Appendix E

City of Port Phillips Due Diligence Investigation Report of May 2011

Enquiries: Darren Pendergast
Telephone: (03) 9209 6245

CITY OF
PORT PHILLIP
ABN 21 762 977 945

10 May 2011

Ms Katrina Terjung
Coordinator Strategic Planning
City of Port Phillip
99a Carlisle Street
ST KILDA VIC 3182

Dear Ms Terjung

46-58 MARLBOROUGH STREET, BALACLAVA - DUE DILIGENCE INVESTIGATION

INTRODUCTION

A due diligence investigation has been undertaken at 46, 48 and 50-58 Marlborough Street, Balaclava (the site). The location of the site is shown on the site location plan, attached.

The aim of this assessment was to investigate the current and historic use of the site and the status of the soil of the site. It is understood that the site is intended to be developed for public housing with an underground car park and it is likely that soil will need to be excavated and disposed from the site.

SCOPE OF WORKS

The works undertaken comprised a site history investigation, a site inspection and a systematic soil sampling and testing program. Seven boreholes were drilled within the vacant lot of 46 Marlborough St and the garden areas of the car park. The locations are shown on the borehole location plan, attached.

SITE FEATURES

The site comprises a vacant lot (46 Marlborough St), a residential house (48 Marlborough St) and car park (50-58 Marlborough St). The following features were observed on each property:

- 46 Marlborough St - Vacant lot, no buildings present, long grass, metal sheeting fence at rear, temporary construction fence on Marlborough St, section of concrete path adjacent to the eastern site boundary
- 48 Marlborough St - Residential lot; weatherboard house with metal sheeting roof, some sheets rusted; metal shed located in the rear northern corner, concrete paths

Cnr Carlisle St & Brighton Rd,
St Kilda Victoria 3182
Private Bag No 3,
PO St Kilda Victoria 3182,
DX 35706 Balaclava
Phone (03) 9209 6777
Facsimile (03) 9534 9105

- 50-58 Marlborough St – Car park; paved surfaces, sometimes broken and subsided or replaced with bitumen; surrounding garden beds have woodchip mulch; middle garden beds have gravel a surface.

SITE HISTORY

A site history investigation was undertaken which included a search conducted by the Royal Historical Society of Victoria (RHSV) and a review of the following information:

- Certificates of title
- Historical aerial photographs
- Council records

The search undertaken by the RHSV reported 46 to 50 Marlborough St, Balaclava have been residential properties since street numbers were first listed in the 1890s. Historic certificates of title do not list any businesses which have owned any of the properties until the City of Port Phillip, then as the City of St Kilda, purchased the properties in the 1970s. A copy of the RHSV report is attached.

Aerial photographs from 1931 to 1969 show the sites and the surrounding area to be mainly used for residential purposes. The Balaclava Railway Station is located immediately to the east of the site and commercial precinct of Carlisle St is located to the north. It is unclear if the car parks have been constructed in the 1977 aerial photograph. The car parks are present in the 1987 photograph.

The review of council records show that the car parks on 56 and 58 Marlborough St had been completed in 1978 and car parks on 52 and 54 Marlborough St were completed in 1979.

Copies of results of the site history investigation are attached.

POTENTIAL CONTAMINANTS OF CONCERN

Searches of EPA Victoria's Priority Sites Register and the City of Port Phillip Planning Scheme – Environmental Audit Overlay did not find any potentially contaminating sites in the vicinity of the assessment site. A search of the list of issued Certificates or Statements of Environmental Audit was undertaken and identified four sites which are within 500 m of the site. The following details of each site are summarised below:

Report No.	Site Address	Vicinity to the Site	Former Use	Current Use
41002-1	126 Carlisle St, St Kilda	432 m WNW	Automotive engineers/motor mechanic	High density residential
35722-1	128-140 Chapel St, St Kilda	195 m WSW	Substations/ residential	High density residential development
35620-1	120-124 Carlisle St, St Kilda	450 WNW	Wood and coal merchant/ confectionary manufacturer/ antique retailer	High density residential
62851-1	12, 14 and 18 Martin St, St Kilda	500 m NW	Residential/ Industrial – metal electroplating	Light industrial

Total petroleum hydrocarbons (TPH), and heavy metals were identified on the former automotive engineering and substation sites. Onsite storage and use of fuels and oils are regularly associated with TPH contamination in soils.

Heavy metals and total polycyclic aromatic hydrocarbons (PAH) were identified in the upper, imported fill material layer on all of the sites. PAHs are produced by the incomplete burning of carbon containing fuels and are contained in gasworks waste. The source of this fill on these sites was not known. Fill material containing heavy metals and PAH are encountered widely in the City of Port Phillip.

Three of these sites have been developed for high density residential use. As part of these developments contamination was required to be managed or remediated. As such soil impacts of these sites are not considered pose a risk to the assessment site.

Groundwater beneath the site located at 12, 14 and 18 Martin St, St Kilda was reported to be impacted by tectrachloroethylene (PCE) which is a solvent component. The source of the PCE was considered to be the historic industry located on the site and its surrounding area. Groundwater was not considered by the Auditor to be a concern to the commercial/industrial occupiers of the site at the time of the audit. This site is located 500 m northwest of the assessment site. As such groundwater impacts are not considered to be a risk to the assessment site.

The assessment site is located in a residential area and the site history investigation has not report any historic commercial or industrial use on the site. The site is located in an area which is likely to have been built up by fill material. Occupiers of residential properties may have stored and used hydrocarbons for garden equipment and pesticides or use on gardens and lawns.

Contaminants of potential concern (COPC) of the site are summarised in the following table:

Potential Contaminating Activity	Potential Contaminant of Concern
Imported fill material	Heavy metal, PAH
Garden maintenance	Polychlorinated biphenyls (PCB)
Motorised gardening equipment	TPH; benzene, toluene, ethylbenzene, xylenes (BTEX); PAH

SOIL ASSESSMENT

On 23 March 2011 seven boreholes (BH1-BH7) were drilled using a hand auger on the site. The sample locations were undertaken on a systematic pattern across the vacant lot and car parks. The location of each borehole is shown on the borehole location plan and logs of each borehole are attached.

The site is approximately 1,800 m^2, the Australian Standard AS4482.1 *Guide to the Sampling and Investigation of Potentially Contaminated Soil – Non-volatile and Semi-volatile Compounds* and AS4482.2: *Guide to the sampling and investigation of potentially contaminated soil - Volatile substances* suggests that a minimum number of sampling points for an area of this size is seven.

Soil of the site comprised sandy topsoil fill material which contained occasional charcoal and ash. Natural material of the site comprised silty clay of the Brighton Group and was generally encountered at 0.4 m depth. Wood chip mulch and toppings were present at the surface within landscaped areas of the car park. Extensive fill material containing angular basalt rocks were encountered in the eastern portion of the car park adjacent to the railway line easement.

Boreholes were drilled up to 0.9 m depth. Soil samples were generally collected at the surface (0.0-0.1 m), at 0.2 m and 0.5 m depths or changes in soil type.

Soil Chemical Testing

Individual samples were selected for chemical testing based on location and field observations. The chemical testing program was carried out to screen the site for COPC as well as general soil contamination. The following table outlines chemical testing undertaken on individual samples:

Sample Number	Chemical Testing
BH1-0.4, BH2-0.1, BH3-0.05, BH3-0.45, BH4-0.1, BH5-0.65, BH6-0.05, BH7-0.05, BH7-0.3, DUP1, SPLIT1	Heavy metals*, TPH, BTEX and PAH
BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	NEPM Schedule B(1) Screen#

* Heavy metals: Arsenic, Barium, Beryllium, Cadmium, Chromium (total), Cobalt, Copper, Manganese, Nickel, Lead, Vanadium, Zinc and Mercury)

NEPM Schedule B(1) Screen: Heavy Metals, Chromium VI, TPH, BTEX, PAH, Phenols, Organochlorine Pesticides, Polychlorinated Biphenyls

All chemical testing results for soil samples were compared to the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM (1999)) Health Based Investigation Level (HIL) for a standard residential site with garden/accessible soil (A) and residential with minimal access to soil (D).* Results compared to NEPM HIL A and D are presented in Table 1.

It is understood that soil will be required to be excavated and disposed offsite to allow for the development of the site. As such the chemical testing results were also compared to EPA Victoria Industrial Waste Resource Guidelines (IWRG) *Soil Hazard Categorisation and Management (621)*. Results compared to EPA IWRG 621 are present in Table 2.

Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) procedures were undertaken to assess quality of data. The QA/QC measures undertaken during sampling and testing included:

- Preservation of soil samples during sampling and transportation in a chilled esky
- Soil sampling handling tracking by chain of custody procedures
- Testing undertaken within required holding times
- Review of laboratory QA/QC procedures (inter and intra-laboratory duplicate and split analysis results and rinsate blank analysis results).

Additional to internal laboratory QA/QC testing results field QA/QC procedures were also undertaken. Field duplicate, field split samples and rinsate samples were collected during soil sampling.

During sampling three identical samples were collected from 0.0-0.2 m depth of borehole BH1, one primary sample (BH1-0.0), one duplicate sample (DUP1), and split sample (SPLIT1). The duplicate sample was submitted to the primary laboratory for testing, Australian Laboratory Services Pty Ltd, and the split sample was submitted to the secondary laboratory, mgt-Labmark, for analysis. The duplicate and split samples were tested for the main COPC for the site and results compared to the primary sample results.

One rinsate sample (RIN1) was collected during soil sampling. The rinsate is an indication of the adequacy of the cleaning procedures of hand sampling equipment between sampling locations.

The results of QA/QC testing are presented in Tables 3 and 4, attached. Certificates of laboratory analysis are attached.

SOIL RESULTS

Soil testing results are presented in Table 1 and Table 2. The results of chemical testing indicated the majority of results for analytes tested were below the NEPM HIL A assessment criteria for a site proposed onsite use and EPA IWRG 621 offsite classification criteria. However, the following results exceeded NEPM HIL A and EPA IWRG 621 upper levels of Fill Material :

Analyte	Exceedances of NEPM HIL A	Exceedances of EPA IWRG 621 Fill Material
Lead	BH1-0.0, BH2-0.1, BH3-0.05, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.3	BH1-0.0, BH2-0.1, BH3-0.05, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3
Zinc	None	BH1-0.0, BH2-0.1, BH3-0.05, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.3
Benzo(a)pyrene	BH1-0.0, BH2-0.1, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3	BH1-0.0, BH2-0.1, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3
Total PAH	BH4-0.1, BH6-0.05, BH7-0.05	BH4-0.1, BH6-0.05, BH7-0.05

All samples which reported elevated concentrations were collected from fill material of the site.

Based on the comparison of QA/QC results the chemical testing are considered to be acceptable and representative of conditions of the site.

DISCUSSION AND RECOMMENDATIONS

A soil sampling and testing program has been undertaken at 46, 48 and 50-58 Marlborough St, Balaclava to assess the status of the underlying soil for due diligence purposes.

The site history investigation did not show any part of the site had previously been used for industrial purposes however, it is likely fill material has been imported onto the site.

A total of seven boreholes were hand augered on the site. Fill material was encountered across the whole site up to a depth of 0.4 m. Samples were tested for broad screens and contaminants of concern which are often found in fill material of the City of Port Phillip.

Results of chemical testing reported all results were below the adopted assessment criteria for high density residential, NEPM HIL D. Therefore soil of the site is considered to be suitable to remain onsite if the site is developed for high density residential use or commercial industrial use.

The testing results were also compared to EPA industrial waste resource guidelines for offsite disposal. It was found that fill material of the site was required to be disposed offsite it would most likely be classified as EPA Contaminated Soil Category C. It should be noted that if soil is required to be disposed offsite it will need to be tested in accordance with EPA guidelines.

It is understood that a basement car park is proposed for the site. As such it is recommended that if soil is required to be excavated and disposed offsite then a soil management plan should be implemented to ensure any contaminated fill material is handled in an appropriate manner and disposed to a suitably licensed facility.

Yours sincerely

DARREN PENDERGAST
Site Contamination Advisor

Attachments:
Site Location Plan
Site History Investigation Results
Borehole Location Plan
Borehole Logs
Tables
Laboratory Certificates of Analysis

46-58 Marlborough St, Balaclava - Site Location

Scale 1:1,744 at A4

User: D. Pendergast

Date: 6/04/2011

Vol. 3045 Fol. 608919

46 Marlborough

VICTORIA.

Certificate of Title,

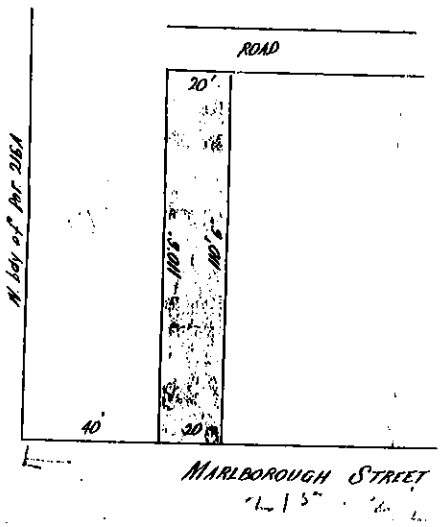
UNDER THE "TRANSFER OF LAND ACT 1890."

Sarah Anne Armstrong of Marlborough Street Balaclava Street Balaclava Widow is now the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in All that piece of Land, delineated and colored red on the Map in the margin, being part of Crown Portion Two hundred and sixteen A East of St Kilda Parish of Prahran County of Bourke

Dated the Twelfth day of April One thousand nine hundred and five

Assistant Registrar of Titles.

ENCUMBRANCES REFERRED TO.



Vol. [illegible] Fol. [illegible] Transfer 561 Application 561 (2-13)

Nature of Instrument.	Day and Hour of its Production.	Names of the Parties to it.	Number or Symbol thereon.
The Economic Permanent Building Society of Collins Street Melbourne			

now the Proprietor of the within-described Estate and Land by Transfer from the within named Sarah Anne Armstrong registered the 17th April 1907 at 2.40 o'clock in the afternoon, and Numbered 54,5992

Assistant Registrar of Titles.

William Frederick Stanley Cross of Auburn Road Auburn Accountant now the proprietor of the within-described Estate and Land pursuant to Transfer from above named The Economic Permanent Building Society registered on the 18th day of November 1911 at 11.11 o'clock in the forenoon and Numbered 608080

Assistant Registrar of Titles.

The Building Society of No 285 Collins Street Melbourne now the proprietor of the within-described Estate and Land pursuant to Transfer from above named William Frederick Stanley Cross registered on the 18th day of November 1911 at 11.11 o'clock in the forenoon and Numbered 608081

Assistant Registrar of Titles.

Charles Henry Perkins Brass Finisher and Charlotte May Perkins Married Woman both of 46 Marlborough Street Balaclava are now the proprietors of the within described estate by joint transfer registered on 14th July 1931 and numbered 784275

Assistant Registrar of Titles

DANIEL RAYMOND TIGHE of Flat 11 No.56 Tennyson Street Elwood Accountant and CHRISTOPHER JOHN HALL of 63 Bent Street Bentleigh Teacher are now proprietors as TENANTS IN COMMON IN EQUAL SHARES Registered 5th July 1977 No.G693942

Assistant Registrar of Titles.

Salvatore Mollica, Labourer and Grazia Mollica, Married Woman both of 11 Shirley Grove East St Kilda are now joint proprietors of the within described estate by transfer registered on 8 Jan 1954 and numbered 2608583

Assistant Registrar of Titles

MORTGAGE to YUNCKEN NOMINEES PTY.LTD. Registered 5th July 1977 No.G693943

Assistant Registrar of Titles.

MORTGAGE to THE NATIONAL BANK OF AUSTRALASIA LIMITED dated 8 Jan 1954 registered numbered 1068775

Assistant Registrar of Titles

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA is now the proprietor Registered 1st October 1979 No.H702841

273 H702841

48 Marlborough

Entered in the Register Book,

Vol. 3652 Fol. 730255

VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1890."

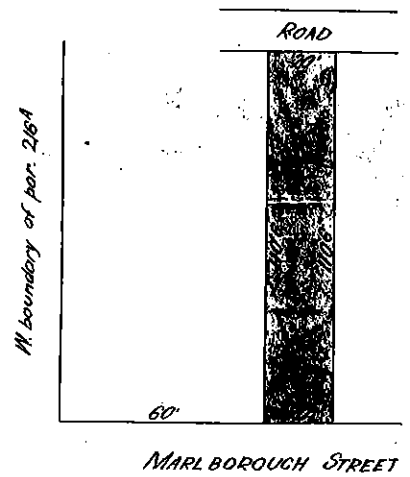
LILY MAY JOHNSON of No. 175 Carlisle Street Balaclava Married Woman is now the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in All that piece of Land, delineated and coloured red on the map in the margin, being part of Crown Portion Two hundred and sixteenA East of St. Kilda parish of Prahran county of Bourke

Dated the Twenty-third day of November thousand nine hundred and twelve

Assistant Registrar of Titles.

ENCUMBRANCES REFERRED TO.

SPECIAL RAILWAY CONDITION contained in Crown Grant to John Cooke



E.A.L.

Measurements are in feet & inches

Nature of Instrument.	Day and Hour of its Production.	Names of the Parties to it.	Number or Symbol thereon.
of 28/30 Market Street Melbourne is now within described estate by Lily May Johnson registered on 23rd December 1925 and numbered 1247165 Assistant Registrar of Titles.		MICHAEL JOHN BILANAKIS Labourer and MARIA BILANAKIS Married Woman both of 56 Nightingale Street Balaclava are now JOINT PROPRIETORS Registered 13th November 1969 No. D559105 UNDER THE TRANSFER OF LAND ACT Assistant Registrar of Titles.	
Lily May Johnson of 48 Marlborough Street Balaclava Married Woman is now the proprietor of the within described estate by transfer registered on 6th November 1950 and numbered 2357832 Assistant Registrar of Titles.		to COMMONWEALTH SAVINGS BANK OF AUSTRALIA Registered 13th November 1969 No. D559106 Assistant Registrar of Titles.	
Norman William Johnson of 27 Duke Street St. Kilda Council Employee is now the proprietor of the within described estate by transfer registered on 6th November 1950 and numbered 2357833 Assistant Registrar of Titles.		PROPRIETOR THE MAYOR COUNCILLORS & CITIZENS OF THE CITY OF ST.KILDA REGISTERED 9/6/88 N508468S Assistant Registrar of Titles.	
JAMES McKAY of 14 Vale Street St. Kilda Foreman is now the proprietor Registered 9th July 1964 No. B977765			
DU PONT PTY. LTD. of 208 Little Lonsdale Street Melbourne is now the proprietor Registered 9th July 1964 No. B977766		Assistant Registrar of Titles.	
[illegible] to ALICE MAY RANDLE Registered 4th March 1965 No.C162680		Assistant Registrar of Titles.	
EUSTRATIA PAVLIOGLOU of 48 Marlborough Street St.Kilda Home Duties is now the proprietor Registered 15th September 1967 No.C885984		Assistant Registrar of Titles.	

50-58 Marlborough 260

VICTORIA.

Vol. 5291 Fol. 058118

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1915."

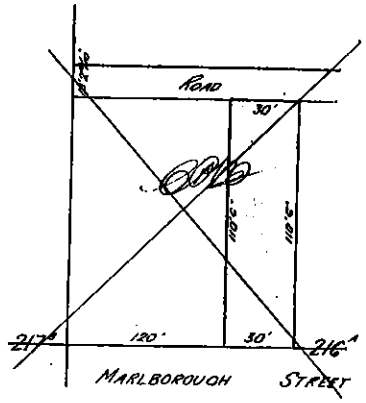
Philipp Schuler of 78 Allison Road Elsternwick Gentleman is- - - - - - - - - -
now the proprietor of an Estate in Fee-simple, subject to the Encumbrances
notified hereunder in. All that piece of Land delineated and coloured
red on the map in the margin being part of Crown Portion Two hundred and sixteen[A] ~~at~~ Balaclava
~~Balaclava~~ Parish of Prahran County of Bourke - Together with a right of carriage-
way over the road colored brown on the said map- - - - - - - - - - - - - - - - - - -

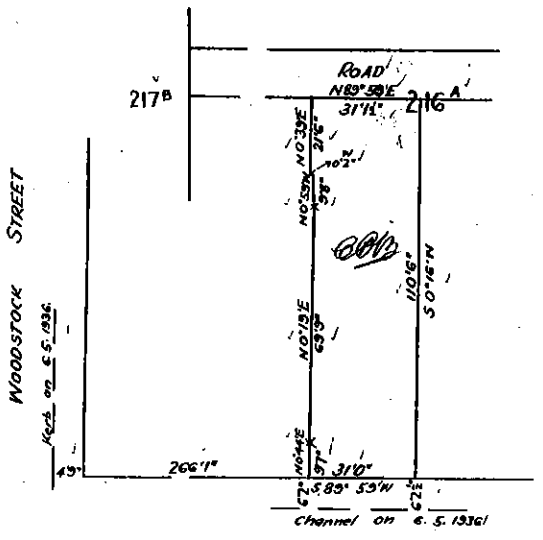
Dated the Fourth day of July One
thousand nine hundred and twenty-seven.

Assistant Registrar of Titles.

ENCUMBRANCES REFERRED TO.

App. 5089 Sec 215.
2. 7. 1936.





Measurements are in feet & inches

Vol. 1744 Fol. 349079 | Transfer. 1617105. | Application.

260

William Craig, Patrolman, and Ethel May Craig, Married Woman, both of 22 Marlborough Street Balaclava are now joint proprietors of the within described estate by transfer registered on 1st July 1936 and numbered 1617105.

L. Forbes.
Assistant Registrar of Titles

Kathlena Marschner Lightfoot of 1 Merriwoola Street East St Kilda Married Woman is now the proprietor of the within described estate by transfer registered on 15th April 1940 and numbered 1768665.

C.O'Daly
Assistant Registrar of Titles

ROGER EARL (WINDSOR) PTY. LTD. of 3 Wellington Street Windsor is now the proprietor
Registered 5th December 1975
No.F957273

OFFICE OF TITLES I.M.V. VICTORIA

MORTGAGE to THE SECURITIES NOMINEE CORPORATION PTY. LTD.
Registered 5th December 1975
No.F957274

DISCHARGED -8 JUN 1976 J.R.B.

OFFICE OF TITLES I.M.V. VICTORIA

MORTGAGE to BENEFICIAL FINANCE CORPORATION LIMITED
Registered 5th December 1975
No.F957275

DISCHARGED -8 JUN 1976 J.R.B.

OFFICE OF TITLES I.M.V.

PIERRE MARTIN Company Director and JENNIFER FAY McCURDY Secretary both of 12 Kerferd Road Albert Park are now JOINT PROPRIETORS
Registered 8th June 1976
No.G182889

OFFICE OF TITLES J.R.B. VICTORIA

MORTGAGE to THE COMMISSIONERS OF THE STATE SAVINGS BANK OF VICTORIA
Registered 8th June 1976
No.G182890

DISCHARGED 1 NOV 1978 J.R.B.

OFFICE OF TITLES J.R.B. VICTORIA

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST.KILDA is now the proprietor
Registered 14th November 1978
No.H303035

Maddocks, Lowe

A554217

50-58 Marlborough 276

R

VICTORIA

Entered in the Register Book

Vol. 8196 *Fol.* 673

Certificate of Title

UNDER THE "TRANSFER OF LAND ACT 1954"

Ilma Jean O'Neill of 50 Marlborough Street Balaclava Married Woman is - - - -

now the proprietor -

of an Estate in Fee-simple subject to the Encumbrances notified hereunder in

All *that piece of Land, delineated and coloured* red on the map in the - - -

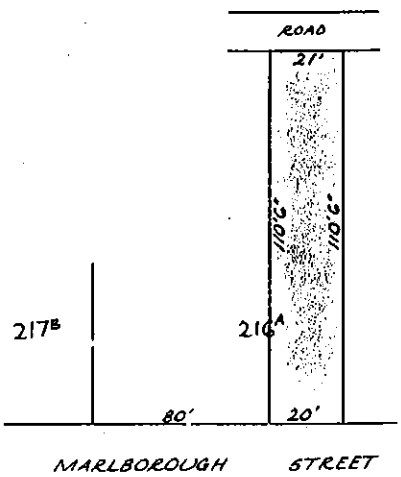
margin being part of Crown Portion 216[A] Parish of Prahran - - - - - - - - - - - -

Dated the Eleventh *day of* August *One thousand nine hundred and* fifty-eight.

Assistant Registrar of Titles

OFFICE OF TITLES VICTORIA

ENCUMBRANCES REFERRED TO



THE MEASUREMENTS ARE IN feet & inches.

Vol. 3355 Fol. 915 | Transfer A584217 | Application

BRUCE CHARLES OWEN Engineer and DOROTHY GEORGINA OWEN Married Woman both of 50 Marlborough Street Balaclava are now JOINT PROPRIETORS
Registered 15th October 1964
No.C58531

OFFICE OF TITLES B.D.D. VICTORIA

NOTICE CHARGED 12 OCT 1971

to ILMA JEAN TOUGH
Registered 15th October 196
No.C58532

OFFICE OF TITLES A. B. VICTORIA

OFFICE OF TITLES B.D.D. VICTORIA

ADELINDO VENTURATO Farm Labourer and SHIRLEY ELAINE VENTURATO Married Woman both of 50 Marlborough Street Balaclava are now JOINT PROPRIETORS
Registered 12th October 1971
No.E188717

OFFICE OF TITLES A. B. VICTORIA

CARL CONWAY Solicitor and ELIZABETH MENDES Married Woman both of 10 Martin Court Toorak are now JOINT PROPRIETORS
Registered 12th October 1971
No.E188718

OFFICE OF TITLES A. B. VICTORIA

VERRAT NOMINEES PTY. LTD. of 7th Floor Holland House 492 St.Kilda Road Melbourne is now the proprietor
Registered 3rd August 1978
No.H179000

OFFICE OF TITLES A. S. VICTORIA

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST.KILDA is now the proprietor
Registered 3rd December 1979
No.H786496

OFFICE OF TITLES L.M.V. VICTORIA

916

H786496
Maddock, Lonie & Chisholm

E641146

50-58 Marlborough 196

REGISTER BOOK

VOL. 8958 FOL. 714

VICTORIA

Certificate of Title

UNDER THE "TRANSFER OF LAND ACT"

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA is now the proprietor of an estate in fee simple subject to the encumbrances notified hereunder in ALL THAT piece of land delineated and coloured red on the map in the margin being part of Crown Portion 216[A] Parish of Prahran County of Bourke

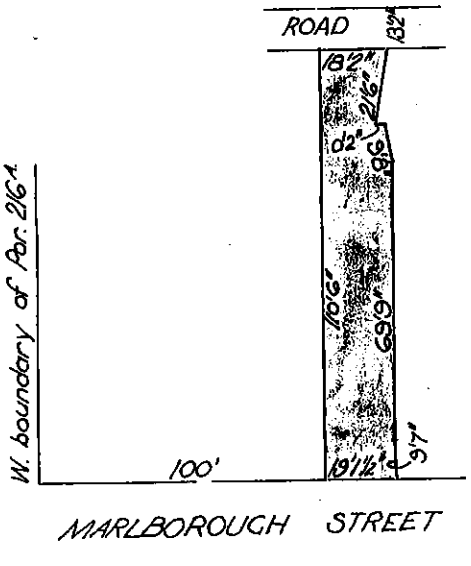
DATED the 15th day of December 1972

V W Howden

Assistant Registrar of Titles

OFFICE OF TITLES VICTORIA

ENCUMBRANCES REFERRED TO



MEASUREMENTS ARE IN FEET AND INCHES

Derived from Vol.3002 Fol.369

E641146

50-58 Malborough 158

Entered in the Register Book

Vol. 4573 Fol. 914423

VICTORIA.

Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1915."

Horace Milton Theodore Percy Clarke of 93 Cole Street Elsternwick Clerk is -- *now the proprietor of an Estate in Fee-simple, subject to the Encumbrances notified hereunder in* All th at *piece of Land, delineated and coloured* red and blue on the map in the margin, being part of Crown Portion Two hundred and - sixteen A at Balaclava Parish of Prahran County of Bourke Together with a right - of carriage way over the road colored brown on the said map As to the land colored- blue Together with a right to use the land colored yellow on the said map for party wall purposes -

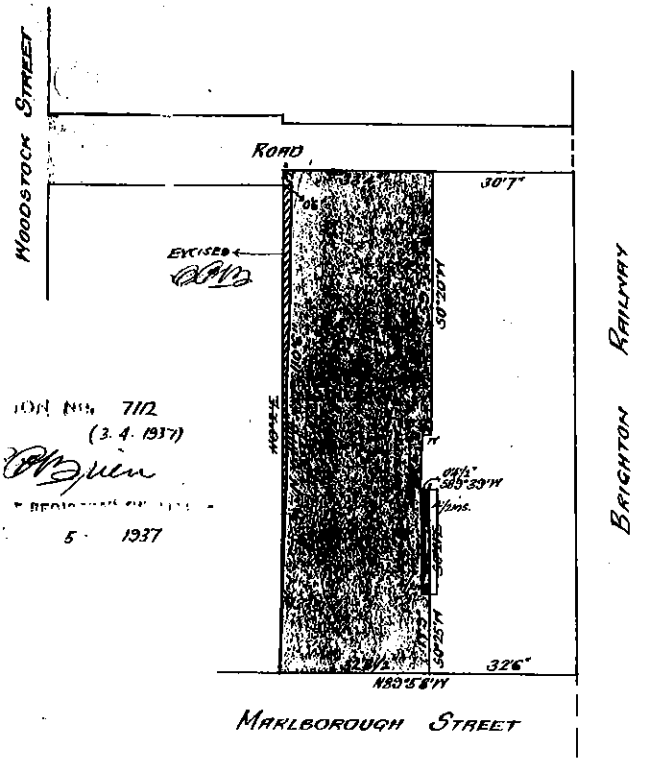
Dated the Eighteenth *day of* May *One thousand nine hundred and* twenty-two.

Assistant Registrar of Titles.

ENCUMBRANCES REFERRED TO.

As to the land colored blue ----

THE PARTY WALL EASEMENT created by -- Instrument of Transfer No.1045150 in- the Register Book - - - - - - - - - -



The Measurements are in feet and inches.

Vol. 4396 Fol. 879034 Transfer. 1045428 Application.

HORACE MILTON THEODORE PERCY CLARKE died on 17th August 1962 Letters of Administration of his estate have been granted to PERCY HARMAN CLARKE of 83 Yathong Road Caringbah New South Wales Manager
Dated 27th November 1963
No.B806390

OFFICE OF TITLES R.L. VICTORIA

ALLAN ERNEST DAVIES of 28 Royal Avenue Glenhuntly Plumber NORMAN EDWIN DAVIES of 10 Twickenham Crescent Burnley Clerk JOHN RAYMOND DAVIES of 66A Grosvenor Street St.Kilda Engineer and CYRIL ROBERT DAVIES of 15 York Street North Brighton Electrician are now proprietors as TENANTS IN COMMON IN EQUAL SHARES
Registered 14th July 1964
No.B981159

OFFICE OF TITLES R. L. VICTORIA

As to the interest of ALLAN ERNEST DAVIES who died on 3rd May 1965 Probate of his will has been granted to MARIE JEAN DAVIES of 3 Florizel Street Burwood Widow
Registered 22nd June 1970
No.D752848

OFFICE OF TITLES A. B. VICTORIA

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST.KILDA is now the proprietor
Registered 1st July 1970
No.D761840

OFFICE OF TITLES D. A. VICTORIA

158

50-58 Marlborough ... 184

Entered in the Register Book

Vol. 4573 Fol. 914422

VICTORIA.

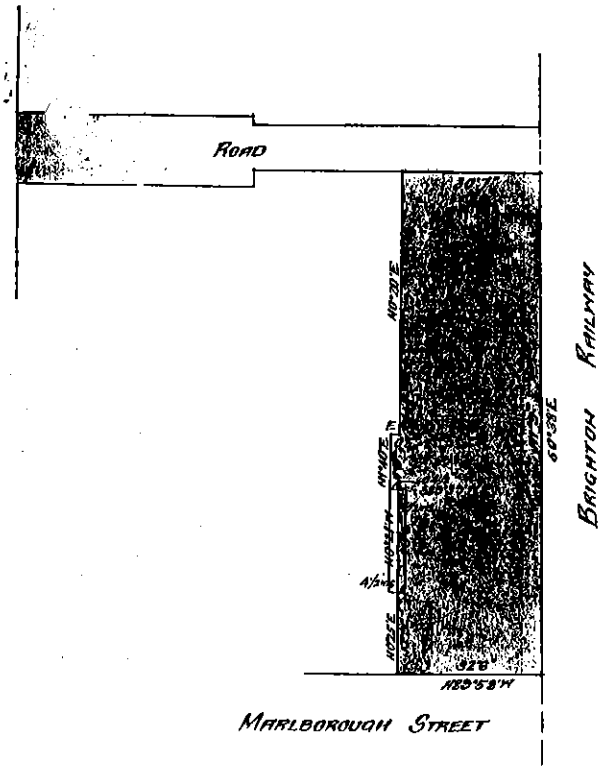
Certificate of Title,

UNDER THE "TRANSFER OF LAND ACT 1915."

Amy Amelia Evelyn Hall of 93 Alma Road St.Kilda Spinster is - - - - - - - -
now the proprietor of an Estate in Fee-simple, subject to the Encumbrances
notified hereunder in All th at *piece of Land, delineated and coloured*
red and blue on the map in the margin being part of Crown Portion Two hundred and -
sixteen[A] at Balaclava Parish of Prahran County of Bourke Together with a right -
of carriage way over the road colored brown on the said map and Together with a --
right to use the land colored yellow on the said map for party wall purposes - - - -

Dated the Fifteenth *day of* M a y *One*
thousand nine hundred and twenty-two.

W. H. Cornpole
Assistant Registrar of Titles.



ENCUMBRANCES REFERRED TO.

As to the land colored blue --------

THE PARTY WALL EASEMENT reserved by Instrument -
of Transfer No. 1045150 in the Register Book - -

Vol. 4396 Fol. 879034 Transfer. 1045150 Applica

Arthur Metcalf of Andrew Street Windsor Painter is

now the proprietor of the within described estate

by transfer from Amy Amelia Evelyn Hall.

registered on 26th May 1925 and numbered

1216943. J.B. Norrell

Assistant Registrar of Titles.

DISCHARGED [stamp]

MORTGAGE to James McConnell Kerr.

registered on

26th May 1925 and numbered 517665.

J.B. Norrell

Assistant Registrar of Titles.

DISCHARGED [stamp]

MORTGAGE to Clement Frederick Samuel Newyear King

registered on

1925 and numbered 518595

J. Irawin

Assistant Registrar of Titles.

Frances Mary Gerrand of 14 Thanet Street Malvern Married Woman is

now the proprietor of the within described estate by

transfer registered on 30th October 1940

and numbered 1792762

Assistant Registrar of Titles

Constance James of 101 Inkerman Street St Kilda Married Woman is

now the proprietor of the within described estate by

transfer registered on 5th April 1941

and numbered 1810769

Assistant Registrar of Titles

THE MAYOR COUNCILLORS AND CITIZENS OF THE CITY OF ST. KILDA

is now the proprietor

Registered 11th November 1971

No. E217918

OFFICE OF TITLES L.A.R. VICTORIA

1931 Aerial Photograph

1945 Aerial Photograph

1960 Aerial Photograph

1969 Aerial Photograph

1977 Aerial Photograph

1987 Aerial Photograph

COUNCIL OF THE CITY OF ST. KILDA

T.C... 2

Application No. 77/1706

CITY OF ST. K...
17 APR 197...

TOWN AND COUNTRY PLANNING BOARD

Town and Country Planning Act 1961

MELBOURNE METROPOLITAN ..... **PLANNING SCHEME**

ST. K. C. C.
CITY ENGINEER'S DEPT.

~~INTERIM DEVELOPMENT ORDER~~

Permit No. 77/1706

Subject to the conditions (if any) set out hereunder the following is hereby permitted:

The construction of a public car park on land at Nos. 56 and 58 Marlborough Street, Balaclava, being Crown Portion 216A, Parish of Prahran in accordance with the endorsed plans submitted with the application (Drawing No. 1321).

Conditions:

The area shown green on the plan shall be planted and maintained with trees and shrubs to the satisfaction of the Town and Country Planning Board.

NOTE: Pursuant to Section 18 (5) of the Town and Country Planning Act 1961, if the development authorised by this permit is not completed within two years the permit shall expire, but application may be made to the Responsible Authority pursuant to the said section for an extension of time.

Date 13.4.78

W. H. Craig
Secretary
For and on behalf of the
Town and Country Planning Board

The issue of this permit does not obviate the necessity for complying with the requirements of any other Authority pursuant to any Statute or Regulation.

NOTE.–SEE BACK.

7-113

CITY OF ST. KILDA

T.C.P. 2

Des Eng
Pol
copy for each P/file

Application No. 79/316

ST. K. C. C. R
20 APR 1979
CITY ENGINEER'S DEPT.

TOWN AND COUNTRY PLANNING BOARD

Town and Country Planning Act 1961

MELBOURNE METROPOLITAN **PLANNING SCHEME**

~~INTERIM DEVELOPMENT ORDER~~

Permit No. 79/316

Subject to the conditions (if any) set out hereunder the following is hereby permitted:

The construction of a car park on Crown Portion No. 216A, Parish of Prahran being Nos. 52 and 54 Marlborough Street, Balaclava, in accordance with the submitted plans numbered 1451.

20 APR 1979

Conditions:

NOTE: Pursuant to Section 18 (5) of the Town and Country Planning Act 1961, if the development authorised by this permit is not completed within two years the permit shall expire, but application may be made to the Responsible Authority pursuant to the said section for an extension of time.

Date 19 APR 1979

W H [signature]
Secretary
For and on behalf of the
Town and Country Planning Board

The issue of this permit does not obviate the necessity for complying with the requirements of any other Authority pursuant to any Statute or Regulation.

ROYAL HISTORICAL SOCIETY OF VICTORIA INC.
239 A'Beckett Street, Melbourne 3000

Date: **28th April 2011**

Attention: **Darren Pendergast**

Company: **Port Phillip City**

From: **Gerardine Horgan (Administrative Officer)**

SITE SEARCH: 46, 48, 50 -58 Marlborough Street Balaclava

The sites under investigation are located on the northern side of Marlborough Street in the block between Chapel Street to the west and the railway line to the east.

The Sands and McDougall Directories of Victoria published between the 1860's and 1974 first list Marlborough Street in the 1870's. Whilst street numbers were not assigned at that time the street was residential with only four houses listed on the north side of the street in this block. The number of houses in the street increased in each subsequent year, and by the time street numbers were assigned in the 1890s, numbers 46, 48, 50, 52, 54, 56, 58 and number 60 were private residences.

This situation remained unchanged when the final directory was published.

Resources available to the Society cannot confirm when the houses at numbers 50- 58 were demolished to create the present day car park. An internet search confirms that the house at number 48 appears to be the only one left standing.

Research by Ruth Permezel

Tel: (03) 9326 9288 Fax: (03) 9326 9477
Email: office@historyvictoria.org.au ABN 36 520 675 471 Reg. No: A2529
Find out more about us on our website: www.historyvictoria.org.au

ROYAL HISTORICAL SOCIETY OF VICTORIA INC.
239 A'Beckett Street, Melbourne 3000

Borehole Location Plan

Scale 1:369 at A4

User: D. Pendergast

Date: 6/04/2011

CITY OF PORT PHILLIP

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

46-58 Marlborough St
Balaclava

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

			Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
			Sample Number:			**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**	**BH7-0.3**
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**														
EA055: Moisture Content																			
Moisture Content (dried @ 103°C)		%	1			9.7	17.8	5.9	18.6	9.7	5.4	9.3	14.7	4	24.6	7.6	7.1	4.8	5.8
EG005T: Total Metals by ICP-AES																			
Arsenic	7440-38-2	mg/kg	5	**100**	**400**	6	5	<5	13	6	<5	6	10	<5	<5	18	10	7	9
Barium	7440-39-3	mg/kg	10	**-**		90	140	70	10	110	<10	90	<10	40	20	220	270	50	60
Beryllium	7440-41-7	mg/kg	1	**20**	**80**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	7440-43-9	mg/kg	1	**20**	**80**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2	**120000**	**480000**	13	16	5	28	6	<2	10	22	4	24	13	14	6	9
Cobalt	7440-48-4	mg/kg	2	**100**	**400**	3	5	2	4	2	<2	2	3	<2	2	7	6	5	9
Copper	7440-50-8	mg/kg	5	**1000**	**4000**	68	15	68	8	28	<5	50	<5	10	<5	59	41	15	24
Lead	7439-92-1	mg/kg	5	**300**	**1200**	461	28	405	20	770	<5	516	16	133	11	810	1120	230	315
Manganese	7439-96-5	mg/kg	5	**1500**	**6000**	56	29	70	16	97	<5	91	16	112	18	190	129	90	146
Nickel	7440-02-0	mg/kg	2	**600**	**2400**	7	8	7	8	5	<2	8	6	3	7	24	21	14	34
Vanadium	7440-62-2	mg/kg	5	**-**		28	38	12	84	14	12	18	63	16	38	18	26	12	13
Zinc	7440-66-6	mg/kg	5	**7000**	**28000**	473	66	344	12	323	<5	353	40	1500	17	661	607	188	262
EG035T: Total Recoverable Mercury by FIMS																			
Mercury	7439-97-6	mg/kg	0.1	**15**	**60**	0.4	0.1	0.8	<0.1	0.4	<0.1	0.7	<0.1	0.2	<0.1	0.7	0.4	<0.1	0.1
EG048: Hexavalent Chromium (Alkaline Digest)																			
Hexavalent Chromium	18540-29-9	mg/kg	0.5	**-**		<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---
EP066: Polychlorinated Biphenyls (PCB)																			
Total Polychlorinated biphenyls		mg/kg	0.1	**10**	**40**	<0.15	---	---	<0.10	---	---	---	<0.10	<0.10	---	---	<2.50	---	---

CITY OF PORT PHILLIP

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

46-58 Marlborough St
Balaclava

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

			Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
			Sample Number:			**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**	**BH7-0.3**	
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**															
EP068A: Organochlorine Pesticides (OC)																				
alpha-BHC	319-84-6	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
beta-BHC	319-85-7	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
gamma-BHC	58-89-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
delta-BHC	319-86-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Heptachlor	76-44-8	mg/kg	0.05	**10**	**40**	<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Aldrin	309-00-2	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Heptachlor epoxide	1024-57-3	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
trans-Chlordane	5103-74-2	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
alpha-Endosulfan	959-98-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
cis-Chlordane	5103-71-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Dieldrin	60-57-1	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
4.4`-DDE	72-55-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Endrin	72-20-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
beta-Endosulfan	33213-65-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
4.4`-DDD	72-54-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Endrin aldehyde	7421-93-4	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Endosulfan sulfate	1031-07-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
4.4`-DDT	50-29-3	mg/kg	0.2			<0.2	---	---	<0.2	---	---	---	<0.2	<0.2	---	---	<5.0	---	---	
Endrin ketone	53494-70-5	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---	---	
Methoxychlor	72-43-5	mg/kg	0.2			<0.2	---	---	<0.2	---	---	---	<0.2	<0.2	---	---	<5.0	---	---	
Aldrin + Dieldrin		mg/kg		**10**	**40**	<0.1	---	---	<0.1	---	---	---	<0.1	<0.1	---	---	<2.5	---	---	
Chlordane		mg/kg		**50**	**200**	<0.1	---	---	<0.1	---	---	---	<0.1	<0.1	---	---	<2.5	---	---	
DDT+DDE+DDD		mg/kg		**200**	**800**	<0.3	---	---	<0.3	---	---	---	<0.3	<0.3	---	---	<2.5	---	---	
EP075(SIM)A: Phenolic Compounds																				
Phenol	108-95-2	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2-Chlorophenol	95-57-8	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2-Methylphenol	95-48-7	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
3- & 4-Methylphenol	1319-77-3	mg/kg	1			<1.0	---	---	<1.0	---	---	---	<1.0	<1.0	---	---	<1.0	---	---	
2-Nitrophenol	88-75-5	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2.4-Dimethylphenol	105-67-9	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2.4-Dichlorophenol	120-83-2	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2.6-Dichlorophenol	87-65-0	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---	---	
Pentachlorophenol	87-86-5	mg/kg	2			<2.0	---	---	<2.0	---	---	---	<2.0	<2.0	---	---	<2.0	---	---	

CITY OF PORT PHILLIP

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

46-58 Marlborough St
Balaclava

Client - Matrix: SOIL
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denotes exceedence of NEPM HIL A
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			Sample date:	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
			Sample Number:	**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**	**BH7-0.3**

Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**													
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																		
Naphthalene	91-20-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6	<0.5
Acenaphthene	83-32-9	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5			1.2	<0.5	0.7	<0.5	0.6	<0.5	1.1	<0.5	<0.5	<0.5	1.3	1.2	1.9	1.1
Anthracene	120-12-7	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.7	<0.5
Fluoranthene	206-44-0	mg/kg	0.5			2.4	<0.5	2.2	<0.5	1.2	<0.5	5	<0.5	<0.5	<0.5	3.7	2.7	4.8	2.4
Pyrene	129-00-0	mg/kg	0.5			2.5	<0.5	2.3	<0.5	1.2	<0.5	4.9	<0.5	<0.5	<0.5	4	3.1	5.3	2.5
Benz(a)anthracene	56-55-3	mg/kg	0.5			1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.2	1.5	2.7	1.2
Chrysene	218-01-9	mg/kg	0.5			1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.1	1.5	2.6	1.2
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5			1.6	<0.5	1.9	<0.5	0.6	<0.5	2.5	<0.5	<0.5	<0.5	2.2	1.5	2.6	1.1
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5			0.6	<0.5	0.6	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.2	1.6	2.4	1.1
Benzo(a)pyrene	50-32-8	mg/kg	0.5	**1**	**4**	1.3	<0.5	1.5	<0.5	0.7	<0.5	3.1	<0.5	<0.5	<0.5	2.9	2.1	3.4	1.4
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5			0.8	<0.5	1	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	1.8	1.2	1.8	0.7
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0.6	<0.5	0.6	<0.5
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5			1	<0.5	1.2	<0.5	0.5	<0.5	2.3	<0.5	<0.5	<0.5	2.2	1.5	2.3	0.8
Total PAH				**20**	**80**	<13.6	<0.5	<13.6	<0.5	<6.6	<0.5	<29.6	<0.5	<0.5	<0.5	<25.7	<18.4	<31.7	<13.5
EP080: BTEX																			
Benzene	71-43-2	mg/kg	0.2	**0.5***	**0.5***	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.5	**3***	**3***	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	mg/kg	0.5	**5***	**5***	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	3-38-3 106-4	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons																			
C6 - C9 Fraction		mg/kg	10	**100**	**100**	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction		mg/kg	50			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction		mg/kg	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	200	110	180	<100
C29 - C36 Fraction		mg/kg	100			140	<100	<100	<100	<100	<100	<100	<100	<100	<100	230	160	290	180
C10 - C36 Fraction (sum)		mg/kg	50	**1000**	**1000**	140	<50	<50	<50	<50	<50	<50	<50	<50	<50	430	270	470	180

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of EPA Fill Material Upper Limit

				Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
				Sample Number:			**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**								
EA055: Moisture Content														
Moisture Content (dried @ 103°C)		%	1				9.7	17.8	5.9	18.6	9.7	5.4	9.3	14.7
EG005T: Total Metals by ICP-AES														
Arsenic	7440-38-2	mg/kg	5	**20**	500	**2000**	6	5	<5	13	6	<5	6	10
Barium	7440-39-3	mg/kg	10				90	140	70	10	110	<10	90	<10
Beryllium	7440-41-7	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	7440-43-9	mg/kg	1	**3**	100	**400**	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2				13	16	5	28	6	<2	10	22
Cobalt	7440-48-4	mg/kg	2				3	5	2	4	2	<2	2	3
Copper	7440-50-8	mg/kg	5	**100**	5000	**20000**	68	15	68	8	28	<5	50	<5
Lead	7439-92-1	mg/kg	5	**300**	1500	**6000**	461	28	405	20	770	<5	516	16
Manganese	7439-96-5	mg/kg	5				56	29	70	16	97	<5	91	16
Nickel	7440-02-0	mg/kg	2	**60**	3000	**12000**	7	8	7	8	5	<2	8	6
Vanadium	7440-62-2	mg/kg	5				28	38	12	84	14	12	18	63
Zinc	7440-66-6	mg/kg	5	**200**	35000	**140000**	473	66	344	12	323	<5	353	40
EG035T: Total Recoverable Mercury by FIMS														
Mercury	7439-97-6	mg/kg	0.1	**1**	75	**300**	0.4	0.1	0.8	<0.1	0.4	<0.1	0.7	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)														
Hexavalent Chromium	18540-29-9	mg/kg	0.5	**1**	500	**2000**	<0.5	---	---	<0.5	---	---	---	<0.5
EP066: Polychlorinated Biphenyls (PCB)														
Total Polychlorinated biphenyls		mg/kg	0.1	**2**			<0.15	---	---	<0.10	---	---	---	<0.10

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of EPA Fill Material Upper Limit

				Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
				Sample Number:			**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**								
EP068A: Organochlorine Pesticides (OC)														
alpha-BHC	319-84-6	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
beta-BHC	319-85-7	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
gamma-BHC	58-89-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
delta-BHC	319-86-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Heptachlor	76-44-8	mg/kg	0.05		1.2	4.8	<0.05	---	---	<0.05	---	---	---	<0.05
Aldrin	309-00-2	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Heptachlor epoxide	1024-57-3	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
trans-Chlordane	5103-74-2	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
alpha-Endosulfan	959-98-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
cis-Chlordane	5103-71-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Dieldrin	60-57-1	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
4.4`-DDE	72-55-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Endrin	72-20-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
beta-Endosulfan	33213-65-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
4.4`-DDD	72-54-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Endrin aldehyde	7421-93-4	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Endosulfan sulfate	1031-07-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
4.4`-DDT	50-29-3	mg/kg	0.2				<0.2	---	---	<0.2	---	---	---	<0.2
Endrin ketone	53494-70-5	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05
Methoxychlor	72-43-5	mg/kg	0.2	1			<0.2	---	---	<0.2	---	---	---	<0.2
Aldrin + Dieldrin		mg/kg			1.2	4.8	<0.1	---	---	<0.1	---	---	---	<0.1
Chlordane		mg/kg			4	16	<0.1	---	---	<0.1	---	---	---	<0.1
DDT+DDE+DDD		mg/kg			50	50	<0.3	---	---	<0.3	---	---	---	<0.3
EP075(SIM)A: Phenolic Compounds														
Phenol	108-95-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2-Chlorophenol	95-57-8	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2-Methylphenol	95-48-7	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
3- & 4-Methylphenol	1319-77-3	mg/kg	1				<1.0	---	---	<1.0	---	---	---	<1.0
2-Nitrophenol	88-75-5	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2.4-Dimethylphenol	105-67-9	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2.4-Dichlorophenol	120-83-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2.6-Dichlorophenol	87-65-0	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5
Pentachlorophenol	87-86-5	mg/kg	2				<2.0	---	---	<2.0	---	---	---	<2.0

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of EPA Fill Material Upper Limit

				Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
				Sample Number:			**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons														
Naphthalene	91-20-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5				1.2	<0.5	0.7	<0.5	0.6	<0.5	1.1	<0.5
Anthracene	120-12-7	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	mg/kg	0.5				2.4	<0.5	2.2	<0.5	1.2	<0.5	5	<0.5
Pyrene	129-00-0	mg/kg	0.5				2.5	<0.5	2.3	<0.5	1.2	<0.5	4.9	<0.5
Benz(a)anthracene	56-55-3	mg/kg	0.5				1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5
Chrysene	218-01-9	mg/kg	0.5				1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5				1.6	<0.5	1.9	<0.5	0.6	<0.5	2.5	<0.5
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5				0.6	<0.5	0.6	<0.5	0.6	<0.5	2.7	<0.5
Benzo(a)pyrene	50-32-8	mg/kg	0.5	**1**	**5**	**16**	1.3	<0.5	1.5	<0.5	0.7	<0.5	3.1	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5				0.8	<0.5	1	<0.5	<0.5	<0.5	2	<0.5
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5				1	<0.5	1.2	<0.5	0.5	<0.5	2.3	<0.5
Total PAH				**20**	**100**	**400**	<13.6	<0.5	<13.6	<0.5	<6.6	<0.5	<29.6	<0.5
EP080: BTEX														
Benzene	71-43-2	mg/kg	0.2	**1**	**4**	**16**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	8-38-3 106-42	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total MAH				**7**	**70**	**400**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons														
C6 - C9 Fraction		mg/kg	10	**100**	**650**	**2600**	<10	<10	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction		mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction		mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction		mg/kg	100				140	<100	<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (sum)		mg/kg	50	**1000**	**10000**	**40000**	140	<50	<50	<50	<50	<50	<50	<50

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of EPA Fill Material Upper Limit

				Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
				Sample Number:			**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**	**BH7-0.3**
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**						
EA055: Moisture Content												
Moisture Content (dried @ 103°C)		%	1				4	24.6	7.6	7.1	4.8	5.8
EG005T: Total Metals by ICP-AES												
Arsenic	7440-38-2	mg/kg	5	**20**	**500**	**2000**	<5	<5	18	10	7	9
Barium	7440-39-3	mg/kg	10				40	20	220	270	50	60
Beryllium	7440-41-7	mg/kg	1				<1	<1	<1	<1	<1	<1
Cadmium	7440-43-9	mg/kg	1	**3**	**100**	**400**	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2				4	24	13	14	6	9
Cobalt	7440-48-4	mg/kg	2				<2	2	7	6	5	9
Copper	7440-50-8	mg/kg	5	**100**	**5000**	**20000**	10	<5	59	41	15	24
Lead	7439-92-1	mg/kg	5	**300**	**1500**	**6000**	133	11	810	1120	230	315
Manganese	7439-96-5	mg/kg	5				112	18	190	129	90	146
Nickel	7440-02-0	mg/kg	2	**60**	**3000**	**12000**	3	7	24	21	14	34
Vanadium	7440-62-2	mg/kg	5				16	38	18	26	12	13
Zinc	7440-66-6	mg/kg	5	**200**	**35000**	**140000**	1500	17	661	607	188	262
EG035T: Total Recoverable Mercury by FIMS												
Mercury	7439-97-6	mg/kg	0.1	**1**	**75**	**300**	0.2	<0.1	0.7	0.4	<0.1	0.1
EG048: Hexavalent Chromium (Alkaline Digest)												
Hexavalent Chromium	18540-29-9	mg/kg	0.5	**1**	**500**	**2000**	<0.5	---	---	<0.5	---	---
EP066: Polychlorinated Biphenyls (PCB)												
Total Polychlorinated biphenyls		mg/kg	0.1	**2**			<0.10	---	---	<2.50	---	---

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Soil Samples
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Client - Matrix: SOIL
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denotes exceedence of EPA Fill Material Upper Limit

				Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
				Sample Number:			**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**	**BH7-0.3**
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**						
EP068A: Organochlorine Pesticides (OC)												
alpha-BHC	319-84-6	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05				<0.05	---	---	<1.25	---	---
beta-BHC	319-85-7	mg/kg	0.05				<0.05	---	---	<1.25	---	---
gamma-BHC	58-89-9	mg/kg	0.05				<0.05	---	---	<1.25	---	---
delta-BHC	319-86-8	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Heptachlor	76-44-8	mg/kg	0.05		1.2	4.8	<0.05	---	---	<1.25	---	---
Aldrin	309-00-2	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Heptachlor epoxide	1024-57-3	mg/kg	0.05				<0.05	---	---	<1.25	---	---
trans-Chlordane	5103-74-2	mg/kg	0.05				<0.05	---	---	<1.25	---	---
alpha-Endosulfan	959-98-8	mg/kg	0.05				<0.05	---	---	<1.25	---	---
cis-Chlordane	5103-71-9	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Dieldrin	60-57-1	mg/kg	0.05				<0.05	---	---	<1.25	---	---
4.4`-DDE	72-55-9	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Endrin	72-20-8	mg/kg	0.05				<0.05	---	---	<1.25	---	---
beta-Endosulfan	33213-65-9	mg/kg	0.05				<0.05	---	---	<1.25	---	---
4.4`-DDD	72-54-8	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Endrin aldehyde	7421-93-4	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Endosulfan sulfate	1031-07-8	mg/kg	0.05				<0.05	---	---	<1.25	---	---
4.4`-DDT	50-29-3	mg/kg	0.2				<0.2	---	---	<5.0	---	---
Endrin ketone	53494-70-5	mg/kg	0.05				<0.05	---	---	<1.25	---	---
Methoxychlor	72-43-5	mg/kg	0.2	1			<0.2	---	---	<5.0	---	---
Aldrin + Dieldrin		mg/kg			1.2	4.8	<0.1	---	---	<2.5	---	---
Chlordane		mg/kg			4	16	<0.1	---	---	<2.5	---	---
DDT+DDE+DDD		mg/kg			50	50	<0.3	---	---	<2.5	---	---
EP075(SIM)A: Phenolic Compounds												
Phenol	108-95-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2-Chlorophenol	95-57-8	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2-Methylphenol	95-48-7	mg/kg	0.5				<0.5	---	---	<0.5	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1				<1.0	---	---	<1.0	---	---
2-Nitrophenol	88-75-5	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.5				<0.5	---	---	<0.5	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5				<0.5	---	---	<0.5	---	---
Pentachlorophenol	87-86-5	mg/kg	2				<2.0	---	---	<2.0	---	---

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL
Workgroup: EM1103251
Project name/number: DUE DILIGENCE INVESTIGATION FILE NO 02503

denotes exceedence of EPA Fill Material Upper Limit

				Sample date:			29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
				Sample Number:			**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**	**BH7-0.3**
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons												
Naphthalene	91-20-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5				<0.5	<0.5	<0.5	0.5	0.6	<0.5
Acenaphthene	83-32-9	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5				<0.5	<0.5	1.3	1.2	1.9	1.1
Anthracene	120-12-7	mg/kg	0.5				<0.5	<0.5	0.5	<0.5	0.7	<0.5
Fluoranthene	206-44-0	mg/kg	0.5				<0.5	<0.5	3.7	2.7	4.8	2.4
Pyrene	129-00-0	mg/kg	0.5				<0.5	<0.5	4	3.1	5.3	2.5
Benz(a)anthracene	56-55-3	mg/kg	0.5				<0.5	<0.5	2.2	1.5	2.7	1.2
Chrysene	218-01-9	mg/kg	0.5				<0.5	<0.5	2.1	1.5	2.6	1.2
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5				<0.5	<0.5	2.2	1.5	2.6	1.1
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5				<0.5	<0.5	2.2	1.6	2.4	1.1
Benzo(a)pyrene	50-32-8	mg/kg	0.5	**1**	**5**	**16**	<0.5	<0.5	2.9	2.1	3.4	1.4
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5				<0.5	<0.5	1.8	1.2	1.8	0.7
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5				<0.5	<0.5	0.6	<0.5	0.6	<0.5
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5				<0.5	<0.5	2.2	1.5	2.3	0.8
Total PAH				**20**	**100**	**400**	<0.5	<0.5	<25.7	<18.4	<31.7	<13.5
EP080: BTEX												
Benzene	71-43-2	mg/kg	0.2	**1**	**4**	**16**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	8-38-3 106-42	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total MAH				**7**	**70**	**400**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons												
C6 - C9 Fraction		mg/kg	10	**100**	**650**	**2600**	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction		mg/kg	50				<50	<50	<50	<50	<50	<50
C15 - C28 Fraction		mg/kg	100				<100	<100	200	110	180	<100
C29 - C36 Fraction		mg/kg	100				<100	<100	230	160	290	180
C10 - C36 Fraction (sum)		mg/kg	50	**1000**	**10000**	**40000**	<50	<50	430	270	470	180

		Sample date:	29/03/2011	29/03/2011		29/03/2011	29/03/2011	
		Sample Number:	**BH1_0.0**	**DUP 1**	**RPD**	**BH1_0.0**	**SPLIT 1**	**RPD**
Analyte grouping/Analyte	CAS Number	Units						
EA055: Moisture Content								
Moisture Content		%	9.7	11	-13	9.7	15	43
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	mg/kg	6	6	0	6	16	91
Barium	7440-39-3	mg/kg	90	60	40	90	64	-34
Beryllium	7440-41-7	mg/kg	<1	<1	-	<1	<2	-
Cadmium	7440-43-9	mg/kg	<1	<1	-	<1	<0.5	-
Chromium	7440-47-3	mg/kg	13	11	17	13	18	32
Cobalt	7440-48-4	mg/kg	3	3	-	3	<5	-
Copper	7440-50-8	mg/kg	68	44	43	68	46	**-39**
Lead	7439-92-1	mg/kg	461	380	19	461	600	26
Manganese	7439-96-5	mg/kg	56	54	4	56	57	2
Nickel	7440-02-0	mg/kg	7	6	15	7	9.7	**32**
Vanadium	7440-62-2	mg/kg	28	30	7	28	67	82
Zinc	7440-66-6	mg/kg	473	320	**39**	473	440	-7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	mg/kg	0.4	0.2	-	0.4	4.9	170
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
Acenaphthylene	208-96-8	mg/kg	<0.5	<0.5	-	<0.5	0.1	-
Acenaphthene	83-32-9	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
Fluorene	86-73-7	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
Phenanthrene	85-01-8	mg/kg	1.2	0.6	**67**	1.2	0.9	29
Anthracene	120-12-7	mg/kg	<0.5	<0.5	-	<0.5	0.2	-
Fluoranthene	206-44-0	mg/kg	2.4	3.6	40	2.4	1.5	46
Pyrene	129-00-0	mg/kg	2.5	4.5	**57**	2.5	1.4	**56**
Benz(a)anthracene	56-55-3	mg/kg	1.1	2.7	**84**	1.1	0.8	32
Chrysene	218-01-9	mg/kg	1.1	2.4	**74**	1.1	0.7	44
Benzo(b)fluoranthene	205-99-2	mg/kg	1.6	6.4	**120**	1.6	0.7	**78**
Benzo(k)fluoranthene	207-08-9	mg/kg	0.6	2	**108**	0.6	0.5	18
Benzo(a)pyrene	50-32-8	mg/kg	1.3	5	**117**	1.3	0.8	48
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.8	3.1	**118**	0.8	0.5	46
Dibenz(a.h)anthracene	53-70-3	mg/kg	<0.5	0.7	-	<0.5	0.2	-
Benzo(g.h.i)perylene	191-24-2	mg/kg	1	3.6	**113**	1	0.7	35
EP080: BTEX								
Benzene	71-43-2	mg/kg	<0.2	<0.2	-	<0.2	<0.05	-
Toluene	108-88-3	mg/kg	<0.5	<0.5	-	<0.5	<0.05	-
Ethylbenzene	100-41-4	mg/kg	<0.5	<0.5	-	<0.5	<0.05	-
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
ortho-Xylene	95-47-6	mg/kg	<0.5	<0.5	-	<0.5	<0.05	-
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		mg/kg	<10	<10	-	<10	<20	-
C10 - C14 Fraction		mg/kg	<50	<50	-	<50	<50	-
C15 - C28 Fraction		mg/kg	<100	440	-	<100	<100	-
C29 - C36 Fraction		mg/kg	140	740	**136**	140	<100	-
C10 - C36 Fraction (sum)		mg/kg	140	1180	**158**	140	<100	-

Table 4
Chemical Testing Results
Rinsate Sample

Client - Matrix: WATER
Workgroup: EM1012428
Project name/number: SOIL ASSESSMENT

	Sample date:			29/03/2011
	Sample Number:			**RIN 1**

Analyte grouping/Analyte	CAS Number	Units	LOR	
EG020T: Total Metals by ICP-MS				
Arsenic	7440-38-2	mg/L	0.001	<0.001
Beryllium	7440-41-7	mg/L	0.001	<0.001
Barium	7440-39-3	mg/L	0.001	<0.001
Cadmium	7440-43-9	mg/L	0.0001	<0.0001
Chromium	7440-47-3	mg/L	0.001	<0.001
Cobalt	7440-48-4	mg/L	0.001	<0.001
Copper	7440-50-8	mg/L	0.001	<0.001
Lead	7439-92-1	mg/L	0.001	<0.001
Manganese	7439-96-5	mg/L	0.001	<0.001
Nickel	7440-02-0	mg/L	0.001	<0.001
Vanadium	7440-62-2	mg/L	0.01	<0.01
Zinc	7440-66-6	mg/L	0.005	<0.005
EG035T: Total Recoverable Mercury by FIMS				
Mercury	7439-97-6	mg/L	0.0001	<0.0001
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons				
Naphthalene	91-20-3	µg/L	1	<1.0
Acenaphthylene	208-96-8	µg/L	1	<1.0
Acenaphthene	83-32-9	µg/L	1	<1.0
Fluorene	86-73-7	µg/L	1	<1.0
Phenanthrene	85-01-8	µg/L	1	<1.0
Anthracene	120-12-7	µg/L	1	<1.0
Fluoranthene	206-44-0	µg/L	1	<1.0
Pyrene	129-00-0	µg/L	1	<1.0
Benz(a)anthracene	56-55-3	µg/L	1	<1.0
Chrysene	218-01-9	µg/L	1	<1.0
Benzo(b)fluoranthene	205-99-2	µg/L	1	<1.0
Benzo(k)fluoranthene	207-08-9	µg/L	1	<1.0
Benzo(a)pyrene	50-32-8	µg/L	0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	µg/L	1	<1.0
Dibenz(a.h)anthracene	53-70-3	µg/L	1	<1.0
Benzo(g.h.i)perylene	191-24-2	µg/L	1	<1.0
EP080: BTEX				
Benzene	71-43-2	µg/L	1	<1
Toluene	108-88-3	µg/L	2	<2
Ethylbenzene	100-41-4	µg/L	2	<2
meta- & para-Xylene	08-38-3 106-42	µg/L	2	<2
ortho-Xylene	95-47-6	µg/L	2	<2
EP080/071: Total Petroleum Hydrocarbons				
C6 - C9 Fraction		µg/L	20	<20
C10 - C14 Fraction		µg/L	50	<50
C15 - C28 Fraction		µg/L	100	<100
C29 - C36 Fraction		µg/L	50	<50
C10 - C36 Fraction (sum)		µg/L	50	<50

CITY OF **PORT PHILLIP**

Chain of Custody

pg (2)

File No:	02503
Page:	1 of 1

Address:	46-58 MARLBOROUGH ST, BALACLAVA	Sampled by:	DP
Project:	DUE DILIGENCE INVESTIGATION	Date sampled:	29-3-11

Sample Number	Sample Type	Material Description	Testing Required: NEPM SCREEN P-13/1	13 METALS S-3	TPH/BTEX/PAH S-7
BH1-0.0	S	SILT	✓		
BH1-0.4	S	CLAY		✓	✓
BH2-0.1	S	SILT		✓	✓
BH2-0.4	S	CLAY	✓		
BH3-0.05	S	SILT		✓	✓
BH3-0.45	S	SAND		✓	✓
BH3-0.6	S	CLAY			
BH4-0.1	S	SILT		✓	✓
BH4-0.3	S	SAND			
BH4-0.4	S	CLAY	✓		
BH5-0.1	S	SILT	✓		
BH5-0.4	S	SAND			
BH5-0.65	S	CLAY		✓	✓
BH6-0.05	S	SAND		✓	✓
BH6-0.5	S	SAND	✓		
BH7-0.05	S	SILT		✓	✓
BH7-0.3	S	SILT		✓	✓
DUP 1	S	SILT		✓	✓
SPLIT 1 *	S	SILT		✓	✓
RIN 1	W	RINSATE		✓	✓

Environmental Division
Melbourne
Work Order
EM1103251
Telephone : +61-3-8549 9600

Turnaround: STANDARD (5 DAYS)

NOTES
Please email reports to DARREN PENDERGAST : dpendergast@portphillip.vic.gov.au
0466 752 892
* Please forward SPLIT 1 to MGT-Labmark for analysis

CHAIN OF CUSTODY

From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	R Anna	ALS	30/3	12:30
			MGT-LM	31/3	2:00

MG Relin - 295096 - 31/3 @ 1804

CERTIFICATE OF ANALYSIS

Work Order	: **EM1103251**	Page	: 1 of 20
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-MAR-2011
Sampler	: DP	Issue Date	: 07-APR-2011
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
		No. of samples received	: 19
Quote number	: ME/468/10	No. of samples analysed	: 16

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

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

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.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Senior Inorganic Instrument Chemist	Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Nikki Stepniewski	Non-metallic Supervisor	Melbourne Inorganics

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.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG048: EM1103251 #4 matrix spike failed for Total Hexavalent Chromium by Alkaline Digestion due to possible sample matrix interference. This has been confirmed by re-digestion and re-analysis.**
- **EP066/068: EM1103251-001) 15 Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
				EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**17.8**	**18.6**	**14.7**	**24.6**	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**5**	**13**	**10**	<5	----
Barium	7440-39-3	10	mg/kg	**140**	**10**	<10	**20**	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	**16**	**28**	**22**	**24**	----
Cobalt	7440-48-4	2	mg/kg	**5**	**4**	**3**	**2**	----
Copper	7440-50-8	5	mg/kg	**15**	**8**	<5	<5	----
Lead	7439-92-1	5	mg/kg	**28**	**20**	**16**	**11**	----
Manganese	7439-96-5	5	mg/kg	**29**	**16**	**16**	**18**	----
Nickel	7440-02-0	2	mg/kg	**8**	**8**	**6**	**7**	----
Vanadium	7440-62-2	5	mg/kg	**38**	**84**	**63**	**38**	----
Zinc	7440-66-6	5	mg/kg	**66**	**12**	**40**	**17**	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	<0.5	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
				EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	<0.2	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	<1.0	<1.0	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	<0.5	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	----	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	<0.5	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
				EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**55.4**	**61.8**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	**42.8**	**48.0**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	**53.6**	**59.8**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**83.6**	**81.4**	**96.0**	**94.5**	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**93.0**	**92.7**	**96.0**	**94.5**	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**93.0**	**91.2**	**129**	**100**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**96.9**	**94.9**	**96.4**	**96.4**	----
Anthracene-d10	1719-06-8	0.1	%	**104**	**110**	**93.1**	**93.0**	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID	BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
					EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		**112**	**110**	**103**	**104**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**98.8**	**111**	**114**	**76.1**	----
Toluene-D8	2037-26-5	0.1	%		**85.2**	**94.4**	**96.8**	**90.3**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**92.9**	**99.8**	**98.1**	**97.6**	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-006	EM1103251-014	EM1103251-015	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**5.4**	**7.6**	**7.1**	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**18**	**10**	----	----
Barium	7440-39-3	10	mg/kg	<10	**220**	**270**	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	<2	**13**	**14**	----	----
Cobalt	7440-48-4	2	mg/kg	<2	**7**	**6**	----	----
Copper	7440-50-8	5	mg/kg	<5	**59**	**41**	----	----
Lead	7439-92-1	5	mg/kg	<5	**810**	**1120**	----	----
Manganese	7439-96-5	5	mg/kg	<5	**190**	**129**	----	----
Nickel	7440-02-0	2	mg/kg	<2	**24**	**21**	----	----
Vanadium	7440-62-2	5	mg/kg	**12**	**18**	**26**	----	----
Zinc	7440-66-6	5	mg/kg	<5	**661**	**607**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.7**	**0.4**	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	<2.50	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<1.25	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<1.25	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<1.25	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<1.25	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<1.25	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<1.25	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	<1.25	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<1.25	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<1.25	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<1.25	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<1.25	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<1.25	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<1.25	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<1.25	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<1.25	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<1.25	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-006	EM1103251-014	EM1103251-015	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<1.25	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<1.25	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<5.0	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<1.25	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<5.0	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	----	<1.0	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	----	----	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	**0.5**	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	**1.3**	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	**0.5**	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	**1.2**	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	**3.7**	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	**2.7**	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	**4.0**	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	**2.2**	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	**3.1**	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	**1.5**	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	**2.1**	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	**2.2**	----	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-006	EM1103251-014	EM1103251-015	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	----	----	**1.5**	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	----	**1.5**	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	**2.2**	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	**2.9**	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	**1.6**	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	**2.1**	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	**1.8**	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	**0.6**	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	**1.2**	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	**2.2**	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	**1.5**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	**200**	**110**	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	**230**	**160**	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	**430**	**270**	----	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**Not Determined**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	**Not Determined**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	**Not Determined**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**96.1**	**93.1**	**98.0**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**97.1**	**95.7**	**97.6**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**100**	**109**	**113**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**97.6**	**93.6**	**97.1**	----	----
Anthracene-d10	1719-06-8	0.1	%	**96.9**	**93.3**	**97.8**	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID	BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
					EM1103251-006	EM1103251-014	EM1103251-015	----	----
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		**106**	**100**	**104**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**116**	**87.5**	**81.7**	----	----
Toluene-D8	2037-26-5	0.1	%		**98.1**	**100**	**102**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**101**	**99.7**	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**9.7**	**5.9**	**9.7**	**9.3**	**4.0**
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	<5	**6**	**6**	<5
Barium	7440-39-3	10	mg/kg	**90**	**70**	**110**	**90**	**40**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**13**	**5**	**6**	**10**	**4**
Cobalt	7440-48-4	2	mg/kg	**3**	**2**	**2**	**2**	<2
Copper	7440-50-8	5	mg/kg	**68**	**68**	**28**	**50**	**10**
Lead	7439-92-1	5	mg/kg	**461**	**405**	**770**	**516**	**133**
Manganese	7439-96-5	5	mg/kg	**56**	**70**	**97**	**91**	**112**
Nickel	7440-02-0	2	mg/kg	**7**	**7**	**5**	**8**	**3**
Vanadium	7440-62-2	5	mg/kg	**28**	**12**	**14**	**18**	**16**
Zinc	7440-66-6	5	mg/kg	**473**	**344**	**323**	**353**	**1500**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.4**	**0.8**	**0.4**	**0.7**	**0.2**
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	<0.5
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.15	----	----	----	<0.10
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	<0.2
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	----	----	----	<1.0
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	----	----	----	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	**0.7**	**0.6**	**1.1**	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	**1.2**	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	**2.2**	**1.2**	**5.0**	----
Fluoranthene	206-44-0	0.5	mg/kg	**2.4**	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	**2.3**	**1.2**	**4.9**	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	**1.1**	**0.6**	**2.7**	----
Pyrene	129-00-0	0.5	mg/kg	**2.5**	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	**1.1**	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	**1.1**	**0.6**	**2.7**	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	**1.9**	**0.6**	**2.5**	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	**1.1**	----	----	----	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	**1.6**	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	**0.6**	**0.6**	**2.7**	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	**1.5**	**0.7**	**3.1**	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**0.6**	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**1.3**	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	**1.0**	<0.5	**2.0**	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	**0.6**	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**0.8**	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	**1.2**	**0.5**	**2.3**	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**1.0**	----	----	----	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	**140**	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**140**	<50	<50	<50	<50
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**79.7**	----	----	----	**70.6**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**60.5**	----	----	----	**54.9**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**84.2**	----	----	----	**66.6**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**81.3**	**83.2**	**97.1**	**96.7**	**94.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.4**	**93.0**	**97.9**	**96.0**	**95.5**
2.4.6-Tribromophenol	118-79-6	0.1	%	**94.5**	**93.0**	**104**	**105**	**103**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**97.9**	**97.0**	**99.1**	**94.8**	**98.1**
Anthracene-d10	1719-06-8	0.1	%	**87.4**	**87.3**	**96.2**	**94.2**	**92.1**

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.1	%	**102**	**101**	**105**	**102**	**104**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**109**	**113**	**118**	**120**	**84.8**
Toluene-D8	2037-26-5	0.1	%	**103**	**93.7**	**103**	**98.9**	**107**
4-Bromofluorobenzene	460-00-4	0.1	%	**108**	**99.4**	**103**	**98.3**	**109**

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH7-0.05	BH7-0.3	DUP 1	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-016	EM1103251-017	EM1103251-018	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**4.8**	**5.8**	**11.0**	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**7**	**9**	**6**	----	----
Barium	7440-39-3	10	mg/kg	**50**	**60**	**60**	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**6**	**9**	**11**	----	----
Cobalt	7440-48-4	2	mg/kg	**5**	**9**	**3**	----	----
Copper	7440-50-8	5	mg/kg	**15**	**24**	**44**	----	----
Lead	7439-92-1	5	mg/kg	**230**	**315**	**380**	----	----
Manganese	7439-96-5	5	mg/kg	**90**	**146**	**54**	----	----
Nickel	7440-02-0	2	mg/kg	**14**	**34**	**6**	----	----
Vanadium	7440-62-2	5	mg/kg	**12**	**13**	**30**	----	----
Zinc	7440-66-6	5	mg/kg	**188**	**262**	**320**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.1**	**0.2**	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	**0.6**	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	**1.9**	**1.1**	**0.6**	----	----
Anthracene	120-12-7	0.5	mg/kg	**0.7**	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	**4.8**	**2.4**	**3.6**	----	----
Pyrene	129-00-0	0.5	mg/kg	**5.3**	**2.5**	**4.5**	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	**2.7**	**1.2**	**2.7**	----	----
Chrysene	218-01-9	0.5	mg/kg	**2.6**	**1.2**	**2.4**	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	**2.6**	**1.1**	**6.4**	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**2.4**	**1.1**	**2.0**	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**3.4**	**1.4**	**5.0**	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**1.8**	**0.7**	**3.1**	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	**0.6**	<0.5	**0.7**	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**2.3**	**0.8**	**3.6**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	**180**	<100	**440**	----	----
C29 - C36 Fraction	----	100	mg/kg	**290**	**180**	**740**	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH7-0.05	BH7-0.3	DUP 1	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-016	EM1103251-017	EM1103251-018	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**470**	**180**	**1180**	----	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**92.0**	**94.4**	**81.5**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.4**	**94.1**	**91.4**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**113**	**111**	**105**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**91.5**	**95.4**	**96.7**	----	----
Anthracene-d10	1719-06-8	0.1	%	**94.3**	**94.7**	**94.2**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**100**	**100**	**104**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**90.0**	**92.4**	**80.8**	----	----
Toluene-D8	2037-26-5	0.1	%	**101**	**111**	**99.2**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	**99.8**	**112**	**97.2**	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: RIN 1	----	----	----	----
				Client sampling date / time: 29-MAR-2011 15:00	----	----	----	----
				EM1103251-019	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080: BTEX								

Analytical Results

Sub-Matrix: **WATER**				Client sample ID	**RIN 1**	----	----	----	----
				Client sampling date / time	29-MAR-2011 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EM1103251-019**	----	----	----	----
EP080: BTEX - Continued									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**35.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**75.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**91.8**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**85.2**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**92.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**97.0**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**110**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**114**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**107**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **CLAY**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	33	133
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	26.3	144
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	6.9	167
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	57	129
Toluene-D8	2037-26-5	58	120
4-Bromofluorobenzene	460-00-4	56	126

Sub-Matrix: **SAND**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	33	133
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	26.3	144
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	6.9	167
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	57	129
Toluene-D8	2037-26-5	58	120

Sub-Matrix: **SAND**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			
4-Bromofluorobenzene	460-00-4	56	126

Sub-Matrix: **SILT**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	33	133
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	26.3	144
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	6.9	167
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	57	129
Toluene-D8	2037-26-5	58	120
4-Bromofluorobenzene	460-00-4	56	126

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
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

QUALITY CONTROL REPORT

Work Order	: **EM1103251**	Page	: 1 of 13
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
C-O-C number	: ----	Date Samples Received	: 30-MAR-2011
Sampler	: DP	Issue Date	: 07-APR-2011
Order number	: ----		
		No. of samples received	: 19
Quote number	: ME/468/10	No. of samples analysed	: 16

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.

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.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Senior Inorganic Instrument Chemist	Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Nikki Stepniewski	Non-metallic Supervisor	Melbourne Inorganics

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.

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1731173)									
EM1103247-018	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.7	13.7	34.4	0% - 50%
EM1103251-001	BH1-0.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.7	12.6	25.5	0% - 50%
EA055: Moisture Content (QC Lot: 1731174)									
EM1103251-014	BH6-0.05	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.6	6.8	12.2	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1731144)									
EM1103251-005	BH3-0.05	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	110	140	20.6	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	6	7	18.4	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	37	27.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	770	727	5.8	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	97	68	35.9	0% - 50%
		EG005T: Vanadium	7440-62-2	5	mg/kg	14	16	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	323	306	5.4	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1731145)									
EM1103251-005	BH3-0.05	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.5	32.2	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1731176)									
EM1103251-001	BH1-0.0	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1731204)									
EM1103251-001	BH1-0.0	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.15	<0.15	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1731203)									
EM1103251-001	BH1-0.0	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1731203) - continued									
EM1103251-001	BH1-0.0	EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1731209)									
EM1103207-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EM1103251-006	BH3-0.45	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1731209)									
EM1103207-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	1.0	1.1	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1731209) - continued									
EM1103207-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	3.1	4.8	44.3	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	1.1	1.6	36.7	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	9.4	12.9	# 31.3	0% - 20%
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	10.2	13.9	# 30.4	0% - 20%
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	5.9	8.0	30.8	0% - 50%
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	4.7	6.1	25.2	0% - 50%
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	7.8	10.2	# 27.6	0% - 20%
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	2.5	2.4	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	6.6	8.3	22.9	0% - 50%
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	3.8	4.6	17.9	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	1.0	1.2	17.4	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	4.4	5.0	12.1	0% - 50%
EM1103251-006	BH3-0.45	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1731198)									
EM1103251-001	BH1-0.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM1103251-014	BH6-0.05	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1731208)									
EM1103207-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	170	190	7.7	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	130	140	8.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	300	330	9.5	No Limit
EM1103251-006	BH3-0.45	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1731208) - continued									
EM1103251-006	BH3-0.45	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 1731198)									
EM1103251-001	BH1-0.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1103251-014	BH6-0.05	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1733433)									
EM1103189-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.016	0.016	0.0	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.066	0.064	3.9	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.011	0.012	0.0	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.078	0.082	5.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.184	0.183	0.0	0% - 20%
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.02	0.02	0.0	No Limit
EM1103251-019	RIN 1	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1733433) - continued									
EM1103251-019	RIN 1	EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1733462)									
EM1103189-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EM1103219-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	15100	14900	1.2	0% - 20%
EP080: BTEX (QC Lot: 1733462)									
EM1103189-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
EM1103219-011	Anonymous	EP080: Benzene	71-43-2	1	µg/L	7370	7150	3.0	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	178	187	4.8	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	2800	2780	0.9	0% - 20%
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	1950	1910	2.1	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	212	201	5.1	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1731144)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.6 mg/kg	92.1	74	132
EG005T: Barium	7440-39-3	10	mg/kg	<10	139 mg/kg	90.8	72	126
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	6.2 mg/kg	87.7	70	119
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.8 mg/kg	97.3	71	123
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.9 mg/kg	94.8	73	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	25.4 mg/kg	91.6	70	124
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.1 mg/kg	94.3	74	124
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.9 mg/kg	92.2	74	126
EG005T: Manganese	7439-96-5	5	mg/kg	<5	137 mg/kg	90.6	72	126
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	100	74	128
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	34.9 mg/kg	94.1	75	129
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	96.4	74	124
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1731145)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.47 mg/kg	84.4	71.9	119
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1731176)								
EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	90.0	80	120
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1731204)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.10	1.15 mg/kg	95.8	52	142
EP068A: Organochlorine Pesticides (OC) (QCLot: 1731203)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	68.8	52	136
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	65.4	50	130
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	50	142
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	54	136
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.6	51	138
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	51	137
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	68.2	52	134
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	60.2	54	136
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	60.3	53	135
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	73.9	53	133
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	60.8	52	136
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	73.0	49	141
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	73.3	53	135
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	45	143
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	74.3	54	138

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 1731203) - continued								
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	67.5	52	136
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	71.5	49	133
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	49	143
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	107	40	150
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	67.7	51	141
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	102	38	152
EP075(SIM)A: Phenolic Compounds (QCLot: 1731209)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	10 mg/kg	82.1	62	124
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	10 mg/kg	85.4	63	123
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	10 mg/kg	87.1	62	126
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	20 mg/kg	88.1	64	126
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	10 mg/kg	91.3	50	128
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	10 mg/kg	86.4	62	128
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	10 mg/kg	84.2	57	125
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	10 mg/kg	94.2	63	123
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	10 mg/kg	86.9	58	126
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	10 mg/kg	84.0	54	126
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	10 mg/kg	116	57	127
EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	10 mg/kg	63.5	10	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731209)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	10 mg/kg	86.1	64	126
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	10 mg/kg	87.7	63	127
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	10 mg/kg	87.6	65	125
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	10 mg/kg	85.0	66	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	10 mg/kg	86.5	64	124
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	10 mg/kg	87.1	66	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	10 mg/kg	88.0	66	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	10 mg/kg	87.8	66	124
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	10 mg/kg	89.6	62	124
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	10 mg/kg	85.5	64	126
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	10 mg/kg	93.1	58	126
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	10 mg/kg	88.8	65	127
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	10 mg/kg	91.1	61	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	10 mg/kg	90.3	58	126
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	10 mg/kg	91.1	58	126
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	10 mg/kg	90.1	57	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731198)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	32 mg/kg	100	70	133
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731208)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731208) - continued								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	636 mg/kg	100	54	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1550 mg/kg	89.3	74	134
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	356 mg/kg	66.3	63	143
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEX (QCLot: 1731198)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	92.5	72	126
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	95.9	73	129
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	96.2	72	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	110	70	138
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	103	73	131

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1733433)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.2	88	110
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	109	73	123
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	102	86	116
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	106	87	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	86	110
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	97.5	88	114
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	87	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	107	92	114
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	89	111
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.8	89	113
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	104	87	111
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	108	84	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1737163)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	92.5	76	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731446)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	65.2	27.5	124
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	71.0	35	129
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	89.0	35	127
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	93.2	36	130
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	93.8	42	132
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.4	42	132
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	102	41	141
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	95.2	40	142

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731446) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	106	33	153
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	98.1	37	145
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	107	35	151
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	121	39	141
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	112	41	139
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	102	35	141
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	101	36	142
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	105	10	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731444)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	5440 µg/L	105	64	124
EP071: C15 - C28 Fraction	----	100	µg/L	<100	17824 µg/L	91.4	70	130
EP071: C29 - C36 Fraction	----	50	µg/L	<50	3694 µg/L	94.7	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1733462)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	100	72	136
EP080: BTEX (QCLot: 1733462)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.3	73	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.2	74	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.2	72	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	93.5	69	133
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	94.9	74	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1731144)							
EM1103247-009	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	89.5	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	# Not Determined	70	130
		EG005T: Beryllium	7440-41-7	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	111	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	87.1	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	116	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	94.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1731145)							
EM1103247-009	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	112	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1731176)							
EM1103251-004	BH2-0.4	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	# 54.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1731204)							
EM1103251-010	BH4-0.4	EP066: Total Polychlorinated biphenyls	----	1.15 mg/kg	97.8	41	149
EP068A: Organochlorine Pesticides (OC) (QCLot: 1731203)							
EM1103251-004	BH2-0.4	EP068: gamma-BHC	58-89-9	0.5 mg/kg	62.4	30	132
		EP068: Heptachlor	76-44-8	0.5 mg/kg	64.7	22.2	132
		EP068: Aldrin	309-00-2	0.5 mg/kg	50.0	25	133
		EP068: Dieldrin	60-57-1	0.5 mg/kg	61.9	36	138
		EP068: Endrin	72-20-8	0.5 mg/kg	61.6	32	142
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	84.3	12.2	140
EP075(SIM)A: Phenolic Compounds (QCLot: 1731209)							
EM1103207-004	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.0	64	122
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.2	68	120
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	102	49	125
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	111	60	118
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	98.2	12	136
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731209)							
EM1103207-004	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.8	68	122
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.6	65	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731198)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731198) - continued							
EM1103251-002	BH1-0.4	EP080: C6 - C9 Fraction	----	28 mg/kg	77.9	49	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731208)							
EM1103207-003	Anonymous	EP071: C10 - C14 Fraction	----	636 mg/kg	61.6	54	123
		EP071: C15 - C28 Fraction	----	1550 mg/kg	78.9	74	134
		EP071: C29 - C36 Fraction	----	356 mg/kg	83.1	63	143
EP080: BTEX (QCLot: 1731198)							
EM1103251-002	BH1-0.4	EP080: Benzene	71-43-2	2 mg/kg	72.0	58	136
		EP080: Toluene	108-88-3	2 mg/kg	78.7	63	135

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1733433)							
EM1103189-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	126	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	126	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	107	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	115	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	106	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	99.7	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	105	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	113	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	100	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	108	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	105	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	112	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1733462)							
EM1103189-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	86.8	51	125
EP080: BTEX (QCLot: 1733462)							
EM1103189-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	79.8	63	131
		EP080: Toluene	108-88-3	20 µg/L	81.2	65	133

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1103251**	Page	: 1 of 10
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
C-O-C number	: ----	Date Samples Received	: 30-MAR-2011
Sampler	: DP	Issue Date	: 07-APR-2011
Order number	: ----		
		No. of samples received	: 19
Quote number	: ME/468/10	No. of samples analysed	: 16

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

Analysis Holding Time Compliance

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 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 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 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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**----**	----	----	**01-APR-2011**	12-APR-2011	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	25-SEP-2011	✓	**04-APR-2011**	25-SEP-2011	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	26-APR-2011	✓	**05-APR-2011**	26-APR-2011	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	26-APR-2011	✓	**05-APR-2011**	08-APR-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**03-APR-2011**	11-MAY-2011	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**03-APR-2011**	11-MAY-2011	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**04-APR-2011**	11-MAY-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**04-APR-2011**	11-MAY-2011	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**02-APR-2011**	11-MAY-2011	✓
Soil Glass Jar - Unpreserved BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**05-APR-2011**	12-APR-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEX							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**05-APR-2011**	12-APR-2011	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
RIN 1	**29-MAR-2011**	**04-APR-2011**	25-SEP-2011	✓	**05-APR-2011**	25-SEP-2011	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
RIN 1	**29-MAR-2011**	**----**	----	----	**06-APR-2011**	26-APR-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RIN 1	**29-MAR-2011**	**01-APR-2011**	05-APR-2011	✓	**05-APR-2011**	11-MAY-2011	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RIN 1	**29-MAR-2011**	**01-APR-2011**	05-APR-2011	✓	**05-APR-2011**	11-MAY-2011	✓
Amber VOC Vial- NaHSO4 or H2SO4							
RIN 1	**29-MAR-2011**	**04-APR-2011**	12-APR-2011	✓	**04-APR-2011**	12-APR-2011	✓
EP080: BTEX							
Amber VOC Vial- NaHSO4 or H2SO4							
RIN 1	**29-MAR-2011**	**04-APR-2011**	12-APR-2011	✓	**04-APR-2011**	12-APR-2011	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	3	26	**11.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by 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)
Total Hexavalent Chromium by Alkaline Digestion	EG048	SOIL	USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by UV-VIS spectrophotometer following 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)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed 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) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by 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)
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)

Analytical Methods	Method	Matrix	Method Descriptions
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
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (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.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1103207-001	Anonymous	**Fluoranthene**	206-44-0	31.3 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1103207-001	Anonymous	**Pyrene**	129-00-0	30.4 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1103207-001	Anonymous	**Benzo(b)fluoranthene**	205-99-2	27.6 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1103247-009	Anonymous	**Barium**	7440-39-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EM1103247-009	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG048: Hexavalent Chromium (Alkaline Digest)	EM1103251-004	BH2-0.4	**Hexavalent Chromium**	18540-29-9	54.0 %	70-130%	**Recovery less than lower data quality objective**

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

Regular Sample Surrogates

Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP066S: PCB Surrogate	EM1103251-015	BH6-0.5	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068S: Organochlorine Pesticide Surrogate	EM1103251-015	BH6-0.5	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068T: Organophosphorus Pesticide Surrogate	EM1103251-015	BH6-0.5	**DEF**	78-48-8	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

Outliers : Analysis Holding Time Compliance

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

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

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

Matrix: **SOIL**

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Mercury by FIMS	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EM1103251**		
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: EM2010CITPOR0001 (ME/468/10)
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
Sampler	: DP	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 30-MAR-2011	Issue Date	: 31-MAR-2011 16:14
Client Requested Due Date	: 06-APR-2011	Scheduled Reporting Date	: **06-APR-2011**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.8-3.6 - Ice present
No. of coolers/boxes	: 1	No. of samples received	: 19
Security Seal	: Intact.	No. of samples analysed	: 16

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times**
- **Please direct any queries related to sample condition / numbering / breakages to Peter Ravlic.**
- **Analytical work for this work order will be conducted at ALS Melbourne.**
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

- **No sample container / preservation non-compliance exist.**

Summary of Sample(s) and Requested Analysis

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

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - P-13/1 NEPM Table 5A	SOIL - S-03 13 Metals (NEPM Suite - incl. Digestion)	SOIL - S-07 TPH/BTEX/PAH (SIM)
EM1103251-001	29-MAR-2011 15:00	BH1-0.0		✓		
EM1103251-002	29-MAR-2011 15:00	BH1-0.4			✓	✓
EM1103251-003	29-MAR-2011 15:00	BH2-0.1			✓	✓
EM1103251-004	29-MAR-2011 15:00	BH2-0.4		✓		
EM1103251-005	29-MAR-2011 15:00	BH3-0.05			✓	✓
EM1103251-006	29-MAR-2011 15:00	BH3-0.45			✓	✓
EM1103251-007	29-MAR-2011 15:00	BH3-0.6	✓			
EM1103251-008	29-MAR-2011 15:00	BH4-0.1			✓	✓
EM1103251-009	29-MAR-2011 15:00	BH4-0.3	✓			
EM1103251-010	29-MAR-2011 15:00	BH4-0.4		✓		
EM1103251-011	29-MAR-2011 15:00	BH5-0.1		✓		
EM1103251-012	29-MAR-2011 15:00	BH5-0.4	✓			
EM1103251-013	29-MAR-2011 15:00	BH5-0.65			✓	✓
EM1103251-014	29-MAR-2011 15:00	BH6-0.05			✓	✓
EM1103251-015	29-MAR-2011 15:00	BH6-0.5		✓		
EM1103251-016	29-MAR-2011 15:00	BH7-0.05			✓	✓
EM1103251-017	29-MAR-2011 15:00	BH7-0.3			✓	✓
EM1103251-018	29-MAR-2011 15:00	DUP 1			✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-03T 13 Metals (Total) (NEPM)	WATER - W-07 TPH/BTEX/PAH
EM1103251-019	29-MAR-2011 15:00	RIN 1	✓	✓

Requested Deliverables

MR DARREN PENDERGAST

- *AU Certificate of Analysis - NATA (COA)	Email	dpenderg@portphillip.vic.gov.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	dpenderg@portphillip.vic.gov.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	dpenderg@portphillip.vic.gov.au
- A4 - AU Sample Receipt Notification - Environmental (SRN)	Email	dpenderg@portphillip.vic.gov.au
- A4 - AU Tax Invoice (INV)	Email	dpenderg@portphillip.vic.gov.au
- Chain of Custody (CoC) (COC)	Email	dpenderg@portphillip.vic.gov.au
- EDI Format - ENMRG (ENMRG)	Email	dpenderg@portphillip.vic.gov.au

mgt LabMark
ENVIRONMENTAL LABORATORIES

Certificate of Analysis

City of Port Phillip
Private Bag 3
PO St Kilda
Victoria 3182

Attention: Darren Pendergast

NATA Accredited
Accreditation Number 1261
Site Number 1254

This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Report	295096-S
Client Reference	DUE DILIGENCE INVESTIGATION 02503
Received Date	Mar 31, 2011

Client Sample ID			**SPLIT 1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**M11-MA14427**
Date Sampled			**Mar 29, 2011**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9 Fraction by GC	20	mg/kg	< 20
BTEX			
Benzene	0.05	mg/kg	< 0.05
Toluene	0.05	mg/kg	< 0.05
Ethylbenzene	0.05	mg/kg	< 0.05
o-Xylene	0.05	mg/kg	< 0.05
Total m+p-Xylenes	0.10	mg/kg	< 0.1
Xylenes(ortho.meta and para)	0.15	mg/kg	< 0.15
Fluorobenzene (surr.)	1	%	87
Total Recoverable Hydrocarbons			
TRH C10-C14 Fraction by GC	50	mg/kg	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100
TRH C10-36 (Total)	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.1	mg/kg	< 0.1
Acenaphthylene	0.1	mg/kg	0.1
Anthracene	0.1	mg/kg	0.2
Benz(a)anthracene	0.1	mg/kg	0.8
Benzo(a)pyrene	0.1	mg/kg	0.8
Benzo(b)fluoranthene	0.1	mg/kg	0.7
Benzo(g.h.i)perylene	0.1	mg/kg	0.7
Benzo(k)fluoranthene	0.1	mg/kg	0.5
Chrysene	0.1	mg/kg	0.7
Dibenz(a.h)anthracene	0.1	mg/kg	0.2
Fluoranthene	0.1	mg/kg	1.5
Fluorene	0.1	mg/kg	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	0.5
Naphthalene	0.1	mg/kg	< 0.1
Phenanthrene	0.1	mg/kg	0.9
Pyrene	0.1	mg/kg	1.4
Total PAH	0.1	mg/kg	9.0
p-Terphenyl-d14 (surr.)	1	%	89
2-Fluorobiphenyl (surr.)	1	%	94
Metals M13			
Arsenic	2	mg/kg	16
Barium	10	mg/kg	64
Beryllium	2	mg/kg	< 2

Client Sample ID			**SPLIT 1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**M11-MA14427**
Date Sampled			**Mar 29, 2011**
Test/Reference	LOR	Unit	
Cadmium	0.5	mg/kg	< 0.5
Chromium	5	mg/kg	18
Cobalt	5	mg/kg	< 5
Copper	5	mg/kg	46
Lead	5	mg/kg	600
Manganese	5	mg/kg	57
Mercury	0.1	mg/kg	0.1
Nickel	5	mg/kg	9.7
Vanadium	10	mg/kg	67
Zinc	5	mg/kg	440
% Moisture	0.1	%	13

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - Method: TRH C6-C36 - MGT 100A	Melbourne	Apr 04, 2011	14 Day
BTEX - Method: USEPA 8260B - MGT 350A Monocyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2011	14 Day
Total Recoverable Hydrocarbons - Method: TRH C6-C36 - MGT 100A	Melbourne	Apr 04, 2011	14 Day
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270C Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2011	14 Day
Metals M13 - Method: USEPA 6010B Heavy Metals	Melbourne	Apr 04, 2011	180 Day
% Moisture - Method: Method 102 - ANZECC - % Moisture	Melbourne	Apr 04, 2011	14 Day

mgt-LabMark Internal Quality Control Review

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis.
7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)
For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per Kilogram	**mg/L:** milligrams per litre
µg/l: micrograms per litre	**ppm:** Parts per million
ppb: Parts per billion	**%:** Percentage
org/100ml: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:
Results <10 times the LOR : No Limit
Results between 10-20 times the LOR : RPD must lie between 0-50%
Results >20 times the LOR : RPD must lie between 0-20%
Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Quality Control Results

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Method Blank							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A							
TRH C6-C9 Fraction by GC	mg/kg	< 20			20	Pass	
Method Blank							
BTEX USEPA 8260B - MGT 350A Monocyclic Aromatic Hydroca							
Benzene	mg/kg	< 0.05			0.05	Pass	
Toluene	mg/kg	< 0.05			0.05	Pass	
Ethylbenzene	mg/kg	< 0.05			0.05	Pass	
o-Xylene	mg/kg	< 0.05			0.05	Pass	
Total m+p-Xylenes	mg/kg	< 0.1			0.10	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15			0.15	Pass	
Method Blank							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A							
TRH C10-C14 Fraction by GC	mg/kg	< 50			50	Pass	
TRH C15-C28 Fraction by GC	mg/kg	< 100			100	Pass	
TRH C29-C36 Fraction by GC	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270C Polycyclic A							
Acenaphthene	mg/kg	< 0.1			0.1	Pass	
Acenaphthylene	mg/kg	< 0.1			0.1	Pass	
Anthracene	mg/kg	< 0.1			0.1	Pass	
Benz(a)anthracene	mg/kg	< 0.1			0.1	Pass	
Benzo(a)pyrene	mg/kg	< 0.1			0.1	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.1			0.1	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.1			0.1	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.1			0.1	Pass	
Chrysene	mg/kg	< 0.1			0.1	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.1			0.1	Pass	
Fluoranthene	mg/kg	< 0.1			0.1	Pass	
Fluorene	mg/kg	< 0.1			0.1	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.1			0.1	Pass	
Naphthalene	mg/kg	< 0.1			0.1	Pass	
Phenanthrene	mg/kg	< 0.1			0.1	Pass	
Pyrene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Metals M13 USEPA 6010B Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.5			0.5	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Vanadium	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A		Result 1					
TRH C6-C9 Fraction by GC	%	80			70-130	Pass	
LCS - % Recovery							
BTEX USEPA 8260B - MGT 350A Monocyclic Aromatic Hydroca		Result 1					
Benzene	%	85			70-130	Pass	
Toluene	%	93			70-130	Pass	
Ethylbenzene	%	83			70-130	Pass	
Xylenes(ortho.meta and para)	%	83			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A		Result 1					
TRH C10-C14 Fraction by GC	%	89			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons USEPA 8270C Polycyclic A		Result 1					
Acenaphthene	%	104			70-130	Pass	

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Acenaphthylene	%	105			70-130	Pass	
Anthracene	%	99			70-130	Pass	
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	104			70-130	Pass	
Benzo(b)fluoranthene	%	92			70-130	Pass	
Benzo(g.h.i)perylene	%	111			70-130	Pass	
Benzo(k)fluoranthene	%	107			70-130	Pass	
Chrysene	%	101			70-130	Pass	
Dibenz(a.h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	103			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	118			70-130	Pass	
Naphthalene	%	101			70-130	Pass	
Phenanthrene	%	103			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Metals M13 USEPA 6010B Heavy Metals		Result 1					
Arsenic	%	95			80-120	Pass	
Barium	%	114			80-120	Pass	
Beryllium	%	97			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	100			80-120	Pass	
Cobalt	%	102			80-120	Pass	
Copper	%	96			80-120	Pass	
Lead	%	101			80-120	Pass	
Manganese	%	105			80-120	Pass	
Mercury	%	108			75-125	Pass	
Nickel	%	102			80-120	Pass	
Vanadium	%	96			80-120	Pass	
Zinc	%	99			80-120	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD			
TRH C6-C9 Fraction by GC	mg/kg	< 20	< 20	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
BTEX		Result 1	Result 2	RPD			
Benzene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toluene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Ethylbenzene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
o-Xylene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Total m+p-Xylenes	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15	< 0.15	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD			
TRH C10-C14 Fraction by GC	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C15-C28 Fraction by GC	mg/kg	< 100	< 100	<1	30%	Pass	
TRH C29-C36 Fraction by GC	mg/kg	< 100	< 100	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Polycyclic Aromatic Hydrocarbons		Result 1	Result 2	RPD			
Acenaphthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Acenaphthylene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benz(a)anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(a)pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Chrysene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Fluorene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Naphthalene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Phenanthrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
[Duplicate of M11-MA14363 - BATCH]							
Metals M13		Result 1	Result 2	RPD			

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Arsenic	mg/kg	2.3	< 2	20	30%	Pass	
Barium	mg/kg	60	80	7	30%	Pass	
Beryllium	mg/kg	< 2	< 2	20	30%	Pass	
Cadmium	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chromium	mg/kg	31	36	14	30%	Pass	
Cobalt	mg/kg	15	17	3	30%	Pass	
Copper	mg/kg	31	37	19	30%	Pass	
Lead	mg/kg	53	54	2	30%	Pass	
Manganese	mg/kg	160	180	2	30%	Pass	
Nickel	mg/kg	51	51	<1	30%	Pass	
Vanadium	mg/kg	30	56	42	30%	Fail	Q15
Zinc	mg/kg	110	110	2	30%	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
Total Recoverable Hydrocarbons		Result 1					
TRH C6-C9 Fraction by GC	%	99			70 - 130	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
BTEX		Result 1					
Benzene	%	99			70 - 130	Pass	
Toluene	%	105			70 - 130	Pass	
Ethylbenzene	%	97			70 - 130	Pass	
o-Xylene	%	97			75 - 125	Pass	
Xylenes(ortho.meta and para)	%	96			70 - 130	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
Total Recoverable Hydrocarbons		Result 1					
TRH C10-C14 Fraction by GC	%	90			70 - 130	Pass	
[Spike of M11-MA14427] - % Recovery							
Polycyclic Aromatic Hydrocarbons		Result 1					
Acenaphthene	%	109			70 - 130	Pass	
Acenaphthylene	%	111			70 - 130	Pass	
Anthracene	%	111			70 - 130	Pass	
Benz(a)anthracene	%	122			70 - 130	Pass	
Benzo(a)pyrene	%	109			70 - 130	Pass	
Benzo(b)fluoranthene	%	111			70 - 130	Pass	
Benzo(g.h.i)perylene	%	100			70 - 130	Pass	
Benzo(k)fluoranthene	%	101			70 - 130	Pass	
Chrysene	%	116			70 - 130	Pass	
Dibenz(a.h)anthracene	%	96			70 - 130	Pass	
Fluoranthene	%	121			70 - 130	Pass	
Fluorene	%	107			70 - 130	Pass	
Indeno(1.2.3-cd)pyrene	%	106			70 - 130	Pass	
Naphthalene	%	106			70 - 130	Pass	
Phenanthrene	%	120			70 - 130	Pass	
Pyrene	%	122			70 - 130	Pass	
[Spike of M11-MA14363 - BATCH] - % Recovery							
Metals M13		Result 1					
Arsenic	%	82			75 - 125	Pass	
Barium	%	101			75 - 125	Pass	
Beryllium	%	90			75 - 125	Pass	
Cadmium	%	91			75 - 125	Pass	
Chromium	%	102			75 - 125	Pass	
Cobalt	%	90			75 - 125	Pass	
Copper	%	93			75 - 125	Pass	
Lead	%	101			75 - 125	Pass	
Manganese	%	124			75 - 125	Pass	
Mercury	%	103			70 - 130	Pass	
Nickel	%	109			75 - 125	Pass	
Vanadium	%	88			75 - 125	Pass	
Zinc	%	88			75 - 125	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in AS-POL-002. Refer to Glossary Page of this report for further details

Authorised By

Michael Wright
NATA Signatory

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Appendix F

City of Port Phillips Soil Remediation Plan of August 2011

46-58 Marlborough Street, Balaclava

SOIL REMEDIATION PLAN

31 August 2011

VERSION 1

Issued to:

Ms Katrina Terjung
COORDINATOR STRATEGIC PLANNING
City of Port Phillip

Prepared by:

DARREN PENDERGAST
Site Contamination Advisor

Introduction

A Soil Remediation Plan (SRP) has been prepared for 46, 48 and 50-58 Marlborough Street, Balaclava (the site). The location of the site is shown on the site location plan, attached.

Soil sampling and testing undertaken by the City of Port Phillip identified soil contamination within fill material of the site. It is understood the site will be developed for high density residential use which will required excavation works to be undertaken.

The SRP has been prepared to provide guidance for the remediation and bulk excavation of the site during the construction process.

Site Features

The site is located within a residential and commercial area of Balaclava adjacent to the Sandringham Railway line. The site is approximately 1,800 m^2 and comprises a vacant lot (46 Marlborough St), a residential house (48 Marlborough St) and car park (50-58 Marlborough St). The following features were observed on each property:

- 46 Marlborough St - Vacant lot, no buildings present, long grass, metal sheeting fence at rear, temporary fencing on boundary with Marlborough St, section of concrete path adjacent to the eastern site boundary
- 48 Marlborough St - Residential lot; weatherboard house with metal sheeting roof, some sheets rusted; metal shed located in the rear northern corner, grass lawns, garden beds and concrete paths
- 50-58 Marlborough St – Car park; paved surfaces, sometimes broken and subsided or replaced with bitumen; surrounding garden beds have woodchip mulch; middle garden beds have gravel a surface.

Soil of the site comprised sandy topsoil fill material which contained crushed rock fragments, occasional charcoal and ash. Natural material of the site comprised silty clay of the Brighton Group and was generally encountered at 0.4 m depth. Wood chip mulch and toppings were present at the surface within landscaped areas of the car park. Extensive fill material containing angular basalt rocks were encountered in the eastern portion of the car park adjacent to the railway line easement.

Due Diligence Investigation

A due diligence investigation has been undertaken for the site which comprised a site history investigation and limited soil sampling and testing program. The findings of the due diligence investigation have been reported in City of Port Phillip letter *46-58 Marlborough St, Balaclava – Due Diligence Investigation*, dated 10 May 2011.

The site history investigation included a search conducted by the Royal Historical Society of Victoria (RHSV) and a review of the following information:

- Certificates of title
- Historical aerial photographs
- Council records

The review of available historical information reported the site had been used for residential purposes since street records were first listed in the 1890s. The site was purchased by the Council in the 1970s and that car parks were constructed in 1978 and 1979. It could not be established from the records when the residence on 46 Marlborough St, Balaclava was demolished.

Searches of EPA Victoria's Priority Sites Register and the City of Port Phillip Planning Scheme – Environmental Audit Overlay did not find any potentially contaminating sites in the vicinity of the assessment site. A search of the list of issued Certificates or Statements of Environmental Audit was undertaken and identified four sites which are within 500 m of the site.

Total petroleum hydrocarbons (TPH), and heavy metals were identified on a former automotive engineering and a substation sites. Onsite storage and use of fuels and oils are regularly associated with TPH contamination in soils.

Heavy metals and total polycyclic aromatic hydrocarbons (PAH) were identified in the upper, imported fill material layer on all of the audited sites. PAHs can be produced by the incomplete burning of carbon containing fuels and are contained in gasworks waste. The source of this fill on these sites was not known. Fill material containing heavy metals and PAH are encountered widely in the City of Port Phillip.

The results of soil sampling and testing have been included in the results of this classification.

Soil Sampling and Testing

To classify the soil for offsite disposal a soil sampling and testing program has been undertaken on the site. Nineteen boreholes (BH1-BH19) were drilled using a hand auger on the site. The sample locations were undertaken on a systematic pattern across the vacant lot and car parks. The location of each borehole is shown on the borehole location plan and logs of each borehole are attached.

Individual samples were selected for chemical testing based on location and field observations. The chemical testing program was carried out to screen the site for general soil contamination and potential contaminants of concern.

The results of chemical testing reported concentrations of lead, benzo(a)pyrene (BaP) and total polycyclic aromatic hydrocarbons (PAH) which exceeded the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM (1999)) Health Based Investigation Level* (HIL) *for a standard residential site with garden/accessible soil* (A) within fill material of the site. One reported concentration of lead reported in fill material exceeded the NEPM HIL for *residential with minimal access to soil* (D) which is considered to be the most appropriate criteria based on the proposed development of the site.

The results of chemical testing were also compared to EPA Victoria Industrial Waste Resource Guidelines (IWRG) *Soil Hazard Categorisation and Management* (621).

This comparison identified concentrations of lead, zinc, BaP and total PAH which exceeded the upper limits of “clean” Fill Material.

Extent of Contaminated Soil

Based on the results of chemical testing fill material of the site has been identified as contaminated. The following table lists the chemicals which exceed the adopted assessment criteria for the site:

Chemical	Range (mg/kg)	Locations Exceeding NEPM HIL A	Locations Exceeding EPA Fill Material Upper Limits	Locations Exceeding EPA Contaminated Soil Category C	Locations Exceeding EPA Contaminated Soil Category B
Arsenic	<5-37	None	BH8-0.05	None	None
Copper	<5-313	None	BH12-0.0, BH13-0.0	None	None
Lead	<5–1,360	BH1-0.0, BH2-0.1, BH3-0.05, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.3, BH8-0.05, BH10-0.01, BH12-0.0*, BH13-0.0, BH14-0.0, BH18-0.5	BH1-0.0, BH2-0.1, BH3-0.05, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, BH8-0.05, BH10-0.01, BH12-0.0, BH13-0.0, BH14-0.0, BH18-0.5	None	None
ASLP^ Lead	0.2-1.8	-	-	BH12-0.0	None
Mercury	<0.1-1.1	None	BH12-0.0	None	None
Nickel	<2-94	None	BH9-0.1, BH15-0.1, BH16-0.1, BH17-0.1, BH18-0.1, BH19-0.1	None	None
Zinc	<5–1,500	None	BH1-0.0, BH2-0.1, BH3-0.05, BH4-0.1, BH5-0.1, BH6-0.05, BH6-0.5, BH7-0.3, BH8-0.05, BH10-0.01, BH12-0.0, BH13-0.0, BH13-0.5, BH14-0.0, BH18-0.5	None	None
BaP	<0.5-41.3	BH1-0.0, BH2-0.1, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, BH8-0.05*, BH12-0.0, BH13-0.0, BH14-0.0, BH18-0.5	BH1-0.0, BH2-0.1, BH4-0.1, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, BH8-0.05, BH12-0.0, BH13-0.0, BH14-0.0, BH18-0.5	BH8-0.05, BH14-0.0	BH8-0.05
Total PAH	<0.5-<437	BH4-0.1, BH6-0.05, BH7-0.05, BH8-0.05*, BH12-0.0, BH13-0.0, BH14-0.0	BH4-0.1, BH6-0.05, BH7-0.05, BH8-0.05, BH12-0.0, BH13-0.0, BH14-0.0	BH8-0.05	BH8-0.05

Notes: *: Reported concentration also exceeds NEPM HIL residential with minimal access soil (D)
^: ASLP – Australian Standard Leaching Procedure
-: sample collected from natural material

Tabulated chemical testing results compared to human health criteria and offsite disposal criteria are attached.

The proposed residential development requires bulk excavation for a basement and foundations. Fill material and natural material will need to be excavated and disposed offsite. Concentrations which exceed Fill Material upper limits as outlined by IWRG621 are reported in fill material of the site. One natural material sample, BH13-0.5, reported a zinc concentration which exceeds Fill Material upper limits as outlined by IWRG621. Based on the results of chemical testing the majority of fill material of the site is classified as EPA Contaminated Soil Category C (Category C).

The frequency of sampling and chemical testing meets the requirements of IWRG702 to classify soil for offsite disposal. No additional sampling is considered to be required to classify soil to be disposed offsite.

Category A

Concentrations of BaP (41.3 mg/kg) and total PAH (<437 mg/kg) which exceed the upper limits of Category B as outlined by IWRG621 were recorded in sample BH8-0.05. This sample was collected from fill material within the garden bed on the eastern portion of the site, adjacent to the boundary with Balaclava Railway Station. Fill material from the garden bed adjacent to the Balaclava Railway Station is classified as Contaminated Soil Category A for offsite disposal based on the results of chemical testing.

Category B

The BaP concentration of 7.4 mg/kg reported in sample BH14-0.0 exceeded the upper limits of Category C as outlined in IWRG621. The sample was collected in fill material of the front yard of 48 Marlborough St, Balaclava. Based on the results of chemical testing fill material from the front yard of 48 Marlborough St, Balaclava is classified as Contaminated Soil Category B as defined by IWRG621 for offsite disposal.

An elevated lead concentration of 1,360 mg/kg reported in fill material sample BH12-0.0. BH12 is located within the middle portion of 46 Marlborough St, Balaclava. Australian Standard Leaching Procedure (ASLP) testing was undertaken on lead on sample BH12-0.0 to investigate the potential mobility of lead. ASLP is a measure of the potential mobility of a contaminant, in this case lead. ASLP testing replicates the ongoing affect rainwater has on contaminants in soil. Soil is exposed to fluids of similar acidity as rainwater in the laboratory. After a set length of time these fluids are tested for the contaminants of concern. If a contaminant is highly leachable then elevated concentrations will be detected in the final fluid.

The reported ASLP lead concentration of 1.8 mg/L exceeded the upper limit of Category C as outlined in IWRG621. All other ASLP results reported for the site did not exceed the upper limits of Category C. Based on the results of chemical testing fill material from this area is classified as Category B as defined by IWRG621 for offsite disposal.

Category C

Numerous concentrations of arsenic, copper, lead, mercury, nickel, zinc, BaP and total PAH were reported in fill material across the site. The majority of exceedances of fill material upper limits as outlined in IWRG621 are within the upper limits of Category C. Locations which are the exception have been outlined above. Heavy metal and PAH contamination of fill material is considered to be associated with historic imported fill material which may have included industrial waste. One natural material sample collected from BH13 reported a concentration of zinc which exceeds the upper limits of fill material as outline in IWRG621. Borehole BH13 is located within the backyard of 48 Marlborough St, Balaclava.

Based on the results of chemical testing the following soil is classified as Category C for offsite disposal:

- fill material except soil adjacent to the eastern site boundary and in the vicinity of BH12 and BH14
- natural material in the vicinity of BH13 to a depth of 0.7 m

The extent of contaminated soil from the surface to 0.4 m depth and 0.4 m - 0.7 m depth is shown on figures attached.

Excavation and Removal of Contaminated Soil

All soil excavation and removal must be undertaken in accordance with EPA guidelines and regulations.

Areas of Category A and Category B contaminated soil should be excavated prior to the excavation of Category C contaminated soil and natural material to avoid the risk of cross contamination.

The following approximate volumes of soil have been calculated to exist on the site:

Offsite Disposal Category	Location (Boreholes)	Expected depth range (mBGS*)	Approximate Volume (m^3)
Category A Contaminated Soil	Garden bed adjacent to east site boundary (BH6, BH7, BH8)	0-0.8	36
Category B Contaminated Soil	Middle portion of 46 Marlborough St (BH12)	0-0.3	12
Category B Contaminated Soil	Southern portion of 48 Marlborough St (BH14)	0-0.3	10
Category C Contaminated Soil	Whole site (All boreholes except BH6, BH7, BH8, BH12, BH14)	0-0.4	650
Category C Contaminated Soil	Northern portion of 48 Marlborough St (BH13)	0.4-0.7	15

If soil is required to be stockpiled prior to offsite disposal measures should be implemented to ensure no cross contamination between soil categories. The following measures should be put in place during removal of soil from the site:

- contractors must be made aware of contamination within soil of the site and a Job Safety Analysis (JSA) document must be prepared prior to excavation
- stockpiles should be secured. A boundary fence should be in place around the site
- stockpiles should be placed to ensure no water run off will occur during rainfall
- if conditions are likely to produce dust stockpiles should be watered down and if necessary covered with plastic sheeting
- soil must be tracked both onsite and offsite to the final disposal destination
- offsite soil disposal must be undertaken in accordance with EPA Victoria guidelines

Natural Material

Based on observations made during soil sampling and the results of chemical testing natural material of the site is not contaminated. Chemical testing results of natural material did not exceed the upper limits of Fill Material as outlined in IWRG621 with the exception of one natural material sample collected from borehole BH13 located on the northern portion of 48 Marlborough St, Balaclava. The natural material sample collected from 0.5-0.6 m depth reported a zinc concentration which exceeded the upper limit of fill material as defined by IWRG621.

Natural material located on the northern portion of 48 Marlborough St, Balaclava to a depth of 0.7 m is classified as Category C Contaminated Soil as defined by IWRG621.

Unexpected Potentially Contaminated Material

If unexpected material which is potentially contaminated is discovered during site works all activities in that location should be stopped. Potentially contaminated material may include but not be limited to:

- stains and odours
- material potentially containing asbestos
- building rubble

The following measures should be implemented:

- fence off the location to avoid further disturbance
- notify the superintendent and engaged a suitably qualified environmental professional to assess the nature and extent of potential contamination. This may require sampling, testing and reporting
- additional remediation work may be required

Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) procedures were undertaken to assess quality of data as part of the soil sampling and testing program. The QA/QC measures undertaken during sampling and testing included:

- preservation of soil samples during sampling and transportation in a chilled esky
- soil sampling handling tracking by chain of custody procedures
- testing undertaken within required holding times
- review of laboratory QA/QC procedures (inter and intra-laboratory duplicate and split analysis results and rinsate blank analysis results).

Additional to internal laboratory QA/QC testing results field QA/QC procedures were also undertaken. Field duplicate, field split samples and rinsate samples were collected during soil sampling.

During sampling the following soil QA/QC samples were collected and tested:

Primary Sample	QA/QC samples	Testing
BH1-0.0	DUP1, SPLIT1	Heavy metals, PAH, TPH, BTEX
BH12-0.0	DUP2, SPLIT2	Heavy metals, PAH
BH15-0.1	DUP3, SPLIT3	Heavy metals, PAH

The results of primary and QA/QC samples are compared via the Relative Percentage Difference (RPD) method to make a judgement of the accuracy of reported data. Tabulated results of QA/QC data are attached.

Two rinsate samples (RIN1, RIN 2006) was collected during soil sampling. The rinsate is an indication of the adequacy of the cleaning procedures of hand sampling equipment between sampling locations.

Many calculated RPDs for pairs of data were outside the acceptable limit (i.e. greater than 50%). The difference in data is attributed to the composition of fill material from where samples were collected from. Fill material was observed to be heterogeneous during sampling.

Based on the comparison of QA/QC results the chemical testing are considered to be acceptable and representative of conditions of the site.

Conclusion

Contaminated soil as defined by EPA publication IWRG621 has been identified on the site. Contamination is mainly contained within fill material of the site. The majority of fill material of the site has been classified as Category C contaminated soil. Categories A and B contaminated soil should be handled prior to Category C contaminated soil.

All of the site's natural material, with the exception of the northern portion of 48 Marlborough St, Balaclava to a depth of 0.7 m, is classified as fill material as defined by EPA publication IWRG621.

If unexpected material which is potentially contaminated is uncovered during site works then appropriate management and assessment measures must be implemented.

Site Location Plan

Borehole Location Plan


CAMDEN STREET
CARLISLE STREET
NELSON STREET
BLENHEIM STREET
BALACLAVA
WOODSTOCK STREET
MARLBOROUGH STREET
CHARLES STREET
WILLIAM STREET
ROSAMOND STREET
STUART STREET
Balaclava
220
224
232
234
240
242
246-252
254
256
258
264-266
270-272
274
276
280
63-65
284
286
290
292
296
302
304-306
3/47
2/47
45
47
1/47
133
137
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165-169
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225-227
231-233
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6-8
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16-20
24-26
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209
3-13
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13-15
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27-29
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22B
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46-58 Marlborough St, Balaclava - Borehole Location Plan

Scale 1:300 at A4

User: D. Pendergast

Date: 17/08/2011

Extent of Contaminated Soil (0.0-0.4 m depth)

Extent of Contaminated Soil (0.4-0.7 m depth)

46-58 Marlborough St, Balaclava - Contaminated Soil (0.0-0.4m depth)

Scale 1:301 at A4

User: D. Pendergast

Date: 17/08/2011

46-58 Marlborough St, Balaclava - Contaminated Soil (0.4-0.7m depth)

Scale 1:300 at A4

User: D. Pendergast

Date: 17/08/2011

Borehole Logs

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH1
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	46 Marlborough St, north	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	0.9
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Long grass at surface FILL: CLAYEY SILT, Brown, topsoil, contains fine grained sand, clay clumps and occasional charcoal fragments (<5mm), dry, no odour	BH1-0.0 SPLIT 1 DUP 1 0-0.2m
0.1		
0.2		
0.3		
0.4	NATURAL MATERIAL: SILTY CLAY, Orange-brown, stiff, medium plasticity, dry to moist, no odour	BH1-0.4 0.4-0.5m
0.5		
0.6		
0.7	Clay becoming very stiff	
0.8		
0.9	End of borehole - target depth	

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH2
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	46 Marlborough St, south	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	0.5
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	Long grass at surface FILL: SANDY SILT, Grey-brown, contains roots, dry no odour	
0.2		BH2-0.1 0.1-0.2m
0.3	FILL: SAND, Light brown, fine grained, resembles packing sand, dry, no odour	
0.4		
0.5	NATURAL MATERIAL: SILTY CLAY, Orange-brown, stiff, medium plasticity, dry to moist, no odour	BH2-0.4 0.4-0.5m
0.6	End of borehole - target depth	
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH3
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	Car park - north west portion	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	0.7
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Mulch at surface FILL: SANDY SILT, Brown, contains white, medium grained sand, dry, no odour	
0.1		BH3-0.05 0.05-0.15m
0.2		
0.3		
0.4		
	FILL: SAND, Light grey, fine to medium grained, dry, no odour	BH3-0.45 0.45-0.55m
0.5		
0.6		
	NATURAL MATERIAL: SILTY CLAY, Orange-brown, stiff, medium plasticity, dry to moist, no odour	BH3-0.6 0.6-0.7m
0.7		
	End of borehole - target depth	
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH4
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	Car park - middle north portion	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	0.5
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Gravel at surface	
0.1	FILL: SANDY SILT, Brown, contains roots and minor charcoal, dry, no odour	
		BH4-0.1 0.1-0.2m
0.2		
0.3		
	FILL: SAND, White, medium grained, dry, no odour	BH4-0.3 0.3-0.4m
0.4		
	NATURAL MATERIAL: SILTY CLAY, Orange-brown, stiff, medium plasticity, dry to moist, no odour	BH4-0.4 0.4-0.5m
0.5		
	End of borehole - target depth	
0.6		
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH5
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	Car park - middle south portion	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	0.75
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Gravel at surface	
0.1	FILL: SANDY SILT, Brown, contains roots, dry, no odour	
	Grades to SILTY SAND	BH5-0.1 0.1-0.2m
0.2		
0.3		
0.4	FILL: SAND, White, medium grained, dry, no odour	BH5-0.4 0.4-0.5m
0.5		
0.6		
	NATURAL MATERIAL: SILTY CLAY, Orange-brown, dry, no odour	BH5-0.65 0.65-0.75m
0.7		
	End of borehole - target depth	
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH6
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	Car park - north east	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	0.8
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Mulch at surface	
	FILL: SILTY SAND, Brown, contains roots and charcoal, dry, no odour	BH6-0.05 0.05-0.15m
0.1		
0.2		
0.3		
0.4		
0.5	Contains ash and coke	BH6-0.5 0.5-0.6m
0.6	Contains brick (<5mm), charcoal (<5mm) and basalt (<20mm) fragments	
0.7		
0.8		
	End of borehole - refusal on rock/concrete/brick	
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH7
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Due Dilligence Investigation		
Location:	Car park - south east	Date:	29/03/2011

Driller:	DP	Borehole Depth (m):	
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Mulch and gravel at surface	
	FILL: SANDY SILT, Brown, contains rocks, roots and charcoal, dry, no odour	BH7-0.05 0.05-0.15m
0.1		
0.2		
0.3	Increased rock fragments with depth.	
	Rock fragment <50mm	BH7-0.3 0.3-0.4m
0.4	Brick fragements <20mm	
0.5		
	End of borehole - refusal on rock/concrete/brick	
0.6		
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH8
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - east boundary	Date:	16/06/2011

Driller:	DP	Borehole Depth (m):	0.7
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Mulch at surface	
0.1	FILL: SILTY CLAY. Grey, stiff, medium plasticity, contains crushed rock, dry to moist, no odour	BH8-0.05 0.05-0.15m
0.2	increased sand with depth	
0.3		
0.4		
0.5	NATURAL MATERIAL: SAND, Brown-grey, medium grained, moist, no odour	BH8-0.5 0.5-0.65m
0.6		
0.7	End of borehole - target depth	
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH9
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - south east	Date:	16/06/2011

Driller:	DP	Borehole Depth (m):	1
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Paver at surface	
0.1	FILL: CRUSHED ROCK AND SAND. Grey, angular, <15mm, contains occasional brick fragments	BH9-0.1 0.1-0.2m
0.2		
0.3		
0.4		
0.5	NATURAL MATERIAL: SAND. Light brown, medium grained, moist, no odour	BH9-0.5 0.5-0.6m
0.6		
0.7		
0.8		
0.9	NATURAL MATERIAL: CLAY. Orange-brown, stiff, medium plasticity, moist, no odour	BH9-0.9 0.9-1.0m
1.0	End of borehole - target depth	

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH10
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:		Date:	16/06/2011

Driller:	DP	Borehole Depth (m):	0.8
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	FILL MATERIAL: TOPPINGS	
	FILL MATERIAL: SILT AND SAND. Brown, contains minor crushed rock and occasional brick fragments, dry, no odour	BH10-0.01 0.01-0.1m
0.1		
0.2		
0.3		
0.4		
	NATURAL MATERIAL: SAND. Brown, medium grained, dry to moist, no odour	BH10-0.4 0.4-0.5m
0.5		
0.6		
0.7		
	NATURAL MATERIAL: CLAY. Orange-brown, stiff, medium plasticity, moist, no odour	BH10-0.7 0.7-0.8m
0.8		
	End of borehole - target depth	
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH11
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - western garden bed	Date:	16/06/2011

Driller:	DP	Borehole Depth (m):	0.8
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Mulch at surface	
	FILL: SAND, Brown, fine grained, contains roots, dry, no odour	BH11-0.02 0.02-0.1m
0.1		
0.2		
0.3		
	FILL: SANDY SILT. Dark grey, fine grained, minor rock fragments, dry, no odour	BH11-0.3 0.3-0.4m
0.4		
	NATURAL MATERIAL: SAND. Light brown, medium grained, dry, no odour	BH11-0.4 0.4-0.5m
0.5		
0.6		
0.7		
	NATURAL MATERIAL: SILTY CLAY. Orange-brown motled, stiff, medium plasticity, dry-moist, no odour	BH11-0.7 0.7-0.8m
0.8		
	End of borehole - target depth	
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH12
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Vacant lot	Date:	16/06/2011

Driller:	DP	Borehole Depth (m):	0.8
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	Grass at surface FILL: SANDY SILT. Dark brown, contains roots, moist, no odour	**BH12-0.0 0.0-0.1 DUP2 SPLIT2**
0.2		
0.3		
0.4	NATURAL MATERIAL: SAND. Light brown, medium grained, dry, no odour	**BH12-0.3 0.3-0.4m**
0.5		
0.6		
0.7		
0.8	NATURAL MATERIAL: SILTY CLAY. Brown to orange, stiff, medium plasticity, dry-moist, no odour	**BH12-0.7 0.7-0.8m**
0.9	End of borehole - target depth	

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH13
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Residence - backyard	Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Grass at surface FILL: SANDY SILT. Brown, contains roots, moist, no odour	BH13-0.0 0.0-0.15m
0.1		
0.2	Increased CLAY content with depth	
0.3		
0.4		
0.5	NATURAL MATERIAL: SILTY CLAY. Grey mottled orange, stiff, medium plasticity, moist, no odour	BH13-0.5 0.5-0.6m
0.6	End of borehole - target depth	
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH14
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Residence - Front yard	Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
0.1	Grass at surface FILL: SANDY SILT. Dark brown, contains roots, moist, no odour	BH14-0.0 0.0-0.1m
0.2		
0.3		
0.4	FILL: SAND, Light grey, fine to medium grained, dry, no odour	BH14-0.3 0.3-0.4m
0.5		
0.6	NATURAL MATERIAL: SILTY CLAY. Grey mottled orange, stiff, medium plasticity, moist, no odour	BH14-0.5 0.5-0.6m
0.7	End of borehole - target depth	
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH15
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - north west	Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Paver at surface	
0.1	FILL: SAND. White, fine grained, dry, no odour	
	FILL: CRUSHED ROCK AND SAND. Grey, angular, <20mm, moist, no odour	BH15-0.1 DUP3 SPLIT3 0.1-0.2m
0.2		
0.3		
	FILL: SAND. Light brown, medium grained, dry, no odour	
0.4		
	NATURAL MATERIAL: SILTY CLAY. Grey mottled orange, stiff, medium plasticity, moist, no odour	BH15-0.4 0.4-0.5m
0.5		
0.6		
	End of borehole - target depth	
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH16
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - south west	Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	0.8
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Paver at surface	
0.1	FILL: SAND. White, fine grained, dry, no odour	
	FILL: CRUSHED ROCK AND SAND. Grey, angular, <20mm, moist, no odour	BH16-0.1 0.1-0.2m
0.2		
0.3		
0.4		
0.5		
	FILL: SAND. Light brown, medium grained, dry, no odour	
0.6		
	NATURAL MATERIAL: SILTY CLAY. Grey mottled orange, stiff, medium plasticity, moist, no odour	BH16-0.6 0.6-0.8m
0.7		
0.8		
	End of borehole - target depth	
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH17
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:		Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Paver at surface	
0.1	FILL: SAND. White, fine grained, dry, no odour	
	FILL: CRUSHED ROCK AND SAND. Grey, angular, <20mm, moist, no odour	BH17-0.1 0.1-0.2m
0.2		
0.3		
0.4		
	FILL: SAND. Light brown, medium grained, dry, no odour	
	NATURAL MATERIAL: SILTY CLAY. Grey mottled orange, stiff, medium plasticity, moist, no odour	
0.5		BH17-0.5 0.5-0.6m
0.6		
	End of borehole - target depth	
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH18
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - North east	Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Paver at surface	
0.1	FILL: SAND. White, fine grained, dry, no odour	
	FILL: CRUSHED ROCK AND SAND. Grey, angular, <20mm, moist, no odour	BH18-0.1 0.1-0.2m
0.2		
0.3		
0.4		
0.5		
	FILL: SANDY SILT. Brown, contains rock and brick fragments, moist, no odour	BH18-0.5 0.5-0.6m
0.6		
	End of borehole - refusal on rock/brick	
0.7		
0.8		
0.9		

CITY OF PORT PHILLIP

Borehole Log

Borehole No: BH19
Sheet No: 1 of 1
File No: 02503

Address	46-58 Marlborough St, Balaclava	Logged by:	DP
Project:	Soil Classification		
Location:	Car park - North east	Date:	20/06/2011

Driller:	DP	Borehole Depth (m):	0.6
Drilling Method:	Hand Auger	Borehole Diameter (mm):	65

Depth (m)	Material Description	Sample Details
	Paver at surface	
0.1	FILL: SAND. White, fine grained, dry, no odour	
	FILL: CRUSHED ROCK AND SAND. Grey, angular, <20mm, moist, no odour	BH19-0.1 0.1-0.2m
0.2		
0.3		
	FILL: SAND. Light brown to grey, medium grained, dry, no odour	
0.4		
0.5		
	NATURAL MATERIAL: SILTY CLAY. Grey mottled orange, stiff, medium plasticity, moist, no odour	BH19-0.5 0.5-0.6m
0.6		
	End of borehole - target depth	
0.7		
0.8		
0.9		

Tables

CITY OF PORT PHILLIP

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

46-58 Marlborough St
Balaclava

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/11	29/03/11	29/03/11	29/03/11
				Sample Number:	**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**
				Material													
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**												
EA055: Moisture Content																	
Moisture Content (dried @ 103°C)		%	1			9.7	17.8	5.9	18.6	9.7	5.4	9.3	14.7	4	24.6	7.6	7.1	4.8
EG005T: Total Metals by ICP-AES																		
Arsenic	7440-38-2	mg/kg	5	**100**	**400**	6	5	<5	13	6	<5	6	10	<5	<5	18	10	7
Barium	7440-39-3	mg/kg	10			90	140	70	10	110	<10	90	<10	40	20	220	270	50
Beryllium	7440-41-7	mg/kg	1	**20**	**80**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	7440-43-9	mg/kg	1	**20**	**80**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2	**120000**	**480000**	13	16	5	28	6	<2	10	22	4	24	13	14	6
Cobalt	7440-48-4	mg/kg	2	**100**	**400**	3	5	2	4	2	<2	2	3	<2	2	7	6	5
Copper	7440-50-8	mg/kg	5	**1000**	**4000**	68	15	68	8	28	<5	50	<5	10	<5	59	41	15
Lead	7439-92-1	mg/kg	5	**300**	**1200**	461	28	405	20	770	<5	516	16	133	11	810	1120	230
Manganese	7439-96-5	mg/kg	5	**1500**	**6000**	56	29	70	16	97	<5	91	16	112	18	190	129	90
Nickel	7440-02-0	mg/kg	2	**600**	**2400**	7	8	7	8	5	<2	8	6	3	7	24	21	14
Vanadium	7440-62-2	mg/kg	5	**-**		28	38	12	84	14	12	18	63	16	38	18	26	12
Zinc	7440-66-6	mg/kg	5	**7000**	**28000**	473	66	344	12	323	<5	353	40	1500	17	661	607	188
EG035T: Total Recoverable Mercury by FIMS																		
Mercury	7439-97-6	mg/kg	0.1	**15**	**60**	0.4	0.1	0.8	<0.1	0.4	<0.1	0.7	<0.1	0.2	<0.1	0.7	0.4	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)																		
Hexavalent Chromium	18540-29-9	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
EP066: Polychlorinated Biphenyls (PCB)																		
Total Polychlorinated biphenyls		mg/kg	0.1	**10**	**40**	<0.15	---	---	<0.10	---	---	---	<0.10	<0.10	---	---	<2.50	---

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/11	29/03/11	29/03/11	29/03/11
				Sample Number:	**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**
				Material													
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**												
EP068A: Organochlorine Pesticides (OC)																	
alpha-BHC	319-84-6	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
beta-BHC	319-85-7	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
gamma-BHC	58-89-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
delta-BHC	319-86-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Heptachlor	76-44-8	mg/kg	0.05	**10**	**40**	<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Aldrin	309-00-2	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Heptachlor epoxide	1024-57-3	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
trans-Chlordane	5103-74-2	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
alpha-Endosulfan	959-98-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
cis-Chlordane	5103-71-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Dieldrin	60-57-1	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
4.4`-DDE	72-55-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Endrin	72-20-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
beta-Endosulfan	33213-65-9	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
4.4`-DDD	72-54-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Endrin aldehyde	7421-93-4	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Endosulfan sulfate	1031-07-8	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
4.4`-DDT	50-29-3	mg/kg	0.2			<0.2	---	---	<0.2	---	---	---	<0.2	<0.2	---	---	<5.0	---
Endrin ketone	53494-70-5	mg/kg	0.05			<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25	---
Methoxychlor	72-43-5	mg/kg	0.2			<0.2	---	---	<0.2	---	---	---	<0.2	<0.2	---	---	<5.0	---
Aldrin + Dieldrin		mg/kg		**10**	**40**	<0.1	---	---	<0.1	---	---	---	<0.1	<0.1	---	---	<2.5	---
Chlordane		mg/kg		**50**	**200**	<0.1	---	---	<0.1	---	---	---	<0.1	<0.1	---	---	<2.5	---
DDT+DDE+DDD		mg/kg		**200**	**800**	<0.3	---	---	<0.3	---	---	---	<0.3	<0.3	---	---	<2.5	---
EP075(SIM)A: Phenolic Compounds																		
Phenol	108-95-2	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2-Chlorophenol	95-57-8	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2-Methylphenol	95-48-7	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1			<1.0	---	---	<1.0	---	---	---	<1.0	<1.0	---	---	<1.0	---
2-Nitrophenol	88-75-5	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2.4-Dimethylphenol	105-67-9	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5			<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5	---
Pentachlorophenol	87-86-5	mg/kg	2			<2.0	---	---	<2.0	---	---	---	<2.0	<2.0	---	---	<2.0	---

CITY OF PORT PHILLIP

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

46-58 Marlborough St
Balaclava

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/11	29/03/11	29/03/11	29/03/11
				Sample Number:	**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**	**BH7-0.05**
				Material													
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**												
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																	
Naphthalene	91-20-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6
Acenaphthene	83-32-9	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5			1.2	<0.5	0.7	<0.5	0.6	<0.5	1.1	<0.5	<0.5	<0.5	1.3	1.2	1.9
Anthracene	120-12-7	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.7
Fluoranthene	206-44-0	mg/kg	0.5			2.4	<0.5	2.2	<0.5	1.2	<0.5	5	<0.5	<0.5	<0.5	3.7	2.7	4.8
Pyrene	129-00-0	mg/kg	0.5			2.5	<0.5	2.3	<0.5	1.2	<0.5	4.9	<0.5	<0.5	<0.5	4	3.1	5.3
Benz(a)anthracene	56-55-3	mg/kg	0.5			1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.2	1.5	2.7
Chrysene	218-01-9	mg/kg	0.5			1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.1	1.5	2.6
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5			1.6	<0.5	1.9	<0.5	0.6	<0.5	2.5	<0.5	<0.5	<0.5	2.2	1.5	2.6
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5			0.6	<0.5	0.6	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.2	1.6	2.4
Benzo(a)pyrene	50-32-8	mg/kg	0.5	**1**	**4**	1.3	<0.5	1.5	<0.5	0.7	<0.5	3.1	<0.5	<0.5	<0.5	2.9	2.1	3.4
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5			0.8	<0.5	1	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	1.8	1.2	1.8
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0.6	<0.5	0.6
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5			1	<0.5	1.2	<0.5	0.5	<0.5	2.3	<0.5	<0.5	<0.5	2.2	1.5	2.3
Total PAH	50-32-8	µg/L	0.5	**20**	**80**	<13.6	<0.5	<13.6	<0.5	<6.6	<0.5	<29.6	<0.5	<0.5	<0.5	<25.7	<18.4	<31.7
EP080: BTEX																		
Benzene	71-43-2	mg/kg	0.2	**0.5***	**0.5***	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	mg/kg	0.5	**3***	**3***	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	mg/kg	0.5	**5***	**5***	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	3-38-3 106-4	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons																		
C6 - C9 Fraction		mg/kg	10	**100**	**100**	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction		mg/kg	50			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction		mg/kg	100			<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	200	110	180
C29 - C36 Fraction		mg/kg	100			140	<100	<100	<100	<100	<100	<100	<100	<100	<100	230	160	290
C10 - C36 Fraction (sum)		mg/kg	50	**1000**	**1000**	140	<50	<50	<50	<50	<50	<50	<50	<50	<50	430	270	470

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	29/03/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	20/06/11	20/06/11	20/06/11
				Sample Number:	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**	**BH13-0.0**	**BH13-0.5**	**BH14-0.0**
				Material		Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**														
EA055: Moisture Content																			
Moisture Content (dried @ 103°C)		%	1			5.8	5.6	9.4	5.7	7.8	5.5	21.2	6.8	4.4	14	23.4	11.5	19.9	17.6
EG005T: Total Metals by ICP-AES																			
Arsenic	7440-38-2	mg/kg	5	**100**	**400**	9	37	<5	<5	<5	6	7	<5	<5	10	8	8	10	9
Barium	7440-39-3	mg/kg	10			60	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Beryllium	7440-41-7	mg/kg	1	**20**	**80**	<1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	7440-43-9	mg/kg	1	**20**	**80**	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	2	<1	<1
Chromium	7440-47-3	mg/kg	2	**120000**	**480000**	9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cobalt	7440-48-4	mg/kg	2	**100**	**400**	9	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Copper	7440-50-8	mg/kg	5	**1000**	**4000**	24	28	<5	25	<5	15	5	12	<5	313	13	148	10	57
Lead	7439-92-1	mg/kg	5	**300**	**1200**	315	493	7	<5	16	381	10	186	17	1360	51	1180	38	646
Manganese	7439-96-5	mg/kg	5	**1500**	**6000**	146	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	7440-02-0	mg/kg	2	**600**	**2400**	34	25	<2	76	<2	5	6	3	<2	15	8	11	15	10
Vanadium	7440-62-2	mg/kg	5	**-**		13	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	7440-66-6	mg/kg	5	**7000**	**28000**	262	1060	13	41	18	321	11	114	19	1350	56	840	1060	231
EG035T: Total Recoverable Mercury by FIMS																			
Mercury	7439-97-6	mg/kg	0.1	**15**	**60**	0.1	0.4	<0.1	<0.1	<0.1	0.5	<0.1	0.3	<0.1	1.1	0.1	0.7	0.1	0.5
EG048: Hexavalent Chromium (Alkaline Digest)																			
Hexavalent Chromium	18540-29-9	mg/kg	0.5			---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP066: Polychlorinated Biphenyls (PCB)																			
Total Polychlorinated biphenyls		mg/kg	0.1	**10**	**40**	---	---	---	<0.10	---	<0.50	---	---	---	---	<0.10	<0.50	---	---

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	29/03/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	20/06/11	20/06/11	20/06/11
				Sample Number:	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**	**BH13-0.0**	**BH13-0.5**	**BH14-0.0**
				Material		Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	NEPM HIL D													
EP068A: Organochlorine Pesticides (OC)																		
alpha-BHC	319-84-6	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
beta-BHC	319-85-7	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
gamma-BHC	58-89-9	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
delta-BHC	319-86-8	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Heptachlor	76-44-8	mg/kg	0.05	**10**	**40**	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Aldrin	309-00-2	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Heptachlor epoxide	1024-57-3	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
trans-Chlordane	5103-74-2	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	0.06	---	---
alpha-Endosulfan	959-98-8	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	0.08	---	---
cis-Chlordane	5103-71-9	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Dieldrin	60-57-1	mg/kg	0.05			---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05	0.46	---	---
4.4`-DDE	72-55-9	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	0.49	---	---
Endrin	72-20-8	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
beta-Endosulfan	33213-65-9	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
4.4`-DDD	72-54-8	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Endrin aldehyde	7421-93-4	mg/kg	0.05			---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05	<0.06	---	---
Endosulfan sulfate	1031-07-8	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
4.4`-DDT	50-29-3	mg/kg	0.2			---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05	0.22	---	---
Endrin ketone	53494-70-5	mg/kg	0.05			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	<0.06	---	---
Methoxychlor	72-43-5	mg/kg	0.2			---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	1.31	---	---
Aldrin + Dieldrin		mg/kg		**10**	**40**	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	0.49	---	---
Chlordane		mg/kg		**50**	**200**	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05	0.68	---	---
DDT+DDE+DDD		mg/kg		**200**	**800**	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	0.14	---	---
						---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03	0.14	---	---
EP075(SIM)A: Phenolic Compounds																			
Phenol	108-95-2	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	95-57-8	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	95-48-7	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	88-75-5	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	87-86-5	mg/kg	2			---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	29/03/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	16/06/11	20/06/11	20/06/11	20/06/11
				Sample Number:	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**	**BH13-0.0**	**BH13-0.5**	**BH14-0.0**
				Material		Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**													
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																		
Naphthalene	91-20-3	mg/kg	0.5			<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5			<0.5	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	1.3
Acenaphthene	83-32-9	mg/kg	0.5			<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5			<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5			1.1	41.3	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	6.6	<0.5	1.7	<0.5	6.3
Anthracene	120-12-7	mg/kg	0.5			<0.5	13.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5	<0.5	<0.5	2
Fluoranthene	206-44-0	mg/kg	0.5			2.4	74.8	<0.5	<0.5	<0.5	0.5	<0.5	1.8	<0.5	8.3	<0.5	3.7	<0.5	11.8
Pyrene	129-00-0	mg/kg	0.5			2.5	72.7	<0.5	<0.5	<0.5	0.6	<0.5	1.8	<0.5	7.9	<0.5	3.6	<0.5	12
Benz(a)anthracene	56-55-3	mg/kg	0.5			1.2	39.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	4.2	<0.5	1.9	<0.5	6.2
Chrysene	218-01-9	mg/kg	0.5			1.2	30.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	4	<0.5	1.8	<0.5	6.3
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5			1.1	49.2	<0.5	<0.5	<0.5	0.6	<0.5	0.8	<0.5	3.7	<0.5	4	<0.5	6.3
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5			1.1	16.8	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	3.8	<0.5	2.5	<0.5	5.8
Benzo(a)pyrene	50-32-8	mg/kg	0.5	**1**	**4**	1.4	41.3	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	4.5	<0.5	1.4	<0.5	7.4
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5			0.7	19.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.5	<0.5	<0.5	<0.5	4.3
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5			<0.5	4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1.6	<0.5	1.2
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5			0.8	24.2	<0.5	<0.5	<0.5	1.7	<0.5	0.6	<0.5	2.9	<0.5	22.2	<0.5	5.2
Total PAH	50-32-8	µg/L	0.5	**20**	**80**	<13.5	<437	<0.5	<0.5	<0.5	<3.4	<0.5	<9.2	<0.5	<54.1	<0.5	<44.4	<0.5	<76.1
EP080: BTEX																			
Benzene	71-43-2	mg/kg	0.2	**0.5***	**0.5***	<0.2	---	---	<0.2	---	<0.2	---	---	---	---	<0.2	<0.2	---	---
Toluene	108-88-3	mg/kg	0.5	**3***	**3***	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5	<0.5	---	---
Ethylbenzene	100-41-4	mg/kg	0.5	**5***	**5***	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5	<0.5	---	---
meta- & para-Xylene	3-38-3 106-4	mg/kg	0.5			<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5	<0.5	---	---
ortho-Xylene	95-47-6	mg/kg	0.5			<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5	<0.5	---	---
							---	---	<0.5	---	<0.5	---	---	---	---	<0.5	<0.5	---	---
EP080/071: Total Petroleum Hydrocarbons																			
C6 - C9 Fraction		mg/kg	10	**100**	**100**	<10	---	---	<10	---	<10	---	---	---	---	---	<10	---	---
C10 - C14 Fraction		mg/kg	50			<50	---	---	<50	---	<50	---	---	---	---	---	<50	---	---
C15 - C28 Fraction		mg/kg	100			<100	---	---	<100	---	<100	---	---	---	---	---	100	---	---
C29 - C36 Fraction		mg/kg	100			180	---	---	<100	---	<100	---	---	---	---	---	120	---	---
C10 - C36 Fraction (sum)		mg/kg	50	**1000**	**1000**	180	---	---	<50	---	<50	---	---	---	---	---	220	---	---

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11
				Sample Number:	**BH14-0.5**	**BH15-0.1**	**BH15-0.4**	**BH16-0.1**	**BH16-0.6**	**BH17-0.1**	**BH17-0.5**	**BH18-0.1**	**BH18-0.5**	**BH19-0.1**	**BH19-0.5**
				Material	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**										
EA055: Moisture Content															
Moisture Content (dried @ 103°C)		%	1			13.8	6.3	16.5	6.1	16.8	6.5	17	5.2	10.9	7	17.6
EG005T: Total Metals by ICP-AES																
Arsenic	7440-38-2	mg/kg	5	**100**	**400**	10	<5	<5	<5	13	<5	6	<5	14	<5	9
Barium	7440-39-3	mg/kg	10			---	---	---	---	---	---	---	---	---	---	---
Beryllium	7440-41-7	mg/kg	1	**20**	**80**	---	---	---	---	---	---	---	---	---	---	---
Cadmium	7440-43-9	mg/kg	1	**20**	**80**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2	**120000**	**480000**	---	---	---	---	---	---	---	---	---	---	---
Cobalt	7440-48-4	mg/kg	2	**100**	**400**	---	---	---	---	---	---	---	---	---	---	---
Copper	7440-50-8	mg/kg	5	**1000**	**4000**	<5	26	<5	29	<5	25	7	28	59	24	6
Lead	7439-92-1	mg/kg	5	**300**	**1200**	15	<5	15	7	11	<5	41	<5	552	12	10
Manganese	7439-96-5	mg/kg	5	**1500**	**6000**	---	---	---	---	---	---	---	---	---	---	---
Nickel	7440-02-0	mg/kg	2	**600**	**2400**	9	94	7	91	8	68	9	81	26	68	8
Vanadium	7440-62-2	mg/kg	5	**-**		---	---	---	---	---	---	---	---	---	---	---
Zinc	7440-66-6	mg/kg	5	**7000**	**28000**	23	50	12	54	8	41	21	40	631	44	11
EG035T: Total Recoverable Mercury by FIMS																
Mercury	7439-97-6	mg/kg	0.1	**15**	**60**	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.6	<0.1	0.1
EG048: Hexavalent Chromium (Alkaline Digest)																
Hexavalent Chromium	18540-29-9	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EP066: Polychlorinated Biphenyls (PCB)																
Total Polychlorinated biphenyls		mg/kg	0.1	**10**	**40**	---	---	---	<0.10	---	---	<0.10	---	---	---	---

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11
				Sample Number:	**BH14-0.5**	**BH15-0.1**	**BH15-0.4**	**BH16-0.1**	**BH16-0.6**	**BH17-0.1**	**BH17-0.5**	**BH18-0.1**	**BH18-0.5**	**BH19-0.1**	**BH19-0.5**
				Material	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**										
EP068A: Organochlorine Pesticides (OC)															
alpha-BHC	319-84-6	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
beta-BHC	319-85-7	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
gamma-BHC	58-89-9	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
delta-BHC	319-86-8	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Heptachlor	76-44-8	mg/kg	0.05	**10**	**40**	---	---	---	<0.03	---	---	<0.03	---	---	---	---
Aldrin	309-00-2	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Heptachlor epoxide	1024-57-3	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
trans-Chlordane	5103-74-2	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
alpha-Endosulfan	959-98-8	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
cis-Chlordane	5103-71-9	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Dieldrin	60-57-1	mg/kg	0.05			---	---	---	<0.05	---	---	<0.05	---	---	---	---
4.4`-DDE	72-55-9	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Endrin	72-20-8	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
beta-Endosulfan	33213-65-9	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
4.4`-DDD	72-54-8	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Endrin aldehyde	7421-93-4	mg/kg	0.05			---	---	---	<0.05	---	---	<0.05	---	---	---	---
Endosulfan sulfate	1031-07-8	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
4.4`-DDT	50-29-3	mg/kg	0.2			---	---	---	<0.05	---	---	<0.05	---	---	---	---
Endrin ketone	53494-70-5	mg/kg	0.05			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Methoxychlor	72-43-5	mg/kg	0.2			---	---	---	<0.03	---	---	<0.03	---	---	---	---
Aldrin + Dieldrin		mg/kg		**10**	**40**	---	---	---	<0.03	---	---	<0.03	---	---	---	---
Chlordane		mg/kg		**50**	**200**	---	---	---	<0.05	---	---	<0.05	---	---	---	---
DDT+DDE+DDD		mg/kg		**200**	**800**	---	---	---	<0.03	---	---	<0.03	---	---	---	---
						---	---	---	<0.03	---	---	<0.03	---	---	---	---
EP075(SIM)A: Phenolic Compounds																
Phenol	108-95-2	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	95-57-8	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	95-48-7	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1			---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	88-75-5	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5			---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	87-86-5	mg/kg	2			---	---	---	---	---	---	---	---	---	---	---

Table 1
Chemical Testing Results
Soil Samples
Onsite Health

Client - Matrix: SOIL

denotes exceedence of NEPM HIL D
denotes exceedence of NEPM HIL A
* No NEPM HIL A criterion exists - adopted criterion used

				Sample date:	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11	20/06/11
				Sample Number:	**BH14-0.5**	**BH15-0.1**	**BH15-0.4**	**BH16-0.1**	**BH16-0.6**	**BH17-0.1**	**BH17-0.5**	**BH18-0.1**	**BH18-0.5**	**BH19-0.1**	**BH19-0.5**
				Material	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**NEPM HIL A**	**NEPM HIL D**										
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																	
Naphthalene	91-20-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	<0.5
Anthracene	120-12-7	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	mg/kg	0.5			<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	3	<0.5	<0.5	<0.5
Pyrene	129-00-0	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.1	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<0.5	<0.5
Chrysene	218-01-9	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	mg/kg	0.5	**1**	**4**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5			<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<0.5	<0.5
Total PAH	50-32-8	µg/L	0.5	**20**	**80**	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<18.6	<0.5	<0.5	<0.5
EP080: BTEX																	
Benzene	71-43-2	mg/kg	0.2	**0.5***	**0.5***	---	---	---	<0.2	---	---	<0.2	---	---	---	---	---
Toluene	108-88-3	mg/kg	0.5	**3***	**3***	---	---	---	<0.5	---	---	<0.5	---	---	---	---	---
Ethylbenzene	100-41-4	mg/kg	0.5	**5***	**5***	---	---	---	<0.5	---	---	<0.5	---	---	---	---	---
meta- & para-Xylene	3-38-3 106-4	mg/kg	0.5			---	---	---	<0.5	---	---	<0.5	---	---	---	---	---
ortho-Xylene	95-47-6	mg/kg	0.5			---	---	---	<0.5	---	---	<0.5	---	---	---	---	---
						---	---	---	<0.5	---	---	<0.5	---	---	---	---	---
EP080/071: Total Petroleum Hydrocarbons																	
C6 - C9 Fraction		mg/kg	10	**100**	**100**	---	---	---	<10	---	---	---	---	---	---	---	---
C10 - C14 Fraction		mg/kg	50			---	---	---	<50	---	---	---	---	---	---	---	---
C15 - C28 Fraction		mg/kg	100			---	---	---	<100	---	---	---	---	---	---	---	---
C29 - C36 Fraction		mg/kg	100			---	---	---	<100	---	---	---	---	---	---	---	---
C10 - C36 Fraction (sum)		mg/kg	50	**1000**	**1000**	---	---	---	<50	---	---	---	---	---	---	---	---

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
						Sample Number:	**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**
						Material	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Fill
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**												
EA055: Moisture Content																		
Moisture Content (dried @ 103°C)		%	1				9.7	17.8	5.9	18.6	9.7	5.4	9.3	14.7	4	24.6	7.6	7.1
EG005T: Total Metals by ICP-AES																		
Arsenic	7440-38-2	mg/kg	5	**20**	**500**	**2000**	6	5	<5	13	6	<5	6	10	<5	<5	18	10
Barium	7440-39-3	mg/kg	10				90	140	70	10	110	<10	90	<10	40	20	220	270
Beryllium	7440-41-7	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	7440-43-9	mg/kg	1	**3**	**100**	**400**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2				13	16	5	28	6	<2	10	22	4	24	13	14
Cobalt	7440-48-4	mg/kg	2				3	5	2	4	2	<2	2	3	<2	2	7	6
Copper	7440-50-8	mg/kg	5	**100**	**5000**	**20000**	68	15	68	8	28	<5	50	<5	10	<5	59	41
Lead	7439-92-1	mg/kg	5	**300**	**1500**	**6000**	461	28	405	20	770	<5	516	16	133	11	810	1120
Manganese	7439-96-5	mg/kg	5				56	29	70	16	97	<5	91	16	112	18	190	129
Molybdenum	7439-98-7	mg/kg	2	**40**	**1000**	**4000**	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	7440-02-0	mg/kg	2	**60**	**3000**	**12000**	7	8	7	8	5	<2	8	6	3	7	24	21
Vanadium	7440-62-2	mg/kg	5				28	38	12	84	14	12	18	63	16	38	18	26
Selenium	7782-49-2	mg/kg	5	**10**	**50**	**200**	---	---	---	---	---	---	---	---	---	---	---	---
Silver	7440-22-4	mg/kg	2	**10**	**180**	**720**	---	---	---	---	---	---	---	---	---	---	---	---
Tin	7440-31-5	mg/kg	5	**50**	**500**	**-**	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	7440-66-6	mg/kg	5	**200**	**35000**	**140000**	473	66	344	12	323	<5	353	40	1500	17	661	607
EG005C: Leachable Metals by ICPAES																		
ASLP Arsenic	7440-38-2	mg/L	0.1		**0.7**	**2.8**	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Copper	7440-50-8	mg/L	0.1		**200**	**800**	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Lead	7439-92-1	mg/L	0.1		**1**	**4**	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Nickel	7440-02-0	mg/L	0.1		**2**	**8**	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Zinc	7440-66-6	mg/L	0.1		**300**	**1200**	---	---	---	---	---	---	---	---	---	---	---	---
EG035T: Total Recoverable Mercury by FIMS																		
Mercury	7439-97-6	mg/kg	0.1	**1**	**75**	**300**	0.4	0.1	0.8	<0.1	0.4	<0.1	0.7	<0.1	0.2	<0.1	0.7	0.4
EG035C: Leachable Mercury by FIMS																		
Mercury	7439-97-6	mg/L	0.001		**0.1**	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---
EG048: Hexavalent Chromium (Alkaline Digest)																		
Hexavalent Chromium	18540-29-9	mg/kg	0.5	**1**	**500**	**2000**	<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
EK026G: Total Cyanide By Discrete Analyser																		
Total Cyanide	57-12-5	mg/kg	1	**50**	**2500**	**10000**	---	---	---	---	---	---	---	---	---	---	---	---
EK040T: Fluoride Total																		
Fluoride	16984-48-8	mg/kg	40	**450**	**10000**	**40000**	---	---	---	---	---	---	---	---	---	---	---	---
Total Polychlorinated biphenyls		mg/kg	0.1	**2**			<0.15	---	---	<0.10	---	---	---	<0.10	<0.10	---	---	<2.50

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

Legend	
Yellow	denotes exceedence of EPA Fill Material Upper Limit
Grey	denotes exceedence of EPA Category C Upper Limit
Dark grey	denotes exceedence of EPA Category B Upper Limit

Analyte grouping/Analyte	CAS Number	Units	LOR	EPA Fill upper limits	EPA Category C upper limits	EPA Category B upper limits												
Sample date:							29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
Sample Number:							**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**
Material							Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Fill
EP068A: Organochlorine Pesticides (OC)																		
alpha-BHC	319-84-6	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
beta-BHC	319-85-7	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
gamma-BHC	58-89-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
delta-BHC	319-86-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Heptachlor	76-44-8	mg/kg	0.05		1.2	4.8	<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Aldrin	309-00-2	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Heptachlor epoxide	1024-57-3	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
trans-Chlordane	5103-74-2	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
alpha-Endosulfan	959-98-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
cis-Chlordane	5103-71-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Dieldrin	60-57-1	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
4.4`-DDE	72-55-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Endrin	72-20-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
beta-Endosulfan	33213-65-9	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
4.4`-DDD	72-54-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Endrin aldehyde	7421-93-4	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Endosulfan sulfate	1031-07-8	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
4.4`-DDT	50-29-3	mg/kg	0.2				<0.2	---	---	<0.2	---	---	---	<0.2	<0.2	---	---	<5.0
Endrin ketone	53494-70-5	mg/kg	0.05				<0.05	---	---	<0.05	---	---	---	<0.05	<0.05	---	---	<1.25
Methoxychlor	72-43-5	mg/kg	0.2				<0.2	---	---	<0.2	---	---	---	<0.2	<0.2	---	---	<5.0
Aldrin + Dieldrin		mg/kg		-	1.2	4.8	<0.1	---	---	<0.1	---	---	---	<0.1	<0.1	---	---	<2.5
Chlordane		mg/kg		-	4	16	<0.1	---	---	<0.1	---	---	---	<0.1	<0.1	---	---	<2.5
DDT+DDE+DDD		mg/kg			50	50	<0.3	---	---	<0.3	---	---	---	<0.3	<0.3	---	---	<2.5
Sum of other organochlorine pesticides		mg/kg	0.03	1			---	---	---	---	---	---	---	---	---	---	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																		
Naphthalene	91-20-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Acenaphthene	83-32-9	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	mg/kg	0.5				1.2	<0.5	0.7	<0.5	0.6	<0.5	1.1	<0.5	<0.5	<0.5	1.3	1.2
Anthracene	120-12-7	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5
Fluoranthene	206-44-0	mg/kg	0.5				2.4	<0.5	2.2	<0.5	1.2	<0.5	5	<0.5	<0.5	<0.5	3.7	2.7
Pyrene	129-00-0	mg/kg	0.5				2.5	<0.5	2.3	<0.5	1.2	<0.5	4.9	<0.5	<0.5	<0.5	4	3.1
Benz(a)anthracene	56-55-3	mg/kg	0.5				1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.2	1.5
Chrysene	218-01-9	mg/kg	0.5				1.1	<0.5	1.1	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.1	1.5
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5				1.6	<0.5	1.9	<0.5	0.6	<0.5	2.5	<0.5	<0.5	<0.5	2.2	1.5
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5				0.6	<0.5	0.6	<0.5	0.6	<0.5	2.7	<0.5	<0.5	<0.5	2.2	1.6
Benzo(a)pyrene	50-32-8	mg/kg	0.5	1	5	16	1.3	<0.5	1.5	<0.5	0.7	<0.5	3.1	<0.5	<0.5	<0.5	2.9	2.1
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5				0.8	<0.5	1	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	1.8	1.2
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0.6	<0.5
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5				1	<0.5	1.2	<0.5	0.5	<0.5	2.3	<0.5	<0.5	<0.5	2.2	1.5
Total PAH				20	100	400	<13.6	<0.5	<13.6	<0.5	<6.6	<0.5	<29.6	<0.5	<0.5	<0.5	<25.7	<18.4

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
						Sample Number:	**BH1-0.0**	**BH1-0.4**	**BH2-0.1**	**BH2-0.4**	**BH3-0.05**	**BH3-0.45**	**BH4-0.1**	**BH4-0.4**	**BH5-0.1**	**BH5-0.65**	**BH6-0.05**	**BH6-0.5**						
						Material	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Fill						
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**																		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																								
ASLP Benzo(a)pyrene	50-32-8	µg/L	0.5		0.001	0.004	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
EP080: BTEX																								
Benzene	71-43-2	mg/kg	0.2	1	4	16	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2						
Toluene	108-88-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Ethylbenzene	100-41-4	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
meta- & para-Xylene	8-38-3 106-42	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
ortho-Xylene	95-47-6	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
Total MAH				7	70	400	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5						
EP080/071: Total Petroleum Hydrocarbons																								
C6 - C9 Fraction		mg/kg	10	100	650	2600	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10						
C10 - C14 Fraction		mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50						
C15 - C28 Fraction		mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	200	110						
C29 - C36 Fraction		mg/kg	100				140	<100	<100	<100	<100	<100	<100	<100	<100	<100	230	160						
C10 - C36 Fraction (sum)		mg/kg	50	1000	10000	40000	140	<50	<50	<50	<50	<50	<50	<50	<50	<50	430	270						
EP074I: Volatile Halogenated Compounds																								
Vinyl chloride	75-01-4	mg/kg	0.02	-	1.2	4.8	---	---	---	---	---	---	---	---	---	---	---	---						
1.1-Dichloroethene	75-35-4	mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
Methylene chloride	75-09-2	mg/kg	0.4				---	---	---	---	---	---	---	---	---	---	---	---						
trans-1.2-Dichloroethene	156-60-5	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
cis-1.2-Dichloroethene	156-59-2	mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
Chloroform	67-66-3	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
1.1.1-Trichloroethane	71-55-6	mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
Carbon Tetrachloride	56-23-5	mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
1.2-Dichloroethane	107-06-2	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
Trichloroethene	79-01-6	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
1.1.2-Trichloroethane	79-00-5	mg/kg	0.04				---	---	---	---	---	---	---	---	---	---	---	---						
Tetrachloroethene	127-18-4	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
1.1.1.2-Tetrachloroethane	630-20-6	mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
1.1.2.2-Tetrachloroethane	79-34-5	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
Hexachlorobutadiene	87-68-3	mg/kg	0.02	-	2.8	11	---	---	---	---	---	---	---	---	---	---	---	---						
Chlorobenzene	108-90-7	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
1.4-Dichlorobenzene	106-46-7	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
1.2-Dichlorobenzene	95-50-1	mg/kg	0.02				---	---	---	---	---	---	---	---	---	---	---	---						
1.2.4-Trichlorobenzene	120-82-1	mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
Sum of volatile chlorinated hydrocarbons		mg/kg	0.01				---	---	---	---	---	---	---	---	---	---	---	---						
Sum of other chlorinated hydrocarbons		mg/kg	0.01	-	10	50	---	---	---	---	---	---	---	---	---	---	---	---						
Total Xylenes	1330-20-7	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---						

Table 2

Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

Legend	
(yellow)	denotes exceedence of EPA Fill Material Upper Limit
(grey)	denotes exceedence of EPA Category C Upper Limit
(dark)	denotes exceedence of EPA Category B Upper Limit

Analyte grouping/Analyte	CAS Number	Units	LOR	EPA Fill upper limits	EPA Category C upper limits	EPA Category B upper limits	BH1-0.0	BH1-0.4	BH2-0.1	BH2-0.4	BH3-0.05	BH3-0.45	BH4-0.1	BH4-0.4	BH5-0.1	BH5-0.65	BH6-0.05	BH6-0.5
Sample date:							29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011	29/03/2011
Sample Number:							BH1-0.0	BH1-0.4	BH2-0.1	BH2-0.4	BH3-0.05	BH3-0.45	BH4-0.1	BH4-0.4	BH5-0.1	BH5-0.65	BH6-0.05	BH6-0.5
Material							Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Fill
EP075(SIM)A: Phenolic Compounds																		
Phenol	108-95-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2-Chlorophenol	95-57-8	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2-Methylphenol	95-48-7	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
3- & 4-Methylphenol	1319-77-3	mg/kg	1				<1.0	---	---	<1.0	---	---	---	<1.0	<1.0	---	---	<1.0
2-Nitrophenol	88-75-5	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2.4-Dimethylphenol	105-67-9	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2.4-Dichlorophenol	120-83-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2.6-Dichlorophenol	87-65-0	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5				<0.5	---	---	<0.5	---	---	---	<0.5	<0.5	---	---	<0.5
Pentachlorophenol	87-86-5	mg/kg	2				<2.0	---	---	<2.0	---	---	---	<2.0	<2.0	---	---	<2.0
EP075A: Phenolic Compounds (Halogenated)																		
2-Chlorophenol	95-57-8	mg/kg	0.03				---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.03				---	---	---	---	---	---	---	---	---	---	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.03				---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.03				---	---	---	---	---	---	---	---	---	---	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.05				---	---	---	---	---	---	---	---	---	---	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.05				---	---	---	---	---	---	---	---	---	---	---	---
2.3.5.6-Tetrachlorophenol	935-95-5	mg/kg	0.03				---	---	---	---	---	---	---	---	---	---	---	---
2.3.4.5 & 2.3.4.6-Tetrachlorophe	4901-51-3/58	mg/kg	0.05				---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	87-86-5	mg/kg	0.2				---	---	---	---	---	---	---	---	---	---	---	---
Sum of Phenols (halogenated)		mg/kg	0.03	**1**	**10**	**320**	---	---	---	---	---	---	---	---	---	---	---	---
EP075A: Phenolic Compounds (Non-halogenated)																		
Phenol	108-95-2	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	95-48-7	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	88-75-5	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dinitrophenol	51-28-5	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---
4-Nitrophenol	100-02-7	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---
2-Methyl-4.6-dinitrophenol	8071-51-0	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---
Dinoseb	88-85-7	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---
Sum of Phenols (non-halogenated)		mg/kg	1	**60**	**560**	**2200**	---	---	---	---	---	---	---	---	---	---	---	---

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	29/03/2011	29/03/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011
						Sample Number:	**BH7-0.05**	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**
						Material	Fill	Fill	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**												
EA055: Moisture Content																		
Moisture Content (dried @ 103°C)		%	1				4.8	5.8	5.6	9.4	5.7	7.8	5.5	21.2	6.8	4.4	14	23.4
EG005T: Total Metals by ICP-AES																		
Arsenic	7440-38-2	mg/kg	5	**20**	**500**	**2000**	7	9	37	<5	<5	<5	6	7	<5	<5	10	8
Barium	7440-39-3	mg/kg	10				50	60	---	---	---	---	---	---	---	---	---	---
Beryllium	7440-41-7	mg/kg	1				<1	<1	---	---	---	---	---	---	---	---	---	---
Cadmium	7440-43-9	mg/kg	1	**3**	**100**	**400**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1
Chromium	7440-47-3	mg/kg	2				6	9	---	---	---	---	---	---	---	---	---	---
Cobalt	7440-48-4	mg/kg	2				5	9	---	---	---	---	---	---	---	---	---	---
Copper	7440-50-8	mg/kg	5	**100**	**5000**	**20000**	15	24	28	<5	25	<5	15	5	12	<5	313	13
Lead	7439-92-1	mg/kg	5	**300**	**1500**	**6000**	230	315	493	7	<5	16	381	10	186	17	1360	51
Manganese	7439-96-5	mg/kg	5				90	146	---	---	---	---	---	---	---	---	---	---
Molybdenum	7439-98-7	mg/kg	2	**40**	**1000**	**4000**	---	---	<2	<2	<2	2	<2	<2	<2	<2	<2	<2
Nickel	7440-02-0	mg/kg	2	**60**	**3000**	**12000**	14	34	25	<2	76	<2	5	6	3	<2	15	8
Vanadium	7440-62-2	mg/kg	5				12	13	---	---	---	---	---	---	---	---	---	---
Selenium	7782-49-2	mg/kg	5	**10**	**50**	**200**	---	---	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	7440-22-4	mg/kg	2	**10**	**180**	**720**	---	---	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tin	7440-31-5	mg/kg	5	**50**	**500**	**-**	---	---	16	<5	<5	<5	7	<5	<5	<5	40	<5
Zinc	7440-66-6	mg/kg	5	**200**	**35000**	**140000**	188	262	1060	13	41	18	321	11	114	19	1350	56
EG005C: Leachable Metals by ICPAES																		
ASLP Arsenic	7440-38-2	mg/L	0.1		**0.7**	**2.8**	---	---	0.2	---	---	---	---	---	---	---	---	---
ASLP Copper	7440-50-8	mg/L	0.1		**200**	**800**	---	---	---	---	---	---	---	---	---	---	0.6	---
ASLP Lead	7439-92-1	mg/L	0.1		**1**	**4**	---	---	0.6	---	---	---	---	---	---	---	1.8	---
ASLP Nickel	7440-02-0	mg/L	0.1		**2**	**8**	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Zinc	7440-66-6	mg/L	0.1		**300**	**1200**	---	---	2.4	---	---	---	---	---	---	---	20.3	---
EG035T: Total Recoverable Mercury by FIMS																		
Mercury	7439-97-6	mg/kg	0.1	**1**	**75**	**300**	<0.1	0.1	0.4	<0.1	<0.1	<0.1	0.5	<0.1	0.3	<0.1	1.1	0.1
EG035C: Leachable Mercury by FIMS																		
Mercury	7439-97-6	mg/L	0.001		**0.1**	**0.4**	---	---	---	---	---	---	---	---	---	---	<0.0010	---
EG048: Hexavalent Chromium (Alkaline Digest)																		
Hexavalent Chromium	18540-29-9	mg/kg	0.5	**1**	**500**	**2000**	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EK026G: Total Cyanide By Discrete Analyser																		
Total Cyanide	57-12-5	mg/kg	1	**50**	**2500**	**10000**	---	---	---	---	<1	---	<1	---	---	---	---	<1
EK040T: Fluoride Total																		
Fluoride	16984-48-8	mg/kg	40	**450**	**10000**	**40000**	---	---	---	---	140	---	<40	---	---	---	---	220
Total Polychlorinated biphenyls		mg/kg	0.1	**2**			---	---	---	---	<0.10	---	<0.50	---	---	---	---	<0.10

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	29/03/2011	29/03/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011
						Sample Number:	**BH7-0.05**	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**
						Material	Fill	Fill	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**												
EP068A: Organochlorine Pesticides (OC)																		
alpha-BHC	319-84-6	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
beta-BHC	319-85-7	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
gamma-BHC	58-89-9	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
delta-BHC	319-86-8	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Heptachlor	76-44-8	mg/kg	0.05		1.2	4.8	---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Aldrin	309-00-2	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Heptachlor epoxide	1024-57-3	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
trans-Chlordane	5103-74-2	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
alpha-Endosulfan	959-98-8	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
cis-Chlordane	5103-71-9	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Dieldrin	60-57-1	mg/kg	0.05				---	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05
4.4`-DDE	72-55-9	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Endrin	72-20-8	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
beta-Endosulfan	33213-65-9	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
4.4`-DDD	72-54-8	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Endrin aldehyde	7421-93-4	mg/kg	0.05				---	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05
Endosulfan sulfate	1031-07-8	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
4.4`-DDT	50-29-3	mg/kg	0.2				---	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05
Endrin ketone	53494-70-5	mg/kg	0.05				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Methoxychlor	72-43-5	mg/kg	0.2				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Aldrin + Dieldrin		mg/kg		-	1.2	4.8	---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Chlordane		mg/kg		-	4	16	---	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05
DDT+DDE+DDD		mg/kg			50	50	---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
Sum of other organochlorine pesticides		mg/kg	0.03	1			---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																		
Naphthalene	91-20-3	mg/kg	0.5				<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Acenaphthylene	208-96-8	mg/kg	0.5				0.6	<0.5	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5
Acenaphthene	83-32-9	mg/kg	0.5				<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	mg/kg	0.5				<0.5	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5
Phenanthrene	85-01-8	mg/kg	0.5				1.9	1.1	41.3	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	6.6	<0.5
Anthracene	120-12-7	mg/kg	0.5				0.7	<0.5	13.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5
Fluoranthene	206-44-0	mg/kg	0.5				4.8	2.4	74.8	<0.5	<0.5	<0.5	0.5	<0.5	1.8	<0.5	8.3	<0.5
Pyrene	129-00-0	mg/kg	0.5				5.3	2.5	72.7	<0.5	<0.5	<0.5	0.6	<0.5	1.8	<0.5	7.9	<0.5
Benz(a)anthracene	56-55-3	mg/kg	0.5				2.7	1.2	39.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	4.2	<0.5
Chrysene	218-01-9	mg/kg	0.5				2.6	1.2	30.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	4	<0.5
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5				2.6	1.1	49.2	<0.5	<0.5	<0.5	0.6	<0.5	0.8	<0.5	3.7	<0.5
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5				2.4	1.1	16.8	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	3.8	<0.5
Benzo(a)pyrene	50-32-8	mg/kg	0.5	1	5	16	3.4	1.4	41.3	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	4.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5				1.8	0.7	19.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.5	<0.5
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5				0.6	<0.5	4.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5				2.3	0.8	24.2	<0.5	<0.5	<0.5	1.7	<0.5	0.6	<0.5	2.9	<0.5
Total PAH				20	100	400	<31.7	<13.5	<437	<0.5	<0.5	<0.5	<3.4	<0.5	<9.2	<0.5	<54.1	<0.5

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	29/03/2011	29/03/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011
						Sample Number:	**BH7-0.05**	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**
						Material	Fill	Fill	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**												
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																		
ASLP Benzo(a)pyrene	50-32-8	µg/L	0.5		0.001	0.004	---	---	<0.5	---	---	---	---	---	---	---	<0.5	---
EP080: BTEX																		
Benzene	71-43-2	mg/kg	0.2	1	4	16	<0.2	<0.2	---	---	<0.2	---	<0.2	---	---	---	---	<0.2
Toluene	108-88-3	mg/kg	0.5				<0.5	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5
Ethylbenzene	100-41-4	mg/kg	0.5				<0.5	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5
meta- & para-Xylene	8-38-3 106-42	mg/kg	0.5				<0.5	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5
ortho-Xylene	95-47-6	mg/kg	0.5				<0.5	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5
Total MAH				7	70	400	<0.5	<0.5	---	---	<0.5	---	<0.5	---	---	---	---	<0.5
EP080/071: Total Petroleum Hydrocarbons																		
C6 - C9 Fraction		mg/kg	10	100	650	2600	<10	<10	---	---	<10	---	<10	---	---	---	---	---
C10 - C14 Fraction		mg/kg	50				<50	<50	---	---	<50	---	<50	---	---	---	---	---
C15 - C28 Fraction		mg/kg	100				180	<100	---	---	<100	---	<100	---	---	---	---	---
C29 - C36 Fraction		mg/kg	100				290	180	---	---	<100	---	<100	---	---	---	---	---
C10 - C36 Fraction (sum)		mg/kg	50	1000	10000	40000	470	180	---	---	<50	---	<50	---	---	---	---	---
EP074I: Volatile Halogenated Compounds																		
Vinyl chloride	75-01-4	mg/kg	0.02	-	1.2	4.8	---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.1-Dichloroethene	75-35-4	mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
Methylene chloride	75-09-2	mg/kg	0.4				---	---	---	---	<0.4	---	<0.4	---	---	---	---	<0.4
trans-1.2-Dichloroethene	156-60-5	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
cis-1.2-Dichloroethene	156-59-2	mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
Chloroform	67-66-3	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.1.1-Trichloroethane	71-55-6	mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
Carbon Tetrachloride	56-23-5	mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
1.2-Dichloroethane	107-06-2	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
Trichloroethene	79-01-6	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.1.2-Trichloroethane	79-00-5	mg/kg	0.04				---	---	---	---	<0.04	---	<0.04	---	---	---	---	<0.04
Tetrachloroethene	127-18-4	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.1.1.2-Tetrachloroethane	630-20-6	mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
1.1.2.2-Tetrachloroethane	79-34-5	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
Hexachlorobutadiene	87-68-3	mg/kg	0.02	-	2.8	11	---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
Chlorobenzene	108-90-7	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.4-Dichlorobenzene	106-46-7	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.2-Dichlorobenzene	95-50-1	mg/kg	0.02				---	---	---	---	<0.02	---	<0.02	---	---	---	---	<0.02
1.2.4-Trichlorobenzene	120-82-1	mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
Sum of volatile chlorinated hydrocarbons		mg/kg	0.01				---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
Sum of other chlorinated hydrocarbons		mg/kg	0.01	-	10	50	---	---	---	---	<0.01	---	<0.01	---	---	---	---	<0.01
Total Xylenes	1330-20-7	mg/kg	0.5				---	---	---	---	<0.50	---	<0.50	---	---	---	---	<0.50

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	29/03/2011	29/03/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011	16/06/2011
						Sample Number:	**BH7-0.05**	**BH7-0.3**	**BH8-0.05**	**BH8-0.5**	**BH9-0.1**	**BH9-0.5**	**BH10-0.01**	**BH10-0.7**	**BH11-0.2**	**BH11-0.4**	**BH12-0.0**	**BH12-0.7**
						Material	Fill	Fill	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**												
EP075(SIM)A: Phenolic Compounds																		
Phenol	108-95-2	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	95-57-8	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	95-48-7	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	88-75-5	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	87-86-5	mg/kg	2				---	---	---	---	---	---	---	---	---	---	---	---
EP075A: Phenolic Compounds (Halogenated)																		
2-Chlorophenol	95-57-8	mg/kg	0.03				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
2.4-Dichlorophenol	120-83-2	mg/kg	0.03				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
2.6-Dichlorophenol	87-65-0	mg/kg	0.03				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.03				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.05				---	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.05				---	---	---	---	<0.05	---	<0.06	---	---	---	---	<0.05
2.3.5.6-Tetrachlorophenol	935-95-5	mg/kg	0.03				---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
2.3.4.5 & 2.3.4.6-Tetrachlorophe	4901-51-3/58	mg/kg	0.05				---	---	---	---	<0.05	---	<0.12	---	---	---	---	<0.05
Pentachlorophenol	87-86-5	mg/kg	0.2				---	---	---	---	<0.2	---	<0.2	---	---	---	---	<0.2
Sum of Phenols (halogenated)		mg/kg	0.03	**1**	**10**	**320**	---	---	---	---	<0.03	---	<0.06	---	---	---	---	<0.03
EP075A: Phenolic Compounds (Non-halogenated)																		
Phenol	108-95-2	mg/kg	1				---	---	---	---	<1	---	<1	---	---	---	---	<1
2-Methylphenol	95-48-7	mg/kg	1				---	---	---	---	<1	---	<1	---	---	---	---	<1
3- & 4-Methylphenol	1319-77-3	mg/kg	1				---	---	---	---	<1	---	<1	---	---	---	---	<1
2-Nitrophenol	88-75-5	mg/kg	1				---	---	---	---	<1	---	<1	---	---	---	---	<1
2.4-Dimethylphenol	105-67-9	mg/kg	1				---	---	---	---	<1	---	<1	---	---	---	---	<1
2.4-Dinitrophenol	51-28-5	mg/kg	5				---	---	---	---	<5	---	<5	---	---	---	---	<5
4-Nitrophenol	100-02-7	mg/kg	5				---	---	---	---	<5	---	<5	---	---	---	---	<5
2-Methyl-4.6-dinitrophenol	8071-51-0	mg/kg	5				---	---	---	---	<5	---	<5	---	---	---	---	<5
Dinoseb	88-85-7	mg/kg	5				---	---	---	---	<5	---	<5	---	---	---	---	<5
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	mg/kg	5				---	---	---	---	<5	---	<5	---	---	---	---	<5
Sum of Phenols (non-halogenated)		mg/kg	1	**60**	**560**	**2200**	---	---	---	---	<1	---	<1	---	---	---	---	<1

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011
						Sample Number:	**BH13-0.0**	**BH13-0.5**	**BH14-0.0**	**BH14-0.5**	**BH15-0.1**	**BH15-0.4**	**BH16-0.1**	**BH16-0.6**	**BH17-0.1**	**BH17-0.5**	**BH18-0.1**	**BH18-0.5**	**BH19-0.1**	**BH19-0.5**
						Material	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**														
EA055: Moisture Content																				
Moisture Content (dried @ 103°C)		%	1				11.5	19.9	17.6	13.8	6.3	16.5	6.1	16.8	6.5	17	5.2	10.9	7	17.6
EG005T: Total Metals by ICP-AES																				
Arsenic	7440-38-2	mg/kg	5	**20**	**500**	**2000**	8	10	9	10	<5	<5	<5	13	<5	6	<5	14	<5	9
Barium	7440-39-3	mg/kg	10				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Beryllium	7440-41-7	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium	7440-43-9	mg/kg	1	**3**	**100**	**400**	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	mg/kg	2				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cobalt	7440-48-4	mg/kg	2				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Copper	7440-50-8	mg/kg	5	**100**	**5000**	**20000**	148	10	57	<5	26	<5	29	<5	25	7	28	59	24	6
Lead	7439-92-1	mg/kg	5	**300**	**1500**	**6000**	1180	38	646	15	<5	15	7	11	<5	41	<5	552	12	10
Manganese	7439-96-5	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Molybdenum	7439-98-7	mg/kg	2	**40**	**1000**	**4000**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Nickel	7440-02-0	mg/kg	2	**60**	**3000**	**12000**	11	15	10	9	94	7	91	8	68	9	81	26	68	8
Vanadium	7440-62-2	mg/kg	5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Selenium	7782-49-2	mg/kg	5	**10**	**50**	**200**	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Silver	7440-22-4	mg/kg	2	**10**	**180**	**720**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Tin	7440-31-5	mg/kg	5	**50**	**500**	**-**	42	<5	26	<5	<5	<5	<5	<5	<5	<5	<5	11	<5	<5
Zinc	7440-66-6	mg/kg	5	**200**	**35000**	**140000**	840	1060	231	23	50	12	54	8	41	21	40	631	44	11
EG005C: Leachable Metals by ICPAES																				
ASLP Arsenic	7440-38-2	mg/L	0.1		**0.7**	**2.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Copper	7440-50-8	mg/L	0.1		**200**	**800**	0.1	---	---	---	---	---	---	---	---	---	---	---	---	---
ASLP Lead	7439-92-1	mg/L	0.1		**1**	**4**	0.6	---	0.2	---	---	---	---	---	---	---	---	0.3	---	---
ASLP Nickel	7440-02-0	mg/L	0.1		**2**	**8**	---	---	---	---	<0.1	---	<0.1	---	---	---	---	---	---	---
ASLP Zinc	7440-66-6	mg/L	0.1		**300**	**1200**	3.5	---	2.7	---	---	---	---	---	---	---	---	2.6	---	---
EG035T: Total Recoverable Mercury by FIMS																				
Mercury	7439-97-6	mg/kg	0.1	**1**	**75**	**300**	0.7	0.1	0.5	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.6	<0.1	0.1
EG035C: Leachable Mercury by FIMS																				
Mercury	7439-97-6	mg/L	0.001		**0.1**	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---
EG048: Hexavalent Chromium (Alkaline Digest)																				
Hexavalent Chromium	18540-29-9	mg/kg	0.5	**1**	**500**	**2000**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
EK026G: Total Cyanide By Discrete Analyser																				
Total Cyanide	57-12-5	mg/kg	1	**50**	**2500**	**10000**	2	---	---	---	---	---	<1	---	---	1	---	---	---	---
EK040T: Fluoride Total																				
Fluoride	16984-48-8	mg/kg	40	**450**	**10000**	**40000**	360	---	---	---	---	---	180	---	---	160	---	---	---	---
Total Polychlorinated biphenyls		mg/kg	0.1	**2**			<0.50	---	---	---	---	---	<0.10	---	---	<0.10	---	---	---	---

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

						Sample date:	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011
						Sample Number:	BH13-0.0	BH13-0.5	BH14-0.0	BH14-0.5	BH15-0.1	BH15-0.4	BH16-0.1	BH16-0.6	BH17-0.1	BH17-0.5	BH18-0.1	BH18-0.5	BH19-0.1	BH19-0.5		
						Material	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural		
Analyte grouping/Analyte	CAS Number	Units	LOR	EPA Fill upper limits	EPA Category C upper limits	EPA Category B upper limits																
EP068A: Organochlorine Pesticides (OC)																						
alpha-BHC	319-84-6	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Hexachlorobenzene (HCB)	118-74-1	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
beta-BHC	319-85-7	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
gamma-BHC	58-89-9	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
delta-BHC	319-86-8	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Heptachlor	76-44-8	mg/kg	0.05		1.2	4.8	<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Aldrin	309-00-2	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Heptachlor epoxide	1024-57-3	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
trans-Chlordane	5103-74-2	mg/kg	0.05				0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
alpha-Endosulfan	959-98-8	mg/kg	0.05				0.08	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
cis-Chlordane	5103-71-9	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Dieldrin	60-57-1	mg/kg	0.05				0.46	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---		
4.4`-DDE	72-55-9	mg/kg	0.05				0.49	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Endrin	72-20-8	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
beta-Endosulfan	33213-65-9	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
4.4`-DDD	72-54-8	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Endrin aldehyde	7421-93-4	mg/kg	0.05				<0.06	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---		
Endosulfan sulfate	1031-07-8	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
4.4`-DDT	50-29-3	mg/kg	0.2				0.22	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---		
Endrin ketone	53494-70-5	mg/kg	0.05				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Methoxychlor	72-43-5	mg/kg	0.2				1.31	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Aldrin + Dieldrin		mg/kg		-	1.2	4.8	0.49	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Chlordane		mg/kg		-	4	16	0.68	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---		
DDT+DDE+DDD		mg/kg			50	50	0.14	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
Sum of other organochlorine pesticides		mg/kg	0.03	1			0.14	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																						
Naphthalene	91-20-3	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Acenaphthylene	208-96-8	mg/kg	0.5				<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Acenaphthene	83-32-9	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Fluorene	86-73-7	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Phenanthrene	85-01-8	mg/kg	0.5				1.7	<0.5	6.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5		
Anthracene	120-12-7	mg/kg	0.5				<0.5	<0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Fluoranthene	206-44-0	mg/kg	0.5				3.7	<0.5	11.8	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	3	<0.5	<0.5		
Pyrene	129-00-0	mg/kg	0.5				3.6	<0.5	12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.1	<0.5	<0.5		
Benz(a)anthracene	56-55-3	mg/kg	0.5				1.9	<0.5	6.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<0.5		
Chrysene	218-01-9	mg/kg	0.5				1.8	<0.5	6.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5		
Benzo(b)fluoranthene	205-99-2	mg/kg	0.5				4	<0.5	6.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5		
Benzo(k)fluoranthene	207-08-9	mg/kg	0.5				2.5	<0.5	5.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5		
Benzo(a)pyrene	50-32-8	mg/kg	0.5	1	5	16	1.4	<0.5	7.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5		
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.5				<0.5	<0.5	4.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5		
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.5				1.6	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Benzo(g.h.i)perylene	191-24-2	mg/kg	0.5				22.2	<0.5	5.2	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	<0.5		
Total PAH				20	100	400	<44.4	<0.5	<76.1	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<18.6	<0.5	<0.5		

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

denotes exceedence of EPA Fill Material Upper Limit
denotes exceedence of EPA Category C Upper Limit
denotes exceedence of EPA Category B Upper Limit

					Sample date:	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011
					Sample Number:	**BH13-0.0**	**BH13-0.5**	**BH14-0.0**	**BH14-0.5**	**BH15-0.1**	**BH15-0.4**	**BH16-0.1**	**BH16-0.6**	**BH17-0.1**	**BH17-0.5**	**BH18-0.1**	**BH18-0.5**	**BH19-0.1**	**BH19-0.5**
					Material	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**														
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons																				
ASLP Benzo(a)pyrene	50-32-8	µg/L	0.5		0.001	0.004	<0.5	---	<0.5	---	---	---	---	---	---	---	---	<0.5	---	---
EP080: BTEX																				
Benzene	71-43-2	mg/kg	0.2	1	4	16	<0.2	---	---	---	---	---	<0.2	---	---	<0.2	---	---	---	---
Toluene	108-88-3	mg/kg	0.5				<0.5	---	---	---	---	---	<0.5	---	---	<0.5	---	---	---	---
Ethylbenzene	100-41-4	mg/kg	0.5				<0.5	---	---	---	---	---	<0.5	---	---	<0.5	---	---	---	---
meta- & para-Xylene	8-38-3 106-4	mg/kg	0.5				<0.5	---	---	---	---	---	<0.5	---	---	<0.5	---	---	---	---
ortho-Xylene	95-47-6	mg/kg	0.5				<0.5	---	---	---	---	---	<0.5	---	---	<0.5	---	---	---	---
Total MAH				7	70	400	<0.5	---	---	---	---	---	<0.5	---	---	<0.5	---	---	---	---
EP080/071: Total Petroleum Hydrocarbons																				
C6 - C9 Fraction		mg/kg	10	100	650	2600	<10	---	---	---	---	---	<10	---	---	---	---	---	---	---
C10 - C14 Fraction		mg/kg	50				<50	---	---	---	---	---	<50	---	---	---	---	---	---	---
C15 - C28 Fraction		mg/kg	100				100	---	---	---	---	---	<100	---	---	---	---	---	---	---
C29 - C36 Fraction		mg/kg	100				120	---	---	---	---	---	<100	---	---	---	---	---	---	---
C10 - C36 Fraction (sum)		mg/kg	50	1000	10000	40000	220	---	---	---	---	---	<50	---	---	---	---	---	---	---
EP074I: Volatile Halogenated Compounds																				
Vinyl chloride	75-01-4	mg/kg	0.02	-	1.2	4.8	<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.1-Dichloroethene	75-35-4	mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
Methylene chloride	75-09-2	mg/kg	0.4				<0.4	---	---	---	---	---	<0.4	---	---	<0.4	---	---	---	---
trans-1.2-Dichloroethene	156-60-5	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
cis-1.2-Dichloroethene	156-59-2	mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
Chloroform	67-66-3	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.1.1-Trichloroethane	71-55-6	mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
Carbon Tetrachloride	56-23-5	mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
1.2-Dichloroethane	107-06-2	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
Trichloroethene	79-01-6	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.1.2-Trichloroethane	79-00-5	mg/kg	0.04				<0.04	---	---	---	---	---	<0.04	---	---	<0.04	---	---	---	---
Tetrachloroethene	127-18-4	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.1.1.2-Tetrachloroethane	630-20-6	mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
1.1.2.2-Tetrachloroethane	79-34-5	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
Hexachlorobutadiene	87-68-3	mg/kg	0.02	-	2.8	11	<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
Chlorobenzene	108-90-7	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.4-Dichlorobenzene	106-46-7	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.2-Dichlorobenzene	95-50-1	mg/kg	0.02				<0.02	---	---	---	---	---	<0.02	---	---	<0.02	---	---	---	---
1.2.4-Trichlorobenzene	120-82-1	mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
Sum of volatile chlorinated hydrocarbons		mg/kg	0.01				<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
Sum of other chlorinated hydrocarbons		mg/kg	0.01	-	10	50	<0.01	---	---	---	---	---	<0.01	---	---	<0.01	---	---	---	---
Total Xylenes	1330-20-7	mg/kg	0.5				<0.50	---	---	---	---	---	<0.50	---	---	<0.50	---	---	---	---

Table 2
Chemical Testing Results
Soil Samples
EPA Offsite Disposal

Client - Matrix: SOIL

Legend	
(yellow)	denotes exceedence of EPA Fill Material Upper Limit
(grey)	denotes exceedence of EPA Category C Upper Limit
(dark grey)	denotes exceedence of EPA Category B Upper Limit

						Sample date:	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011	20/06/2011
						Sample Number:	**BH13-0.0**	**BH13-0.5**	**BH14-0.0**	**BH14-0.5**	**BH15-0.1**	**BH15-0.4**	**BH16-0.1**	**BH16-0.6**	**BH17-0.1**	**BH17-0.5**	**BH18-0.1**	**BH18-0.5**	**BH19-0.1**	**BH19-0.5**
						Material	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural	Fill	Natural
Analyte grouping/Analyte	CAS Number	Units	LOR	**EPA Fill upper limits**	**EPA Category C upper limits**	**EPA Category B upper limits**														
EP075(SIM)A: Phenolic Compounds																				
Phenol	108-95-2	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	95-57-8	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylphenol	95-48-7	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Nitrophenol	88-75-5	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.5				---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	87-86-5	mg/kg	2				---	---	---	---	---	---	---	---	---	---	---	---	---	---
EP075A: Phenolic Compounds (Halogenated)																				
2-Chlorophenol	95-57-8	mg/kg	0.03				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---
2.4-Dichlorophenol	120-83-2	mg/kg	0.03				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---
2.6-Dichlorophenol	87-65-0	mg/kg	0.03				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---
4-Chloro-3-Methylphenol	59-50-7	mg/kg	0.03				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---
2.4.5-Trichlorophenol	95-95-4	mg/kg	0.05				<0.06	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---
2.4.6-Trichlorophenol	88-06-2	mg/kg	0.05				<0.06	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---
2.3.5.6-Tetrachlorophenol	935-95-5	mg/kg	0.03				<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---
2.3.4.5 & 2.3.4.6-Tetrachlorophe	4901-51-3/58	mg/kg	0.05				<0.12	---	---	---	---	---	<0.05	---	---	<0.05	---	---	---	---
Pentachlorophenol	87-86-5	mg/kg	0.2				<0.2	---	---	---	---	---	<0.2	---	---	<0.2	---	---	---	---
Sum of Phenols (halogenated)		mg/kg	0.03	1	10	320	<0.06	---	---	---	---	---	<0.03	---	---	<0.03	---	---	---	---
EP075A: Phenolic Compounds (Non-halogenated)																				
Phenol	108-95-2	mg/kg	1				<1	---	---	---	---	---	<1	---	---	<1	---	---	---	---
2-Methylphenol	95-48-7	mg/kg	1				<1	---	---	---	---	---	<1	---	---	<1	---	---	---	---
3- & 4-Methylphenol	1319-77-3	mg/kg	1				<1	---	---	---	---	---	<1	---	---	<1	---	---	---	---
2-Nitrophenol	88-75-5	mg/kg	1				<1	---	---	---	---	---	<1	---	---	<1	---	---	---	---
2.4-Dimethylphenol	105-67-9	mg/kg	1				<1	---	---	---	---	---	<1	---	---	<1	---	---	---	---
2.4-Dinitrophenol	51-28-5	mg/kg	5				<5	---	---	---	---	---	<5	---	---	<5	---	---	---	---
4-Nitrophenol	100-02-7	mg/kg	5				<5	---	---	---	---	---	<5	---	---	<5	---	---	---	---
2-Methyl-4.6-dinitrophenol	8071-51-0	mg/kg	5				<5	---	---	---	---	---	<5	---	---	<5	---	---	---	---
Dinoseb	88-85-7	mg/kg	5				<5	---	---	---	---	---	<5	---	---	<5	---	---	---	---
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	mg/kg	5				<5	---	---	---	---	---	<5	---	---	<5	---	---	---	---
Sum of Phenols (non-halogenated)		mg/kg	1	60	560	2200	<1	---	---	---	---	---	<1	---	---	<1	---	---	---	---

Table 3
Quality Assurance/ Quality Control

denotes exceedence 50% Relative Percenttage Difference

		Sample date:	29/03/2011	29/03/2011		16/06/2011	16/06/2011	
		Sample Number:	**BH1_0.0**	**DUP 1**	**RPD**	**BH12_0.0**	**DUP2**	**RPD**
Analyte grouping/Analyte	CAS Number	Units						
EA055: Moisture Content								
Moisture Content		%	9.7	11	-13	14	18.9	30
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	mg/kg	6	6	0	10	9	11
Barium	7440-39-3	mg/kg	90	60	40	-	-	-
Beryllium	7440-41-7	mg/kg	<1	<1	-	-	-	-
Cadmium	7440-43-9	mg/kg	<1	<1	-	2	<1	-
Chromium	7440-47-3	mg/kg	13	11	17	-	-	-
Cobalt	7440-48-4	mg/kg	3	3	-	-	-	-
Copper	7440-50-8	mg/kg	68	44	43	313	232	30
Lead	7439-92-1	mg/kg	461	380	19	1360	1070	24
Manganese	7439-96-5	mg/kg	56	54	4	-	-	-
Molydenum	7439-96-5	mg/kg				<2	<2	
Nickel	7440-02-0	mg/kg	7	6	15	15	13	14
Vanadium	7440-62-2	mg/kg	28	30	7	-	-	-
Selenium	7782-49-2	mg/kg	-	-	-	<5	<5	
Silver	7440-22-4	mg/kg	-	-	-	<2	<2	
Tin	7440-31-5	mg/kg	-	-	-	40	52	
Zinc	7440-66-6	mg/kg	473	320	39	1350	786	**53**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	mg/kg	0.4	0.2	-	1.1	1.1	0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	mg/kg	<0.5	<0.5	-	0.7	<0.5	-
Acenaphthylene	208-96-8	mg/kg	<0.5	<0.5	-	1.3	<0.5	-
Acenaphthene	83-32-9	mg/kg	<0.5	<0.5	-	<0.5	<0.5	-
Fluorene	86-73-7	mg/kg	<0.5	<0.5	-	0.8	<0.5	-
Phenanthrene	85-01-8	mg/kg	1.2	0.6	**67**	6.6	2.2	**100**
Anthracene	120-12-7	mg/kg	<0.5	<0.5	-	2.2	0.8	-
Fluoranthene	206-44-0	mg/kg	2.4	3.6	40	8.3	5	50
Pyrene	129-00-0	mg/kg	2.5	4.5	**57**	7.9	5	45
Benz(a)anthracene	56-55-3	mg/kg	1.1	2.7	**84**	4.2	2.8	40
Chrysene	218-01-9	mg/kg	1.1	2.4	**74**	4	2.9	32
Benzo(b)fluoranthene	205-99-2	mg/kg	1.6	6.4	**120**	3.7	2.7	31
Benzo(k)fluoranthene	207-08-9	mg/kg	0.6	2	**108**	3.8	2.7	34
Benzo(a)pyrene	50-32-8	mg/kg	1.3	5	**117**	4.5	3.3	31
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	0.8	3.1	**118**	2.5	2.1	17
Dibenz(a.h)anthracene	53-70-3	mg/kg	<0.5	0.7	-	0.7	0.6	-
Benzo(g.h.i)perylene	191-24-2	mg/kg	1	3.6	**113**	2.9	2.6	11
EP080: BTEX								
Benzene	71-43-2	mg/kg	<0.2	<0.2	-	-	-	-
Toluene	108-88-3	mg/kg	<0.5	<0.5	-	-	-	-
Ethylbenzene	100-41-4	mg/kg	<0.5	<0.5	-	-	-	-
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	<0.5	<0.5	-	-	-	-
ortho-Xylene	95-47-6	mg/kg	<0.5	<0.5	-	-	-	-
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		mg/kg	<10	<10	-	-	-	-
C10 - C14 Fraction		mg/kg	<50	<50	-	-	-	-
C15 - C28 Fraction		mg/kg	<100	440	-	-	-	-
C29 - C36 Fraction		mg/kg	140	740	**136**	-	-	-
C10 - C36 Fraction (sum)		mg/kg	140	1180	**158**	-	-	-

Table 3
Quality Assurance/ Quality Control

denotes exceedence 50% Relative Percent

		Sample date:	20/06/2011	20/06/2011		29/03/2011	29/03/2011	
		Sample Number:	**BH15_0.1**	**DUP3**	**RPD**	**BH1_0.0**	**SPLIT 1**	**RPD**
Analyte grouping/Analyte	CAS Number	Units						
EA055: Moisture Content								
Moisture Content		%	16.5	6.6	86	9.7	15	43
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	mg/kg	<5	<5	-	6	16	**91**
Barium	7440-39-3	mg/kg	-	-	-	90	64	34
Beryllium	7440-41-7	mg/kg	-	-	-	<1	<2	-
Cadmium	7440-43-9	mg/kg	<1	<1	-	<1	<0.5	-
Chromium	7440-47-3	mg/kg	-	-	-	13	18	32
Cobalt	7440-48-4	mg/kg	-	-	-	3	<5	-
Copper	7440-50-8	mg/kg	<5	25	-	68	46	39
Lead	7439-92-1	mg/kg	15	22	38	461	600	26
Manganese	7439-96-5	mg/kg	-	-	-	56	57	2
Molydenum	7439-96-5	mg/kg	<2	<2		-	-	-
Nickel	7440-02-0	mg/kg	7	68	**163**	7	9.7	32
Vanadium	7440-62-2	mg/kg	-	-	-	28	67	**82**
Selenium	7782-49-2	mg/kg	<5	<5		-	-	-
Silver	7440-22-4	mg/kg	<2	<2		-	-	-
Tin	7440-31-5	mg/kg	<5	<5		-	-	-
Zinc	7440-66-6	mg/kg	12	58	**131**	473	440	7
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	mg/kg	0.1	<0.1	-	0.4	4.9	**170**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
Acenaphthylene	208-96-8	mg/kg	<0.5	<0.5	-	<0.5	0.1	-
Acenaphthene	83-32-9	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
Fluorene	86-73-7	mg/kg	<0.5	<0.5	-	<0.5	<0.1	-
Phenanthrene	85-01-8	mg/kg	<0.5	<0.5	-	1.2	0.9	29
Anthracene	120-12-7	mg/kg	<0.5	<0.5	-	<0.5	0.2	-
Fluoranthene	206-44-0	mg/kg	<0.5	<0.5	-	2.4	1.5	46
Pyrene	129-00-0	mg/kg	<0.5	<0.5	-	2.5	1.4	**56**
Benz(a)anthracene	56-55-3	mg/kg	<0.5	<0.5	-	1.1	0.8	32
Chrysene	218-01-9	mg/kg	<0.5	<0.5	-	1.1	0.7	44
Benzo(b)fluoranthene	205-99-2	mg/kg	<0.5	<0.5	-	1.6	0.7	**78**
Benzo(k)fluoranthene	207-08-9	mg/kg	<0.5	<0.5	-	0.6	0.5	18
Benzo(a)pyrene	50-32-8	mg/kg	<0.5	<0.5	-	1.3	0.8	48
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	<0.5	<0.5	-	0.8	0.5	46
Dibenz(a.h)anthracene	53-70-3	mg/kg	<0.5	<0.5	-	<0.5	0.2	-
Benzo(g.h.i)perylene	191-24-2	mg/kg	<0.5	<0.5	-	1	0.7	35
EP080: BTEX								
Benzene	71-43-2	mg/kg	-	-	-	<0.2	<0.05	-
Toluene	108-88-3	mg/kg	-	-	-	<0.5	<0.05	-
Ethylbenzene	100-41-4	mg/kg	-	-	-	<0.5	<0.05	-
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	-	-	-	<0.5	<0.1	-
ortho-Xylene	95-47-6	mg/kg	-	-	-	<0.5	<0.05	-
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		mg/kg	-	-	-	<10	<20	-
C10 - C14 Fraction		mg/kg	-	-	-	<50	<50	-
C15 - C28 Fraction		mg/kg	-	-	-	<100	<100	-
C29 - C36 Fraction		mg/kg	-	-	-	140	<100	-
C10 - C36 Fraction (sum)		mg/kg	-	-	-	140	<100	-

denotes exceedence 50% Relative Percent

		Sample date:	16/06/2011	16/06/2011		20/06/2011	20/06/2011	
		Sample Number:	**BH12_0.0**	**SPLIT2**	**RPD**	**BH15_0.1**	**SPLIT3**	**RPD**
Analyte grouping/Analyte	CAS Number	Units						
EA055: Moisture Content								
Moisture Content		%	14	19.5	33	6.3	5.4	15
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	mg/kg	10	5	**67**	<5	<4	-
Barium	7440-39-3	mg/kg	-	-	-	-	-	-
Beryllium	7440-41-7	mg/kg	-	-	-	-	-	-
Cadmium	7440-43-9	mg/kg	2	<1	-	<1	<1	-
Chromium	7440-47-3	mg/kg	-	-	-	-	-	-
Cobalt	7440-48-4	mg/kg	-	-	-	-	-	-
Copper	7440-50-8	mg/kg	313	705	**77**	26	28	7
Lead	7439-92-1	mg/kg	1360	1210	12	<5	53	-
Manganese	7439-96-5	mg/kg	-	-	-	-	-	-
Molydenum	7439-96-5	mg/kg	<2	<25	-	-	-	-
Nickel	7440-02-0	mg/kg	15	26	**54**	94	88	7
Vanadium	7440-62-2	mg/kg	-	-	-	-	-	-
Selenium	7782-49-2	mg/kg	<5	<2		<5	<2	
Silver	7440-22-4	mg/kg	<2	<1		<2	<1	
Tin	7440-31-5	mg/kg	40	50		<5	<50	
Zinc	7440-66-6	mg/kg	1350	1170	14	50	99	**200**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	mg/kg	1.1	0.8	32	<0.1	4.9	-
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	mg/kg	0.7	0.1	**150**	<0.5	<0.1	-
Acenaphthylene	208-96-8	mg/kg	1.3	0.3	**125**	<0.5	<0.1	-
Acenaphthene	83-32-9	mg/kg	<0.5	<0.1	-	<0.5	<0.1	-
Fluorene	86-73-7	mg/kg	0.8	<0.1	-	<0.5	<0.1	-
Phenanthrene	85-01-8	mg/kg	6.6	2.4	**93**	<0.5	<0.1	-
Anthracene	120-12-7	mg/kg	2.2	0.4	**138**	<0.5	<0.1	-
Fluoranthene	206-44-0	mg/kg	8.3	6.4	26	<0.5	<0.1	-
Pyrene	129-00-0	mg/kg	7.9	6.3	**23**	<0.5	<0.1	-
Benz(a)anthracene	56-55-3	mg/kg	4.2	3.2	27	<0.5	<0.1	-
Chrysene	218-01-9	mg/kg	4	3.2	22	<0.5	<0.1	-
Benzo(b)fluoranthene	205-99-2	mg/kg	3.7	-	**-**	<0.5	-	-
Benzo(k)fluoranthene	207-08-9	mg/kg	3.8	-	-	<0.5	-	-
Benzo(a)pyrene	50-32-8	mg/kg	4.5	4.1	9	<0.5	<0.05	-
Indeno(1.2.3.cd)pyrene	193-39-5	mg/kg	2.5	2.2	13	<0.5	<0.1	-
Dibenz(a.h)anthracene	53-70-3	mg/kg	0.7	0.4	**55**	<0.5	<0.1	-
Benzo(g.h.i)perylene	191-24-2	mg/kg	2.9	2	37	<0.5	<0.1	-
EP080: BTEX								
Benzene	71-43-2	mg/kg	-	-	-	-	-	-
Toluene	108-88-3	mg/kg	-	-	-	-	-	-
Ethylbenzene	100-41-4	mg/kg	-	-	-	-	-	-
meta- & para-Xylene	108-38-3 106-42-3	mg/kg	-	-	-	-	-	-
ortho-Xylene	95-47-6	mg/kg	-	-	-	-	-	-
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		mg/kg	-	-	-	-	-	-
C10 - C14 Fraction		mg/kg	-	-	-	-	-	-
C15 - C28 Fraction		mg/kg	-	-	-	-	-	-
C29 - C36 Fraction		mg/kg	-	-	-	-	-	-
C10 - C36 Fraction (sum)		mg/kg	-	-	-	-	-	-

Table 4
Chemical Testing Results
Rinsate Sample

Client - Matrix: WATER
Project name/number: SOIL ASSESSMENT

	Sample date:			29/03/2011	20/06/2011
	Sample Number:			**RIN 1**	**RIN 2006**

Analyte grouping/Analyte	CAS Number	Units	LOR		
EG020T: Total Metals by ICP-MS					
Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001
Beryllium	7440-41-7	mg/L	0.001	<0.001	-
Barium	7440-39-3	mg/L	0.001	<0.001	-
Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001
Chromium	7440-47-3	mg/L	0.001	<0.001	-
Cobalt	7440-48-4	mg/L	0.001	<0.001	-
Copper	7440-50-8	mg/L	0.001	<0.001	<0.001
Lead	7439-92-1	mg/L	0.001	<0.001	<0.001
Manganese	7439-96-5	mg/L	0.001	<0.001	-
Molybdenum	7439-98-7	mg/L	0.001	-	<0.001
Nickel	7440-02-0	mg/L	0.001	<0.001	<0.001
Vanadium	7440-62-2	mg/L	0.01	<0.01	-
Selenium	7782-49-2	mg/L	0.01	-	<0.01
Silver	7440-22-4	mg/L	0.001	-	<0.001
Zinc	7440-66-6	mg/L	0.005	<0.005	<0.005
EG035T: Total Recoverable Mercury by FIMS					
Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons					
Naphthalene	91-20-3	µg/L	1	<1.0	<1.0
Acenaphthylene	208-96-8	µg/L	1	<1.0	<1.0
Acenaphthene	83-32-9	µg/L	1	<1.0	<1.0
Fluorene	86-73-7	µg/L	1	<1.0	<1.0
Phenanthrene	85-01-8	µg/L	1	<1.0	<1.0
Anthracene	120-12-7	µg/L	1	<1.0	<1.0
Fluoranthene	206-44-0	µg/L	1	<1.0	<1.0
Pyrene	129-00-0	µg/L	1	<1.0	<1.0
Benz(a)anthracene	56-55-3	µg/L	1	<1.0	<1.0
Chrysene	218-01-9	µg/L	1	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	µg/L	1	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	µg/L	1	<1.0	<1.0
Benzo(a)pyrene	50-32-8	µg/L	0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	µg/L	1	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	µg/L	1	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	µg/L	1	<1.0	<1.0
EP080: BTEX					
Benzene	71-43-2	µg/L	1	<1	-
Toluene	108-88-3	µg/L	2	<2	-
Ethylbenzene	100-41-4	µg/L	2	<2	-
meta- & para-Xylene	08-38-3 106-42	µg/L	2	<2	-
ortho-Xylene	95-47-6	µg/L	2	<2	-
EP080/071: Total Petroleum Hydrocarbons					
C6 - C9 Fraction		µg/L	20	<20	-
C10 - C14 Fraction		µg/L	50	<50	-
C15 - C28 Fraction		µg/L	100	<100	-
C29 - C36 Fraction		µg/L	50	<50	-
C10 - C36 Fraction (sum)		µg/L	50	<50	-

Laboratory Certificates of Analysis

CITY OF **PORT PHILLIP**

Chain of Custody

File No:	02503
Page:	1 of 1

Address:	46-58 MARLBOROUGH ST, BALACLAVA	Sampled by:	DP
Project:	DUE DILIGENCE INVESTIGATION	Date sampled:	29-3-11

	Sample Number	Sample Type	Material Description	Testing Required: NEPM SCREEN B-13/1	13 METALS S-3	TPH/BTEX/ PAH S-7	Date	AM				
1	BH1-0.0	S	SILT	✓			29/3					
2	BH1-0.4	S	CLAY		✓	✓						
3	BH2-0.1	S	SILT		✓	✓						
4	BH2-0.4	S	CLAY	✓								
5	BH3-0.05	S	SILT		✓	✓						
6	BH3-0.45	S	SAND		✓	✓						
7	BH3-0.6	S	CLAY									
8	BH4-0.1	S	SILT		✓	✓						
9	BH4-0.3	S	SAND									
10	BH4-0.4	S	CLAY	✓								
11	BH5-0.1	S	SILT	✓								
12	BH5-0.4	S	SAND									
13	BH5-0.65	S	CLAY		✓	✓						
14	BH6-0.05	S	SAND		✓	✓						
15	BH6-0.5	S	SAND	✓								
16	BH7-0.05	S	SILT		✓	✓						
17	BH7-0.3	S	SILT		✓	✓						
18	DUP 1	S	SILT		✓	✓						
	SPLIT 1 *	S	SILT		✓	✓						
19	RIN 1	W	RINSATE		✓	✓						

Environmental Division
Melbourne
Work Order
EM1103251

Telephone : +61-3-8549 9600

Turnaround: STANDARD (5 DAYS)

NOTES
Please email reports to DARREN TENDERGAST : dtendergast@portphillip.vic.gov.au
0466 752892
* Please forward SPLIT 1 to MGT-Labwork for analysis

CHAIN OF CUSTODY

From	Organisation	Received by	Company	Date	Time
D. Tendergast	CoPP	RAnna	AU	30/3	12-30

CERTIFICATE OF ANALYSIS

Work Order	: **EM1103251**	Page	: 1 of 20
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-MAR-2011
Sampler	: DP	Issue Date	: 07-APR-2011
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
		No. of samples received	: 19
Quote number	: ME/468/10	No. of samples analysed	: 16

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

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

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.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Senior Inorganic Instrument Chemist	Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Nikki Stepniewski	Non-metallic Supervisor	Melbourne Inorganics

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.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG048: EM1103251 #4 matrix spike failed for Total Hexavalent Chromium by Alkaline Digestion due to possible sample matrix interference. This has been confirmed by re-digestion and re-analysis.**
- **EP066/068: EM1103251-001) 15 Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
				EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**17.8**	**18.6**	**14.7**	**24.6**	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**5**	**13**	**10**	<5	----
Barium	7440-39-3	10	mg/kg	**140**	**10**	<10	**20**	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	**16**	**28**	**22**	**24**	----
Cobalt	7440-48-4	2	mg/kg	**5**	**4**	**3**	**2**	----
Copper	7440-50-8	5	mg/kg	**15**	**8**	<5	<5	----
Lead	7439-92-1	5	mg/kg	**28**	**20**	**16**	**11**	----
Manganese	7439-96-5	5	mg/kg	**29**	**16**	**16**	**18**	----
Nickel	7440-02-0	2	mg/kg	**8**	**8**	**6**	**7**	----
Vanadium	7440-62-2	5	mg/kg	**38**	**84**	**63**	**38**	----
Zinc	7440-66-6	5	mg/kg	**66**	**12**	**40**	**17**	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	<0.5	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
				EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	<0.2	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	<1.0	<1.0	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	<0.5	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	----	<2.0	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	<0.5	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
				EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**55.4**	**61.8**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	**42.8**	**48.0**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	**53.6**	**59.8**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**83.6**	**81.4**	**96.0**	**94.5**	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**93.0**	**92.7**	**96.0**	**94.5**	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**93.0**	**91.2**	**129**	**100**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**96.9**	**94.9**	**96.4**	**96.4**	----
Anthracene-d10	1719-06-8	0.1	%	**104**	**110**	**93.1**	**93.0**	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID	BH1-0.4	BH2-0.4	BH4-0.4	BH5-0.65	----
				Client sampling date / time	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----
					EM1103251-002	EM1103251-004	EM1103251-010	EM1103251-013	----
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		**112**	**110**	**103**	**104**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**98.8**	**111**	**114**	**76.1**	----
Toluene-D8	2037-26-5	0.1	%		**85.2**	**94.4**	**96.8**	**90.3**	----
4-Bromofluorobenzene	460-00-4	0.1	%		**92.9**	**99.8**	**98.1**	**97.6**	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-006	EM1103251-014	EM1103251-015	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**5.4**	**7.6**	**7.1**	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**18**	**10**	----	----
Barium	7440-39-3	10	mg/kg	<10	**220**	**270**	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	<2	**13**	**14**	----	----
Cobalt	7440-48-4	2	mg/kg	<2	**7**	**6**	----	----
Copper	7440-50-8	5	mg/kg	<5	**59**	**41**	----	----
Lead	7439-92-1	5	mg/kg	<5	**810**	**1120**	----	----
Manganese	7439-96-5	5	mg/kg	<5	**190**	**129**	----	----
Nickel	7440-02-0	2	mg/kg	<2	**24**	**21**	----	----
Vanadium	7440-62-2	5	mg/kg	**12**	**18**	**26**	----	----
Zinc	7440-66-6	5	mg/kg	<5	**661**	**607**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.7**	**0.4**	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	<2.50	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<1.25	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<1.25	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	<1.25	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<1.25	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	<1.25	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	<1.25	----	----
Aldrin	309-00-2	0.05	mg/kg	----	----	<1.25	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<1.25	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<1.25	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<1.25	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<1.25	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	<1.25	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<1.25	----	----
Endrin	72-20-8	0.05	mg/kg	----	----	<1.25	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<1.25	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<1.25	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-006	EM1103251-014	EM1103251-015	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<1.25	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<1.25	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	<5.0	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<1.25	----	----
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<5.0	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	----	<1.0	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2.0	mg/kg	----	----	<2.0	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	**0.5**	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	**1.3**	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	**0.5**	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	**1.2**	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	**3.7**	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	**2.7**	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	**4.0**	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	**2.2**	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	**3.1**	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	**1.5**	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	**2.1**	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	**2.2**	----	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-006	EM1103251-014	EM1103251-015	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	----	----	**1.5**	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	----	**1.5**	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	**2.2**	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	**2.9**	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	**1.6**	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	**2.1**	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	**1.8**	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	**0.6**	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	**1.2**	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	**2.2**	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	**1.5**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	**200**	**110**	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	**230**	**160**	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	**430**	**270**	----	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**Not Determined**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	**Not Determined**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	**Not Determined**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**96.1**	**93.1**	**98.0**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**97.1**	**95.7**	**97.6**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**100**	**109**	**113**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**97.6**	**93.6**	**97.1**	----	----
Anthracene-d10	1719-06-8	0.1	%	**96.9**	**93.3**	**97.8**	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID	BH3-0.45	BH6-0.05	BH6-0.5	----	----
				Client sampling date / time	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
					EM1103251-006	EM1103251-014	EM1103251-015	----	----
EP075(SIM)T: PAH Surrogates - Continued									
4-Terphenyl-d14	1718-51-0	0.1	%		**106**	**100**	**104**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**116**	**87.5**	**81.7**	----	----
Toluene-D8	2037-26-5	0.1	%		**98.1**	**100**	**102**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**102**	**101**	**99.7**	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**9.7**	**5.9**	**9.7**	**9.3**	**4.0**
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	<5	**6**	**6**	<5
Barium	7440-39-3	10	mg/kg	**90**	**70**	**110**	**90**	**40**
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**13**	**5**	**6**	**10**	**4**
Cobalt	7440-48-4	2	mg/kg	**3**	**2**	**2**	**2**	<2
Copper	7440-50-8	5	mg/kg	**68**	**68**	**28**	**50**	**10**
Lead	7439-92-1	5	mg/kg	**461**	**405**	**770**	**516**	**133**
Manganese	7439-96-5	5	mg/kg	**56**	**70**	**97**	**91**	**112**
Nickel	7440-02-0	2	mg/kg	**7**	**7**	**5**	**8**	**3**
Vanadium	7440-62-2	5	mg/kg	**28**	**12**	**14**	**18**	**16**
Zinc	7440-66-6	5	mg/kg	**473**	**344**	**323**	**353**	**1500**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.4**	**0.8**	**0.4**	**0.7**	**0.2**
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	----	----	----	<0.5
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.15	----	----	----	<0.10
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EP068A: Organochlorine Pesticides (OC) - Continued								
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	<0.2
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	----	----	----	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	----	----	----	<0.5
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	----	----	----	<1.0
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	----	----	----	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	----	----	----	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	----	----	----	<0.5
Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	----	----	----	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	**0.7**	**0.6**	**1.1**	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	**1.2**	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	**2.2**	**1.2**	**5.0**	----
Fluoranthene	206-44-0	0.5	mg/kg	**2.4**	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	**2.3**	**1.2**	**4.9**	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	**1.1**	**0.6**	**2.7**	----
Pyrene	129-00-0	0.5	mg/kg	**2.5**	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	**1.1**	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	**1.1**	**0.6**	**2.7**	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	**1.9**	**0.6**	**2.5**	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	0.5	mg/kg	**1.1**	----	----	----	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	**1.6**	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	**0.6**	**0.6**	**2.7**	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	**1.5**	**0.7**	**3.1**	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**0.6**	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**1.3**	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	**1.0**	<0.5	**2.0**	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	**0.6**	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**0.8**	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	**1.2**	**0.5**	**2.3**	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**1.0**	----	----	----	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	**140**	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**140**	<50	<50	<50	<50
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**79.7**	----	----	----	**70.6**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**60.5**	----	----	----	**54.9**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**84.2**	----	----	----	**66.6**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**81.3**	**83.2**	**97.1**	**96.7**	**94.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.4**	**93.0**	**97.9**	**96.0**	**95.5**
2.4.6-Tribromophenol	118-79-6	0.1	%	**94.5**	**93.0**	**104**	**105**	**103**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**97.9**	**97.0**	**99.1**	**94.8**	**98.1**
Anthracene-d10	1719-06-8	0.1	%	**87.4**	**87.3**	**96.2**	**94.2**	**92.1**

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH1-0.0	BH2-0.1	BH3-0.05	BH4-0.1	BH5-0.1
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00
				EM1103251-001	EM1103251-003	EM1103251-005	EM1103251-008	EM1103251-011
EP075(SIM)T: PAH Surrogates - Continued								
4-Terphenyl-d14	1718-51-0	0.1	%	**102**	**101**	**105**	**102**	**104**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**109**	**113**	**118**	**120**	**84.8**
Toluene-D8	2037-26-5	0.1	%	**103**	**93.7**	**103**	**98.9**	**107**
4-Bromofluorobenzene	460-00-4	0.1	%	**108**	**99.4**	**103**	**98.3**	**109**

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH7-0.05	BH7-0.3	DUP 1	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-016	EM1103251-017	EM1103251-018	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**4.8**	**5.8**	**11.0**	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**7**	**9**	**6**	----	----
Barium	7440-39-3	10	mg/kg	**50**	**60**	**60**	----	----
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**6**	**9**	**11**	----	----
Cobalt	7440-48-4	2	mg/kg	**5**	**9**	**3**	----	----
Copper	7440-50-8	5	mg/kg	**15**	**24**	**44**	----	----
Lead	7439-92-1	5	mg/kg	**230**	**315**	**380**	----	----
Manganese	7439-96-5	5	mg/kg	**90**	**146**	**54**	----	----
Nickel	7440-02-0	2	mg/kg	**14**	**34**	**6**	----	----
Vanadium	7440-62-2	5	mg/kg	**12**	**13**	**30**	----	----
Zinc	7440-66-6	5	mg/kg	**188**	**262**	**320**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.1**	**0.2**	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	**0.6**	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	**1.9**	**1.1**	**0.6**	----	----
Anthracene	120-12-7	0.5	mg/kg	**0.7**	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	**4.8**	**2.4**	**3.6**	----	----
Pyrene	129-00-0	0.5	mg/kg	**5.3**	**2.5**	**4.5**	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	**2.7**	**1.2**	**2.7**	----	----
Chrysene	218-01-9	0.5	mg/kg	**2.6**	**1.2**	**2.4**	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	**2.6**	**1.1**	**6.4**	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**2.4**	**1.1**	**2.0**	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**3.4**	**1.4**	**5.0**	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**1.8**	**0.7**	**3.1**	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	**0.6**	<0.5	**0.7**	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**2.3**	**0.8**	**3.6**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	**180**	<100	**440**	----	----
C29 - C36 Fraction	----	100	mg/kg	**290**	**180**	**740**	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH7-0.05	BH7-0.3	DUP 1	----	----
				Client sampling date / time: 29-MAR-2011 15:00	29-MAR-2011 15:00	29-MAR-2011 15:00	----	----
				EM1103251-016	EM1103251-017	EM1103251-018	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**470**	**180**	**1180**	----	----
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**92.0**	**94.4**	**81.5**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.4**	**94.1**	**91.4**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**113**	**111**	**105**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**91.5**	**95.4**	**96.7**	----	----
Anthracene-d10	1719-06-8	0.1	%	**94.3**	**94.7**	**94.2**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**100**	**100**	**104**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**90.0**	**92.4**	**80.8**	----	----
Toluene-D8	2037-26-5	0.1	%	**101**	**111**	**99.2**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	**99.8**	**112**	**97.2**	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: RIN 1	----	----	----	----
				Client sampling date / time: 29-MAR-2011 15:00	----	----	----	----
				EM1103251-019	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080: BTEX								

Analytical Results

Sub-Matrix: **WATER**				Client sample ID	**RIN 1**	----	----	----	----
				Client sampling date / time	29-MAR-2011 15:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EM1103251-019**	----	----	----	----
EP080: BTEX - Continued									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**35.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**75.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**91.8**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**85.2**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**92.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**97.0**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**110**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**114**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**107**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **CLAY**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	33	133
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	26.3	144
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	6.9	167
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	57	129
Toluene-D8	2037-26-5	58	120
4-Bromofluorobenzene	460-00-4	56	126

Sub-Matrix: **SAND**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	33	133
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	26.3	144
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	6.9	167
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	57	129
Toluene-D8	2037-26-5	58	120

Sub-Matrix: **SAND**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates - Continued			
4-Bromofluorobenzene	460-00-4	56	126

Sub-Matrix: **SILT**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	33	133
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	26.3	144
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	6.9	167
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	57	129
Toluene-D8	2037-26-5	58	120
4-Bromofluorobenzene	460-00-4	56	126

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
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

QUALITY CONTROL REPORT

Work Order	: **EM1103251**	Page	: 1 of 13
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
C-O-C number	: ----	Date Samples Received	: 30-MAR-2011
Sampler	: DP	Issue Date	: 07-APR-2011
Order number	: ----		
		No. of samples received	: 19
Quote number	: ME/468/10	No. of samples analysed	: 16

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.

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.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Senior Inorganic Instrument Chemist	Melbourne Inorganics
Herman Lin	Laboratory Coordinator	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics
Nikki Stepniewski	Non-metallic Supervisor	Melbourne Inorganics

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.

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1731173)									
EM1103247-018	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.7	13.7	34.4	0% - 50%
EM1103251-001	BH1-0.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.7	12.6	25.5	0% - 50%
EA055: Moisture Content (QC Lot: 1731174)									
EM1103251-014	BH6-0.05	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.6	6.8	12.2	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1731144)									
EM1103251-005	BH3-0.05	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	110	140	20.6	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	6	7	18.4	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	2	2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	37	27.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	770	727	5.8	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	97	68	35.9	0% - 50%
		EG005T: Vanadium	7440-62-2	5	mg/kg	14	16	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	323	306	5.4	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1731145)									
EM1103251-005	BH3-0.05	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.4	0.5	32.2	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1731176)									
EM1103251-001	BH1-0.0	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1731204)									
EM1103251-001	BH1-0.0	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.15	<0.15	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1731203)									
EM1103251-001	BH1-0.0	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1731203) - continued									
EM1103251-001	BH1-0.0	EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 1731209)									
EM1103207-001	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EM1103251-006	BH3-0.45	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1731209)									
EM1103207-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	1.0	1.1	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1731209) - continued									
EM1103207-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	3.1	4.8	44.3	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	1.1	1.6	36.7	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	9.4	12.9	# 31.3	0% - 20%
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	10.2	13.9	# 30.4	0% - 20%
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	5.9	8.0	30.8	0% - 50%
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	4.7	6.1	25.2	0% - 50%
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	7.8	10.2	# 27.6	0% - 20%
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	2.5	2.4	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	6.6	8.3	22.9	0% - 50%
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	3.8	4.6	17.9	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	1.0	1.2	17.4	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	4.4	5.0	12.1	0% - 50%
EM1103251-006	BH3-0.45	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1731198)									
EM1103251-001	BH1-0.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM1103251-014	BH6-0.05	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1731208)									
EM1103207-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	170	190	7.7	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	130	140	8.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	300	330	9.5	No Limit
EM1103251-006	BH3-0.45	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1731208) - continued									
EM1103251-006	BH3-0.45	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEX (QC Lot: 1731198)									
EM1103251-001	BH1-0.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1103251-014	BH6-0.05	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1733433)									
EM1103189-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.016	0.016	0.0	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.066	0.064	3.9	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.011	0.012	0.0	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.078	0.082	5.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.184	0.183	0.0	0% - 20%
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.02	0.02	0.0	No Limit
EM1103251-019	RIN 1	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1733433) - continued									
EM1103251-019	RIN 1	EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1733462)									
EM1103189-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EM1103219-011	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	15100	14900	1.2	0% - 20%
EP080: BTEX (QC Lot: 1733462)									
EM1103189-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
EM1103219-011	Anonymous	EP080: Benzene	71-43-2	1	µg/L	7370	7150	3.0	0% - 20%
		EP080: Toluene	108-88-3	2	µg/L	178	187	4.8	0% - 20%
		EP080: Ethylbenzene	100-41-4	2	µg/L	2800	2780	0.9	0% - 20%
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	1950	1910	2.1	0% - 20%
		EP080: ortho-Xylene	95-47-6	2	µg/L	212	201	5.1	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1731144)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.6 mg/kg	92.1	74	132
EG005T: Barium	7440-39-3	10	mg/kg	<10	139 mg/kg	90.8	72	126
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	6.2 mg/kg	87.7	70	119
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.8 mg/kg	97.3	71	123
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.9 mg/kg	94.8	73	125
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	25.4 mg/kg	91.6	70	124
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.1 mg/kg	94.3	74	124
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.9 mg/kg	92.2	74	126
EG005T: Manganese	7439-96-5	5	mg/kg	<5	137 mg/kg	90.6	72	126
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	100	74	128
EG005T: Vanadium	7440-62-2	5	mg/kg	<5	34.9 mg/kg	94.1	75	129
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	96.4	74	124
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1731145)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.47 mg/kg	84.4	71.9	119
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1731176)								
EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	90.0	80	120
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1731204)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.10	1.15 mg/kg	95.8	52	142
EP068A: Organochlorine Pesticides (OC) (QCLot: 1731203)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	68.8	52	136
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	65.4	50	130
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	50	142
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	54	136
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.6	51	138
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	51	137
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	68.2	52	134
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	60.2	54	136
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	60.3	53	135
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	73.9	53	133
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	60.8	52	136
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	73.0	49	141
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	73.3	53	135
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	45	143
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	74.3	54	138

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 1731203) - continued								
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	67.5	52	136
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	71.5	49	133
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	49	143
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	107	40	150
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	67.7	51	141
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	102	38	152
EP075(SIM)A: Phenolic Compounds (QCLot: 1731209)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	10 mg/kg	82.1	62	124
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	10 mg/kg	85.4	63	123
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	10 mg/kg	87.1	62	126
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1.0	20 mg/kg	88.1	64	126
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	10 mg/kg	91.3	50	128
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	10 mg/kg	86.4	62	128
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	10 mg/kg	84.2	57	125
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	10 mg/kg	94.2	63	123
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	10 mg/kg	86.9	58	126
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	10 mg/kg	84.0	54	126
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	10 mg/kg	116	57	127
EP075(SIM): Pentachlorophenol	87-86-5	2.0	mg/kg	<2.0	10 mg/kg	63.5	10	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731209)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	10 mg/kg	86.1	64	126
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	10 mg/kg	87.7	63	127
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	10 mg/kg	87.6	65	125
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	10 mg/kg	85.0	66	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	10 mg/kg	86.5	64	124
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	10 mg/kg	87.1	66	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	10 mg/kg	88.0	66	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	10 mg/kg	87.8	66	124
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	10 mg/kg	89.6	62	124
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	10 mg/kg	85.5	64	126
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	10 mg/kg	93.1	58	126
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	10 mg/kg	88.8	65	127
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	10 mg/kg	91.1	61	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	10 mg/kg	90.3	58	126
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	10 mg/kg	91.1	58	126
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	10 mg/kg	90.1	57	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731198)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	32 mg/kg	100	70	133
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731208)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731208) - continued								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	636 mg/kg	100	54	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1550 mg/kg	89.3	74	134
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	356 mg/kg	66.3	63	143
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEX (QCLot: 1731198)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	92.5	72	126
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	95.9	73	129
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	96.2	72	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	110	70	138
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	103	73	131

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1733433)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.2	88	110
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	109	73	123
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	102	86	116
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	106	87	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	104	86	110
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	97.5	88	114
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	87	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	107	92	114
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	89	111
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.8	89	113
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	104	87	111
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	108	84	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1737163)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	92.5	76	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731446)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	65.2	27.5	124
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	71.0	35	129
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	89.0	35	127
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	93.2	36	130
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	93.8	42	132
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	94.4	42	132
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	102	41	141
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	95.2	40	142

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731446) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	106	33	153
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	98.1	37	145
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	107	35	151
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	121	39	141
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	112	41	139
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	102	35	141
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	101	36	142
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	105	10	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731444)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	5440 µg/L	105	64	124
EP071: C15 - C28 Fraction	----	100	µg/L	<100	17824 µg/L	91.4	70	130
EP071: C29 - C36 Fraction	----	50	µg/L	<50	3694 µg/L	94.7	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1733462)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	100	72	136
EP080: BTEX (QCLot: 1733462)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.3	73	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	96.2	74	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	92.2	72	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	93.5	69	133
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	94.9	74	128

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1731144)							
EM1103247-009	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	89.5	70	130
		EG005T: Barium	7440-39-3	50 mg/kg	# Not Determined	70	130
		EG005T: Beryllium	7440-41-7	50 mg/kg	103	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	111	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	87.1	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70	130
		EG005T: Vanadium	7440-62-2	50 mg/kg	116	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	94.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1731145)							
EM1103247-009	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	112	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1731176)							
EM1103251-004	BH2-0.4	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	# 54.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1731204)							
EM1103251-010	BH4-0.4	EP066: Total Polychlorinated biphenyls	----	1.15 mg/kg	97.8	41	149
EP068A: Organochlorine Pesticides (OC) (QCLot: 1731203)							
EM1103251-004	BH2-0.4	EP068: gamma-BHC	58-89-9	0.5 mg/kg	62.4	30	132
		EP068: Heptachlor	76-44-8	0.5 mg/kg	64.7	22.2	132
		EP068: Aldrin	309-00-2	0.5 mg/kg	50.0	25	133
		EP068: Dieldrin	60-57-1	0.5 mg/kg	61.9	36	138
		EP068: Endrin	72-20-8	0.5 mg/kg	61.6	32	142
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	84.3	12.2	140
EP075(SIM)A: Phenolic Compounds (QCLot: 1731209)							
EM1103207-004	Anonymous	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.0	64	122
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.2	68	120
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	102	49	125
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	111	60	118
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	98.2	12	136
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1731209)							
EM1103207-004	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.8	68	122
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.6	65	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731198)							

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731198) - continued							
EM1103251-002	BH1-0.4	EP080: C6 - C9 Fraction	----	28 mg/kg	77.9	49	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1731208)							
EM1103207-003	Anonymous	EP071: C10 - C14 Fraction	----	636 mg/kg	61.6	54	123
		EP071: C15 - C28 Fraction	----	1550 mg/kg	78.9	74	134
		EP071: C29 - C36 Fraction	----	356 mg/kg	83.1	63	143
EP080: BTEX (QCLot: 1731198)							
EM1103251-002	BH1-0.4	EP080: Benzene	71-43-2	2 mg/kg	72.0	58	136
		EP080: Toluene	108-88-3	2 mg/kg	78.7	63	135

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1733433)							
EM1103189-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	126	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	126	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	107	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	115	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	106	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	99.7	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	105	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	113	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	100	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	108	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	105	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	112	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1733462)							
EM1103189-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	86.8	51	125
EP080: BTEX (QCLot: 1733462)							
EM1103189-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	79.8	63	131
		EP080: Toluene	108-88-3	20 µg/L	81.2	65	133

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1103251**	Page	: 1 of 10
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Sarah Hodgson
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: sarah.hodgson@alsenviro.com
Telephone	: +61 03 9209 6245	Telephone	: 03 8549 9652
Facsimile	: ----	Facsimile	: 03 8549 9626
Project	: DUE DILIGENCE INVESTIGATION FILE NO 02503	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: 46-58 MARLBOROUGH ST BALACLAVA		
C-O-C number	: ----	Date Samples Received	: 30-MAR-2011
Sampler	: DP	Issue Date	: 07-APR-2011
Order number	: ----		
		No. of samples received	: 19
Quote number	: ME/468/10	No. of samples analysed	: 16

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

Analysis Holding Time Compliance

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 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 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 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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**----**	----	----	**01-APR-2011**	12-APR-2011	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	25-SEP-2011	✓	**04-APR-2011**	25-SEP-2011	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	26-APR-2011	✓	**05-APR-2011**	26-APR-2011	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	26-APR-2011	✓	**05-APR-2011**	08-APR-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**03-APR-2011**	11-MAY-2011	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**03-APR-2011**	11-MAY-2011	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved BH1-0.0, BH2-0.4, BH4-0.4, BH5-0.1, BH6-0.5	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**04-APR-2011**	11-MAY-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**04-APR-2011**	11-MAY-2011	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**02-APR-2011**	11-MAY-2011	✓
Soil Glass Jar - Unpreserved BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**05-APR-2011**	12-APR-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEX							
Soil Glass Jar - Unpreserved							
BH1-0.0, BH1-0.4, BH2-0.1, BH2-0.4, BH3-0.05, BH3-0.45, BH4-0.1, BH4-0.4, BH5-0.1, BH5-0.65, BH6-0.05, BH6-0.5, BH7-0.05, BH7-0.3, DUP 1	**29-MAR-2011**	**01-APR-2011**	12-APR-2011	✓	**05-APR-2011**	12-APR-2011	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
RIN 1	**29-MAR-2011**	**04-APR-2011**	25-SEP-2011	✓	**05-APR-2011**	25-SEP-2011	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
RIN 1	**29-MAR-2011**	**----**	----	----	**06-APR-2011**	26-APR-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RIN 1	**29-MAR-2011**	**01-APR-2011**	05-APR-2011	✓	**05-APR-2011**	11-MAY-2011	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved							
RIN 1	**29-MAR-2011**	**01-APR-2011**	05-APR-2011	✓	**05-APR-2011**	11-MAY-2011	✓
Amber VOC Vial- NaHSO4 or H2SO4							
RIN 1	**29-MAR-2011**	**04-APR-2011**	12-APR-2011	✓	**04-APR-2011**	12-APR-2011	✓
EP080: BTEX							
Amber VOC Vial- NaHSO4 or H2SO4							
RIN 1	**29-MAR-2011**	**04-APR-2011**	12-APR-2011	✓	**04-APR-2011**	12-APR-2011	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	3	26	**11.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by 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)
Total Hexavalent Chromium by Alkaline Digestion	EG048	SOIL	USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by UV-VIS spectrophotometer following 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)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed 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) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by 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)
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)

Analytical Methods	Method	Matrix	Method Descriptions
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
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (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.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1103207-001	Anonymous	**Fluoranthene**	206-44-0	31.3 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1103207-001	Anonymous	**Pyrene**	129-00-0	30.4 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1103207-001	Anonymous	**Benzo(b)fluoranthene**	205-99-2	27.6 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1103247-009	Anonymous	**Barium**	7440-39-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EM1103247-009	Anonymous	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG048: Hexavalent Chromium (Alkaline Digest)	EM1103251-004	BH2-0.4	**Hexavalent Chromium**	18540-29-9	54.0 %	70-130%	**Recovery less than lower data quality objective**

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

Regular Sample Surrogates

Sub-Matrix: **SAND**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP066S: PCB Surrogate	EM1103251-015	BH6-0.5	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068S: Organochlorine Pesticide Surrogate	EM1103251-015	BH6-0.5	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068T: Organophosphorus Pesticide Surrogate	EM1103251-015	BH6-0.5	**DEF**	78-48-8	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

Outliers : Analysis Holding Time Compliance

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

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

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

Matrix: **SOIL**

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Mercury by FIMS	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

CITY OF PORT PHILLIP

Chain of Custody

File No:	02503
Page:	1 of 2

Address:	Marlborough St, Balaclava	Sampled by:	DP
Project:	Soil Classification	Date sampled:	17-20 June 2011

	Sample Number	Sample Type	Material Description	IWRG 621 SCREEN P16	HEAVY METALS P16/1, EG035	PAH EP075B						NO OF JARS	
16/6 1	BH8 - 0.05	S	CLAY		✓	✓						2	
2	BH8 - 0.5	S	SAND		✓	✓						1	
3	BH9 - 0.1	S	CL + SAND	✓								1	
4	BH9 - 0.5	S	SAND		✓	✓						2	
5	BH9 - 0.9	S	CLAY									1	
6	BH10 - 0.01	S	SAND	✓								(2)	1 BP
7	BH10 - 0.4	S	"									(1)	2
8	BH10 - 0.7	S	CLAY		✓	✓						1	
9	BH11 - 0.2	S	SAND		✓	✓						1	
10	BH11 - 0.3	S	SILT									1	
11	BH11 - 0.4	S	SAND		✓	✓						1	
12	BH11 - 0.7	S	CLAY									1	
13	BH12 - 0.0	S	SILT		✓	✓						2	
14	BH12 - 0.3	S	SAND									1	
16/6 15	BH12 - 0.7	S	CLAY	✓								1	
20/6 16	BH13 - 0.0	S	SILT	✓								2	
17	BH13 - 0.2 -0.5 BP	S	CLAY		✓	✓						2	
18	BH14 - 0.0	S	SILT		✓	✓						2	
19	BH14 - 0.3	S	SAND									2	
20	BH14 - 0.5	S	CLAY		✓	✓						2	

Environmental Division
Melbourne
Work Order
EM1106735
Telephone : +61-3-8549 9600
mp mp

Turnaround:	STANDARD (circled)	3 DAY	48 HOURS	24 HOURS

NOTES	
Report to:	DARREN PENDERGAST email: dpenderg@portphillip.vic.gov.au, m: 0468 762 892
	Heavy Metals as per IWRG 621 incl Mercury and Hexavalent Chromium
	ASL Quote ref: ME-331-11

CHAIN OF CUSTODY

From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	[signature]	(ALS)	22/6	12:30
					—

COC rec'd 22/6/11 3:50 Peter ALS

CITY OF PORT PHILLIP

Chain of Custody

File No:	02503
Page:	2 of 2

Address:	Marlborough St, Balaclava	Sampled by:	DP
Project:	Soil Classification	Date sampled:	17-20 June 2011

	Sample Number	Sample Type	Material Description	Testing Required: IWRG 621 screen	Heavy Metals	PAH						No of Jars
20/6	21 BH15 - 0.1	S	CR SAND		✓	✓						2
	22 BH15 - 0.4	S	CLAY		✓	✓						2
	23 BH16 - 0.1	S	CR SAND	✓								2
	24 BH16 - 0.6	S	CLAY		✓	✓						2
	25 BH17 - 0.1	S	CR SAND		✓	✓						2
	26 BH17 - 0.5	S	CLAY	✓								2
	27 BH18 - 0.1	S	CR SAND		✓	✓						2
	28 BH18 - 0.5	S	SILT		✓	✓						2
	29 BH19 - 0.1	S	CR SAND		✓	✓						2
	30 BH19 - 0.5	S	CLAY		✓	✓						2
16/6	31 DUP 2	S	SILT		✓	✓						1
20/6	32 DUP 3	S	CR SAND		✓	✓						1
20/6	33 RIN 2006	W	RINSATE		✓	✓						

Turnaround:	STANDARD	3 DAY	48 HOURS	24 HOURS

NOTES	
Report to:	DARREN PENDERGAST email: dpenderg@portphillip.vic.gov.au, m: 0466 752 892
	Heavy Metals as per IWRG 621 incl Mercury and Hexavalent Chromium
	ASL Quote ref: ME-331-11

CHAIN OF CUSTODY					
From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	[signature]	ASL	22/6	12:50

COC rec'd 22/6/11 3:50 Refer ORS

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EM1106735**	Page	: 1 of 33
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Client Services
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: Melbourne.Enviro.Services@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: SOIL CLASSIFICATION	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: 02503	Date Samples Received	: 22-JUN-2011
Sampler	: DP	Issue Date	: 29-JUN-2011
Site	: MARLBOROUGH ST BALACLAVA		
		No. of samples received	: 33
Quote number	: ME/331/11	No. of samples analysed	: 27

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

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

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.

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 Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics

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.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EP066-EM/075-EM: Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly.**
- **EP075(SIM): Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.**
- **EP075(SIM): Poor duplicate precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.**

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.05	BH10-0.7	BH12-0.7	BH13-0.5	BH14-0.5
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-001	EM1106735-008	EM1106735-015	EM1106735-017	EM1106735-020
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	5.6	21.2	23.4	19.9	13.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	37	7	8	10	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	28	5	13	10	<5
Lead	7439-92-1	5	mg/kg	493	10	51	38	15
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	25	6	8	15	9
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	16	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	1060	11	56	1060	23
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.4	<0.1	0.1	0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	220	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	<0.10	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	<0.2	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	<0.02	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	----	<0.4	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	<0.02	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	<0.01	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.05	BH10-0.7	BH12-0.7	BH13-0.5	BH14-0.5
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-001	EM1106735-008	EM1106735-015	EM1106735-017	EM1106735-020
EP074I: Volatile Halogenated Compounds - Continued								
Chloroform	67-66-3	0.02	mg/kg	----	----	<0.02	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	<0.01	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	----	<0.02	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	<0.02	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	<0.01	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	<0.02	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	<0.02	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	<0.02	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	----	----	<0.50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<1.0	<0.5	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	**9.0**	<0.5	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<1.0	<0.5	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	**1.2**	<0.5	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**41.3**	<0.5	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	**13.1**	<0.5	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**74.8**	<0.5	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	**72.7**	<0.5	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	**39.5**	<0.5	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**30.5**	<0.5	----	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	**49.2**	<0.5	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**16.8**	<0.5	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**41.3**	<0.5	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**19.5**	<0.5	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	**4.1**	<0.5	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**24.2**	<0.5	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**437**	<0.5	----	<0.5	<0.5
EP075A: Phenolic Compounds (Halogenated)								

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.05	BH10-0.7	BH12-0.7	BH13-0.5	BH14-0.5
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-001	EM1106735-008	EM1106735-015	EM1106735-017	EM1106735-020
EP075A: Phenolic Compounds (Halogenated) - Continued								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg	----	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg	----	----	<0.03	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	----	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	----	----	<0.05	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	----	----	<0.05	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	----	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	----	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	----	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	----	<1	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg	----	----	<1	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg	----	----	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	----	<5	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	----	----	<5	----	----
Dinoseb	88-85-7	5	mg/kg	----	----	<5	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	----	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.05	BH10-0.7	BH12-0.7	BH13-0.5	BH14-0.5
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-001	EM1106735-008	EM1106735-015	EM1106735-017	EM1106735-020
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.05	BH10-0.7	BH12-0.7	BH13-0.5	BH14-0.5
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-001	EM1106735-008	EM1106735-015	EM1106735-017	EM1106735-020
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**64.7**	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	**92.5**	----	----
Toluene-D8	2037-26-5	0.1	%	----	----	**104**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	**107**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**103**	**88.7**	----	**92.8**	**91.5**
2-Chlorophenol-D4	93951-73-6	0.1	%	**96.8**	**93.4**	----	**94.0**	**93.8**
2.4.6-Tribromophenol	118-79-6	0.1	%	**99.8**	**61.5**	----	**33.3**	**64.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**85.9**	**103**	----	**102**	**104**
Anthracene-d10	1719-06-8	0.1	%	**89.0**	**121**	----	**122**	**120**
4-Terphenyl-d14	1718-51-0	0.1	%	**90.6**	**103**	----	**106**	**105**
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	----	----	**84.6**	----	----
Phenol-d6	13127-88-3	0.1	%	----	----	**64.2**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**65.4**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**95.4**	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	----	**72.1**	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	----	**70.4**	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**79.3**	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	**80.8**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	**83.5**	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15-0.4	BH16-0.6	BH17-0.5	BH19-0.5	----
				Client sampling date / time: 20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	----
				EM1106735-022	EM1106735-024	EM1106735-026	EM1106735-030	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**16.5**	**16.8**	**17.0**	**17.6**	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**13**	**6**	**9**	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg	<5	<5	**7**	**6**	----
Lead	7439-92-1	5	mg/kg	**15**	**11**	**41**	**10**	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	----
Nickel	7440-02-0	2	mg/kg	**7**	**8**	**9**	**8**	----
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	----
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	----
Zinc	7440-66-6	5	mg/kg	**12**	**8**	**21**	**11**	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	**0.1**	**0.1**	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	**1**	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	**160**	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	<0.10	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	<0.2	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	<0.02	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	----	<0.4	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	<0.02	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	<0.01	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15-0.4	BH16-0.6	BH17-0.5	BH19-0.5	----
				Client sampling date / time: 20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	----
				EM1106735-022	EM1106735-024	EM1106735-026	EM1106735-030	----
EP074I: Volatile Halogenated Compounds - Continued								
Chloroform	67-66-3	0.02	mg/kg	----	----	<0.02	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	<0.01	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	----	<0.02	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	<0.02	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	<0.01	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	<0.02	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	<0.02	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	<0.02	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	----	----	<0.50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	----
EP075A: Phenolic Compounds (Halogenated)								

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID	BH15-0.4	BH16-0.6	BH17-0.5	BH19-0.5	----
				Client sampling date / time	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	----
					EM1106735-022	EM1106735-024	EM1106735-026	EM1106735-030	----
EP075A: Phenolic Compounds (Halogenated) - Continued									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	----	<0.03	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg		----	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	----	<0.05	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		----	----	<0.05	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		----	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	----	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)									
Phenol	108-95-2	1	mg/kg		----	----	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg		----	----	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg		----	----	<1	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg		----	----	<1	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg		----	----	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg		----	----	<5	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg		----	----	<5	----	----
Dinoseb	88-85-7	5	mg/kg		----	----	<5	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg		----	----	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg		----	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	----

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15-0.4	BH16-0.6	BH17-0.5	BH19-0.5	----
				Client sampling date / time: 20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	----
				EM1106735-022	EM1106735-024	EM1106735-026	EM1106735-030	----
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								

Analytical Results

Sub-Matrix: **CLAY**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15-0.4	BH16-0.6	BH17-0.5	BH19-0.5	----
				Client sampling date / time: 20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	----
				EM1106735-022	EM1106735-024	EM1106735-026	EM1106735-030	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**44.3**	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	**85.5**	----	----
Toluene-D8	2037-26-5	0.1	%	----	----	**95.4**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	**99.4**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**91.9**	**93.6**	----	**81.8**	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**95.4**	**95.5**	----	**93.2**	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**43.2**	**58.9**	----	**68.2**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**94.0**	**95.1**	----	**98.4**	----
Anthracene-d10	1719-06-8	0.1	%	**121**	**127**	----	**116**	----
4-Terphenyl-d14	1718-51-0	0.1	%	**102**	**106**	----	**99.9**	----
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	----	----	**66.8**	----	----
Phenol-d6	13127-88-3	0.1	%	----	----	**52.1**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**50.2**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**68.8**	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	----	**52.9**	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	----	**52.8**	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**57.6**	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	**60.4**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	**60.3**	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.5	BH9-0.1	BH9-0.5	BH10-0.01	BH11-0.2
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-002	EM1106735-003	EM1106735-004	EM1106735-006	EM1106735-009
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	9.4	5.7	7.8	5.5	6.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	6	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	<5	25	<5	15	12
Lead	7439-92-1	5	mg/kg	7	<5	16	381	186
Molybdenum	7439-98-7	2	mg/kg	<2	<2	2	<2	<2
Nickel	7440-02-0	2	mg/kg	<2	76	<2	5	3
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	7	<5
Zinc	7440-66-6	5	mg/kg	13	41	18	321	114
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.5	0.3
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	<1	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	140	----	<40	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.10	----	<0.50	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Styrene	100-42-5	0.5	mg/kg	----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	<0.2	----	<0.2	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	<0.02	----	<0.02	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	<0.01	----	<0.01	----
Methylene chloride	75-09-2	0.4	mg/kg	----	<0.4	----	<0.4	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	<0.02	----	<0.02	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	<0.01	----	<0.01	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.5	BH9-0.1	BH9-0.5	BH10-0.01	BH11-0.2
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-002	EM1106735-003	EM1106735-004	EM1106735-006	EM1106735-009
EP074I: Volatile Halogenated Compounds - Continued								
Chloroform	67-66-3	0.02	mg/kg	----	<0.02	----	<0.02	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	<0.01	----	<0.01	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	<0.01	----	<0.01	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	<0.02	----	<0.02	----
Trichloroethene	79-01-6	0.02	mg/kg	----	<0.02	----	<0.02	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	<0.04	----	<0.04	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	<0.02	----	<0.02	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	<0.01	----	<0.01	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	<0.02	----	<0.02	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	<0.02	----	<0.02	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	<0.02	----	<0.02	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	<0.02	----	<0.02	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	<0.02	----	<0.02	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	<0.01	----	<0.01	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	<0.01	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	<0.01	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	----	<0.50	----	<0.50	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	<0.5	----	**0.6**
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	<0.5	----	**1.8**
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	<0.5	----	**1.8**
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	----	**0.9**
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	----	**0.9**
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	<0.5	----	**0.8**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	----	**0.8**
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	----	**1.0**
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	----	**0.6**
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	<0.5	----	**9.2**
EP075A: Phenolic Compounds (Halogenated)								

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.5	BH9-0.1	BH9-0.5	BH10-0.01	BH11-0.2
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-002	EM1106735-003	EM1106735-004	EM1106735-006	EM1106735-009
EP075A: Phenolic Compounds (Halogenated) - Continued								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	<0.03	----	<0.06	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg	----	<0.03	----	<0.06	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg	----	<0.03	----	<0.06	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	----	<0.03	----	<0.06	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.05	----	<0.06	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.05	----	<0.06	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.03	----	<0.06	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.05	----	<0.12	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.03	----	<0.06	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	<1	----	<1	----
2-Methylphenol	95-48-7	1	mg/kg	----	<1	----	<1	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	----	<1	----
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	----	<1	----
2.4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	----	<1	----
2.4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	----	<5	----
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	----	<5	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	----	<5	----
Dinoseb	88-85-7	5	mg/kg	----	<5	----	<5	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	----	<5	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	----	<1	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	**0.5**	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	**0.6**	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	<0.5	----	**0.6**	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.5	BH9-0.1	BH9-0.5	BH10-0.01	BH11-0.2
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-002	EM1106735-003	EM1106735-004	EM1106735-006	EM1106735-009
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	**1.7**	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.03	----	<0.06	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.03	----	<0.06	----
beta-BHC	319-85-7	0.03	mg/kg	----	<0.03	----	<0.06	----
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.03	----	<0.06	----
delta-BHC	319-86-8	0.03	mg/kg	----	<0.03	----	<0.06	----
Heptachlor	76-44-8	0.03	mg/kg	----	<0.03	----	<0.06	----
Aldrin	309-00-2	0.03	mg/kg	----	<0.03	----	<0.06	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.03	----	<0.06	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	<0.03	----	<0.06	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	<0.03	----	<0.06	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.03	----	<0.06	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	----	<0.06	----
Dieldrin	60-57-1	0.03	mg/kg	----	<0.03	----	<0.06	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.03	----	<0.06	----
Endrin	72-20-8	0.03	mg/kg	----	<0.03	----	<0.06	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.03	----	<0.06	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	<0.06	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.03	----	<0.06	----
4.4`-DDT	50-29-3	0.05	mg/kg	----	<0.05	----	<0.06	----
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.03	----	<0.06	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	<0.03	----	<0.06	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	<0.03	----	<0.06	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	<0.05	----	<0.06	----
^ Chlordane	57-74-9	0.03	mg/kg	----	<0.03	----	<0.06	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	<0.03	----	<0.06	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.5	BH9-0.1	BH9-0.5	BH10-0.01	BH11-0.2
				Client sampling date / time: 16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-002	EM1106735-003	EM1106735-004	EM1106735-006	EM1106735-009
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	<50	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**69.8**	----	**62.4**	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	**98.8**	----	**101**	----
Toluene-D8	2037-26-5	0.1	%	----	**107**	----	**110**	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	**109**	----	**113**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**67.2**	----	**91.8**	----	**86.5**
2-Chlorophenol-D4	93951-73-6	0.1	%	**68.8**	----	**93.7**	----	**93.2**
2.4.6-Tribromophenol	118-79-6	0.1	%	**60.4**	----	**73.6**	----	**70.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**77.1**	----	**100**	----	**103**
Anthracene-d10	1719-06-8	0.1	%	**84.8**	----	**119**	----	**110**
4-Terphenyl-d14	1718-51-0	0.1	%	**67.6**	----	**100**	----	**98.0**
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	----	**22.6**	----	**108**	----
Phenol-d6	13127-88-3	0.1	%	----	**23.2**	----	**62.0**	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	**20.6**	----	**74.0**	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	**97.9**	----	**93.0**	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	**21.6**	----	**82.6**	----
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	**20.4**	----	**80.4**	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	**34.4**	----	**87.2**	----
Anthracene-d10	1719-06-8	0.1	%	----	**76.5**	----	**94.2**	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	**85.2**	----	**86.8**	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH11-0.4	BH15-0.1	BH16-0.1	BH17-0.1	BH18-0.1
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-011	EM1106735-021	EM1106735-023	EM1106735-025	EM1106735-027
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**4.4**	**6.3**	**6.1**	**6.5**	**5.2**
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Copper	7440-50-8	5	mg/kg	<5	**26**	**29**	**25**	**28**
Lead	7439-92-1	5	mg/kg	**17**	<5	**7**	<5	<5
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	<2	**94**	**91**	**68**	**81**
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	**19**	**50**	**54**	**41**	**40**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	----	**180**	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	<0.10	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
Styrene	100-42-5	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	----	<0.2	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	----	<0.02	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	----	<0.01	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	----	<0.4	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	----	<0.02	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	----	<0.01	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH11-0.4	BH15-0.1	BH16-0.1	BH17-0.1	BH18-0.1
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-011	EM1106735-021	EM1106735-023	EM1106735-025	EM1106735-027
EP074I: Volatile Halogenated Compounds - Continued								
Chloroform	67-66-3	0.02	mg/kg	----	----	<0.02	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	----	<0.01	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	----	<0.01	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	----	<0.02	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	----	<0.02	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	----	<0.04	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	----	<0.02	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	----	<0.01	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	----	<0.02	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	----	<0.02	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	----	<0.02	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	----	<0.02	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	----	<0.02	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	----	<0.01	----	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	----	----	<0.50	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
EP075A: Phenolic Compounds (Halogenated)								

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH11-0.4	BH15-0.1	BH16-0.1	BH17-0.1	BH18-0.1
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-011	EM1106735-021	EM1106735-023	EM1106735-025	EM1106735-027
EP075A: Phenolic Compounds (Halogenated) - Continued								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg	----	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg	----	----	<0.03	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	----	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	----	----	<0.05	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	----	----	<0.05	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	----	<0.03	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	----	<1	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	----	<1	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	----	<1	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg	----	----	<1	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg	----	----	<5	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	----	<5	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	----	----	<5	----	----
Dinoseb	88-85-7	5	mg/kg	----	----	<5	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	----	<5	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	----	<1	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	**0.5**	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH11-0.4	BH15-0.1	BH16-0.1	BH17-0.1	BH18-0.1
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-011	EM1106735-021	EM1106735-023	EM1106735-025	EM1106735-027
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	**0.5**	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg	----	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg	----	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg	----	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	<0.05	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	----	<0.03	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH11-0.4	BH15-0.1	BH16-0.1	BH17-0.1	BH18-0.1
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
				EM1106735-011	EM1106735-021	EM1106735-023	EM1106735-025	EM1106735-027
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued								
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**57.5**	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	**93.4**	----	----
Toluene-D8	2037-26-5	0.1	%	----	----	**101**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	**104**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**94.3**	**89.9**	----	**92.2**	**80.5**
2-Chlorophenol-D4	93951-73-6	0.1	%	**96.3**	**92.2**	----	**93.8**	**92.8**
2.4.6-Tribromophenol	118-79-6	0.1	%	**53.5**	**60.7**	----	**60.0**	**67.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**95.0**	**91.5**	----	**102**	**95.2**
Anthracene-d10	1719-06-8	0.1	%	**121**	**115**	----	**114**	**118**
4-Terphenyl-d14	1718-51-0	0.1	%	**107**	**98.3**	----	**100**	**105**
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	----	----	**74.2**	----	----
Phenol-d6	13127-88-3	0.1	%	----	----	**71.3**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	**67.0**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	**100**	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	----	**71.1**	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	----	**67.8**	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	**70.6**	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	**79.4**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	**80.8**	----	----

Analytical Results

Sub-Matrix: **SAND**

Compound	CAS Number	LOR	Unit	Client sample ID: BH19-0.1	DUP 3	----	----	----
				Client sampling date / time: 20-JUN-2011 15:00	20-JUN-2011 15:00	----	----	----
				EM1106735-029	EM1106735-032	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**7.0**	**6.6**	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Copper	7440-50-8	5	mg/kg	**24**	**25**	----	----	----
Lead	7439-92-1	5	mg/kg	**12**	**22**	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	<2	----	----	----
Nickel	7440-02-0	2	mg/kg	**68**	**68**	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	<5	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Tin	7440-31-5	5	mg/kg	<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg	**44**	**58**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**78.5**	**81.5**	----	----	----

Analytical Results

Sub-Matrix: SAND				Client sample ID	BH19-0.1	DUP 3	----	----	----
				Client sampling date / time	20-JUN-2011 15:00	20-JUN-2011 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EM1106735-029	EM1106735-032	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2-Chlorophenol-D4	93951-73-6	0.1	%		**89.8**	**92.3**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**70.2**	**73.3**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**94.8**	**97.6**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**103**	**106**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**92.9**	**94.1**	----	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH12-0.0	BH13-0.0	BH14-0.0	BH18-0.5	DUP 2
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-013	EM1106735-016	EM1106735-018	EM1106735-028	EM1106735-031
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	14.0	11.5	17.6	10.9	18.9
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	10	8	9	14	9
Cadmium	7440-43-9	1	mg/kg	2	2	<1	<1	<1
Copper	7440-50-8	5	mg/kg	313	148	57	59	232
Lead	7439-92-1	5	mg/kg	1360	1180	646	552	1070
Molybdenum	7439-98-7	2	mg/kg	<2	<2	<2	<2	<2
Nickel	7440-02-0	2	mg/kg	15	11	10	26	13
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Tin	7440-31-5	5	mg/kg	40	42	26	11	52
Zinc	7440-66-6	5	mg/kg	1350	840	231	631	786
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	1.1	0.7	0.5	0.6	1.1
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EK026G: Total Cyanide By Discrete Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	2	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	360	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.50	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
Styrene	100-42-5	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	<0.2	----	----	----
EP074I: Volatile Halogenated Compounds								
Vinyl chloride	75-01-4	0.02	mg/kg	----	<0.02	----	----	----
1.1-Dichloroethene	75-35-4	0.01	mg/kg	----	<0.01	----	----	----
Methylene chloride	75-09-2	0.4	mg/kg	----	<0.4	----	----	----
trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	----	<0.02	----	----	----
cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	----	<0.01	----	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH12-0.0	BH13-0.0	BH14-0.0	BH18-0.5	DUP 2
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-013	EM1106735-016	EM1106735-018	EM1106735-028	EM1106735-031
EP074I: Volatile Halogenated Compounds - Continued								
Chloroform	67-66-3	0.02	mg/kg	----	<0.02	----	----	----
1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	----	<0.01	----	----	----
Carbon Tetrachloride	56-23-5	0.01	mg/kg	----	<0.01	----	----	----
1.2-Dichloroethane	107-06-2	0.02	mg/kg	----	<0.02	----	----	----
Trichloroethene	79-01-6	0.02	mg/kg	----	<0.02	----	----	----
1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	----	<0.04	----	----	----
Tetrachloroethene	127-18-4	0.02	mg/kg	----	<0.02	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	----	<0.01	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	----	<0.02	----	----	----
Hexachlorobutadiene	87-68-3	0.02	mg/kg	----	<0.02	----	----	----
Chlorobenzene	108-90-7	0.02	mg/kg	----	<0.02	----	----	----
1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	----	<0.02	----	----	----
1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	----	<0.02	----	----	----
1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	----	<0.01	----	----	----
^ Sum of volatile chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	----	----
^ Sum of other chlorinated hydrocarbons	----	0.01	mg/kg	----	<0.01	----	----	----
^ Total Xylenes	1330-20-7	0.50	mg/kg	----	<0.50	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	**0.7**	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	**1.3**	----	**1.3**	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	**0.8**	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**6.6**	----	**6.3**	**1.2**	**2.2**
Anthracene	120-12-7	0.5	mg/kg	**2.2**	----	**2.0**	<0.5	**0.8**
Fluoranthene	206-44-0	0.5	mg/kg	**8.3**	----	**11.8**	**3.0**	**5.0**
Pyrene	129-00-0	0.5	mg/kg	**7.9**	----	**12.0**	**3.1**	**5.0**
Benz(a)anthracene	56-55-3	0.5	mg/kg	**4.2**	----	**6.2**	**1.6**	**2.8**
Chrysene	218-01-9	0.5	mg/kg	**4.0**	----	**6.3**	**1.7**	**2.9**
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	**3.7**	----	**6.3**	**1.4**	**2.7**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**3.8**	----	**5.8**	**1.8**	**2.7**
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**4.5**	----	**7.4**	**1.9**	**3.3**
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**2.5**	----	**4.3**	**1.3**	**2.1**
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	**0.7**	----	**1.2**	<0.5	**0.6**
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**2.9**	----	**5.2**	**1.6**	**2.6**
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**54.1**	----	**76.1**	**18.6**	**32.7**
EP075A: Phenolic Compounds (Halogenated)								

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH12-0.0	BH13-0.0	BH14-0.0	BH18-0.5	DUP 2
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-013	EM1106735-016	EM1106735-018	EM1106735-028	EM1106735-031
EP075A: Phenolic Compounds (Halogenated) - Continued								
2-Chlorophenol	95-57-8	0.03	mg/kg	----	<0.06	----	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg	----	<0.06	----	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg	----	<0.06	----	----	----
4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	----	<0.06	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	----	<0.06	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	----	<0.06	----	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	----	<0.06	----	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	----	<0.12	----	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg	----	<0.2	----	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg	----	<0.06	----	----	----
EP075A: Phenolic Compounds (Non-halogenated)								
Phenol	108-95-2	1	mg/kg	----	<1	----	----	----
2-Methylphenol	95-48-7	1	mg/kg	----	<1	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	----	----	----
2-Nitrophenol	88-75-5	1	mg/kg	----	<1	----	----	----
2.4-Dimethylphenol	105-67-9	1	mg/kg	----	<1	----	----	----
2.4-Dinitrophenol	51-28-5	5	mg/kg	----	<5	----	----	----
4-Nitrophenol	100-02-7	5	mg/kg	----	<5	----	----	----
2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	----	<5	----	----	----
Dinoseb	88-85-7	5	mg/kg	----	<5	----	----	----
2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	----	<5	----	----	----
^ Sum of Phenols (non-halogenated)	----	1	mg/kg	----	<1	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	**1.7**	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	**3.7**	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	**3.6**	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	**1.9**	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	**1.8**	----	----	----
Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	----	**4.0**	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	**2.5**	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	**1.4**	----	----	----

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH12-0.0	BH13-0.0	BH14-0.0	BH18-0.5	DUP 2
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-013	EM1106735-016	EM1106735-018	EM1106735-028	EM1106735-031
EP075B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	**1.6**	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	**22.2**	----	----	----
EP075I: Organochlorine Pesticides								
alpha-BHC	319-84-6	0.03	mg/kg	----	<0.06	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	----	<0.06	----	----	----
beta-BHC	319-85-7	0.03	mg/kg	----	<0.06	----	----	----
gamma-BHC	58-89-9	0.03	mg/kg	----	<0.06	----	----	----
delta-BHC	319-86-8	0.03	mg/kg	----	<0.06	----	----	----
Heptachlor	76-44-8	0.03	mg/kg	----	<0.06	----	----	----
Aldrin	309-00-2	0.03	mg/kg	----	<0.06	----	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg	----	<0.06	----	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg	----	**0.06**	----	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg	----	**0.08**	----	----	----
Endosulfan 1	959-98-8	0.03	mg/kg	----	<0.06	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	**0.46**	----	----	----
Dieldrin	60-57-1	0.03	mg/kg	----	**0.49**	----	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg	----	<0.06	----	----	----
Endrin	72-20-8	0.03	mg/kg	----	<0.06	----	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg	----	<0.06	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.06	----	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg	----	<0.06	----	----	----
4.4`-DDT	50-29-3	0.05	mg/kg	----	**0.22**	----	----	----
Methoxychlor	72-43-5	0.03	mg/kg	----	<0.06	----	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg	----	**1.31**	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.03	mg/kg	----	**0.49**	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	**0.68**	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg	----	**0.14**	----	----	----
^ Sum of other organochlorine pesticides	----	0.03	mg/kg	----	**0.14**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	**100**	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	**120**	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	**220**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft								

Analytical Results

Sub-Matrix: **SILT**

Compound	CAS Number	LOR	Unit	Client sample ID: BH12-0.0	BH13-0.0	BH14-0.0	BH18-0.5	DUP 2
				Client sampling date / time: 16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	16-JUN-2011 15:00
				EM1106735-013	EM1106735-016	EM1106735-018	EM1106735-028	EM1106735-031
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft - Continued								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	**190**	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	**110**	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	**300**	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**52.2**	----	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	----	**75.5**	----	----	----
Toluene-D8	2037-26-5	0.1	%	----	**83.2**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	**83.7**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**88.1**	----	**87.2**	**74.3**	**82.2**
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.4**	----	**90.6**	**87.8**	**94.2**
2.4.6-Tribromophenol	118-79-6	0.1	%	**74.0**	----	**79.5**	**65.8**	**75.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**101**	----	**97.2**	**90.5**	**95.4**
Anthracene-d10	1719-06-8	0.1	%	**99.7**	----	**96.8**	**98.4**	**108**
4-Terphenyl-d14	1718-51-0	0.1	%	**94.3**	----	**90.7**	**88.5**	**96.4**
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	----	**85.6**	----	----	----
Phenol-d6	13127-88-3	0.1	%	----	**61.5**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	**64.6**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	**94.5**	----	----	----
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	----	**68.3**	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	----	**67.4**	----	----	----
2-Fluorobiphenyl	321-60-8	0.1	%	----	**74.3**	----	----	----
Anthracene-d10	1719-06-8	0.1	%	----	**81.4**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	**79.7**	----	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: RIN 2006	----	----	----	----
				Client sampling date / time: 20-JUN-2011 15:00	----	----	----	----
				EM1106735-033	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<1.0	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**12.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**38.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**64.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**51.6**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**68.9**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**73.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **CLAY**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.9	133
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	119
Toluene-D8	2037-26-5	64	118
4-Bromofluorobenzene	460-00-4	64	120
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	128
Phenol-d6	13127-88-3	10.6	119
2-Chlorophenol-D4	93951-73-6	11.5	125
2.4.6-Tribromophenol	118-79-6	11.3	133
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	13.5	122
1.2-Dichlorobenzene-D4	2199-69-1	11.8	122
2-Fluorobiphenyl	321-60-8	19.6	130
Anthracene-d10	1719-06-8	27.5	132
4-Terphenyl-d14	1718-51-0	26.7	133

Sub-Matrix: **SAND**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.9	133
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	119
Toluene-D8	2037-26-5	64	118
4-Bromofluorobenzene	460-00-4	64	120
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			

Sub-Matrix: **SAND**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)T: PAH Surrogates - Continued			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	128
Phenol-d6	13127-88-3	10.6	119
2-Chlorophenol-D4	93951-73-6	11.5	125
2.4.6-Tribromophenol	118-79-6	11.3	133
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	13.5	122
1.2-Dichlorobenzene-D4	2199-69-1	11.8	122
2-Fluorobiphenyl	321-60-8	19.6	130
Anthracene-d10	1719-06-8	27.5	132
4-Terphenyl-d14	1718-51-0	26.7	133

Sub-Matrix: **SILT**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.9	133
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	119
Toluene-D8	2037-26-5	64	118
4-Bromofluorobenzene	460-00-4	64	120
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	53	125
2-Chlorophenol-D4	93951-73-6	57	123
2.4.6-Tribromophenol	118-79-6	28	130
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	62	128
Anthracene-d10	1719-06-8	68	142
4-Terphenyl-d14	1718-51-0	67	135
EP075S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	10	128
Phenol-d6	13127-88-3	10.6	119
2-Chlorophenol-D4	93951-73-6	11.5	125
2.4.6-Tribromophenol	118-79-6	11.3	133
EP075T: Base/Neutral Extractable Surrogates			
Nitrobenzene-D5	4165-60-0	13.5	122
1.2-Dichlorobenzene-D4	2199-69-1	11.8	122

Sub-Matrix: SILT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075T: Base/Neutral Extractable Surrogates - Continued			
2-Fluorobiphenyl	321-60-8	19.6	130
Anthracene-d10	1719-06-8	27.5	132
4-Terphenyl-d14	1718-51-0	26.7	133

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

QUALITY CONTROL REPORT

Work Order	: **EM1106735**	Page	: 1 of 19
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Client Services
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: Melbourne.Enviro.Services@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: SOIL CLASSIFICATION	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MARLBOROUGH ST BALACLAVA		
C-O-C number	: 02503	Date Samples Received	: 22-JUN-2011
Sampler	: DP	Issue Date	: 29-JUN-2011
Order number	: ----		
		No. of samples received	: 33
Quote number	: ME/331/11	No. of samples analysed	: 27

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.

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.

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 Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics

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.

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 1843911)									
EM1106718-031	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.2	11.9	26.2	0% - 50%
EM1106735-003	BH9-0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.7	6.4	12.2	No Limit
EA055: Moisture Content (QC Lot: 1843912)									
EM1106735-018	BH14-0.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.6	17.3	1.9	0% - 50%
EM1106735-029	BH19-0.1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.0	6.6	5.8	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1844903)									
EM1106699-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	15	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	9	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	32	39	19.1	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	59	74	23.4	0% - 50%
EM1106702-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	7	47.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	8	40.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	16	38.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	39	83.8	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	120	115	4.4	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1844905)									
EM1106735-013	BH12-0.0	EG005T: Cadmium	7440-43-9	1	mg/kg	2	<1	76.7	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	15	14	11.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	8	26.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	313	278	12.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	1360	1400	3.0	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 1844905) - continued									
EM1106735-013	BH12-0.0	EG005T: Tin	7440-31-5	5	mg/kg	40	30	29.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	1350	1320	2.4	0% - 20%
EM1106735-024	BH16-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	7	63.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	11	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	8	8	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1844904)									
EM1106699-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
EM1106702-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1844906)									
EM1106735-013	BH12-0.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.1	1.5	26.2	0% - 50%
EM1106735-024	BH16-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1843944)									
EM1106723-019	Anonymous	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1106735-013	BH12-0.0	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 1843945)									
EM1106735-026	BH17-0.5	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1106738-003	Anonymous	EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1843438)									
EM1106735-003	BH9-0.1	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK026G: Total Cyanide By Discrete Analyser (QC Lot: 1843947)									
EM1106712-001	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM1106712-028	Anonymous	EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 1843439)									
EM1106735-003	BH9-0.1	EK040T: Fluoride	16984-48-8	40	mg/kg	140	130	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 1843950)									
EM1106712-024	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	300	290	0.0	No Limit
EM1106729-002	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	320	300	8.4	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 1846467)									
EM1106650-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.50	<0.50	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1843981)									
EM1106735-003	BH9-0.1	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 1843981) - continued									
EM1106735-003	BH9-0.1	EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 1843981)									
EM1106735-003	BH9-0.1	EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	<0.01	0.0	No Limit
		EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	<0.04	0.0	No Limit
		EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	<0.4	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1845007)									
EM1106735-001	BH8-0.05	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	9.0	4.3	70.6	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	1.2	<1.0	22.1	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	41.3	10.9	# 116	0% - 20%
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	13.1	5.1	# 87.3	0% - 50%
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	74.8	32.6	# 78.5	0% - 20%
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	72.7	35.9	# 67.8	0% - 20%
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	39.5	17.2	# 78.8	0% - 20%
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	30.5	16.6	# 59.1	0% - 20%
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	49.2	28.8	# 52.1	0% - 20%
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	16.8	10.2	48.8	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1845007) - continued									
EM1106735-001	BH8-0.05	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	41.3	28.1	# 38.1	0% - 20%
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	19.5	13.7	35.4	0% - 20%
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	4.1	2.9	33.4	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	24.2	17.9	# 30.1	0% - 20%
EM1106735-021	BH15-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1845012)									
EB1111963-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM1106735-030	BH19-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1845012) - continued									
EM1106735-030	BH19-0.5	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 1846466)									
EM1106650-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.12	<0.12	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 1846466)									
EM1106650-003	Anonymous	EP075-EM: Phenol	108-95-2	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	<1	0.0	No Limit
		EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	<5	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	<5	0.0	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1846466)									
EM1106650-003	Anonymous	EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1846466) - continued									
EM1106650-003	Anonymous	EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	0.8	0.5	36.2	No Limit
		EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	3.8	3.3	12.5	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	1.2	1.0	20.2	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	10.8	7.4	# 37.8	0% - 50%
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	10.8	7.0	# 42.9	0% - 50%
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	5.7	3.4	# 50.8	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	5.2	2.9	# 56.5	No Limit
		EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2 207-08-9	0.5	mg/kg	11.7	6.5	# 57.3	0% - 50%
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	7.3	4.2	# 54.7	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	4.7	2.6	57.1	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	1.1	0.5	71.3	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	5.7	3.2	# 56.9	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 1846466)									
EM1106650-003	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.06	<0.06	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.06	<0.06	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1843981)									
EM1106735-003	BH9-0.1	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1845008)									
EM1106735-003	BH9-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1845008) - continued									
EM1106735-003	BH9-0.1	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 1845008)									
EM1106735-003	BH9-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1846674)									
EM1106651-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.005	0.006	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.019	0.020	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.007	0.007	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.018	0.022	18.9	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.019	0.022	16.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM1106703-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0127	0.0116	8.6	0% - 20%
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.105	<0.105	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	4.97	4.57	8.4	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.112	0.110	1.6	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.105	<0.105	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	2.96	2.83	4.4	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	2.81	2.82	0.3	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<1.05	<1.05	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 1846675)									
EM1106703-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.105	<0.105	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1848832)									
EM1106651-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EM1106703-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0036	0.0033	7.1	0% - 20%

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1844903)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.6 mg/kg	96.4	74	132
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.8 mg/kg	84.3	71	123
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.1 mg/kg	88.8	74	124
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.9 mg/kg	95.1	74	126
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	8.5 mg/kg	97.6	70	126
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	90.8	74	128
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	5.23 mg/kg	85.6	70	123
EG005T: Tin	7440-31-5	5	mg/kg	<5	26.3 mg/kg	97.1	70	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	94.2	74	124
EG005T: Total Metals by ICP-AES (QCLot: 1844905)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.6 mg/kg	94.2	74	132
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.8 mg/kg	81.7	71	123
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.1 mg/kg	86.8	74	124
EG005T: Lead	7439-92-1	5	mg/kg	<5	54.9 mg/kg	94.6	74	126
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	8.5 mg/kg	92.1	70	126
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	90.0	74	128
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	5.23 mg/kg	83.7	70	123
EG005T: Tin	7440-31-5	5	mg/kg	<5	26.3 mg/kg	94.2	70	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	93.4	74	124
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1844904)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.47 mg/kg	103	64	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1844906)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.47 mg/kg	99.4	64	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1843944)								
EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	108	80	120
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1843945)								
EG048: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	118	80	120
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1843438)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	25 mg/kg	100	85	127
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1843947)								
EK026G: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	101	85	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EK040T: Fluoride Total (QCLot: 1843439)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	86.6	72	108
EK040T: Fluoride Total (QCLot: 1843950)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	950 mg/kg	106	72	108
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1846467)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.10	0.54 mg/kg	99.9	58	140
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1843981)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	104	75	127
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	103	77	121
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	102	76	124
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	98.9	75	123
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	0.1 mg/kg	104	72	124
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	101	78	122
EP074I: Volatile Halogenated Compounds (QCLot: 1843981)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	95.7	48	140
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	98.0	68	134
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	103	75	131
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	71	133
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	98.7	74	126
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	94.1	72	122
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	94.6	70	130
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	95.0	63	135
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	96.0	68	126
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	97.7	74	132
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	108	77	123
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	99.0	71	129
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	95.4	72	124
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	107	73	131
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	81.2	61	127
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	102	75	139
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.5	74	118
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	96.7	76	118
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	85.2	67	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1845007)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	10 mg/kg	98.0	64	126
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	10 mg/kg	99.4	63	127
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	10 mg/kg	95.6	65	125
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	10 mg/kg	96.5	66	126

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1845007) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	10 mg/kg	97.0	64	124
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	10 mg/kg	96.2	66	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	10 mg/kg	96.2	66	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	10 mg/kg	91.8	66	124
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	10 mg/kg	92.1	62	124
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	10 mg/kg	102	64	126
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	10 mg/kg	97.6	58	126
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	10 mg/kg	90.0	65	127
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	10 mg/kg	93.6	61	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	10 mg/kg	87.9	58	126
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	10 mg/kg	86.8	58	126
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	10 mg/kg	88.9	57	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1845012)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	10 mg/kg	94.6	64	126
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	10 mg/kg	97.8	63	127
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	10 mg/kg	94.9	65	125
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	10 mg/kg	95.5	66	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	10 mg/kg	94.8	64	124
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	10 mg/kg	97.9	66	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	10 mg/kg	97.6	66	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	10 mg/kg	99.0	66	124
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	10 mg/kg	96.4	62	124
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	10 mg/kg	98.3	64	126
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	10 mg/kg	87.4	58	126
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	10 mg/kg	98.5	65	127
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	10 mg/kg	91.2	61	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	10 mg/kg	88.7	58	126
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	10 mg/kg	88.0	58	126
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	10 mg/kg	88.5	57	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1846466)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	0.5 mg/kg	72.2	41	135
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	0.5 mg/kg	70.2	39	135
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	0.5 mg/kg	71.8	40	136
EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.03	mg/kg	<0.03	0.5 mg/kg	93.3	45	139
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	0.5 mg/kg	76.6	38	138
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	0.5 mg/kg	72.3	43	131
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	0.5 mg/kg	70.2	41	135
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	1.0 mg/kg	77.2	26.3	134

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1846466) - continued								
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	0.5 mg/kg	77.2	25	129
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1846466)								
EP075-EM: Phenol	108-95-2	0.1	mg/kg	----	0.5 mg/kg	72.9	40	140
		1	mg/kg	<1	----	----	----	----
EP075-EM: 2-Methylphenol	95-48-7	0.1	mg/kg	----	0.5 mg/kg	70.4	37	139
		1	mg/kg	<1	----	----	----	----
EP075-EM: 3- & 4-Methylphenol	1319-77-3	0.1	mg/kg	----	1 mg/kg	73.4	38	138
		1	mg/kg	<1	----	----	----	----
EP075-EM: 2-Nitrophenol	88-75-5	0.1	mg/kg	----	0.5 mg/kg	70.3	35	137
		1	mg/kg	<1	----	----	----	----
EP075-EM: 2.4-Dimethylphenol	105-67-9	0.1	mg/kg	----	0.5 mg/kg	70.3	10.9	137
		1	mg/kg	<1	----	----	----	----
EP075-EM: 2.4-Dinitrophenol	51-28-5	0.1	mg/kg	----	3 mg/kg	67.0	22.7	99
		5	mg/kg	<5	----	----	----	----
EP075-EM: 4-Nitrophenol	100-02-7	0.1	mg/kg	----	3 mg/kg	87.2	36	136
		5	mg/kg	<5	----	----	----	----
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	0.1	mg/kg	----	3 mg/kg	84.3	15.4	117
		5	mg/kg	<5	----	----	----	----
EP075-EM: Dinoseb	88-85-7	0.1	mg/kg	----	3 mg/kg	87.7	26.5	128
		5	mg/kg	<5	----	----	----	----
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	0.1	mg/kg	----	3 mg/kg	87.3	12	132
		5	mg/kg	<5	----	----	----	----
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1846466)								
EP075-EM: Naphthalene	91-20-3	0.1	mg/kg	----	0.5 mg/kg	71.6	42	134
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Acenaphthene	83-32-9	0.1	mg/kg	----	0.5 mg/kg	77.4	43	137
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Acenaphthylene	208-96-8	0.1	mg/kg	----	0.5 mg/kg	75.9	43	139
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Fluorene	86-73-7	0.1	mg/kg	----	0.5 mg/kg	80.1	48	136
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Phenanthrene	85-01-8	0.1	mg/kg	----	0.5 mg/kg	86.5	51	139
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Anthracene	120-12-7	0.1	mg/kg	----	0.5 mg/kg	83.9	49	127
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Fluoranthene	206-44-0	0.1	mg/kg	----	0.5 mg/kg	88.3	48	134
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Pyrene	129-00-0	0.1	mg/kg	----	0.5 mg/kg	89.2	51	132
		0.5	mg/kg	<0.5	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1846466) - continued								
EP075-EM: Benz(a)anthracene	56-55-3	0.1	mg/kg	----	0.5 mg/kg	89.1	50	133
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Chrysene	218-01-9	0.1	mg/kg	----	0.5 mg/kg	87.8	50	136
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benzo(b) & Benzo(k)fluoranthene	205-99-2	0.1	mg/kg	----	1.0 mg/kg	90.2	49	133
	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benzo(a)pyrene	50-32-8	0.1	mg/kg	----	0.5 mg/kg	88.1	48	131
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.1	mg/kg	----	0.5 mg/kg	89.0	42	142
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.1	mg/kg	----	0.5 mg/kg	89.7	42	142
		0.5	mg/kg	<0.5	----	----	----	----
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.1	mg/kg	----	0.5 mg/kg	87.1	43	141
		0.5	mg/kg	<0.5	----	----	----	----
EP075I: Organochlorine Pesticides (QCLot: 1846466)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	0.5 mg/kg	84.9	48	140
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	0.5 mg/kg	82.3	47	139
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	0.5 mg/kg	88.4	46	144
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	0.5 mg/kg	87.9	50	140
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	0.5 mg/kg	88.4	50	132
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	0.5 mg/kg	85.8	49	132
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	0.5 mg/kg	85.4	50	131
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	0.5 mg/kg	87.6	46	129
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	0.5 mg/kg	88.0	46	137
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	0.5 mg/kg	88.3	47	133
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	0.5 mg/kg	83.9	48	136
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.3	46	133
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	0.5 mg/kg	87.6	49	134
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	0.5 mg/kg	67.7	19.4	159
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	0.5 mg/kg	99.0	61	137
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	0.5 mg/kg	89.5	50	144
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	49	145
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	0.5 mg/kg	91.2	47	147
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	40	148
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	0.5 mg/kg	94.1	46	144
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1843981)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	33.1 mg/kg	104	70	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1845008)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	636 mg/kg	70.7	54	123

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1845008) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	1550 mg/kg	84.2	74	134
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	356 mg/kg	92.6	63	143
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1845008)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	894 mg/kg	84.3	54	123
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	1734 mg/kg	84.0	74	134
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	106 mg/kg	72.4	63	143
EP071: >C10 - C40 Fraction (sum)	----	100	mg/kg	<100	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1846674)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.8	86	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	99.1	87	111
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	96.1	88	110
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	103	90	114
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	95.8	87	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	102	89	113
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	94.1	81	109
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.1	82	116
EG020T: Total Metals by ICP-MS (QCLot: 1846675)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1848832)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	87.0	69	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1844118)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	78.0	27.5	124
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	82.0	35	129
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	82.0	35	127
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	84.0	36	130
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	84.0	42	132
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	88.0	42	132
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	84.0	41	141
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	86.0	40	142
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	92.0	33	153
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	86.0	37	145
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	84.0	35	151
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	90.0	39	141
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	86.0	41	139

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1844118) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	94.0	35	141
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	90.0	36	142
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	98.0	10	142

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1844903)							
EM1106699-005	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	86.0	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	89.8	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	85.4	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	84.1	70	130
		EG005T: Molybdenum	7439-98-7	50 mg/kg	85.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	80.0	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	95.7	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	91.1	70	130
EG005T: Total Metals by ICP-AES (QCLot: 1844905)							
EM1106735-015	BH12-0.7	EG005T: Arsenic	7440-38-2	50 mg/kg	99.6	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	126	70	130
		EG005T: Molybdenum	7439-98-7	50 mg/kg	84.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	107	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	108	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	119	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1844904)							
EM1106699-005	Anonymous	EG035T: Mercury	7439-97-6	5.0 mg/kg	104	56	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1844906)							
EM1106735-015	BH12-0.7	EG035T: Mercury	7439-97-6	5.0 mg/kg	97.7	56	122
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1843944)							
EM1106735-001	BH8-0.05	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	72.0	70	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 1843945)							
EM1106735-027	BH18-0.1	EG048: Hexavalent Chromium	18540-29-9	40 mg/kg	77.0	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1843438)							
EM1106735-006	BH10-0.01	EK026G: Total Cyanide	57-12-5	25 mg/kg	100	70	130
EK026G: Total Cyanide By Discrete Analyser (QCLot: 1843947)							
EM1106712-007	Anonymous	EK026G: Total Cyanide	57-12-5	20 mg/kg	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1846467)							
EM1106735-003	BH9-0.1	EP066-EM: Total Polychlorinated biphenyls	----	0.54 mg/kg	91.6	53	139
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1843981)							
EM1106735-006	BH10-0.01	EP074-UT: Benzene	71-43-2	2 mg/kg	107	60	140

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 1843981) - continued							
EM1106735-006	BH10-0.01	EP074-UT: Toluene	108-88-3	2 mg/kg	107	64	134
EP074I: Volatile Halogenated Compounds (QCLot: 1843981)							
EM1106735-006	BH10-0.01	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	97.1	43	135
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	94.9	51	131
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	105	64	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1845007)							
EM1106735-002	BH8-0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.9	68	122
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.5	65	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1845012)							
EB1111963-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	102	68	122
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	113	65	125
EP075A: Phenolic Compounds (Halogenated) (QCLot: 1846466)							
EM1106650-004	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.5 mg/kg	80.3	35	139
		EP075-EM: 4-Chloro-3-Methylphenol	59-50-7	0.5 mg/kg	110	27.7	134
		EP075-EM: Pentachlorophenol	87-86-5	0.5 mg/kg	57.5	23.4	127
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 1846466)							
EM1106650-004	Anonymous	EP075-EM: Phenol	108-95-2	0.5 mg/kg	87.5	28.2	132
		EP075-EM: 2-Nitrophenol	88-75-5	0.5 mg/kg	83.0	11.2	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 1846466)							
EM1106650-004	Anonymous	EP075-EM: Acenaphthene	83-32-9	0.5 mg/kg	137	33	141
		EP075-EM: Pyrene	129-00-0	0.5 mg/kg	# Not Determined	26.2	158
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1843981)							
EM1106735-006	BH10-0.01	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	100	51	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1845008)							
EM1106735-006	BH10-0.01	EP071: C10 - C14 Fraction	----	636 mg/kg	75.5	54	123
		EP071: C15 - C28 Fraction	----	1550 mg/kg	92.8	74	134
		EP071: C29 - C36 Fraction	----	356 mg/kg	111	63	143
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QCLot: 1845008)							
EM1106735-006	BH10-0.01	EP071: >C10 - C16 Fraction	----	894 mg/kg	91.4	54	123
		EP071: >C16 - C34 Fraction	----	1723 mg/kg	93.3	74	134
		EP071: >C34 - C40 Fraction	----	106 mg/kg	143	63	143

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Spike Recovery (%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 1846674)							
EM1106651-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	110	72	146

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 1846674) - continued							
EM1106651-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.25 mg/L	107	73	131
		EG020A-T: Copper	7440-50-8	1 mg/L	104	71	125
		EG020A-T: Lead	7439-92-1	1 mg/L	101	68	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	104	72	128
		EG020A-T: Zinc	7440-66-6	1 mg/L	106	67	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1848832)							
EM1106684-001	Anonymous	EG035T: Mercury	7439-97-6	0.0100 mg/L	90.1	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1106735**	Page	: 1 of 12
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Client Services
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
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Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: SOIL CLASSIFICATION	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MARLBOROUGH ST BALACLAVA		
C-O-C number	: 02503	Date Samples Received	: 22-JUN-2011
Sampler	: DP	Issue Date	: 29-JUN-2011
Order number	: ----		
		No. of samples received	: 33
Quote number	: ME/331/11	No. of samples analysed	: 27

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

Analysis Holding Time Compliance

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 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 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 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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH8-0.05, BH8-0.5, BH9-0.1, BH9-0.5, BH10-0.01, BH10-0.7, BH11-0.2, BH11-0.4, BH12-0.0, BH12-0.7, DUP 2	**16-JUN-2011**	**----**	----	----	**24-JUN-2011**	30-JUN-2011	✓
Soil Glass Jar - Unpreserved							
BH13-0.0, BH13-0.5, BH14-0.0, BH14-0.5, BH15-0.1, BH15-0.4, BH16-0.1, BH16-0.6, BH17-0.1, BH17-0.5, BH18-0.1, BH18-0.5, BH19-0.1, BH19-0.5, DUP 3	**20-JUN-2011**	**----**	----	----	**24-JUN-2011**	04-JUL-2011	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH8-0.05, BH8-0.5, BH9-0.1, BH9-0.5, BH10-0.01, BH10-0.7, BH11-0.2, BH11-0.4, BH12-0.0, BH12-0.7, DUP 2	**16-JUN-2011**	**25-JUN-2011**	13-DEC-2011	✓	**27-JUN-2011**	13-DEC-2011	✓
Soil Glass Jar - Unpreserved							
BH13-0.0, BH13-0.5, BH14-0.0, BH14-0.5, BH15-0.1, BH15-0.4, BH16-0.1, BH16-0.6, BH17-0.1, BH17-0.5, BH18-0.1, BH18-0.5, BH19-0.1, BH19-0.5, DUP 3	**20-JUN-2011**	**25-JUN-2011**	17-DEC-2011	✓	**27-JUN-2011**	17-DEC-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH8-0.05,	BH8-0.5,	**16-JUN-2011**	**25-JUN-2011**	14-JUL-2011	✓	**28-JUN-2011**	14-JUL-2011	✓
BH9-0.1,	BH9-0.5,							
BH10-0.01,	BH10-0.7,							
BH11-0.2,	BH11-0.4,							
BH12-0.0,	BH12-0.7,							
DUP 2								
Soil Glass Jar - Unpreserved								
BH13-0.0,	BH13-0.5,	**20-JUN-2011**	**25-JUN-2011**	18-JUL-2011	✓	**28-JUN-2011**	18-JUL-2011	✓
BH14-0.0,	BH14-0.5,							
BH15-0.1,	BH15-0.4,							
BH16-0.1,	BH16-0.6,							
BH17-0.1,	BH17-0.5,							
BH18-0.1,	BH18-0.5,							
BH19-0.1,	BH19-0.5,							
DUP 3								
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved								
BH8-0.05,	BH8-0.5,	**16-JUN-2011**	**24-JUN-2011**	14-JUL-2011	✓	**28-JUN-2011**	01-JUL-2011	✓
BH9-0.1,	BH9-0.5,							
BH10-0.01,	BH10-0.7,							
BH11-0.2,	BH11-0.4,							
BH12-0.0,	BH12-0.7,							
DUP 2								
Soil Glass Jar - Unpreserved								
BH13-0.0,	BH13-0.5,	**20-JUN-2011**	**24-JUN-2011**	18-JUL-2011	✓	**28-JUN-2011**	01-JUL-2011	✓
BH14-0.0,	BH14-0.5,							
BH15-0.1,	BH15-0.4,							
BH16-0.1,	BH16-0.6,							
BH17-0.1,	BH17-0.5,							
BH18-0.1,	BH18-0.5,							
BH19-0.1,	BH19-0.5,							
DUP 3								
EK026G: Total Cyanide By Discrete Analyser								
Soil Glass Jar - Unpreserved								
BH9-0.1,	BH10-0.01,	**16-JUN-2011**	**23-JUN-2011**	23-JUN-2011	✓	**24-JUN-2011**	07-JUL-2011	✓
BH12-0.7								
Soil Glass Jar - Unpreserved								
BH13-0.0,	BH16-0.1,	**20-JUN-2011**	**24-JUN-2011**	27-JUN-2011	✓	**27-JUN-2011**	08-JUL-2011	✓
BH17-0.5								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved BH9-0.1, BH12-0.7	BH10-0.01,	**16-JUN-2011**	**23-JUN-2011**	23-JUN-2011	✓	**23-JUN-2011**	23-JUN-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH17-0.5	BH16-0.1,	**20-JUN-2011**	**24-JUN-2011**	27-JUN-2011	✓	**24-JUN-2011**	27-JUN-2011	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved BH9-0.1, BH12-0.7	BH10-0.01,	**16-JUN-2011**	**27-JUN-2011**	30-JUN-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH17-0.5	BH16-0.1,	**20-JUN-2011**	**27-JUN-2011**	04-JUL-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved BH9-0.1, BH12-0.7	BH10-0.01,	**16-JUN-2011**	**24-JUN-2011**	30-JUN-2011	✓	**24-JUN-2011**	30-JUN-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH17-0.5	BH16-0.1,	**20-JUN-2011**	**24-JUN-2011**	04-JUL-2011	✓	**24-JUN-2011**	04-JUL-2011	✓
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved BH9-0.1, BH12-0.7	BH10-0.01,	**16-JUN-2011**	**24-JUN-2011**	30-JUN-2011	✓	**24-JUN-2011**	30-JUN-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH17-0.5	BH16-0.1,	**20-JUN-2011**	**24-JUN-2011**	04-JUL-2011	✓	**24-JUN-2011**	04-JUL-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved BH8-0.05, BH9-0.5, BH11-0.2, BH12-0.0	BH8-0.5, BH10-0.7, BH11-0.4,	**16-JUN-2011**	**25-JUN-2011**	30-JUN-2011	✓	**27-JUN-2011**	04-AUG-2011	✓
Soil Glass Jar - Unpreserved DUP 2		**16-JUN-2011**	**27-JUN-2011**	30-JUN-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.5, BH14-0.5, BH15-0.4, BH17-0.1	BH14-0.0, BH15-0.1, BH16-0.6,	**20-JUN-2011**	**25-JUN-2011**	04-JUL-2011	✓	**27-JUN-2011**	04-AUG-2011	✓
Soil Glass Jar - Unpreserved BH18-0.1, BH19-0.1, DUP 3	BH18-0.5, BH19-0.5,	**20-JUN-2011**	**27-JUN-2011**	04-JUL-2011	✓	**28-JUN-2011**	06-AUG-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**27-JUN-2011**	30-JUN-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**27-JUN-2011**	04-JUL-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**27-JUN-2011**	30-JUN-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**27-JUN-2011**	04-JUL-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**27-JUN-2011**	30-JUN-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**27-JUN-2011**	04-JUL-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**27-JUN-2011**	30-JUN-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**27-JUN-2011**	04-JUL-2011	✓	**28-JUN-2011**	06-AUG-2011	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**24-JUN-2011**	30-JUN-2011	✓	**24-JUN-2011**	30-JUN-2011	✓
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**25-JUN-2011**	30-JUN-2011	✓	**27-JUN-2011**	04-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**24-JUN-2011**	04-JUL-2011	✓	**24-JUN-2011**	04-JUL-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**25-JUN-2011**	04-JUL-2011	✓	**27-JUN-2011**	04-AUG-2011	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft							
Soil Glass Jar - Unpreserved BH9-0.1, BH10-0.01, BH12-0.7	**16-JUN-2011**	**25-JUN-2011**	30-JUN-2011	✓	**27-JUN-2011**	04-AUG-2011	✓
Soil Glass Jar - Unpreserved BH13-0.0, BH16-0.1, BH17-0.5	**20-JUN-2011**	**25-JUN-2011**	04-JUL-2011	✓	**27-JUN-2011**	04-AUG-2011	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered RIN 2006	**20-JUN-2011**	**28-JUN-2011**	17-DEC-2011	✓	**28-JUN-2011**	17-DEC-2011	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered RIN 2006	**20-JUN-2011**	**----**	----	----	**28-JUN-2011**	18-JUL-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved RIN 2006	**20-JUN-2011**	**24-JUN-2011**	27-JUN-2011	✓	**25-JUN-2011**	03-AUG-2011	✓

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: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	4	34	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	33	**12.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	3	23	**13.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	3	20	**15.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	4	31	**12.9**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	33	**6.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	23	**8.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	2	20	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	2	31	**6.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	33	**6.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	23	**8.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Fluoride	EK040T	2	20	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	2	31	**6.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	33	**6.1**	**5.0**	✓	ALS QCS3 requirement
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Total Cyanide By Discrete Analyser	EK026G	2	23	**8.7**	**5.0**	✓	ALS QCS3 requirement
Total Hexavalent Chromium by Alkaline Digestion	EG048	2	31	**6.5**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Mercury by FIMS	EG035T	2	38	**5.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	**5.3**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by 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)
Total Hexavalent Chromium by Alkaline Digestion	EG048	SOIL	USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by UV-VIS spectrophotometer following 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)
Total Cyanide By Discrete Analyser	EK026G	SOIL	APHA 21st 4500 CN - C & N. Caustic leach extracts of the sample are distilled with sulphuric acid, converting all CN species to HCN. The distillates are analyzed for CN by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Method 403)
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
PCB - VIC EPA 448.3 Screen	EP066-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed 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) (Method 504)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS in partial SIM/Scan mode. Quantification is by comparison against an established multi-point calibration curves. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 502)
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by 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)
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)

Preparation Methods	Method	Matrix	Method Descriptions
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	USEPA SW846, Method 3060A.
NaOH leach for TCN in Soils	EK026PR	SOIL	APHA 21st ed., 4500 CN- C & N. Samples are extracted by end-over-end tumbling with NaOH.
Total Fluoride	EK040T-PR	SOIL	(In-house) Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17A-EM	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (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.

Summary of Outliers

Outliers : Quality Control Samples

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

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Phenanthrene**	85-01-8	116 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Anthracene**	120-12-7	87.3 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Fluoranthene**	206-44-0	78.5 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Pyrene**	129-00-0	67.8 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Benz(a)anthracene**	56-55-3	78.8 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Chrysene**	218-01-9	59.1 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Benzo(b)fluoranthene**	205-99-2	52.1 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Benzo(a)pyrene**	50-32-8	38.1 %	0-20%	**RPD exceeds LOR based limits**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	EM1106735-001	BH8-0.05	**Benzo(g.h.i)perylene**	191-24-2	30.1 %	0-20%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Fluoranthene**	206-44-0	37.8 %	0-20%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Pyrene**	129-00-0	42.9 %	0-20%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Benz(a)anthracene**	56-55-3	50.8 %	0-50%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Chrysene**	218-01-9	56.5 %	0-50%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Benzo(b) & Benzo(k)fluoranthene**	205-99-2 207-08-9	57.3 %	0-20%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Benzo(a)pyrene**	50-32-8	54.7 %	0-50%	**RPD exceeds LOR based limits**
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-003	Anonymous	**Benzo(g.h.i)perylene**	191-24-2	56.9 %	0-50%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EP075B: Polynuclear Aromatic Hydrocarbons	EM1106650-004	Anonymous	**Pyrene**	129-00-0	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 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.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

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

- **No Quality Control Sample Frequency Outliers exist.**

Marlborough St, Balaclava - additional testing

Pendergast, Darren [dpenderg@portphillip.vic.gov.au]

Sent: Thursday, June 30, 2011 10:32 AM

To: Sarah Hodgson

Hi Sarah,

Would it be possible to have the following testing undertaken on samples reported in EM1106735:

1 BH8-0.05 – ASLP As, ASLP Pb, ASLP Zn, ASLP BaP
2 BH12-0.0 – ASLP Cu, ASLP Pb, ASLP Zn, ASLP Hg, ASLP BaP
3 BH13-0.0 - ASLP Cu, ASLP Pb, ASLP Zn, ASLP BaP
4 BH14-0.0 - ASLP Pb, ASLP Zn, ASLP BaP
5 BH15-0.1 – ASLP Ni
6 BH16-0.1 – ASLP Ni
7 BH18-0.5 - ASLP Pb, ASLP Zn, ASLP BaP

Environmental Division
Melbourne
SH Work Order SH
EM1107061

Telephone : +61-3-8549 9600

We require this testing to be undertaken on a standard turnaround.

Also we will need the invoice for this testing by the end of today (30 June 2011)

Regards,

Darren Pendergast
SITE CONTAMINATION ADVISOR

CITY OF **PORT PHILLIP**

P: (03) 9209 6245; M: 0466 752 892; E: dpenderg@portphillip.vic.gov.au, W: www.portphillip.com.au
Private Bag 3, PO St Kilda, Victoria, 3182

MS→1589 to 1590

original trays = MS: 1503 - 1505

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EM1107061**	Page	: 1 of 7
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Client Services
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: Melbourne.Enviro.Services@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: REBATCH OF EM1106735 SOIL CLASSIFICATION	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-JUN-2011
Sampler	: DP	Issue Date	: 06-JUL-2011
Site	: MARLBOROUGH ST, BALACLAVA		
		No. of samples received	: 7
Quote number	: ME/331/11	No. of samples analysed	: 7

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

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

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.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics

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.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **ASLP LEACHATE**

Compound	CAS Number	LOR	Unit	Client sample ID: BH8-0.05	BH12-0.0	BH13-0.0	BH14-0.0	BH15-0.1
				Client sampling date / time: 06-JUL-2011 12:00	06-JUL-2011 12:00	06-JUL-2011 12:00	06-JUL-2011 12:00	06-JUL-2011 12:00
				EM1107061-001	EM1107061-002	EM1107061-003	EM1107061-004	EM1107061-005
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	**0.2**	----	----	----	----
Copper	7440-50-8	0.1	mg/L	----	**0.6**	**0.1**	----	----
Lead	7439-92-1	0.1	mg/L	**0.6**	**1.8**	**0.6**	**0.2**	----
Nickel	7440-02-0	0.1	mg/L	----	----	----	----	<0.1
Zinc	7440-66-6	0.1	mg/L	**2.4**	**20.3**	**3.5**	**2.7**	----
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	----	<0.0010	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**30.6**	**36.2**	**33.1**	**35.5**	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**43.2**	**69.9**	**65.9**	**65.6**	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**118**	**117**	**114**	**106**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**67.3**	**94.6**	**90.0**	**88.9**	----
Anthracene-d10	1719-06-8	0.1	%	**99.6**	**97.4**	**101**	**97.0**	----
4-Terphenyl-d14	1718-51-0	0.1	%	**106**	**94.5**	**92.5**	**90.5**	----

Analytical Results

Sub-Matrix: ASLP LEACHATE			Client sample ID	BH16-0.1	BH18-0.5	----	----	----
			Client sampling date / time	06-JUL-2011 12:00	06-JUL-2011 12:00	----	----	----
Compound	CAS Number	LOR	Unit	EM1107061-006	EM1107061-007	----	----	----
EG005C: Leachable Metals by ICPAES								
Lead	7439-92-1	0.1	mg/L	----	**0.3**	----	----	----
Nickel	7440-02-0	0.1	mg/L	<0.1	----	----	----	----
Zinc	7440-66-6	0.1	mg/L	----	**2.6**	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	----	<0.5	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	**33.3**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	----	**67.2**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	**102**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	**89.9**	----	----	----
Anthracene-d10	1719-06-8	0.1	%	----	**97.3**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	**89.3**	----	----	----

CITY OF PORT PHILLIP

Chain of Custody

File No:	02503
Page:	1 of 2

Address:	Marlborough St, Balaclava	Sampled by:	DP
Project:	Soil Classification	Date sampled:	17-20 June 2011

	Sample Number	Sample Type	Material Description	Testing Required: IWRG 621 SCREEN P16	HEAVY METALS P16/1, EG035	PAH EP075B						NO OF JARS
16/6 1	BH8-0.05	S	CLAY		✓	✓						2
2	BH8-0.5	S	SAND		✓	✓						1
3	BH9-0.1	S	CL + SAND	✓								1
4	BH9-0.5	S	SAND	✓	✓	✓						2
5	BH9-0.9	S	CLAY									1
6	BH10-0.01	S	SAND	✓								(2) 1 BP
7	BH10-0.4	S	"									(1) 2
8	BH10-0.7	S	CLAY		✓	✓						1
9	BH11-0.2	S	SAND		✓	✓						1
10	BH11-0.3	S	SILT									1
11	BH11-0.4	S	SAND		✓	✓						1
12	BH11-0.7	S	CLAY									1
13	BH12-0.0	S	SILT		✓	✓						2
14	BH12-0.3	S	SAND									1
16/6 15	BH12-0.7	S	CLAY	✓								1
20/6 16	BH13-0.0	S	SILT	✓								2
17	(BH13-0.2) -0.5 BP	S	CLAY		✓	✓						2
18	BH14-0.0	S	SILT		✓	✓						2
19	BH14-0.3	S	SAND									2
20	BH14-0.5	S	CLAY		✓	✓						2

Environmental Division
Melbourne
Work Order
EM1106735
mp mp
Telephone : +61-3-8549 9600

Turnaround:	(STANDARD)	3 DAY	48 HOURS	24 HOURS

NOTES	
Report to:	DARREN PENDERGAST email: dpenderg@portphillip.vic.gov.au, m: 0468 762 892
	Heavy Metals as per IWRG 621 incl Mercury and Hexavalent Chromium
	ASL Quote ref: ME-331-11

CHAIN OF CUSTODY					
From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	[signature]	(ALS)	22/6	12:30
					—

COC rec'd 22/6/11 3:50 Peter ALS

AU

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	BH8-0.05	BH12-0.0	BH13-0.0	BH14-0.0	BH15-0.1
				Client sampling date / time	16-JUN-2011 15:00	16-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00	20-JUN-2011 15:00
					EM1107061-001	EM1107061-002	EM1107061-003	EM1107061-004	EM1107061-005
EN60: ASLP Leaching Procedure									
Initial pH	----	0.1	pH Unit		**8.1**	**8.6**	**6.8**	**5.5**	**8.7**
After HCl pH	----	0.1	pH Unit		**1.4**	**5.1**	**1.5**	**1.3**	**1.5**
Extraction Fluid pH	----	0.1	pH Unit		**5.0**	**2.9**	**5.0**	**5.0**	**5.0**
Final pH	----	0.1	pH Unit		**5.3**	**4.6**	**5.1**	**5.1**	**5.4**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16-0.1	Client sample ID: BH18-0.5	----	----	----
				Client sampling date / time: 20-JUN-2011 15:00	20-JUN-2011 15:00	----	----	----
				EM1107061-006	EM1107061-007	----	----	----
EN60: ASLP Leaching Procedure								
Initial pH	----	0.1	pH Unit	**8.7**	**8.9**	----	----	----
After HCl pH	----	0.1	pH Unit	**1.4**	**1.8**	----	----	----
Extraction Fluid pH	----	0.1	pH Unit	**5.0**	**5.0**	----	----	----
Final pH	----	0.1	pH Unit	**5.2**	**6.0**	----	----	----

Surrogate Control Limits

Sub-Matrix: **ASLP LEACHATE**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
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

QUALITY CONTROL REPORT

Work Order	: **EM1107061**	Page	: 1 of 5
Client	: **CITY OF PORT PHILLIP**	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Client Services
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: Melbourne.Enviro.Services@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: REBATCH OF EM1106735 SOIL CLASSIFICATION	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MARLBOROUGH ST, BALACLAVA		
C-O-C number	: ----	Date Samples Received	: 30-JUN-2011
Sampler	: DP	Issue Date	: 06-JUL-2011
Order number	: ----		
		No. of samples received	: 7
Quote number	: ME/331/11	No. of samples analysed	: 7

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.

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.

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics

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.

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005C: Leachable Metals by ICPAES (QC Lot: 1858480)									
EM1107038-002	Anonymous	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EM1107061-006	BH16-0.1	EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.0	No Limit
		EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	<0.1	0.0	No Limit
EG035C: Leachable Mercury by FIMS (QC Lot: 1860421)									
EM1106815-004	Anonymous	EG035C: Mercury	7439-97-6	0.0010	mg/L	<0.0010	<0.0010	0.0	No Limit

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

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

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1858480)								
EG005C: Arsenic	7440-38-2	0.1	mg/L	<0.1	1.00 mg/L	107	80	120
EG005C: Copper	7440-50-8	0.1	mg/L	<0.1	1.00 mg/L	107	80	120
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	1.00 mg/L	114	80	120
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	1.00 mg/L	113	80	120
EG005C: Zinc	7440-66-6	0.1	mg/L	<0.1	1.00 mg/L	112	80	120
EG035C: Leachable Mercury by FIMS (QCLot: 1860421)								
EG035C: Mercury	7439-97-6	0.001	mg/L	<0.0010	0.0100 mg/L	87.4	70	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1856451)								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	90.7	41	139

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005C: Leachable Metals by ICPAES (QCLot: 1858480)							
EM1107038-003	Anonymous	EG005C: Arsenic	7440-38-2	1.00 mg/L	116	70	130
		EG005C: Copper	7440-50-8	1.00 mg/L	124	70	130
		EG005C: Lead	7439-92-1	1.00 mg/L	110	70	130
		EG005C: Nickel	7440-02-0	1.00 mg/L	104	70	130
		EG005C: Zinc	7440-66-6	1.00 mg/L	102	70	130
EG035C: Leachable Mercury by FIMS (QCLot: 1860421)							
EM1106815-005	Anonymous	EG035C: Mercury	7439-97-6	0.0100 mg/L	85.0	63	133

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EM1107061**	Page	: 1 of 5
Client	: CITY OF PORT PHILLIP	Laboratory	: Environmental Division Melbourne
Contact	: MR DARREN PENDERGAST	Contact	: Client Services
Address	: 99a Carlisle Street ST KILDA VIC 3182	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: dpenderg@portphillip.vic.gov.au	E-mail	: Melbourne.Enviro.Services@alsglobal.com
Telephone	: +61 03 9209 6245	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9601
Project	: REBATCH OF EM1106735 SOIL CLASSIFICATION	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: MARLBOROUGH ST, BALACLAVA		
C-O-C number	: ----	Date Samples Received	: 30-JUN-2011
Sampler	: DP	Issue Date	: 06-JUL-2011
Order number	: ----		
		No. of samples received	: 7
Quote number	: ME/331/11	No. of samples analysed	: 7

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

Analysis Holding Time Compliance

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 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 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 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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
BH8-0.05, BH12-0.0, BH13-0.0, BH14-0.0, BH15-0.1, BH16-0.1, BH18-0.5	**06-JUL-2011**	**05-JUL-2011**	02-JAN-2012	✓	**06-JUL-2011**	02-JAN-2012	✓
EG035C: Leachable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
BH12-0.0	**06-JUL-2011**	**----**	----	----	**06-JUL-2011**	03-AUG-2011	✓
EN60: ASLP Leaching Procedure							
Lab Split: Leach for metals excl. Hg							
BH15-0.1, BH16-0.1	**20-JUN-2011**	**---**	17-DEC-2011	----	**04-JUL-2011**	17-DEC-2011	✓
LabSplit: Leach for organics and other tests							
BH8-0.05, BH12-0.0	**16-JUN-2011**	**---**	30-JUN-2011	----	**04-JUL-2011**	30-JUN-2011	×
LabSplit: Leach for organics and other tests							
BH13-0.0, BH14-0.0, BH18-0.5	**20-JUN-2011**	**---**	04-JUL-2011	----	**04-JUL-2011**	04-JUL-2011	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
BH8-0.05, BH12-0.0, BH13-0.0, BH14-0.0, BH18-0.5	**06-JUL-2011**	**04-JUL-2011**	13-JUL-2011	✓	**05-JUL-2011**	13-JUL-2011	✓

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: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Leachable Mercury by FIMS	EG035C	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Leachable Mercury by FIMS	EG035C	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Leachable Mercury by FIMS	EG035C	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Leachable Mercury by FIMS	EG035C	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Leachable Metals by ICPAES	EG005C	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement

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
Leachable Metals by ICPAES	EG005C	SOIL	APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises leachate 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)
Leachable Mercury by FIMS	EG035C	SOIL	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the TCLP solution. 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)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	SOIL	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)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
ASLP for Non & Semivolatile Analytes	EN60a	SOIL	AS4439.3 Preparation of Leachates
Separatory Funnel Extraction of Liquids	ORG14	SOIL	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.

mgt LabMark
ENVIRONMENTAL LABORATORIES

Certificate of Analysis

City of Port Phillip
Private Bag 3
PO St Kilda
Victoria 3182

Attention: Darren Pendergast

NATA Accredited
Accreditation Number 1261
Site Number 1254

This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Report	295096-S
Client Reference	DUE DILIGENCE INVESTIGATION 02503
Received Date	Mar 31, 2011

Client Sample ID			**SPLIT 1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**M11-MA14427**
Date Sampled			**Mar 29, 2011**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9 Fraction by GC	20	mg/kg	< 20
BTEX			
Benzene	0.05	mg/kg	< 0.05
Toluene	0.05	mg/kg	< 0.05
Ethylbenzene	0.05	mg/kg	< 0.05
o-Xylene	0.05	mg/kg	< 0.05
Total m+p-Xylenes	0.10	mg/kg	< 0.1
Xylenes(ortho.meta and para)	0.15	mg/kg	< 0.15
Fluorobenzene (surr.)	1	%	87
Total Recoverable Hydrocarbons			
TRH C10-C14 Fraction by GC	50	mg/kg	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100
TRH C10-36 (Total)	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.1	mg/kg	< 0.1
Acenaphthylene	0.1	mg/kg	0.1
Anthracene	0.1	mg/kg	0.2
Benz(a)anthracene	0.1	mg/kg	0.8
Benzo(a)pyrene	0.1	mg/kg	0.8
Benzo(b)fluoranthene	0.1	mg/kg	0.7
Benzo(g.h.i)perylene	0.1	mg/kg	0.7
Benzo(k)fluoranthene	0.1	mg/kg	0.5
Chrysene	0.1	mg/kg	0.7
Dibenz(a.h)anthracene	0.1	mg/kg	0.2
Fluoranthene	0.1	mg/kg	1.5
Fluorene	0.1	mg/kg	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	0.5
Naphthalene	0.1	mg/kg	< 0.1
Phenanthrene	0.1	mg/kg	0.9
Pyrene	0.1	mg/kg	1.4
Total PAH	0.1	mg/kg	9.0
p-Terphenyl-d14 (surr.)	1	%	89
2-Fluorobiphenyl (surr.)	1	%	94
Metals M13			
Arsenic	2	mg/kg	16
Barium	10	mg/kg	64
Beryllium	2	mg/kg	< 2

Client Sample ID			**SPLIT 1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**M11-MA14427**
Date Sampled			**Mar 29, 2011**
Test/Reference	LOR	Unit	
Cadmium	0.5	mg/kg	< 0.5
Chromium	5	mg/kg	18
Cobalt	5	mg/kg	< 5
Copper	5	mg/kg	46
Lead	5	mg/kg	600
Manganese	5	mg/kg	57
Mercury	0.1	mg/kg	0.1
Nickel	5	mg/kg	9.7
Vanadium	10	mg/kg	67
Zinc	5	mg/kg	440
% Moisture	0.1	%	13

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - Method: TRH C6-C36 - MGT 100A	Melbourne	Apr 04, 2011	14 Day
BTEX - Method: USEPA 8260B - MGT 350A Monocyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2011	14 Day
Total Recoverable Hydrocarbons - Method: TRH C6-C36 - MGT 100A	Melbourne	Apr 04, 2011	14 Day
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270C Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2011	14 Day
Metals M13 - Method: USEPA 6010B Heavy Metals	Melbourne	Apr 04, 2011	180 Day
% Moisture - Method: Method 102 - ANZECC - % Moisture	Melbourne	Apr 04, 2011	14 Day

mgt-LabMark Internal Quality Control Review

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis.
7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)
For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per Kilogram	**mg/L:** milligrams per litre
µg/l: micrograms per litre	**ppm:** Parts per million
ppb: Parts per billion	**%:** Percentage
org/100ml: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:
Results <10 times the LOR : No Limit
Results between 10-20 times the LOR : RPD must lie between 0-50%
Results >20 times the LOR : RPD must lie between 0-20%
Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Quality Control Results

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Method Blank							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A							
TRH C6-C9 Fraction by GC	mg/kg	< 20			20	Pass	
Method Blank							
BTEX USEPA 8260B - MGT 350A Monocyclic Aromatic Hydroca							
Benzene	mg/kg	< 0.05			0.05	Pass	
Toluene	mg/kg	< 0.05			0.05	Pass	
Ethylbenzene	mg/kg	< 0.05			0.05	Pass	
o-Xylene	mg/kg	< 0.05			0.05	Pass	
Total m+p-Xylenes	mg/kg	< 0.1			0.10	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15			0.15	Pass	
Method Blank							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A							
TRH C10-C14 Fraction by GC	mg/kg	< 50			50	Pass	
TRH C15-C28 Fraction by GC	mg/kg	< 100			100	Pass	
TRH C29-C36 Fraction by GC	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270C Polycyclic A							
Acenaphthene	mg/kg	< 0.1			0.1	Pass	
Acenaphthylene	mg/kg	< 0.1			0.1	Pass	
Anthracene	mg/kg	< 0.1			0.1	Pass	
Benz(a)anthracene	mg/kg	< 0.1			0.1	Pass	
Benzo(a)pyrene	mg/kg	< 0.1			0.1	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.1			0.1	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.1			0.1	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.1			0.1	Pass	
Chrysene	mg/kg	< 0.1			0.1	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.1			0.1	Pass	
Fluoranthene	mg/kg	< 0.1			0.1	Pass	
Fluorene	mg/kg	< 0.1			0.1	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.1			0.1	Pass	
Naphthalene	mg/kg	< 0.1			0.1	Pass	
Phenanthrene	mg/kg	< 0.1			0.1	Pass	
Pyrene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Metals M13 USEPA 6010B Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.5			0.5	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Vanadium	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A		Result 1					
TRH C6-C9 Fraction by GC	%	80			70-130	Pass	
LCS - % Recovery							
BTEX USEPA 8260B - MGT 350A Monocyclic Aromatic Hydroca		Result 1					
Benzene	%	85			70-130	Pass	
Toluene	%	93			70-130	Pass	
Ethylbenzene	%	83			70-130	Pass	
Xylenes(ortho.meta and para)	%	83			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A		Result 1					
TRH C10-C14 Fraction by GC	%	89			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons USEPA 8270C Polycyclic A		Result 1					
Acenaphthene	%	104			70-130	Pass	

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Acenaphthylene	%	105			70-130	Pass	
Anthracene	%	99			70-130	Pass	
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	104			70-130	Pass	
Benzo(b)fluoranthene	%	92			70-130	Pass	
Benzo(g.h.i)perylene	%	111			70-130	Pass	
Benzo(k)fluoranthene	%	107			70-130	Pass	
Chrysene	%	101			70-130	Pass	
Dibenz(a.h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	103			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	118			70-130	Pass	
Naphthalene	%	101			70-130	Pass	
Phenanthrene	%	103			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Metals M13 USEPA 6010B Heavy Metals		Result 1					
Arsenic	%	95			80-120	Pass	
Barium	%	114			80-120	Pass	
Beryllium	%	97			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	100			80-120	Pass	
Cobalt	%	102			80-120	Pass	
Copper	%	96			80-120	Pass	
Lead	%	101			80-120	Pass	
Manganese	%	105			80-120	Pass	
Mercury	%	108			75-125	Pass	
Nickel	%	102			80-120	Pass	
Vanadium	%	96			80-120	Pass	
Zinc	%	99			80-120	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD			
TRH C6-C9 Fraction by GC	mg/kg	< 20	< 20	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
BTEX		Result 1	Result 2	RPD			
Benzene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toluene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Ethylbenzene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
o-Xylene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Total m+p-Xylenes	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15	< 0.15	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD			
TRH C10-C14 Fraction by GC	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C15-C28 Fraction by GC	mg/kg	< 100	< 100	<1	30%	Pass	
TRH C29-C36 Fraction by GC	mg/kg	< 100	< 100	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Polycyclic Aromatic Hydrocarbons		Result 1	Result 2	RPD			
Acenaphthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Acenaphthylene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benz(a)anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(a)pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Chrysene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Fluorene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Naphthalene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Phenanthrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
[Duplicate of M11-MA14363 - BATCH]							
Metals M13		Result 1	Result 2	RPD			

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Arsenic	mg/kg	2.3	< 2	20	30%	Pass	
Barium	mg/kg	60	80	7	30%	Pass	
Beryllium	mg/kg	< 2	< 2	20	30%	Pass	
Cadmium	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chromium	mg/kg	31	36	14	30%	Pass	
Cobalt	mg/kg	15	17	3	30%	Pass	
Copper	mg/kg	31	37	19	30%	Pass	
Lead	mg/kg	53	54	2	30%	Pass	
Manganese	mg/kg	160	180	2	30%	Pass	
Nickel	mg/kg	51	51	<1	30%	Pass	
Vanadium	mg/kg	30	56	42	30%	Fail	Q15
Zinc	mg/kg	110	110	2	30%	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
Total Recoverable Hydrocarbons		Result 1					
TRH C6-C9 Fraction by GC	%	99			70 - 130	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
BTEX		Result 1					
Benzene	%	99			70 - 130	Pass	
Toluene	%	105			70 - 130	Pass	
Ethylbenzene	%	97			70 - 130	Pass	
o-Xylene	%	97			75 - 125	Pass	
Xylenes(ortho.meta and para)	%	96			70 - 130	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
Total Recoverable Hydrocarbons		Result 1					
TRH C10-C14 Fraction by GC	%	90			70 - 130	Pass	
[Spike of M11-MA14427] - % Recovery							
Polycyclic Aromatic Hydrocarbons		Result 1					
Acenaphthene	%	109			70 - 130	Pass	
Acenaphthylene	%	111			70 - 130	Pass	
Anthracene	%	111			70 - 130	Pass	
Benz(a)anthracene	%	122			70 - 130	Pass	
Benzo(a)pyrene	%	109			70 - 130	Pass	
Benzo(b)fluoranthene	%	111			70 - 130	Pass	
Benzo(g.h.i)perylene	%	100			70 - 130	Pass	
Benzo(k)fluoranthene	%	101			70 - 130	Pass	
Chrysene	%	116			70 - 130	Pass	
Dibenz(a.h)anthracene	%	96			70 - 130	Pass	
Fluoranthene	%	121			70 - 130	Pass	
Fluorene	%	107			70 - 130	Pass	
Indeno(1.2.3-cd)pyrene	%	106			70 - 130	Pass	
Naphthalene	%	106			70 - 130	Pass	
Phenanthrene	%	120			70 - 130	Pass	
Pyrene	%	122			70 - 130	Pass	
[Spike of M11-MA14363 - BATCH] - % Recovery							
Metals M13		Result 1					
Arsenic	%	82			75 - 125	Pass	
Barium	%	101			75 - 125	Pass	
Beryllium	%	90			75 - 125	Pass	
Cadmium	%	91			75 - 125	Pass	
Chromium	%	102			75 - 125	Pass	
Cobalt	%	90			75 - 125	Pass	
Copper	%	93			75 - 125	Pass	
Lead	%	101			75 - 125	Pass	
Manganese	%	124			75 - 125	Pass	
Mercury	%	103			70 - 130	Pass	
Nickel	%	109			75 - 125	Pass	
Vanadium	%	88			75 - 125	Pass	
Zinc	%	88			75 - 125	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in AS-POL-002. Refer to Glossary Page of this report for further details

Authorised By

Michael Wright
NATA Signatory

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 57429

Client:
Groundswell Laboratories
116 Moray St
South Melbourne
VIC 3205

Attention: Paul Woodward

Sample log in details:

Your Reference:	**GS11190, 02503 Marlborough St, Balaclava**		
No. of samples:	2 soils		
Date samples received / completed instructions received	24/06/11	/	24/06/11

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

Report Details:

Date results requested by: / Issue Date:	30/06/11	/	28/06/11
Date of Preliminary Report:	Not issued		

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	57429-1 Split 2 17/06/11 Soi	57429-2 Split 3 20/06/11 Soi
Date extracted	-	27/06/2011	27/06/2011
Date analysed	-	27/06/2011	27/06/2011
Naphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.3	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	2.4	<0.1
Anthracene	mg/kg	0.4	<0.1
Fluoranthene	mg/kg	6.4	<0.1
Pyrene	mg/kg	6.3	<0.1
Benzo(a)anthracene	mg/kg	3.2	<0.1
Chrysene	mg/kg	3.2	<0.1
Benzo(b+k)fluoranthene	mg/kg	5.7	<0.2
Benzo(a)pyrene	mg/kg	4.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	2.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.4	<0.1
Benzo(g,h,i)perylene	mg/kg	2.0	<0.1
Surrogate p-Terphenyl-d_{14}	%	109	108

Moisture			
Our Reference:	UNITS	57429-1	57429-2
Your Reference	----------	Split 2	Split 3
Date Sampled	----------	17/06/11	20/06/11
Type of sample		Soi	Soi
Date prepared	-	27/06/2011	27/06/2011
Date analysed	-	28/06/2011	28/06/2011
Moisture	%	20	6.2

Method ID	Methodology Summary
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/06/2011	[NT]	[NT]	LCS-1	27/06/2011
Date analysed	-			27/06/2011	[NT]	[NT]	LCS-1	27/06/2011
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	107%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	107%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	113%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	105%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	113%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	125%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-1	113%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	111	[NT]	[NT]	LCS-1	112%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			27/06/2011
Date analysed	-			28/06/2011
Moisture	%	0.1	Inorg-008	<0.1

Report Comments:

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

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Groundswell Laboratories
116 Moray St
South Melbourne VIC 3205

ph: 03 8669 1450
Fax: 03 8669 1451

Attention: Paul Woodward

Sample log in details:

Your reference:	**GS11190, 02503 Marlborough St, Balaclava**
Envirolab Reference:	**57429**
Date received:	24/06/11
Date results expected to be reported:	**30/06/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	2 soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice Pack

Comments:

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

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

To Envirolab

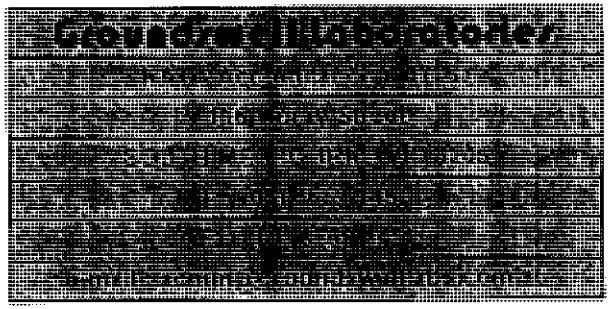
Page 1 of 1

COC Reference : GS11190.

CHAIN OF CUSTODY

Reference : AF06.Rev1

Date Issued : 11/3/2011



CLIENT / PROJECT DETAILS		Groundswell Quote #:
Company Name : Groundswell Laboratories		Ph : (03) 8669 1450
Company Address : 116 Moray Street, Sth Melbourne, VIC, 3205		Fax : (03) 8669 1451
Project Manager : Paul Woodward	Contact E-mail (s): paul@groundswelllabs.com.au	
Project Name : Marlborough St, Bxhadara.	Project Number : 02503	
Project Sample Manager :		Mobile :
TAT : 1day / 2 days / ....days / Date Required : 30/6/2011.	Report Format : pdf ; xlsx.	

Lab ID	Sample ID	Sample Date	Sample Type: Soil	Water	Paint, Filter	Other	# Sample Jars / Bottles	Volatile Organic Analytes: vTPH C6-9	BTEX	VOC	VHC	VAC	Semi-Volatile Organic Analytes: svTPH C10-36	SVOC	PAH / Phenols	OCP / OPP / PCB	SVCHC	Metals*: Soil	Water - Filtered	Water - Total	IWRG 621 Screen	SA Waste Screen	Other Analytes	Comments
1	Split 2	17/6/11	X												X									
2	Split 3	24/6/11	X												X									

Envirolab Ser
12 Ash
Chatswood NSW
Ph: (02) 99

Job No: 574429

Date Received: 24/6/11

Time Received: 10:30

Received by:

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broke

*Metals (circle) : As, Cd, Cr, Cu, Ni, Pb, Zn, Hg (M8) Ag, Mo, Se, Sn, CrVI (EPA 448.3 Metals), Mn, Ca, K, Mg, Na, Be, B, Co, V, Fe

VOC=Volatile Organic Compounds (USEPA 8260) VHC=Volatile Halogenated Compounds VAC=Volatile Aromatic Compounds SVOC=Semi-volatile Organic Compounds (USEPA 8270)

Comments :

Relinquished By :	Date / Time : 23/6/2011.	Received By : Rhea Marge	Date / Time : 24/6/11 10:30
Relinquished By :	Date / Time :	Received By :	Date / Time :

CITY OF **PORT PHILLIP**

Chain of Custody

pg (2)

File No:	02503
Page:	1 of 1

Address:	46-58 MARLBOROUGH ST, BALACLAVA	Sampled by:	DP
Project:	DUE DILIGENCE INVESTIGATION	Date sampled:	29-3-11

Sample Number	Sample Type	Material Description	Testing Required: NEPM SCREEN P-13/1	13 METALS S-3	TPH/BTEX/PAH S-7						
BH1-0.0	S	SILT	✓								
BH1-0.4	S	CLAY		✓	✓						
BH2-0.1	S	SILT		✓	✓						
BH2-0.4	S	CLAY	✓								
BH3-0.05	S	SILT		✓	✓						
BH3-0.45	S	SAND		✓	✓						
BH3-0.6	S	CLAY									
BH4-0.1	S	SILT		✓	✓						
BH4-0.3	S	SAND									
BH4-0.4	S	CLAY	✓								
BH5-0.1	S	SILT	✓								
BH5-0.4	S	SAND									
BH5-0.65	S	CLAY		✓	✓						
BH6-0.05	S	SAND		✓	✓						
BH6-0.5	S	SAND	✓								
BH7-0.05	S	SILT		✓	✓						
BH7-0.3	S	SILT		✓	✓						
DUP 1	S	SILT		✓	✓						
SPLIT 1 *	S	SILT		✓	✓						
RIN 1	W	RINSATE		✓	✓						

Environmental Division
Melbourne
Work Order
EM1103251
Telephone : +61-3-8549 9600

Turnaround: STANDARD (5 DAYS)

NOTES
Please email reports to DARREN PENDERGAST : dpendergast@portphillip.vic.gov.au
0466 752 892
* Please forward SPLIT 1 to MGT-Labmark for analysis

CHAIN OF CUSTODY

From	Organisation	Received by	Company	Date	Time
D. Pendergast	CoPP	R Ana	ALS	30/3	12:30
			MGT-LM	31/3	2:00

MGZClm - 295096 - 31/3 @ 1804

mgt LabMark
ENVIRONMENTAL LABORATORIES

Certificate of Analysis

City of Port Phillip
Private Bag 3
PO St Kilda
Victoria 3182

Attention: Darren Pendergast

NATA Accredited
Accreditation Number 1261
Site Number 1254

This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Report	295096-S
Client Reference	DUE DILIGENCE INVESTIGATION 02503
Received Date	Mar 31, 2011

Client Sample ID			**SPLIT 1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**M11-MA14427**
Date Sampled			**Mar 29, 2011**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9 Fraction by GC	20	mg/kg	< 20
BTEX			
Benzene	0.05	mg/kg	< 0.05
Toluene	0.05	mg/kg	< 0.05
Ethylbenzene	0.05	mg/kg	< 0.05
o-Xylene	0.05	mg/kg	< 0.05
Total m+p-Xylenes	0.10	mg/kg	< 0.1
Xylenes(ortho.meta and para)	0.15	mg/kg	< 0.15
Fluorobenzene (surr.)	1	%	87
Total Recoverable Hydrocarbons			
TRH C10-C14 Fraction by GC	50	mg/kg	< 50
TRH C15-C28 Fraction by GC	100	mg/kg	< 100
TRH C29-C36 Fraction by GC	100	mg/kg	< 100
TRH C10-36 (Total)	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.1	mg/kg	< 0.1
Acenaphthylene	0.1	mg/kg	0.1
Anthracene	0.1	mg/kg	0.2
Benz(a)anthracene	0.1	mg/kg	0.8
Benzo(a)pyrene	0.1	mg/kg	0.8
Benzo(b)fluoranthene	0.1	mg/kg	0.7
Benzo(g.h.i)perylene	0.1	mg/kg	0.7
Benzo(k)fluoranthene	0.1	mg/kg	0.5
Chrysene	0.1	mg/kg	0.7
Dibenz(a.h)anthracene	0.1	mg/kg	0.2
Fluoranthene	0.1	mg/kg	1.5
Fluorene	0.1	mg/kg	< 0.1
Indeno(1.2.3-cd)pyrene	0.1	mg/kg	0.5
Naphthalene	0.1	mg/kg	< 0.1
Phenanthrene	0.1	mg/kg	0.9
Pyrene	0.1	mg/kg	1.4
Total PAH	0.1	mg/kg	9.0
p-Terphenyl-d14 (surr.)	1	%	89
2-Fluorobiphenyl (surr.)	1	%	94
Metals M13			
Arsenic	2	mg/kg	16
Barium	10	mg/kg	64
Beryllium	2	mg/kg	< 2

Client Sample ID			**SPLIT 1**
Sample Matrix			**Soil**
mgt-LabMark Sample No.			**M11-MA14427**
Date Sampled			**Mar 29, 2011**
Test/Reference	LOR	Unit	
Cadmium	0.5	mg/kg	< 0.5
Chromium	5	mg/kg	18
Cobalt	5	mg/kg	< 5
Copper	5	mg/kg	46
Lead	5	mg/kg	600
Manganese	5	mg/kg	57
Mercury	0.1	mg/kg	0.1
Nickel	5	mg/kg	9.7
Vanadium	10	mg/kg	67
Zinc	5	mg/kg	440
% Moisture	0.1	%	13

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - Method: TRH C6-C36 - MGT 100A	Melbourne	Apr 04, 2011	14 Day
BTEX - Method: USEPA 8260B - MGT 350A Monocyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2011	14 Day
Total Recoverable Hydrocarbons - Method: TRH C6-C36 - MGT 100A	Melbourne	Apr 04, 2011	14 Day
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270C Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2011	14 Day
Metals M13 - Method: USEPA 6010B Heavy Metals	Melbourne	Apr 04, 2011	180 Day
% Moisture - Method: Method 102 - ANZECC - % Moisture	Melbourne	Apr 04, 2011	14 Day

mgt-LabMark Internal Quality Control Review

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis.
7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)
For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per Kilogram	**mg/L:** milligrams per litre
µg/l: micrograms per litre	**ppm:** Parts per million
ppb: Parts per billion	**%:** Percentage
org/100ml: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:
Results <10 times the LOR : No Limit
Results between 10-20 times the LOR : RPD must lie between 0-50%
Results >20 times the LOR : RPD must lie between 0-20%
Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Quality Control Results

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Method Blank							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A							
TRH C6-C9 Fraction by GC	mg/kg	< 20			20	Pass	
Method Blank							
BTEX USEPA 8260B - MGT 350A Monocyclic Aromatic Hydroca							
Benzene	mg/kg	< 0.05			0.05	Pass	
Toluene	mg/kg	< 0.05			0.05	Pass	
Ethylbenzene	mg/kg	< 0.05			0.05	Pass	
o-Xylene	mg/kg	< 0.05			0.05	Pass	
Total m+p-Xylenes	mg/kg	< 0.1			0.10	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15			0.15	Pass	
Method Blank							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A							
TRH C10-C14 Fraction by GC	mg/kg	< 50			50	Pass	
TRH C15-C28 Fraction by GC	mg/kg	< 100			100	Pass	
TRH C29-C36 Fraction by GC	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270C Polycyclic A							
Acenaphthene	mg/kg	< 0.1			0.1	Pass	
Acenaphthylene	mg/kg	< 0.1			0.1	Pass	
Anthracene	mg/kg	< 0.1			0.1	Pass	
Benz(a)anthracene	mg/kg	< 0.1			0.1	Pass	
Benzo(a)pyrene	mg/kg	< 0.1			0.1	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.1			0.1	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.1			0.1	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.1			0.1	Pass	
Chrysene	mg/kg	< 0.1			0.1	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.1			0.1	Pass	
Fluoranthene	mg/kg	< 0.1			0.1	Pass	
Fluorene	mg/kg	< 0.1			0.1	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.1			0.1	Pass	
Naphthalene	mg/kg	< 0.1			0.1	Pass	
Phenanthrene	mg/kg	< 0.1			0.1	Pass	
Pyrene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Metals M13 USEPA 6010B Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.5			0.5	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Vanadium	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A		Result 1					
TRH C6-C9 Fraction by GC	%	80			70-130	Pass	
LCS - % Recovery							
BTEX USEPA 8260B - MGT 350A Monocyclic Aromatic Hydroca		Result 1					
Benzene	%	85			70-130	Pass	
Toluene	%	93			70-130	Pass	
Ethylbenzene	%	83			70-130	Pass	
Xylenes(ortho.meta and para)	%	83			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons TRH C6-C36 - MGT 100A		Result 1					
TRH C10-C14 Fraction by GC	%	89			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons USEPA 8270C Polycyclic A		Result 1					
Acenaphthene	%	104			70-130	Pass	

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Acenaphthylene	%	105			70-130	Pass	
Anthracene	%	99			70-130	Pass	
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	104			70-130	Pass	
Benzo(b)fluoranthene	%	92			70-130	Pass	
Benzo(g.h.i)perylene	%	111			70-130	Pass	
Benzo(k)fluoranthene	%	107			70-130	Pass	
Chrysene	%	101			70-130	Pass	
Dibenz(a.h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	103			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	118			70-130	Pass	
Naphthalene	%	101			70-130	Pass	
Phenanthrene	%	103			70-130	Pass	
Pyrene	%	93			70-130	Pass	
LCS - % Recovery							
Metals M13 USEPA 6010B Heavy Metals		Result 1					
Arsenic	%	95			80-120	Pass	
Barium	%	114			80-120	Pass	
Beryllium	%	97			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	100			80-120	Pass	
Cobalt	%	102			80-120	Pass	
Copper	%	96			80-120	Pass	
Lead	%	101			80-120	Pass	
Manganese	%	105			80-120	Pass	
Mercury	%	108			75-125	Pass	
Nickel	%	102			80-120	Pass	
Vanadium	%	96			80-120	Pass	
Zinc	%	99			80-120	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD			
TRH C6-C9 Fraction by GC	mg/kg	< 20	< 20	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
BTEX		Result 1	Result 2	RPD			
Benzene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toluene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Ethylbenzene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
o-Xylene	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Total m+p-Xylenes	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15	< 0.15	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD			
TRH C10-C14 Fraction by GC	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C15-C28 Fraction by GC	mg/kg	< 100	< 100	<1	30%	Pass	
TRH C29-C36 Fraction by GC	mg/kg	< 100	< 100	<1	30%	Pass	
[Duplicate of M11-MA14436 - BATCH]							
Polycyclic Aromatic Hydrocarbons		Result 1	Result 2	RPD			
Acenaphthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Acenaphthylene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benz(a)anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(a)pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Chrysene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Fluoranthene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Fluorene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Naphthalene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Phenanthrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Pyrene	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
[Duplicate of M11-MA14363 - BATCH]							
Metals M13		Result 1	Result 2	RPD			

Sample, Test, Result Reference	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Codes
Arsenic	mg/kg	2.3	< 2	20	30%	Pass	
Barium	mg/kg	60	80	7	30%	Pass	
Beryllium	mg/kg	< 2	< 2	20	30%	Pass	
Cadmium	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chromium	mg/kg	31	36	14	30%	Pass	
Cobalt	mg/kg	15	17	3	30%	Pass	
Copper	mg/kg	31	37	19	30%	Pass	
Lead	mg/kg	53	54	2	30%	Pass	
Manganese	mg/kg	160	180	2	30%	Pass	
Nickel	mg/kg	51	51	<1	30%	Pass	
Vanadium	mg/kg	30	56	42	30%	Fail	Q15
Zinc	mg/kg	110	110	2	30%	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
Total Recoverable Hydrocarbons		Result 1					
TRH C6-C9 Fraction by GC	%	99			70 - 130	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
BTEX		Result 1					
Benzene	%	99			70 - 130	Pass	
Toluene	%	105			70 - 130	Pass	
Ethylbenzene	%	97			70 - 130	Pass	
o-Xylene	%	97			75 - 125	Pass	
Xylenes(ortho.meta and para)	%	96			70 - 130	Pass	
[Spike of M11-MA14436 - BATCH] - % Recovery							
Total Recoverable Hydrocarbons		Result 1					
TRH C10-C14 Fraction by GC	%	90			70 - 130	Pass	
[Spike of M11-MA14427] - % Recovery							
Polycyclic Aromatic Hydrocarbons		Result 1					
Acenaphthene	%	109			70 - 130	Pass	
Acenaphthylene	%	111			70 - 130	Pass	
Anthracene	%	111			70 - 130	Pass	
Benz(a)anthracene	%	122			70 - 130	Pass	
Benzo(a)pyrene	%	109			70 - 130	Pass	
Benzo(b)fluoranthene	%	111			70 - 130	Pass	
Benzo(g.h.i)perylene	%	100			70 - 130	Pass	
Benzo(k)fluoranthene	%	101			70 - 130	Pass	
Chrysene	%	116			70 - 130	Pass	
Dibenz(a.h)anthracene	%	96			70 - 130	Pass	
Fluoranthene	%	121			70 - 130	Pass	
Fluorene	%	107			70 - 130	Pass	
Indeno(1.2.3-cd)pyrene	%	106			70 - 130	Pass	
Naphthalene	%	106			70 - 130	Pass	
Phenanthrene	%	120			70 - 130	Pass	
Pyrene	%	122			70 - 130	Pass	
[Spike of M11-MA14363 - BATCH] - % Recovery							
Metals M13		Result 1					
Arsenic	%	82			75 - 125	Pass	
Barium	%	101			75 - 125	Pass	
Beryllium	%	90			75 - 125	Pass	
Cadmium	%	91			75 - 125	Pass	
Chromium	%	102			75 - 125	Pass	
Cobalt	%	90			75 - 125	Pass	
Copper	%	93			75 - 125	Pass	
Lead	%	101			75 - 125	Pass	
Manganese	%	124			75 - 125	Pass	
Mercury	%	103			70 - 130	Pass	
Nickel	%	109			75 - 125	Pass	
Vanadium	%	88			75 - 125	Pass	
Zinc	%	88			75 - 125	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in AS-POL-002. Refer to Glossary Page of this report for further details

Authorised By

Michael Wright
NATA Signatory

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Groundswell laboratories

116 Moray Street, South Melbourne, Victoria, 3205.
Ph (03) 8669 1450 Fax (03) 8669 1451 (M) 0416 203 845 e-mail : admin@groundswelllabs.com.au

Sample Receipt Notice

Client Name	City of Port Phillip
Client Project Manager	Darren Pendergast
Client e-mail	dpenderg@portphillip.vic.gov.au
Client Address	99A Carisle Street, St Kilda, Victoria, 3182
Client Phone	03 9209 6245
Project Name	Marlborough Street, Balaclava
Project Number	2503
CofC Serial Number	02503/1
Purchase Order Number	Not Applicable
Date Sampled / Sampling Period	17/06 & 20/6/2011
Date Samples Received	23/06/2011
Date Sample Receipt Notice Issued	24/06/2011
Date Analytical Report Due	30/06/2011
Groundswell Batch Number	GS11190
Groundswell Quote Number	Not Applicable
Groundswell Sample Receipt Contact	Chris De Luca
E-mail	chris@groundswelllabs.com.au
Groundswell Reporting Contact	Paul Woodward
E-mail	paul@groundswelllabs.com.au
Reporting Requirements	pdf, .xlse
Sample Condition	Samples immediatrly chilled upon receipt Samples were received in good condition COC received with samples & samples detailed on the COC match those received Analytical request on the CofC clear Samples were received in appropriate containers, and appropriately preserved Samples were received within the THT's adopted by Groundswell
Comments	None
Subcontracted Analysis	PAH's sent to Envirolab on the 23/6/2011 As & Se sent to SAL on the 24/6/2011
Secondary Laboratory Analysis	Not Applicable

Thanks for choosing Groundswell Laboratories

Page 1 of 1

COC Reference : 02503/1

CHAIN OF CUSTODY

Reference : AF06.Rev1

Date Issued : 11/3/2011

Groundswell Laboratories

NATA Accreditation # 17067

116 Moray Street

SOUTH MELBOURNE VIC 3205

Ph (03) 8669 1450

Fax (03) 8669 1451

e-mail : admin@groundswelllabs.com.au

CLIENT / PROJECT DETAILS		Groundswell Quote #:
Company Name : CITY OF PORT PHILLIP		Ph : 9209 6777
Company Address : 99A CARLISLE ST, ST KILDA		Fax :
Project Manager : D. RENDERGAST	Contact E-mail (s): drendergast@portphillip.vic.gov.au	
Project Name : MARLBOROUGH ST BALACLAVA	Project Number : 02503	
Project Sample Manager : DARREN RENDERGAST		Mobile : 0466 752 892
TAT : 1day / 2 days / 5 days / Date Required :		Report Format : XL, PDF.

Lab ID	Sample ID	Sample Date	Sample Type: Soil	Water	Paint, Filter	Other	# Sample Jars / Bottles	Volatile Organic Analytes: vTPH C 6-9	BTEX	VOC	VHC	VAC	Semi-Volatile Organic Analytes: svTPH C 10-36	SVOC	PAH / Phenols	OCP / OPP / PCB	SVCHC	Metals*: Soil	Water - Filtered	Water - Total	IWRG 621 Screen	SA Waste Screen	Other Analytes: HEAVY METALS	PAH	Comments
	SPLIT 2	17/6/11	✓	✓																			✓	✓	
	SPLIT 3	20/6/11	✓	✓																			✓	✓	

*Metals (circle) : As, Cd, Cr, Cu, Ni, Pb, Zn, Hg (M8) Ag, Mo, Se, Sn, CrVI (EPA 448.3 Metals), Mn, Ca, K, Mg, Na, Be, B, Co, V, Fe

VOC=Volatile Organic Compounds (USEPA 8260) VHC=Volatile Halogenated Compounds VAC=Volatile Aromatic Compounds SVOC=Semi-volatile Organic Compounds (USEPA 8270)

Comments :

Relinquished By : D. RENDERGAST	Date / Time : 23/6/11	Received By :	Date / Time : 23/6/2011
Relinquished By :	Date / Time :	Received By :	Date / Time :

Groundswell Laboratories

" A New Force in Analytical Testing"

CERTIFICATE OF ANALYSIS

Client Name :	City of Port Phillip	**Groundswell Batch # :**	GS11190
Client Address :	99A Carlisle Street, St Kilda, Victoria, 3182	**Project Name :**	Marlborough Street, Balaclava
Client Phone # :	03 9209 6245	**Project # :**	2503
Client Fax # :	03 9534 9105	**Date Samples Received :**	23/06/2011
Project Manager :	Darren Pendergast	**Sample Matrix :**	Soil
E-mail :	dpenderg@portphillip.vic.gov.au	**Sample # Submitted :**	2
Project Sample Manager :	Darren Pendergast	**Groundswell Quote # :**	Not Applicable
E-mail :	dpenderg@portphillip.vic.gov.au	**Date CofA Issued :**	30/06/2011

Paul Woodward

Managing Director

paul@groundswelllabs.com.au

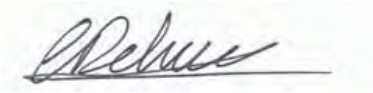
NATA

WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 17067

This Document is issued in accordance with NATA accreditation requirements

Accredited for compliance with ISO/IEC 17025



Chris De Luca

Senior Chemist

chris@groundswelllabs.com.au

Reference AF56.Rev4 Date Issued : 3/11/2010

Analytical Results

Client Sample ID				Split 2	Split 3								
Laboratory Sample Number				GS11190-1	GS11190-2								
Date Sampled				17/06/2011	20/06/2011								
Inorganic Species	**Literature Reference**	**Units**	**LOR**										
Moisture	NEPC 102	%	0.1	19.5	5.4								
Arsenic	GSLS	mg/kg	4	5	<4								
Cadmium	USEPA 7000B	mg/kg	1	<1	<1								
Hexavalent Chromium	USEPA 7196A	mg/kg	1	<1	<1								
Copper	USEPA 7000B	mg/kg	2.5	705	28								
Lead	USEPA 7000B	mg/kg	10	1210	53								
Mercury	USEPA 7470A	mg/kg	0.1	0.8	0.2								
Molybdenum	USEPA 7000B	mg/kg	25	<25	<25								
Nickel	USEPA 7000B	mg/kg	2.5	26	88								
Tin	USEPA 7000B	mg/kg	50	<50	<50								
Selenium	GSLS	mg/kg	2	<2	<2								
Silver	USEPA 7000B	mg/kg	1	<1	<1								
Zinc	USEPA 7000B	mg/kg	1	1170	99								

Reference AF56.Rev4 Date Issued : 3/11/2010

Comments :

1- All metals samples prepared as per NEPC Measure 1999 Schedule B (3), involving air-drying, grindind and screening to -2mm.

2 - Samples digested by EPA Method 200.2 prior to the analaysis of metals (excepting hexavalent chromium)

3- The analysis of arsenic & selenium has been conducted by SAL, NATA accreditation #1884.

Quality Control Report

Client Sample ID			Split 2			Split 3												
Laboratory Sample Number			GS11190-1			GS11190-2												
QC Parameter			Matrix Spike			Laboratory Duplicate					Method Blank		Laboratory Control Standard (LCS)			Certified Reference Material - AGAL12		
			Matrix Spike (%R)	Recovery Limit Acceptance Criteria(%)	Within GSL Acceptance Criteria (Pass/Fail)	Original Result	Duplicate	%RPD	%RPD Acceptance Criteria	Within GSL Acceptance Criteria (Pass/Fail)	Method Blank	Within GSL Acceptance Criteria (<LOR) (Pass/Fail)	LCS (%R)	LCS Acceptance Criteria	Within GSL Acceptance Criteria (Pass/Fail)	CRM (%R)	CRM Acceptance Criteria	Within GSL Acceptance Criteria (Pass/Fail)
Inorganic Species	**Units**	**LOR**																
Moisture	%	0.1	NA	NA	NA	5.4	6.5	19%	≤20%	Pass	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	4	---	80-120%	---	---	---	---	≤15%	---	<4	Pass	---	85-115%	---	---	75-125%	---
Cadmium	mg/kg	1	92%	80-120%	Pass	<1	<1	0%	None	Pass	<1	Pass	104%	85-115%	Pass	---	NA	---
Hexavalent Chromium	mg/kg	0.5	---	80-120%	---	---	---	---	None	---	<1	Pass	93%	90-110%	Pass	---	±2s	---
Copper	mg/kg	2.5	---	80-120%	---	28	29	3%	≤15%	Pass	<2.5	Pass	85%	85-115%	Pass	100%	85-115%	Pass
Lead	mg/kg	10	---	80-120%	---	53	48	11%	≤15%	Pass	<10	Pass	95%	85-115%	Pass	81%	80-120%	Pass
Mercury	mg/kg	0.1	106%	80-120%	Pass	0.2	0.2	0%	≤15%	Pass	<0.1	Pass	110%	85-115%	Pass	93%	80-120%	Pass
Molybdenum	mg/kg	25	95%	80-120%	Pass	<25	<25	0%	≤15%	Pass	<25	Pass	96%	85-115%	Pass	---	NA	---
Nickel	mg/kg	2.5	102%	80-120%	Pass	88	87	1%	≤15%	Pass	<2.5	Pass	99%	85-115%	Pass	92%	70-130%	Pass
Tin	mg/kg	50	---	80-120%	---	<50	<50	0%	≤15%	Pass	<50	Pass	101%	85-115%	Pass	---	NA	---
Selenium	mg/kg	2	---	80-120%	---	---	---	---	≤15%	---	<2	Pass	---	85-115%	---	---	NA	---
Silver	mg/kg	1	113%	80-120%	Pass	<1	<1	0%	None	Pass	<1	Pass	105%	85-115%	Pass	86	80-120%	Pass
Zinc	mg/kg	1	---	80-120%	---	99	95	4%	≤15%	Pass	<1	Pass	91%	85-115%	Pass	92%	85-115%	Pass

Groundswell Laboratories Pty Ltd ABN 24 133 248 923
116 Moray Street, South Melbourne, Victoria, 3205 Ph (03) 8669 1450 Fax (03) 8669 1451 E-mail : admin@groundswelllabs.com.au

Technical Holding Time Compliance Report

Client Sample ID			Split 2	Split 3								
Laboratory Sample Number			GS11190-1	GS11190-2								
Date Sampled			17/06/2011	20/06/2011								
Metal	**THT Parameters**	**THT (Days)**										
All Metals	Date Digested	180	27/06/2011	27/06/2011								
	Analysis Time (Days)		10	7								
	THT Compliant		Yes	Yes								
Moisture	Date Analysed	14	27/06/2011	27/06/2011								
	Analysis Time (Days)		10	10								
	THT Compliant		Yes	Yes								
Hexavalent Chromium	Date Digested	28	29/06/2011	29/06/2011								
	Analysis Time (Days)		12	12								
	THT Compliant		Yes	Yes								

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Appendix G

Golder Associates Contamination and Geotechnical Assessment Report, dated November 2017

15 November 2017

DUE DILIGENCE CONTAMINATION AND GEOTECHNICAL DESKTOP ASSESSMENT

46-58 Marlborough Street, Balaclava

Submitted to:
Port Phillip Housing Association
Suite 6, 22-28 Fitzroy Street
ST KILDA VIC 3182

Report Number. 1785995-001-R-Rev0

Distribution:

1 copy - Port Phillip Housing Association
1 copy - Golder Associates Pty Ltd

REPORT

Golder Associates

Executive Summary

Golder Associates Pty Ltd (Golder) has been engaged by Port Phillip Housing Association (PPHA) to undertake a pre-acquisition due diligence contamination assessment and geotechnical desktop assessment of the Marlborough Street car park at 46-58 Marlborough Street, Balaclava. The site is bound to the south by Marlborough Street, to the east by Balaclava Railway Station, to the north by Dianella Lane and to the west by single storey residential dwellings. The site is roughly rectangular in plan and covers an area of about 1800 m^2.

The proposed development includes the construction of a single level basement car park and some at grade townhouses with the remainder comprising at grade parking beneath a 5 storey apartment block. For the purpose of our assessment we have assumed the basement excavation will be up to 3 m deep.

Based on the results of our assessment the expected subsurface profile (with approximate depth range) is summarised as follows:

- **< 1 m:** Variable fill materials (Unit 1) potentially overlying a thin (less than about 0.5 m thick) layer of silty sand (Unit 2 alluvium).
- **1 m to 16 m:** Brighton Group (Unit 3) materials comprising stiff to very stiff medium to high plasticity clay interbedded with generally medium dense clayey sand. Some layers of firm to stiff clay.
- **> 16 m:** Dargile Formation (Unit 4) materials typically comprising weathered siltstone. The uppermost 2 m (approx.) of this unit is expected to comprise residual soil (hard clay or silt) and extremely to highly weathered siltstone. The siltstone is typically expected to be highly or less weathered below about 18 m. The weathering profile may vary and there is the potential to encounter dyke materials.

Based on the available information we expect the depth to groundwater to be about 3 m to 4 m, i.e. close to the base of the proposed basement excavation.

Contamination assessment

Based on the findings of information review, the site has not previously been used for industrial purposes however, it is likely fill material has been imported onto the site. The soil sampling data indicates that the key contamination risk at the site is considered to be the contaminated fill of thickness generally less than 0.5 m that may be classified as Category A, B or C Contaminated Soil for offsite disposal (Moderate Risk).

Based on the available information and the identified risks, the contamination management strategy for the site is recommended as follows:

- Confirm the environmental sign off requirements for the site (if any) – environmental assessment or Environmental Audit.
- If an Audit is required, appoint an Auditor and confirm any soil or groundwater assessment requirements. Undertake this additional assessment. At this stage we would expect this to be only a groundwater assessment with potentially a small amount of soil assessment.
- Based on the further assessment, a Soil Management Plan should be developed to support the site excavation for development. The Plan will reflect the following strategy for soil contamination management:
  - With the aim of minimising high category contaminated soil, the fill horizons should be excavated, stockpiled and re-classified prior to off-site disposal to landfill. Excavation of the west and east of the site where more highly contaminated material has been identified should be undertaken separately to the central area of the site.
  - The material stockpiles should then be reclassified for disposal with a view to maximising the amount of material removed as Category C Contaminated Soil.

  - The fill should then be disposed of in accordance with its final classification;
  - The exposed natural soil should also be resampled and classified in-situ with a view to direct disposal as part of the bulk excavation for the basement
- Following completion of the soil removal and assessment of groundwater (if required by audit), a contamination validation report would be prepared verifying that the site presents a low contamination risk to the proposed use or to support an Environmental Audit should this be triggered.

Based on the outlined risks and the above strategy, if an Audit is not required and the planning permit allows, the contamination assessment process should be able to be integrated with the bulk excavation program. Should an Environmental Audit be required, groundwater assessment on the site is likely to take between 4 – 6 months to resolve through the Audit process. If possible this would be undertaken and resolved ahead of development.

Based on the above strategy, the Table below summarises the estimated cost ranges for contamination issues:

Summary of Estimated Cost Ranges for Contamination Issues

Cost Item	Low Cost	High Cost
Site Assessment (Soil and Groundwater (if required)	$40,000	$100,000
Bulk Excavation of contaminated fill	$232,000	$247,000
Bulk Excavation of underlying natural soil	$142,000	$146,000
Environmental Audit (if required)	$0	$50,000
TOTAL (exc. GST)	~ $415,000	~ $543,000

It is recommended that:

- Prior to the acquisition of the site, the environmental sign off requirement is confirmed with the Responsible Planning Authority;
- The preliminary contamination strategy outlined above is adopted to manage the contamination issues at the site.

Geotechnical desktop assessment

Final details of the proposed development have not been confirmed at this time. Based on our experience with similar structures we provide the following preliminary comments regarding key geotechnical considerations:

- We expect continuous flight auger (CFA) piles, drilled to effective refusal within the Unit 4 siltstone (i.e. a typical founding depth of about 20 m) to be a satisfactory footing alternative for the expected maximum column loads. A single 600 mm or 750 mm CFA pile (drilled to effective refusal within Unit 4) at each column location is likely to have sufficient geotechnical capacity to support the expected maximum column loads.
- It may be possible to support lightly-loaded elements of the development on shallow (e.g. pad or strip) footings a short distance below the proposed basement excavation. The potential to adopt shallow footings will depend on the results of the geotechnical investigation and confirmation of the design loads.
- A soldier pile wall with shotcrete infill panels would be a typical method of retaining wall construction in Melbourne for the expected ground conditions and proposed basement depth. We expect that the soldier piles would require lateral support in the temporary condition from either props and struts or temporary post tensioned anchors. There may be restrictions on the installation of ground anchors that extend into the railway corridor which should be confirmed by PPHA with the relevant authority.

Groundwater (see below) and expectations regarding the internal finishing (i.e. appearance) of the basement retaining wall will also affect the type of wall construction adopted.

- We expect the retaining wall could be constructed as drained in the temporary condition. A permanent drained or sealed basement may be required depending on factors that include the following:
  - The depth to groundwater and the depth of the proposed basement.
  - Assessment of the anticipated groundwater inflow rate and a chemical and contamination assessment of the groundwater quality.
  - The practicality of negotiating either a trade waste agreement for the disposal of groundwater to the sewer or with Council for the water to be disposed of to the stormwater.
  - Expectations with regards to water ingress and the internal appearance of the proposed basement.

Development-specific geotechnical investigations will be required to assess the subsurface conditions and to inform detailed design of the proposed development. In the short-term, investigation of the depth to groundwater (e.g. a single borehole drilled to about 6 m depth with a groundwater monitoring well installed) would assist in the assessment of groundwater depth and the potential to adopt a permanent drained basement. Geotechnical investigation targeting the depth to weathered rock and the subsurface conditions over the depth of the basement excavation and likely pile founding depths will also be required, once details of the proposed development are confirmed.

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APPENDICES

1.0 ENGAGEMENT

Golder Associates Pty Ltd (Golder) was engaged by Port Phillip Housing Association (PPHA) to undertake a pre-acquisition due diligence contamination assessment and geotechnical desktop assessment of the Marlborough Street car park at 46-58 Marlborough Street, Balaclava.

This report presents the results of our assessments, which were performed in general accordance with the scope of works set out in our proposal dated 17 August 2017 (ref: P1785995-001-P-Rev1).

2.0 SITE DETAILS

The site of the proposed development is shown in Figure 1. The site is bound to the south by Marlborough Street, to the east by Balaclava Railway Station, to the north by Dianella Lane and to the west by single storey residential dwellings. The site is roughly rectangular in plan and covers an area of about 1800 m^2.

Figure 1: Site location (aerial photograph captured 10 October 2017)

A summary of the site details is presented in Table 1.

Table 1: Summary of Site Details

Item	Description
Street Address	46 Marlborough Street, Balaclava
Current Occupier	Car park and vacant residential block
Location	The site is situated in Balaclava
Site Area	Approximately 1800 m^2
Council	City of Port Phillip
Zoning	Mixed Use Zone - MU
Overlays	Design and Development Overlay - DDO Design and Development Overlay – DDO Design and Development Overlay – Schedule 21 DDO21

Item	Description
	Special Building Overlay – SBO Special Building Overlay – Schedule 1 (SBO1)
General Site Description and Current Land Use	The site is bound to the south by Marlborough Street, to the east by Balaclava Railway Station, to the north by Dianella Lane and to the west by single storey residential dwellings as presented in *Figure 1* below. The site is currently used as a car park and two vacant residential allotments.
Surrounding Land use	Commercial and residential
Proposed Land Use	Construction of a single level basement car park and some at grade townhouses with the remainder comprising at grade parking beneath a 5 storey apartment block.

3.0 SITE SETTING

The environmental site setting is summarised in Table 2.

Table 2: Environmental Site Data

Summary Information	Details
Topography	The elevation varies between approximately RL 7 m AHD and RL 8 m AHD. The site is generally flat.
Nearby Surface Water Bodies	Elster Creek is located approximately 1250 m to the south of the site.
Regional Geology	The GSV 'Melbourne' map sheet indicates that the surface geology at the site comprises Quaternary age alluvium consisting of silt, sandy silt and minor sand and gravel. Based on the information presented on the geological map we expect the Quaternary age alluvium to overlie Tertiary age Brighton Group sediments (typically comprising sand and silty sand with some gravel and clay), which in turn is expected to overlie Silurian age siltstone and sandstone of the Dargile Formation. The published information indicates that Dargile Formation materials are present at the ground surface about 1 km northwest of the site.
Regional Hydrogeology	Based on a review of the Visualising Victoria's Groundwater database (VVG, 2016) and our experience in the area, groundwater is likely to be encountered less than 5 metres below ground level (mbgl).
Groundwater Segment	Based on a review of the Visualising Victoria's Groundwater database (VVG, 2016), groundwater quality within the region of the site is expected a total dissolved solids within a range between 500 mg/L – 1,000 mg/L. A salinity value in this range is classified as Segment A2 in accordance with the State Environment Protection Policy *Groundwaters of Victoria* (SGoV, 1997), for which the protected beneficial uses of groundwater are: Maintenance of ecosystems; Potable water - acceptable; Potable mineral water supply; Agriculture, parks and gardens; Stock watering, Industrial water use; Primary contact recreation; and Buildings and structures.
Potential Acid Sulfate Soils	A review of the National Acid Sulfate Soil Atlas indicates the site is within the area of low probability of acid sulfate soils.
Regional Groundwater Use	Approximately 10 registered groundwater bores are located within 500 m of the site (DELWP, 2017). They are all registered for investigation or observation purposes. The total depths of the bores range from 5 to 10 m.
Inferred Groundwater Flow	Inferred regional groundwater flow is considered likely to be south-west towards Port Phillip Bay located 1500 m from of site. However, nearby

Summary Information	Details
	geological or man-made features may influence groundwater flow on a local scale.

4.0 PROPOSED DEVELOPMENT

We understand that the City of Port Phillip (Council) has committed to transferring Marlborough Street car park land to PPHA. Council and PPHA are independent of each other but have worked in partnership for over a decade on affordable housing outcomes in the municipality. PPHA is planning to deliver an affordable housing project on the car park land.

The proposed development (MGS, July 2017 Feasibility, Balaclava Housing) will include the construction of at-grade townhouses fronting Marlborough Street with a 5 storey apartment block over the remainder of the site. Beneath the apartment block and the eastern townhouses will be a single level basement. For the purpose of our assessment we have assumed the basement excavation will be up to 3 m deep.

5.0 INFORMATION PROVIDED

To support the acquisition, PPHA has provided the following information for review:

- Council letter dated 10 May 2011 titled '46-58 Marlborough St, Balaclava – Due Diligence Investigation'.
- Council report dated 31 August 2011 titled '46-58 Marlborough Street, Balaclava – Soil Remediation Plan'.
- Various email correspondence regarding soil disposal costs between Council and Golder.
- Council spreadsheet estimating soil disposal costs for the site (undated but likely to be dated late 2016)

We note that Golder has also had some past involvement with the site. In 2002, Golder prepared:

- Golder Associates Pty Ltd, "*Phase One Environmental Site Assessments for 30-34 Marlborough Street Balaclava and 46-58 Marlborough Street Balaclava*" dated 21 October 2002 prepared for City of Port Phillip

We have used this report and the other supplied reports and our previous experience on the site as part of our review.

6.0 OBJECTIVE

The objectives of the assessments set out in this report are to support the potential acquisition of the site by providing:

Contamination assessment

- A peer review of the provided information.
- Advice on whether or not further assessment should be undertaken to support the acquisition.
- An estimate of cost to remediate the site for the proposed development.

Geotechnical desktop assessment

- A geotechnical assessment of the likely subsurface conditions relevant to the proposed development.

- Preliminary geotechnical recommendations relating to likely footing alternatives (e.g. spread or piled footings) and founding depths, potential basement retaining wall alternatives and groundwater management considerations.

7.0 METHODOLOGY

7.1 Contamination assessment

To achieve the above objectives the following tasks were undertaken:

- Review of the provided information and other information held by Golder to assist in assessing the site contamination status;
- A brief site inspection to assess any changes since the provided reports were completed;
- Evaluation of site contamination risks for the proposed development including an assessment of likely waste classification for spoil associated with the proposed basement construction;
- Consideration of data gaps and the need for further investigation as part of the site due diligence or prior to construction;
- Development of a preliminary strategy to manage contamination issues for the identified development;
- Provision of site remediation cost estimates based on the available data. The estimates will be provided as a range for the key aspects where uncertainty will remain such as the final soil classification for disposal[1];

7.2 Geotechnical desktop assessment

The geotechnical desktop assessment was based on a review of the following information:

- Geotechnical aspects of the information provided. As the boreholes drilled as part of the Council investigations were less than 1 m deep this information is of limited relevance to geotechnical considerations.
- Published geological information including the Geological Survey of Victoria (GSV) 1:63 360 scale 'Melbourne' map sheet.
- Our experience from previous geotechnical investigations in the vicinity of the site, including an investigation performed in 2015 for a proposed development on Alfred Street, located about 150 m north of the site.

8.0 CONTAMINATION ASSESSMENT

8.1 Previous Site Investigation Review Summary

Golder Associates, Phase One Environmental Site Assessments for 30-34 Marlborough Street Balaclava and 46-58 Marlborough Street Balaclava (2002)

Golder completed the *Phase One Environmental Site Assessments for 30-34 Marlborough Street Balaclava and 46-58 Marlborough Street Balaclava*, dated 21 October 2002. The report provides details of the investigations comprised a desktop review of available information of the two sites.

The history review indicated that prior use of the site for car parking, the 46-58 Marlborough Street Balaclava site has a long history of residential use. No industrial activity was noted to have occupied on-site.

[1] Final classification will be based on sampling at a frequency applicable to the final volume of spoil generated.

City of Port Phillip, 46-58 Marlborough Street, Balaclava – Due Diligence Investigation (2011)

The City of Port Philip completed the *46-58 Marlborough Street, Balaclava - Due Diligence Investigation* dated 10 May 2011. The report provides details of the investigations comprised a site history review and the drilling and soil sampling from seven borehole locations across the site.

The site history review did not show any part of the site had previously been used for industrial purposes however, it is likely fill material has been imported onto the site.

The intrusive soil investigation involved the hand augering of seven boreholes to a depth of up to 0.9 below the ground surface (m BGS). Fill was encountered in all seven soil boreholes up to a depth of 0.4 m.

Concentrations for lead benzo(a)pyrene and total polycyclic aromatic hydrocarbons (PAHs) exceeded adopted low density residential health investigation levels (*1999 National Environment Protection (Assessment of Site Contamination) Measure Health Based Investigation Level for a standard residential site with garden/accessible soil* (1999 NEPM A HILs)) . All soil analytical concentration were reported below the 1999 NEPM D HILs (residential with minimal access to soils. There soil was considered suitable to remain on site if the site was developed for high density residential use or commercial/industrial use.

Fill at the site was classified as EPA Contaminated Soil Category C. Further soil analysis was recommended in classify soils at the site in accordance with EPA guidelines. Natural soils beneath the site were not classified.

City of Port Phillip, 46-58 Marlborough Street, Balaclava – Soil Remediation Plan (2011)

The City of Port Philip completed the *46-58 Marlborough Street, Balaclava – Site Remediation Plan* dated 11 August 2011. The report provides details of the drilling and soil sampling of an additional 12 borehole locations across the site.

The intrusive soil investigation involved the hand auguring of the additional 12 boreholes to a depth of up to 1.0 below the ground surface (m BGS). Fill was encountered in all 19 soil boreholes (seven original boreholes plus the 12 additional boreholes) up to a depth of 0.6 m BGS.

The original samples collected and analysed as part of the Due Diligence Investigation were included in the assessment of soil as part of the Soil Remediation Plan soil investigation.

Soil analytical results reported concentrations of lead, benzo(a)pyrene and total PAHs exceeding the 1999 NEPM A HILs. One fill sample reported a lead concentration exceeding the 1999 NEPM D HILs.

One fill material analytical result reported concentration of benzo(a)pyrene and total PAHS above the upper limits of Category B. One fill material analytical result reported concentration of benzo(a)pyrene and total PAHS above the upper limits of Category C and one fill material analytical result reported Lead Australian Standard Leaching Procedure (ASLP) results above the upper limits of Category C. Numerous fill material analytical result reported concentration of arsenic, copper, lead, mercury, nickel, zinc, benzo(a)pyrene and total PAHs above the upper limits of Fill Material.

All natural soil beneath the site was classified and “Fill Material” with the exception of two locations (BH13 and BH18) in the northern portion of 48 Marlborough Street and of the eastern portion of the site at a depth of 0.7 m BGS.

The Soil Remediation Plan recommended excavating fill material to a depth of 0.4 m BGS and separating it into Category A contaminated material (garden bed adjacent to the east site boundary), Category B contaminated material (middle portion of 46 Marlborough Street (BH12) and southern portion of 48 Marlborough Street (BH14)) and Category C contamination soil (rest of fil material across the site) for off-site disposal. The Soil Remediation Plan also recommended excavating natural soil material at one location (BH13) in the northern portion of 48 Marlborough Street at a depth of 0.7 m BGS.

8.2 Site Inspection

The site inspection was conducted on the 9 November 2017. A selection of photographs taken during this site walkover is presented in Appendix A. Little change has occurred on site since the City of Port Phillip soil investigations were completed (2011) and the exception of the 48 Marlborough Street site where is original weatherboard house has been demolished and removed.

No buildings are present on the 46-48 residential lot. As shown in photograph 4, Appendix A, the site is now covered in long grass and is now surrounded by a combination of wire, wooden and brick permanent fencing.

No significant changes has occurred to the 50 – 58 Marlborough Street site. The site is still used as a car park for the Balaclava train station and if surfaced with a combination of paved brick and garden beds. The paved brick surface has been repaired with bitumen in several location across the site, as shown in photograph 1, Appendix A.

8.3 Discussion of Key Risks

8.3.1 Contamination Risks

Based on the findings of information review, Table 3 presents a summary of identified areas of potential contamination, details on potential contaminants that may be associated with these areas and provides a relative priority rating for each item with respect to potential contamination impact on the site. It should be noted the priority rating is not intended to infer severity or extent of impact; rather, it is the intention to indicate the potential for the contamination issue to exist at the site in soil or groundwater.

Table 3: Summary of Potential Issues and Contaminants

Sources/ Areas of Potential Contamination	Potential Contaminants	Potential for Impact to Soil	Potential for Impact to Groundwater	Potential for Vapour Impact
Residential Uses: Localised impacts from the residential use	Metals, TPH, MAH, PAH, asbestos	**Low**	**Low**	**Low**
Car Park Use: Localised impacts from oil leaks	TPH, MAH, PAH	**Low**	**Low**	**Low**
Imported Fill: Potential presence of building waste and other industrial wastes historically used for fill	Metals, TPH, MAH, PAH, chlorinated solvents, asbestos, cyanide, sulphate, pH	**Moderate**	**Low**	**Low**
Offsite Sources: Surrounding uses mainly residential except for adjacent rail use	None identified	**Low**	**Low**	**Low**

In summary the key contamination risk at the site is considered to be:

- Contaminated fill of thickness generally less than 0.5 m that may be classified as Category A, B or C Contaminated Soil for offsite disposal (Moderate Risk).

We note that the 95% upper confidence limit (UCL) was calculated for arsenic, copper, lead, mercury, nickel, benzo(a)pyrene and total PAHs concentration report in fill samples analysed by the City of Port Phillip at the site. The 95% upper confidence limit (UCL) was also calculated for zinc in natural soils analysed the City of port Phillip at the site.

The results of the 95% upper confidence limit (UCL) statistical analysis indicated the following:

- The fill horizon is classified as Category B for off-site disposal using the 95% UCL calculations for each exceeding analyte.

- The natural soil horizon is classified as Category C for off-site disposal using the 95% UCL calculations for each exceeding analyte.

There is a possibility of dividing the site up into areas (east, central and west), stockpiling the fill and resampling and classifying to potentially get a more favourable waste classification. In particular it would be expected that the natural soil would classify as Fill Material for disposal. This process would require double handling of the fill and additional sampling of the natural soils but has the potential to save project costs.

8.3.2 Planning Requirements

It is assumed that a planning permit for the development has not be issued. In accordance with Ministerial Direction No. 1 – Potentially Contaminated Land the planning authority must satisfy itself that the environmental condition of the land is, or will be, suitable for the intended use. Further, also in accordance with Ministerial Direction No. 1, if a change of zoning is to occur to allow a more sensitive land use, the need for a Statutory Environmental Audit is triggered.

Environmental Audit Triggers

As the majority of the site is already zoned for mixed use which includes high density residential housing, the statutory trigger for environmental audit may not apply for that portion of the site.

As a result of the identified contamination in fill, the planning authority may deem that a Statutory Environmental audit will be required. However, as the single level basement car park incorporates the majority of the site footprint (approximately 85%) and will extend to a depth greater than the fill, sources of contamination and residual risk are likely to be removed during development works or inaccessible after the development is completed.

Satisfying the Responsible Authority

In accordance with Ministerial Direction No. 1 and the General Practice Note Potentially Contaminated Land (DSE, 2005) it is anticipated that a planning permit for the proposed development is likely to require, as a minimum, a *detailed contamination assessment of the land by a suitably qualified environmental professional to the satisfaction of the responsible authority*.

Based on the available information and with consideration to the proposed removal of all fill and underlying natural material to a depth enabling construction of the basement car park, a suitably qualified environmental professional is considered likely to conclude that the site *will be* suitable for the proposed use at completion of bulk earthworks.

This approach will be dependent on the actual wording of the planning permit clauses pertaining to environmental condition.

8.3.3 Additional Assessment

At this stage we would expect that there is sufficient soil assessment of the site to allow a report to be prepared to satisfy likely planning requirements if an Audit is not triggered. In our opinion a groundwater assessment would not be required as there are no identified groundwater contamination risks. However, should an Audit be triggered for the site, a groundwater investigation comprising the installation of at least 3 wells and groundwater sampling on at least two occasions would be required and potentially some further soil assessment.

There will be other validation and classification sampling of the soil required as part of the offsite soil disposal. The strategy for the works (as set out below) should be documented in a soil management plan for the disposal.

8.4 Contamination Management Strategy

Based on the available information and the identified risks, the contamination management strategy for the site is recommended as follows:

- Confirm the environmental sign off requirements for the site (if any) – environmental assessment or Environmental Audit.
- If an Audit is required, appoint an Auditor and confirm any soil or groundwater assessment requirements. Undertake this additional assessment. At this stage we would expect this to be only a groundwater assessment with potentially a small amount of soil assessment.
- Based on the further assessment, a Soil Management Plan should be developed to support the site excavation for development. The Plan will reflect the following strategy for soil contamination management:
  - With the aim of minimising high category contaminated soil, the fill horizons should be excavated, stockpiled and re-classified prior to off-site disposal to landfill. Excavation of the west and east of the site where more highly contaminated material has been identified should be undertaken separately to the central area of the site.
  - The material stockpiles should then be reclassified for disposal with a view to maximising the amount of material removed as Category C Contaminated Soil.
  - The fill should then be disposed of in accordance with its final classification;
  - The exposed natural soil should also be resampled and classified in-situ with a view to direct disposal as part of the bulk excavation for the basement
- Following completion of the soil removal and assessment of groundwater (if required by audit), a contamination validation report would be prepared verifying that the site presents a low contamination risk to the proposed use or to support an Environmental Audit should this be triggered.

8.5 Timing Information to Support Due Diligence

Based on the outlined risks and the above strategy, if an Audit is not required and the planning permit allows, the contamination assessment process should be able to be integrated with the bulk excavation program to be completed with the assessment report submitted to Council either:

a) Prior to bulk excavation if Council will accept sign off prior to contaminated soil removal; or

b) Following bulk excavation of the contaminated fill.

Should an Environmental Audit be required, the groundwater assessment on the site is likely to take between 4 – 6 months to resolve through the Audit process. If possible this would be undertaken and resolved ahead of development.

8.6 Contamination Cost Information to Support Due Diligence

Based on the outlined risks and proposed contamination management strategy to address the site contamination, we provide the following preliminary cost information. The Likely Cost Range is based on our experience and judgement given the information made available and the assessed risks as provided in this assessment. It should be noted that should other information become available, the potential cost ranges could vary significantly which is summarised in Table 4 below:

Site Assessment

The following site assessment is likely:

- Development of the soil management plan;
- Sampling and classification associated with the soil disposal;
- Completion of a validation report;
- Potential for further soil assessment, installation 3 groundwater wells with sampling on at least 2 occasions, liaison with an Audit to complete an Audit if required.

Likely Cost Range: $40,000 to $100,000

Bulk Excavation – Offsite Disposal

Costs associated with offsite disposal of fill excavated for development have been estimated based on the following estimated parameters:

- A conservative average depth of 0.5 m of fill
- All fill will be required to be disposed of as part of the construction of the development.
- A site area of approximately 1,800m^2
- 5% of fill will be Category A Contaminated Soil (based on three of the 19 locations by City of Port Phillip)
- 5% of fill will be Category B Contaminated Soil (based on two of the 19 locations by City of Port Phillip)
- 90% of fill will be Category C Contaminated Soil (based on 14 of the 19 locations by City of Port Phillip);
- 5% of natural soil will be Category C Contaminated Soil (based on all of the 19 locations by City of Port Phillip);
- An assumption that other natural material has not been impacted and is classified as “Fill Material”;
- Material density of 1.8 t/m^3
- Approximate cartage and disposal costs exclusive of GST of $130/t for Category C and $500/t for Category B and $600/t for Category A noting that these rates are subject to market demand and fluctuation and are currently less.
- It is noted that Category A material cannot be disposed to landfill and must be treated. The PAH contaminant driving the classification can be treated at the Renex facility in Dandenong South and potentially other facilities that may be available at the time of the works
- We have not allowed for site management and geotechnical costs such as site retention as these would be expected to be part of the development costs.

Likely Cost Range:

Based on these factors costs associated with disposal of the fill and natural soils are estimated as follows:

Fill

Category A: 45m^2 x 0.5 - 0.8 m = 36m^3 or ~65t at $600/t = ~$24,000 - $39,000

Category B: 24m^2 x 0.5 m = 12m^3 or ~22t at $500/t = ~$11,000

Category C: 1684m^2 x 0.5 m = 842m^3 or ~1515t at $130/t = ~$197,000

Total Estimate Cost Range = ~$232,000 - $247,000

Natural

Category C: 100 m^2 x 0.3 – 0.5 m = 30m^3 or ~54t at $130/t = ~$7,000 - $11,000

Fill Material: (Remainder) 1500 m^2 x 2.5 = 3,750m^3 or ~6750t at $20/t = ~$135,000

Total Estimate Cost Range = ~$142,000 - $146,000

Environmental Audit

An Environmental Audit may not be required. Should it be required, Audit costs could be in the order of $50,000

Likely Cost Range: $0 to $50,000

Table 4 below summarises the estimated cost ranges:

Table 4: Summary of Estimated Cost Ranges

Cost Item	Low Cost	High Cost
Site Assessment (Soil and Groundwater (if required)	$40,000	$100,000
Bulk Excavation of contaminated fill	$232,000	$247,000
Bulk Excavation of underlying natural soil	$142,000	$146,000
Environmental Audit (if required)	$0	$50,000
TOTAL (exc. GST)	~ $415,000	~ $543,000

The key tasks that could be undertaken prior to acquisition to reduce the above Likely Cost Ranges are:

- Confirm the environmental sign off requirement with the Responsible Planning Authority

9.0 GEOTECHNICAL DESKTOP ASSESSMENT

9.1 Information review

The GSV 'Melbourne' map sheet indicates that the surface geology at the site comprises Quaternary age alluvium consisting of silt, sandy silt and minor sand and gravel. Based on the information presented on the geological map we expect the Quaternary age alluvium to overlie Tertiary age Brighton Group sediments (typically comprising sand and silty sand with some gravel and clay), which in turn is expected to overlie Silurian age siltstone and sandstone of the Dargile Formation. The published information indicates that Dargile Formation materials are present at the ground surface about 1 km northwest of the site.

We expect the natural materials at the site to be overlain by a layer of variable fill. Based on a review of the information provided, we provide the following comments regarding the anticipated near surface materials:

- The Council report (31 August 2011) indicates that nineteen hand auger boreholes have been drilled at the site for the purpose of classifying soil for offsite disposal. Borehole logs indicate that the boreholes were drilled between 29 March 2011 and 20 June 2011 to depths ranging from about 0.5 m to 1.0 m. The Council report appears to include the results of seven boreholes drilled as part of the Council due diligence investigation (letter dated 10 May 2011).
- The subsurface materials encountered in the boreholes are described as fill to depths typically ranging from between about 0.3 m and 0.65 m, overlying natural silty clay soils. Potentially deeper fill materials were encountered in boreholes BH6, BH7 and BH18, located near the eastern boundary of the site. These boreholes were terminated within fill materials at depths of 0.8 m, 0.5 m and 0.6 m respectively after penetration refusal was achieved on inferred rock/concrete or brick fragments.
- The fill materials are typically described as sandy silt or sand, with some topsoil, crushed rock, charcoal, brick and root fragments. Ash and basalt/rock fragments were also encountered in the fill materials in Boreholes BH6, BH7 and BH18. The borehole logs indicate that there was typically a mulch, grass, gravel or paved surface at the borehole locations.
- The natural materials are typically described as medium plasticity silty clay of stiff consistency. Inferred natural sand soils were encountered beneath the fill in Boreholes BH8 to BH12. Council describes the natural soils as Brighton Group materials. However, based on the published geology they may include Quaternary alluvium.

The Council report and due diligence investigation includes a review of the site history which includes the following information:

- The site was used for residential purposes between the 1890s and 1970s.
- Council purchased the site in the 1970s and the car park was constructed in 1978 and 1979.

A review of recent aerial photographs on the nearmap.com website indicates that there was a residential dwelling on the western part of the site (48 Marlborough Street) until it was demolished in about February 2013. Between about April 2013 and December 2014 the site appears to have been used for site sheds and as a construction laydown/storage area for works associated with the redevelopment of Balaclava Railway Station. We understand that 46-48 Marlborough Street is currently a vacant lot with the remainder of the site occupied by an at-grade carpark with an asphalt surface and mature trees in nature strip/landscaped areas.

Information obtained from the Victorian Department of Environment, Land, Water and Planning land.vic.gov.au website indicates that the ground surface level of the site varies between about RL 7 m AHD and RL 8 m AHD.

The results of Golder's 2015 geotechnical investigation performed about 150 m north of the site encountered the following typical subsurface profile:

- Fill materials to a maximum depth of about 0.8 m.
- A thin (less than 0.4 m thick) layer silty sand (inferred alluvium) beneath the fill.
- Inferred Brighton Group materials comprising predominantly stiff to very stiff, medium to high plasticity clay interbedded with generally medium dense clayey sand. The Brighton Group materials extended from beneath the fill or silty sand to depths ranging from about 15 m to 17 m. Some layers of inferred firm to stiff clay were encountered within the Brighton Group materials.
- Variably weathered siltstone, beneath the Brighton Group sediments. The depth to highly or less weathered siltstone was typically about 18 m but at some locations was more than 25 m due to variations in the weathering profile. A layer of residual soil (hard clay or silt) and/or extremely to highly weathered rock about 2 m thick was typically encountered above the highly or less weathered rock.

The nearby 2015 investigation did not encounter dyke materials (completely weathered igneous intrusions) within the siltstone or silcrete layers within the Brighton Group materials. However, the potential for dyke materials (which are usually of lower strength than the siltstone host rock) to be present was noted. Very

high strength silcrete layers can be present within Brighton Group materials that can pose construction difficulties for basement excavation and piling.

Two standpipes were installed as part of the nearby 2015 investigation. Groundwater was measured in these standpipes at an elevation of between about RL 2.7 m AHD and RL 3.6 m AHD, or about 3 m below the ground surface level at that site.

9.2 Preliminary Ground Model

A summary of the expected subsurface profile is presented in Table 1.

Table 5: Summary of expected subsurface profile, 46-58 Marlborough Street, Balaclava

Unit	Approx. depth range	Typical description
1 – Fill	0 m to < 1 m	Sandy silt or sand with variable proportions of construction rubble including crushed rock, brick, charcoal and ash fragments, and organic materials including tree roots and topsoil. Existing pavements or landscaped areas present at ground surface level.
2 – Alluvium	0.5 m to 1 m	Silty sand. Unit 2 may not be present as a continuous layer.
3 – Brighton Group	1 m to 16 m	Predominantly stiff to very stiff medium to high plasticity clay interbedded with generally medium dense clayey sand. Some layers of firm to stiff clay. There is the potential for very high strength silcrete layers to be encountered.
4 – Dargile Formation	> 16 m	The uppermost 2 m (approx.) of this unit is expected to comprise residual soil (hard clay or silt) and extremely to highly weathered siltstone. The siltstone is typically expected to be highly or less weathered below about 18 m. However, the weathering profile may vary and there is the potential to encounter dyke materials.

Based on the available information we expect the depth to groundwater to be about 3 m to 4 m, i.e. close to the base of the proposed basement excavation.

9.3 Preliminary Geotechnical Recommendations

9.3.1 General

Details of the proposed development have not been confirmed at this time. Based on our experience with similar structures we have made the following assumptions:

- The depth of bulk excavation for the proposed single-level basement is 3 m. There may be local excavations up to about 2 m below this level for footing excavations, pile caps, lift over-run pits or similar structures. We have assumed that the proposed basement extends to the site boundaries.
- Maximum column loads (working) for the proposed 5 storey apartment building are in the order of 4 MN.

For the assumed maximum column loads and expected subsurface conditions we do not expect shallow spread footings to provide a practical founding solution. Piles founding in the weathered siltstone are likely to provide a satisfactory footing alternative for these loads. However, it may be possible to support lightly-loaded elements of the proposed development (e.g. townhouses depending on the applied loads and ground conditions) on shallow spread footings founding within the Unit 3 Brighton Group materials.

The proposed basement could potentially extend below the groundwater table at the site. Key geotechnical considerations for basement construction will include the retention of the basement perimeter (taking into consideration the presence of buildings and other structures at the site boundaries) and management of potential groundwater inflows both during the temporary construction conditions and in the long-term.

For the expected subsurface conditions and basement depth we expect the basement could be constructed as drained in the temporary condition (i.e. a shallow depth of temporary groundwater drawdown during construction is likely to be acceptable from a geotechnical perspective). In the permanent condition, the basement could potentially be constructed as drained (i.e. water inflow is collected in a drainage layer and then disposed of off-site) or sealed (the basement is designed to limit groundwater inflow as far as practical). The main differences between these two approaches are summarised below.

- The walls and floor slab of a sealed basement must be designed to resist hydrostatic pressures. This is not required for a drained basement with a suitably designed drainage system.
- The practicality of collecting and disposing of water inflow in a drained (or to a lesser extent a sealed basement, see comments below) will depend on both the expected rate of groundwater ingress and the groundwater quality. Any proposal to collect and dispose of groundwater offsite (including in the temporary condition) would be subject to the results of chemical and contamination assessment of the groundwater at the site and negotiation of either a trade waste agreement for the disposal of groundwater to the sewer or with Council for the water to be disposed of to the stormwater. Our recent experience is that some councils strongly resist applications for drained basements and that trade waste agreements are becoming significantly more difficult to obtain.
- If a sealed basement is adopted it can be difficult to achieve a seal. Expectations with regards to water ingress need to be managed as will any water seepage into the basement. Refer to Section 9.3.4 for further comments.

We note that construction techniques and requirements for foundation piles will depend on the level from which piling work is undertaken. Depending on the depth to groundwater and the proposed basement excavation depth, it may be necessary to undertake temporary dewatering, or construct a temporary working platform over the subgrade materials exposed in the base of the excavation.

Preliminary recommendations regarding footing systems, basement retention and groundwater management considerations are presented in the following sections. Development specific geotechnical investigation will be required as part of the proposed development works. Our preliminary recommendations should be reviewed and will need to be revised once a geotechnical investigation has been performed.

9.3.2 Spread Footings

Spread footings founding a shallow depth below the proposed basement excavation are not expected to be a practical footing solution for the maximum column loads but could potentially be a satisfactory alternative for lightly-loaded elements of the proposed development.

Unit 3 Brighton Group materials are expected to be exposed following excavation of a 3 m deep basement. The maximum allowable bearing pressure for spread footings founding on medium dense or denser sand, or clays having a consistency of at least stiff to very stiff, is expected to be about 150 kPa to 200 kPa.

For this bearing pressure, the settlement of individual footings up to about 2 m square for pad footings and 1 m wide for strip footings is expected to be about 10 mm to 20 mm. Differential settlement between footings will likely be about half the settlement of an individual footing.

Potential construction issues which would need to be considered if it is practical to adopt spread footings include the following:

- The potential for variability in the strength of the materials exposed following excavation to the design founding level. The size or depth of the footing may need to be increased, or the footing may need to be redesigned, if stiff or softer clay or silt, or loose (or looser) sand soils are exposed following excavation to this level.
- Excavation below the proposed basement level is expected to extend below the groundwater table. In these circumstances temporary dewatering will be required to lower the groundwater level to below the founding level for spread footings (say at least 1 m below the founding level) prior to footing

construction. The practicality of dewatering will depend on a number of factors including the presence and extent of sand layers within the Brighton Group materials.

- The presence of reactive clay soils beneath lightly-loaded shallow footings can lead to additional shrink-swell movements due to seasonal changes in the soil moisture content.

9.3.3 Piles

Piles for the proposed development will need to be designed in accordance with Australian Standard AS2159 (2009) 'Piling – Design and installation'. AS2159 requires a pile to be proportioned such that the design geotechnical strength is not less than the design action effect. The design geotechnical strength is the ultimate geotechnical strength multiplied by a strength reduction factor. The design of piles requires an assessment of individual risk ratings and is based on ultimate limit state design parameters. Hence, traditional allowable unit stresses and working loads are not applicable to the design of piles in accordance with AS2159. Notwithstanding this, in the following sections we have provided some reference to working loads to assist with a preliminary assessment of potential piled footing alternatives.

We anticipate that continuous flight auger (CFA) piles are likely to be a satisfactory piling alternative for the proposed development. We expect that noise and ground vibration issues associated with driven precast concrete piles would preclude their adoption in a residential area. Bored piles, or enlarged base Frankipiles, could also potentially be considered. However, our recent experience is that these options would not be cost competitive with CFA or driven piles for these ground conditions. Further assessment of piling alternatives should be made once building loads are confirmed and a geotechnical investigation has been completed.

Continuous flight auger (CFA) piles

CFA piles have been adopted as a footing solution for a number of tower developments across Melbourne over recent years. Typically 600 mm, 750 mm or 900 mm diameter piles are drilled to effective refusal in weathered rock. The depth to weathered siltstone is likely to control the depth of refusal for CFA piles at this site. Hence, piles drilled to refusal on weathered siltstone are typically expected to be about 20 m long. For the expected maximum column working loads we recommend that CFA piles are drilled to refusal.

The performance of CFA piles depends on the nature of the founding material, the size of the equipment used to the install the piles and the pile diameter. The drilling of CFA piles to refusal also depends on these factors. To assist in preliminary assessment of piling options we recommend that the adoption of the following maximum serviceability (working) loads for CFA piles drilled to effective refusal in the weathered siltstone:

- 3.5 MN for a 600 mm diameter CFA pile.
- 5 MN for a 750 mm diameter CFA pile.
- 7.5 MN for a 900 mm diameter CFA pile

On the basis of these indicative loads we expect it to be practical to support column loads associated with the proposed building on single 600 mm or 750 mm diameter CFA piles. Groups of CFA piles can be used to support columns where the design load is greater than the geotechnical design strength of a single pile. The spacing of the piles needs to be considered in the assessment of the design geotechnical strength and settlement performance of a pile group.

The working load capacity of a CFA pile may be significantly lower than these indicative values if it is not drilled to refusal. The settlement of CFA piles depends on both the founding materials and design loads. For preliminary assessment purposes we consider a satisfactorily designed and constructed pile founding in the weathered siltstone is likely to experience a socket settlement of about 1% to 1.5% of the pile diameter. Elastic shortening of the pile length above the socket would need to be added to the socket settlement to assess displacement at the pile head. Group effects would need to be considered for pile groups or clusters.

The performance of CFA piles should be confirmed by a dynamic load testing program on a proportion of the installed piles. If obstructions are present within the fill it may be necessary to pre-drill at CFA pile locations

prior to the construction of the CFA piles. If silcrete layers are present within the Brighton Group they can also obstruct the drilling of CFA piles.

It should be noted that where sufficient design geotechnical strength is available the load that can be applied to a CFA pile is often governed by the structural capacity of the unreinforced section of the pile.

9.3.4 Basement retention

Assuming a maximum excavation depth of 3 m the excavation will likely encounter fill (Unit 1) materials overlying Unit 2 and Unit 3 soils. Excavation to this depth may extend below the groundwater table. Perched groundwater could be encountered within the fill or Unit 2 materials above the predominantly clayey Unit 3 materials.

If there is sufficient space between the perimeter of any basement and surrounding structures that could be affected by the excavation works (unlikely to be the case if the basement perimeter is close to the site boundary), it may be possible to construct the basement by excavating temporary batter slopes. For preliminary purposes we suggest the adoption of a maximum temporary batter slope of 2H:1V for excavation to about 3 m depth.

If there is insufficient space for temporary batters, retaining walls will need to be built to support the basement walls. The type of retaining wall adopted will depend on factors including the presence of movement sensitive structures close to the site boundaries, the depth to groundwater and the depth of the proposed excavation, and whether a drained or sealed basement is proposed.

Drained basement

If the geotechnical investigation indicates that the basement excavation will be above the groundwater table, or the adoption of a drained basement that extends below the groundwater table is proposed, a soldier pile wall with shotcrete infill panels would be a typical method of retaining wall construction in Melbourne for the expected ground conditions. Assuming that foundation piles comprise CFA piles, the CFA piling rig could also be used to install the soldier piles. We anticipate that individual piles or panels will need to extend to a deeper founding stratum to provide resistance to axial loads applied to the walls of the basement. Depending on the required internal finish of the basement (i.e. if exposed piles/shotcrete panels are acceptable from an aesthetic perspective), a plenum wall may be required in front of the soldier pile wall.

Given the proximity of the site to residential buildings and Balaclava Railway Station (buildings likely to be supported on shallow footings that may have a low tolerance to lateral movement associated with basement construction) we expect that the soldier piles would require lateral support in the temporary condition from either props and struts or temporary post tensioned anchors. In the permanent condition we expect the internal basement and ground floor slabs will act as props to the retaining walls.

Note there may be restrictions associated with the installation of temporary ground anchors that extend into the rail corridor. Applicable restrictions would need to be confirmed by the relevant authority. If temporary ground anchors are not permitted outside the east boundary of the site (or any other boundaries with similar restrictions), for the proposed basement depth we expect construction of a cantilevered retaining wall to be practical. For a cantilevered wall the individual soldier piles would need to be stiffer (i.e. larger diameter and with more steel reinforcement), more closely spaced and have a deeper embedment depth than for soldier piles supported by internal props or ground anchors in the temporary condition. Alternatively, the east boundary of the basement could be located sufficiently far inside the east boundary that temporary anchors are within the site boundary (or temporary batter slopes can be constructed), or internal props could be used (if practical given the width of the basement).

Sealed basement

If the geotechnical investigation indicates that the basement excavation will extend below the groundwater table and a basement that is sealed in the permanent condition is to be adopted, the method of construction will depend on whether short-term groundwater inflows during construction can be managed or if the basement needs to be sealed in the temporary condition as well, and the desired internal finish of the

basement wall. Local excavations below the basement (e.g. lift-overrun pits) may also need to be sealed if they extend below the groundwater table.

If groundwater inflows can be managed in the temporary condition, the basement wall could potentially be constructed as a soldier pile wall with shotcrete infill panels (as above), with a permanent sealed structure built in front of the soldier pile wall. This approach could reduce the space available for use within the basement. However, we expect it would result in a relatively good internal finish and if properly constructed should provide a relatively good seal against water ingress.

An alternative approach would be to construct a continuous section retaining wall (e.g. a secant wall comprising CFA piles or a diaphragm wall constructed using a grab bucket) which could remove the need to build a secondary wall inside the basement. As above, the retaining walls would require lateral support in the temporary condition from either props and struts or temporary post tensioned anchors, with the internal floor slabs providing propping to the wall in the permanent condition. For either a secant pile wall or diaphragm wall we anticipate that individual piles or panels will need to extend to a deeper founding stratum to provide resistance to axial loads applied to the walls of the basement. The sealing of anchor holes in both the temporary and permanent condition is critical to reduce potential groundwater inflow.

The construction of a sealed basement below the groundwater level will raise questions with respect to the appearance of the internal basement walls and what is an acceptable level of water ingress. It is our experience that there are many interpretations of the terms watertight, waterproof and water resistant and we recommend that the decision on basement wall type includes an assessment of the likely performance of the basement walls with respect to expectations. The following comments relate to water ingress and the internal appearance of the walls following excavation of the basement:

- If a secant pile wall comprising CFA piles is adopted, we consider there is potential for non-overlap of adjacent piles occurring particularly towards the base of the excavation and hence groundwater seepage and inflows through the retaining wall. This issue can be overcome using a cased CFA method.
- If a contiguous pile wall (i.e. closely spaced piles) is constructed there is the potential for groundwater inflow through the wall.
- The requirement for internal facing will depend on both the desired finish and the type of retaining wall adopted. For example, the internal finish of a diaphragm wall is generally very good with no internal facing required. However, an internal finish and possibly a plenum wall is likely to be required for a secant pile wall.

Retaining wall design pressures

The pressures to be resisted by temporary or permanent retaining walls depend on the nature of the walls, the sequence of construction, the nature and method of placement of backfill (if present) and the allowable ground movement behind the wall. For preliminary purposes and assuming an anchored or propped retaining wall, we recommend the following design pressures with the zone of influence defined as a zone lying above a plane, sloping at 40 degrees above the horizontal from the base of the excavation.

- Where adjacent buildings and or movement sensitive services are not within the zone of influence, the lateral earth pressure is a uniform pressure of 4H kPa, where H is the total height of the wall in metres.
- Where adjacent buildings and/or movement sensitive services exist within the zone of influence, a uniform pressure of 6H kPa should be adopted, where H is the total height of the wall in metres.
- The effect of surcharge pressures should be added to the lateral earth pressures. Where adjacent building footings or movement sensitive services are not within the zone of influence, an earth pressure coefficient of 0.4 should be adopted. Where adjacent building footings and/or movement sensitive services are within the zone of influence, an earth pressure coefficient of 0.6 should be adopted.
- The above recommendations assume positive drainage will be provided behind the retaining walls, e.g. a series of strip drains placed on the excavated panels between soldier piles prior to the placement

of the shotcrete infill panels. If a sealed basement is adopted, in addition to the above pressures the permanent wall should be designed to support hydrostatic pressure over its full height (e.g. to allow for a potential build-up of hydrostatic pressures following periods of heavy rain, etc.).

For a soldier pile wall the main retaining elements (anchored soldier piles) should be designed for the pressures recommended above. The infill panels between soldier piles may be designed for a lower pressure due to arching of the soil between individual soldier piles. We recommend infill panels be designed for 50% of the previously recommended pressures.

Ground anchors

Ground anchors should be installed under a design and construct contract with contractors required to achieve stated loads via proving tests. Further information can be provided once a geotechnical investigation has been performed at the site.

9.3.5 Groundwater Control

Groundwater inflow rates during construction will depend on the depth of the proposed basement with respect to the groundwater level and the permeability of the materials exposed in the walls and floor of the excavation. In general terms we expect the predominantly clayey Unit 3 materials to have a low permeability. However, there may be sandy layers within Unit 3 with a high permeability, and depending on the continuity of these layers there may be significant groundwater inflows. The depth to groundwater and the nature of the materials expected to be encountered within and below the basement excavation will need to be assessed as part of geotechnical investigation works at the site.

Temporary groundwater control measures are likely to be required during basement construction (e.g. pumping from temporary sumps). Regulations regarding the pumping and off-site disposal of groundwater will need to be investigated with relevant statutory authorities.

Groundwater inflow rates in the long-term will depend on the method of basement construction, i.e. drained or sealed. Refer to our previous comments regarding issues associated with these different methods of basement construction.

We expect Units 1 and 2 to be above the groundwater level at the site. However, there may be perched groundwater within these materials that will also need to be considered during development works.

9.3.6 Excavation Conditions

There is the potential to encounter obstructions in the fill materials and pavement materials including asphalt layers and cement-treated crushed rock. There is also the potential to encounter silcrete layers within the Brighton Group materials. Other than where obstructions are encountered, we expect that the proposed excavation works could typically be undertaken using medium sized excavation equipment. Larger equipment may be required where obstructions are encountered.

9.3.7 Impact on Adjacent structures

The potential for the proposed development works to affect adjacent structures including buildings, roads, the railway line and services depends on the type of works undertaken, the proximity of the development works to existing structures and the nature of the existing structures. Assessment of the potential for impact should be made once details of the proposed development are confirmed.

9.3.8 Earthquake Classification

The methods of assessing earthquake risk classification and consequential design implications are outlined in Australian Standards AS 1170.4 (2007) ‘Structural design actions – Part 4: Earthquake actions in Australia’. The standard uses a number of factors in assessing an earthquake design category for a particular structure at a given site.

Based on the expected subsurface conditions, our preliminary assessment of the sub-soil class in accordance with Section 4 of AS 1170.4 suggests the site may be classified as a sub-soil class of Class C_e (shallow soil site).

The hazard factor (Z) depends on the geographic location of the site. AS1170.4 gives the hazard factor for Melbourne as 0.08.

10.0 RECOMMENDATIONS

10.1 Contamination Assessment

It is recommended that:

- Prior to the acquisition of the site, the environmental sign off requirement is confirmed with the Responsible Planning Authority;
- The preliminary contamination strategy outlined in Section 8.4 is adopted to manage the contamination issues at the site.

10.2 Geotechnical Investigation

Based on the current development proposal we consider that geotechnical investigation should include an assessment of the following key information:

- The depth to the Unit 4 weathered siltstone and the nature of these materials when encountered, which is required for the design of piles.
- The nature and strength of the Unit 3 Brighton Group materials, which is required to assist with the design of the proposed basement and building footings.
- The depth to the groundwater table. An assessment of permeability may also be required depending on the depth of the proposed basement compared to the groundwater level.

Based on the results of the desktop assessment we suggest the following indicative scope for geotechnical investigation works to support detailed design of the proposed development:

- Three boreholes drilled to about 25 m depth (i.e. about 5 m into the weathered siltstone). Standard penetration tests (SPTs) and undisturbed thin-walled tube samples should be recovered from the soils encountered for classification and strength assessment purposes. Boreholes should be advance by coring methods in rock to recover samples for visual and strength assessment purposes.
- The installation of groundwater wells in say two of the boreholes. Groundwater wells should be licenced for sampling and testing, as an assessment of permeability (e.g. slug testing) and groundwater chemistry is likely to be required if the groundwater level is above the proposed excavation level.
- Laboratory testing including saturated moisture content and strength tests (e.g. UCS or point load strength index tests) on samples of weathered rock, and classification tests (e.g. Atterberg limits, particle size distribution, moisture content) on soil samples.

In the short-term, the drilling of a single shallow (say 6 m deep) borehole with a groundwater monitoring well installed may be a cost-effective approach to assessing the depth to groundwater and reducing the uncertainty associated with this aspect of the proposed development.

Other considerations for geotechnical investigations will include assessment of the founding depth of adjacent structures that could be affected by basement excavation (e.g. footing exposures). We consider that the available information (in conjunction with the indicative scope outlined above) is likely to provide a satisfactory assessment of the variation in fill depth across the site.

The nature of the development proposal will affect the scope of geotechnical investigation works required, i.e. if the nature of the proposed development changes, the above indicative scope may also need to be changed. We would be pleased to submit a fee proposal for a geotechnical investigation once details of the proposed development have been confirmed.

11.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled – 'Important Information Relating to this Report', which is included in Appendix B. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder has under the contract between it and its client.

Report Signature Page

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APPENDIX A

Site Photographs

Photograph 1 – Facing south, Car park surface, 50 – 58 Marlborough Street, Balaclava

Photograph 2 – Facing north, Car park surface, 50 – 58 Marlborough Street, Balaclava

Photograph 3 – Facing west, 50 – 58 Marlborough Street, Balaclava

Photograph 4 – Facing north, 46 – 48 Marlborough Street, Balaclava

Photograph 5 – Facing North, Garden bed on the western boundary of 50 – 58 Marlborough Street, Balaclava

Photograph 6 – Facing North, Garden bed on the eastern boundary of 50 – 58 Marlborough Street, Balaclava

APPENDIX B

Important information relating to this report (LEG04, RL2)

IMPORTANT INFORMATION RELATING TO THIS REPORT

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

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The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

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Appendix H

Sampling Assurance and Quality Plan

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SAMPLING QUALITY ASSURANCE PLAN

January 2018

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1. OBJECTIVE AND SCOPE

The objective of this Sampling Quality Assurance Plan (SQAP) is to ensure that soil (which includes sediment), and groundwater samples taken during a contamination assessment or a remediation and validation program are representative of the conditions actually encountered on-site.

The scope of this SQAP is to:

- Outline the methods and procedures for the field investigations during a contamination assessment or remediation and validation program; and
- Specify methods and procedures which ensure that soil and groundwater samples recovered are representative of the actual subsurface conditions at the site, as well as ensuring that the risk of introducing external contamination to samples and to the environment is minimised.

This SQAP must be adhered to by Peter J Ramsay & Associates' personnel and also by sub-contractors involved in field investigations. A Work Plan may be prepared which identifies the specific equipment and sampling methods to be used and the types of samples to be collected.

2. ENVIRONMENTAL SAMPLING

Sample locations are referenced to existing ground features and positioned as indicated in the Work Plan. Some locations, however, may vary due to site and subsurface conditions encountered. Prior to the commencement of site work involving powered drilling or excavating, site plans showing the location of underground services are obtained, where available, from the client or information service. If there is uncertainty regarding the location of underground services, a pipe and cable location specialist is engaged to locate underground services in the vicinity of sample locations.

Samples are labelled with the following information:

- Sample number (which consists of the site identifier and sample location number, and the sample depth (soil samples only) or sample event (groundwater samples only)); and
- Date of sample collection.

2.1 Soil Sampling

Soil samples are retrieved using a number of methods depending on the subsurface conditions encountered, and type and quantity of sample required. In general the methods are classified as:

- Spade or trowel;
- Hand auger and hand held power auger borehole;
- Drill rig borehole; and
- Backhoe test pit and trenching.

Professional consultants supervise drilling and/or excavations and perform lithological logging of sample locations. Logging of soil characteristics is performed according to the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* and Australian Standards *AS4482.1-2005 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-Volatile and Semi-volatile Compounds* and *AS1726-1993 Geotechnical Site Investigations*.

Description of grain size, visible staining, odour and colour are made where observed. Particular note is taken of the nature of possible contamination of the soil encountered and samples collected.

Drilling activities are documented according to the format contained in the Peter J Ramsay & Associates standard Soil Profile Log. Field classifications of samples with regard to the nature of potential contamination are verified against the analytical results.

Decontamination of drilling and sampling equipment is performed according to the procedures outlined in Sections 4.1 and 4.2 respectively. Sampling equipment is confined to a clean surface to prevent cross contamination of samples from different locations. A new pair of latex gloves is used to handle each sample. Contaminated materials such as disposable clothing and equipment are disposed of in accordance with environmental best practice.

Samples are generally collected from a depth of 0.1 m, 0.5 m, 1.0 m, 1.5 m, 2.0 m, 2.5 m, 3.0 m, etc. or as determined by the consultant in the field based on signs of contamination and lithology encountered. The origin of each soil sample collected is identified by a sample number e.g 123/BH01_0.1, which describes the soil sample as follows:

- 123 = The site identifier
- BH01 = Borehole number 01 (TP is used where sampling is undertaken using test pits)
- 0.1 = Approximate sample depth (m BGL)

For soil samples retrieved from stockpiles, the site stockpile and sample location are included in the sample name as outlined in the following example.
E.g. 123/SP01/1

- 123 = Site identifier
- SP01 = Stockpile Number
- 1 = Sample Location collected from the stockpile

The sample numbering convention is not followed where it is necessary to conceal the identity of duplicate samples. In such cases, a fictitious sample location number is used. For example DUP1, DUP2, etc. (refer to section 5)

Validation sampling of in-situ soil exposed in excavations is conducted by taking discrete samples from each of the walls and the base of the excavation. Samples are analysed at a laboratory for the

contaminants of concern. Again, the sample number identifies the origin of each sample collected e.g. 123/A2-B4_0.1 as follows:

- 123 = The site identifier
- A2 = Area of site being remediated
- B4 = The number sample (the fourth in this case) retrieved from the base (B) of the excavation.
- 0.1 = Approximate sample depth (m BGL)

The letters B, N, S, E and W refer to the base, north, south, east and west walls of the excavation respectively.

On the basis of field observations, composite soil samples may be formed for site assessments. Compositing provides the maximum amount of information while minimising analytical requirements. A maximum of three soil samples are generally retrieved from adjacent locations at the same depth from the same soil type and combined to form each composite sample. Composite samples are not analysed for pH and volatile organic analytes including petroleum hydrocarbons and chlorinated hydrocarbons, as loss of volatiles may occur during compositing, which involves thorough mixing of the samples. Stiff clay is not suitable for forming composite samples.

Samples are also generally recovered at soil or hydrogeological boundaries (eg. water table, top of natural soil layer, immediately above bedrock, or variable soil profiles). At each sample depth one either 125 ml or 250 ml glass jar with screw lid and teflon seal is used. The jar is completely filled with the sample (i.e. zero headspace sample) to minimise the potential for volatile components to be lost. Samples for volatiles analyses are retrieved in-situ as undisturbed samples using a split spoon or core sampler or ex-situ by subsampling from a bulk, undisturbed sample (i.e. from a backhoe bucket).

When collecting duplicate soil samples a stainless steel bowl is used for mixing/homogenising purposes. Duplicate samples collected for volatiles analyses are not mixed/ homogenised as this would result in loss of volatiles. The samples are split by dividing the undisturbed sample as evenly as possible to obtain two similar samples. 'Volatile' samples are placed into sample jars prior to samples to be analysed for non-volatiles.

The analytical laboratories provide the appropriate sample containers to Peter J Ramsay & Associates. All laboratories engaged for the project are NATA endorsed for the analyses requested.

2.1.1 Spade or Trowel

A stainless steel spade or trowel are used when surface scrapings or shallow soil samples are collected. The sampling equipment is thoroughly cleaned between sampling events as detailed in Section 4.2. Surface vegetation, surface litter and the top few centimetres of soil are removed prior to the collection of the sample.

2.1.2 Hand Auger Borehole

Samples recovered from hand auger boreholes are collected at specific depths taking care not to cross contaminate samples, particularly between sample depths within the same auger hole. Sampling equipment is thoroughly cleaned between sampling events as detailed in Section 4.2.

Hand augered boreholes are drilled using a variety of auger bit types, depending on the soil type encountered. A split spoon sampler is used to collect undisturbed intact soil samples.
Cross contamination between sampling intervals is minimised by using a smaller diameter auger bit or split spoon sampler to recover the secondary soil sample thus eliminating borehole smearing.

The soil profile and any relevant observations are described on standard Soil Profile Logs, consistent with the NEPM and Australian Standards.

2.1.3 Drill Rig Borehole

A drill rig may be used to recover both near surface and subsurface soil samples. Material handling and quality control measures are directed towards optimum clean drilling conditions so that cross contamination between sampling locations, sampling depths and sampling/monitoring instruments is minimised. The drill rig and associated mechanical components are in sound working order and free of oil leaks prior to arrival on-site.

A decontamination station is provided on-site and is established at the commencement of the project. The station is supplied with power and water.

At locations covered by concrete or asphalt paving, drilling may be preceded by concrete coring of an appropriate diameter to accommodate both drilling activities and subsequent drilling/sampling activities, for example, installation of groundwater monitoring wells.

Accumulated drill cuttings are removed as drilling progresses over a hole so as to prevent fallback of cuttings during normal drilling operations. On completion of drilling, boreholes are backfilled with cuttings or a bentonite/cement grout. Where boreholes have been drilled through sealed surfaces on a site, these will be reinstated with either a standard concrete mix or high strength non-shrink grout, depending on the client's specific requirements and the nature of existing pavements. Excess drill cuttings are disposed of in accordance with environmental best practice.

Petroleum based lubricants are not used on drilling and sampling equipment. Instead, teflon based greases are used where appropriate.

Drilling activities and the subsurface profile encountered are documented by a professional engineer/ hydrogeologist from Peter J Ramsay & Associates. Logging of soil characteristics is performed according to the NEPM and the Australian Standards.

Grain size, visible staining, odour and colour are reported where observed. Particular note is taken of the nature of possible contamination of the soil and each sample collected.

The major drilling methods used in environmental investigations and sampling programs are:

- Rotary air hammer;
- Solid or hollow auger; and
- Geoprobe.

Quality assurance measures for drilling operations vary depending on the drilling methods adopted, including minimising cross contamination between samples.

2.1.3.1 Rotary Air Hammer

The use of a rotary air hammer rig has many advantages for consolidated materials (i.e. rock), these include:

- Large diameter to allow precise placement of groundwater monitoring equipment;
- No injection of additional fluids into the formation with resulting benefits in ensuring integrity of recovered samples;
- Rapid penetration rates in hard rocks;
- Reduced problems of off-site disposal of fluids; and
- Provision of reliable indications of saturated conditions whilst drilling.

The air hammer technique requires the use of synthetic blend lubricants to prevent potential contamination of the borehole if a leak were to occur. In addition, micro-filters are installed into the drilling airline to avoid contamination by hydrocarbons present in the compressed air.

Samples of rock are generally not collected. Where rock samples are needed, specialised techniques are used. These would be outlined in the relevant section of the Work Plan for the project.

2.1.3.2 Solid and Hollow Auger

Solid auger and hollow auger drilling techniques are well suited to unconsolidated materials. The main advantage of the hollow auger technique is that the drill rods allow access of sampling equipment at specified depths within the annulus of the drill rods.

Samples of soil are recovered using a split spoon sampler at specific depth intervals. The split spoon sampler is driven into the soil by the drill rig whilst attached to the end of the drill rods. The retrieved sample is then split lengthways into two halves when duplicate samples are required. A few centimetres of soil and any fallback of drill cuttings from the top and bottom of the sample is discarded. Samples for volatiles analysis are collected first, without mixing.

2.1.3.3 Geoprobe

The Geoprobe drilling unit is particularly suited to shallow unconsolidated materials above the water table. The main advantage of the Geoprobe is it allows rapid soil vapour sampling and retrieval of soil samples at relatively shallow depths. The Geoprobe is supervised by experienced field engineers from Peter J Ramsay & Associates.

The Geoprobe consists of a hydraulic power unit which "pushes" steel drill rods into the ground. A clean plastic tube is placed inside the steel drill rods and the leading steel rod is capped with a cone tip which aids penetration to the required sampling depth. As the steel drill rods penetrate into the ground, soil is collected in the inner plastic tube. Soil samples are then recovered from the plastic tube, which is split so that the soil profile can be inspected and samples collected. Essentially undisturbed soil samples are collected.

2.1.4 Backhoe Test Pit and Trench Sampling

A backhoe is used to recover relatively shallow (i.e. less than 3.5 m depth) soil samples on occasions where:

- Multiple sample locations at a site are needed;
- A description of the subsurface soil profile to approximately 3.5 m depth is required (generally in unsaturated conditions);
- The test pit site is free from known underground services and access problems;
- The test pit site is free from impenetrable surface or near surface layers including concrete and asphalt pavements; and
- An undisturbed soil sample is required, usually at multiple depths.

The backhoe and associated mechanical components are in sound working order and free from oil leaks, and decontaminated prior to arrival on-site. A decontamination station is established on-site and is used to clean the backhoe bucket between sampling locations to minimise the risk of cross contamination where significant contamination is anticipated. Power and water are provided on-site.

Petroleum based lubricants are not used on any sampling equipment and where possible the backhoe bucket.

Soil samples to a depth of 1.0 m are collected by digging into the walls and bottom of the pit with a stainless steel trowel to ensure that the first few centimetres of disturbed soil are removed and discarded. The samples are collected by entering the pit, and sampling at specific depth intervals. Pits are not entered if the depth exceeds 1.0 m below ground surface or the walls of the pit are unstable. Samples below a depth of 1.0 m are retrieved by the use of a long handled scoop, hand auger or the backhoe bucket at ground level.

If in the opinion of the field engineer the test pit walls appear unstable, unsafe or explosive conditions are expected then personnel do not enter the pit at any depth but retrieve samples from the backhoe bucket whilst at ground level. Soil samples are collected at the base of the pit first and then progressively upwards to avoid cross contamination. Water samples can be collected with precleaned bailers or dippers at points where water flows from the test pit walls. Soil Profile Logs are prepared describing the soil profile encountered.

2.2 Groundwater Sampling and Monitoring

Sampling and monitoring of groundwater from a groundwater monitoring well is undertaken in accordance with AS5667.11-1998 *Guidance on the Sampling of Groundwaters*, Victorian EPA Groundwater Sampling Guidelines, and USEPA protocols.

2.2.1 Groundwater Monitoring Well Installation

Groundwater monitoring wells are installed for the purposes of groundwater monitoring, aquifer testing and groundwater sampling. Licensed water well drillers are used to install wells greater than 3 m deep. Licence approval is received from the appropriate water authority prior to installing the wells. The Bore Construction Licence and Bore Completion Reports for the wells are presented in the report for the assessment.

Figures 1 and 2 show typical monitoring well installations. Each well consists of a 50 mm nominal diameter (internal diameter) standpipe, constructed from Class 18 high durability unplasticised polyvinyl chloride (UPVC). The length of the screened interval in the well should be between 2 m and 3 m and located specifically within the zone of interest. Longer screens may result in dilution of groundwater samples due to mixing, resulting in unrepresentative samples. High resolution sampling may require screen lengths less than 1 m in length. Slotting for the screen is nominally 0.5 to 1.0 mm width, with an average spacing of 10 mm between slots. The ends of the casing and screen lengths are threaded to avoid the use of solvent-based glues and cements.

Where light non-aqueous phase liquids (LNAPLs) are potential contaminants of concern, the screened interval is placed so that it extends approximately 1 m above the saturated zone of the aquifer. This ensures that the LNAPL is able to enter the well and to accommodate future groundwater level fluctuations. However, representative samples for analysis of dissolved phase contaminants cannot be obtained from wells with LNAPLS due to free phase contamination of the sample. When the screened interval is outside the direct influence of the LNAPLs it may be possible to sample the well for dissolved phase.

In some situations, a bore sump may be required to either allow the sampling for dense non-aqueous phase liquids (DNAPLs) or to act as a sediment trap. Sumps are placed below the screened interval and are constructed of approximately 0.6 m length of blank casing with an end cap.

Standpipes are fitted with UPVC end caps at the lower and upper ends. The end cap at the lower end of the standpipe is generally fastened using pop rivets or stainless steel self tapping screws. Where well security is required a lockable cap is used on the upper end of the standpipe.

It is a requirement of the quality assurance program that the materials placed into boreholes are free from contaminants targeted in the investigation. Decontamination of well materials is performed as described in Section 4.1. Alternatively, sections of casing, screen and end caps may be used if supplied in sealed protective plastic wrapping after pre-delivery washing at the factory. Following decontamination or removal from the protective plastic wrapping, materials are only handled by field engineers and/or drilling contractors wearing new latex gloves. During handling and assembly of the casing string it is ensured that no grease, oil or other potential contaminants of concern come into contact with the casing.

Where it is anticipated that significant contamination or free product will be intercepted in a shallow aquifer during the drilling of a borehole for the purposes of installing a well in a deep aquifer, specific staged drilling and bore construction techniques are necessary. This involves the drilling and emplacement of a grout plug to a depth below the product layer or shallow aquifer. Once the grout has set, a smaller diameter borehole is then drilled through the grout plug to the required final depth. It is imperative that the minimum well thickness of the grout plug is at least 20 mm. To facilitate this thickness and the installation of the monitoring well, it may be necessary to ream the first stage of the borehole to an increased diameter before emplacing the grout plug.

Following the drilling of the borehole, loose material is removed from around the top of the borehole prior to the installation of the well.

Monitoring well installation procedures are:

- Attach a sump to the base of the screen if required or line the base of hole with sand first;
- In conditions where the borehole will remain open the total depth of the borehole is confirmed once the drilling tools have been removed. When installing a monitoring well in an open borehole, centralisers are attached to the standpipe every six to twelve metres;
- In conditions of poor borehole stability (prone to slumping and collapse) the standpipe is installed through the drilling tool (typically hollow stem augers). With the augers left at depth, the auger tip is removed and the total depth of the borehole is confirmed. The standpipe is installed through the hollow stem of the augers. Centralisers are not required when installing through drilling tools;
- Once the screen and standpipe have been installed, a filter consisting of prewashed graded sand of nominal 2-3 mm size is immediately placed around the standpipe to a height of between 200 and 300 mm above the uppermost screen slots;
- It is crucial to prevent bridging during emplacement of the sand filter. This is accomplished via pouring the sand through a tremmie pipe. Alternatively, the sand can be slowly poured down the open annulus whilst the standpipe is agitated and periodic measurements using a tape measure are made to ensure that bridging of the filter pack has not occurred;
- If the well is being constructed through hollow augers, the augers are withdrawn as the sand is poured to prevent caving of the formation surrounding the well. When the augers are being withdrawn it is ensured that the standpipe does not vary from its emplaced position in the borehole;
- A bentonite seal is placed directly above the filter pack with a minimum thickness of 500 mm;
- The bentonite pellets are poured into the annulus very slowly to prevent bridging. Where the bentonite seal is placed above the water table, then approximately 20 L of clean water is added to the borehole via a tremmie pipe in order to begin the hydration of the bentonite. Cement/bentonite mixtures are used in saline waters;
- Boreholes are backfilled above the bentonite seals with a bentonite/cement grout to approximately 0.3 m below ground level;
- Final completion of the monitoring well involves construction of a concrete collar seal which may incorporate a steel protective cover. The cover is lockable to secure the well; and
- Drainage around the bore head is provided to avoid build up of surface water and leakage down the side of the standpipe.

Generalised design drawings of a groundwater monitoring well are shown in Figures 1 and 2 (refer to pages 15 and 16).

The depth of the sand filter and the bentonite seal are verified during their installation by direct measurement using a weighted measuring probe lowered down the annular space between the borehole wall and the outside wall of the standpipe.

Groundwater monitoring wells are surveyed for location and elevation. Where necessary, the location is determined to the nearest 0.1 m and referenced to the Australian Map Grid (AMG) coordinates or site grid coordinates.

Elevation measurements of the top of the standpipe and ground surface adjacent to the standpipe are determined to the nearest 0.01 m and referenced to an arbitrary datum selected on site or to the Australian Height Datum (AHD).

Records of procedures adopted, materials used, and the progress of the stages of well construction are kept. Information will also be recorded on the monitoring well configuration (i.e. screen location, casing length etc.) placement of sand filters and well seals, and general completion details.

2.2.2 Groundwater Monitoring Well Development

Following installation, the wells are developed. This involves removal of fluids that may have been introduced during drilling operations, fines from the sand filter and screens and fine sand, silt and clay from the aquifer around the well screen. Development of a well is performed after the installation of the well and at least 24 hours to seven days prior to sampling. Decontamination of all equipment used in well development is performed as described in Section 4.2.

Development is performed by pumping or bailing the groundwater from the well. The development process actively agitates the water column in the bore and continues until the water being removed is visibly clean and of a consistent quality (stabilisation of basic water chemistry parameters including pH, electrical conductivity (EC), redox potential (Eh), temperature and dissolved oxygen (DO)). The development process does not introduce air, water or other material into the aquifer. Qualitative measurement of sediment in removed development water may be accomplished by visual inspection of settable solids in the bottom of a container of known volume. All water removed during development is disposed of in accordance with environmental best practice. During development the well yield is estimated by monitoring the rate of recovery of water in the well after the development process. The effectiveness of development is checked by measuring the standpipe depth before and after pumping. Should any sediment be encountered within the sump after pumping has been performed, then the standpipe may require additional development or rehabilitation. A water level indicator which has been decontaminated is lowered into the monitoring well to determine the water level. The

water level elevation is referenced to the top of the standpipe and recorded to the nearest 1 mm.

2.2.3 Groundwater Monitoring Well Purging

Prior to sampling groundwater from a monitoring well, it is necessary to purge the well. The aim of the purging process is to remove the stagnant water that remains in a well between sampling rounds, while creating minimal disturbance to the groundwater flow regime. Upon completion of the purging process, it should be possible to collect groundwater samples that are representative of the aquifer.

Traditional purging techniques have involved the removal of an excess of three to five well volumes of water until the stablisation of basic water chemistry parameters (including pH, DO, EC, Eh and temperature) to within acceptable tolerance ranges has been achieved. However, this approach has typically involved the removal of large volumes of water which is often impractical or hazardous. It may also adversely effect the distribution of contaminants in the sub-surface (eg through dilution, mixing etc.) or introduce bias.

2.2.3.1 Low-Flow/Minimum Drawdown Purging

Low-flow/minimum drawdown purging is designed to minimise the disturbance of the water column and stress on the aquifer, and is the preferred purging technique. Low-flow refers to the velocity with which water enters the pump intake and that is imparted to the formation water in the immediate vicinity of the well screen. This method removes only small volumes of water, typically at rates between 0.1 and 0.5 L/min, at a discrete depth within the well.

Low-flow well purging procedures are:

- Purging and sampling occurs in a progression from least to most contaminated well, if this is known;
- Decontaminate all equipment that is used during purging in accordance with Section 4.2.
- The well, lock and the locking cap are checked for damage and tampering, and observations are noted;
- The presence of VOCs in the monument (well protector) head space is measured with a PID and the reading is noted;
- Upon removal of the well cap, the concentration of VOCs in the standpipe headspace is immediately measured using a PID;
- The depth to the standing water level in the well standpipe relative to the reference maker at the top of the bore casing is measured. The thickness of any LNAPLs floating on the standing water is measured if present (refer to 2.2.4.2);
- The pump is carefully and slowly lowered in the well so that the intake is located in the middle or slightly above the middle of the screened interval. Placement of the intake at the top of the water column is only recommended when the screen has been placed across the water table in an unconfined aquifer and this is the target sampling point. Placing the pump within 0.6 m of the base of the well is avoided as this may cause disturbance of sump deposits;
- The groundwater is pumped from the well using low-flow rates (<0.5 L/min) to maintain minimal drawdown in the well (<0.1 m change in the standing water level). Pump adjustments are made to obtain and stabilise the required flow rate as soon as possible. A stopwatch and graduated container are used to accurately determine flow rates;
- A flow-through cell is used to contain discharged water momentarily whilst water chemistry parameters are measured;
- The standing water level and the physical parameter readings are measured and recorded at an interval of two to three minutes. In addition, the flow rate is calculated and the drawdown in the well is measured. The pumping rate is adjusted as required. All measurements and changes to the pump flow rate are noted;
- The purging process continues until the physical parameters have stabilised. This has been achieved when the water is visibly clean (of low turbidity) and once three consecutive readings of all parameters are within the following tolerance range:
  - +/- 10% DO;
  - +/- 3% EC;
  - +/- 0.05 for pH; and
  - +/- 10 mV for Eh.

The key indicator parameter for samples to be analysed for VOCs is dissolved oxygen; for all other analytes the key parameter is turbidity.

- All appropriate purging details are recorded on the Groundwater Well Purging and Sampling Sheet;
- Throughout the purging procedure, especially when lowering pumps and water level measuring devices, efforts are focussed upon minimising the potential to mix the stagnant bore casing water with fresh screen water, and preventing of disturbance of sump deposits (which are particles that have collected over time and are the result of well development, prior purging and sampling event and natural colloidal transport and deposition);
- The total well depth is measured only after sampling has been completed; and
- The water removed during the purging process is disposed of in accordance with environmental best practice.

2.2.3.2 Low-Flow Purging in Low Permeability Formations (<0.1 L/min recharge)

The procedures for sampling in low permeability formations are as for Section 2.2.3.1, however purging is performed at low rates of <0.1 L/min.

The screen is not dewatered as this may expose the sample to air and other gases or floating substances. This may require repeated recovery of bore water

during purging while leaving the pump in place within the screened interval of the bore.

2.2.3.3 Passive Sampling

Passive sampling is the process of obtaining a sample from a well without disturbing the stagnant water within the well. This method involves permanently installing a pump in the well and allowing the water chemistry to stabilise for at least 48 hours prior to purging. During sampling no agitation of the water column in the well occurs as the pump has already been installed in the well. The measurement of stabilisation parameters during purging for passive sampling is not generally performed. However, the parameters are measured the first few times a well is sampled to enable a purge volume to be established.

2.2.3.4 Removal of a Number of Bore Volumes until Chemical Equilibrium is Reached

Though this method is significantly less desirable for purging than Low-Flow, it still does have some applications, particularly when volatiles or gas sensitive analytes are not contaminants of concern, or bailers are the only purging/sampling device available.

A number of bore volumes (commonly 3 – 5 bore volumes) may need to be withdrawn to ensure that stagnant water has been removed and the drawn water is representative of formation water. This is a guide only. In some situations 10 – 20 bore volumes may need to be removed. Bore volume may be calculated using the following formulae:

Bore Volume = casing volume + filter pack volume

$= \Pi h_1 d_2^2/4 + n(\Pi h_1 d_1^2/4 - \Pi h_2 d_2^2/4)$

Where: $\Pi = 3.14$

n = porosity (0.3 for most filter pack material)

h_1 = height of water column

d_1 = diameter of annulus

h_2 = length of filter pack

d_2 = diameter of casing

General well purging procedures using this approach are:

- The rate of purging is less than the rate of bore development;
- Physical parameters are measured upon removal of each bore volume to determine when stabilisation has been reached. This has been achieved when the water is visibly clean (of low turbidity) and once three consecutive readings of all parameters are within the following tolerance range:
  - +/- 10% DO;
  - +/- 3% EC;
  - +/- 0.05 for pH; and
  - +/- 10 mV for Eh.

The key indicator parameter for samples to be analysed for VOCs is dissolved oxygen; for all other analytes the key parameter is turbidity.

2.2.4 Groundwater Sampling

Groundwater samples may be collected once stabilisation of the physical parameters measured during the purging process has been achieved. The pump is not removed from the well between purging and sampling activities.

Well sampling procedures:

- A sheet of polyethylene is placed beside the well head and firmly fixed into position. Sampling equipment is placed onto the sheet to avoid cross contamination between the ground surface and the groundwater in the well;
- Ensure that appropriate PPE is used including disposable gloves, eye protection and tyvek suit (if appropriate);
- The flow cell is disconnected prior to sample collection;
- Groundwater samples are collected at the same or slightly lower flow rate used during purging (eg. 0.1-0.25 L/min) and such that the maximum allowable drawdown of 0.1 m is not exceeded. A sufficient flow rate is used to prevent cascading and/or air bubble formation in the sampling device tube line. This will minimise the loss of volatile compounds and decrease turbidity (which causes cloudy sampling);
- The sample containers for volatile (eg solvents, volatile organic compounds and fuel constituent) and gas sensitive analytes (eg CH_4, H_2S/HS, alkalinity, and Fe^{2+}) are filled first. Bottles for inorganic analytes can be filled in any order with the exception that samples requiring filtering are filled last;
- Turbulent filling of sample bottles is avoided. The groundwater is allowed to flow from the tubing gently down the inside of the container. The bottles are filled so as to almost overflow to exclude air bubbles prior to firmly screwing on the container cap. Bottles are not excessively overfilled as this may dilute the preservatives. In addition, if a bottle is spilt, it is discarded rather than refilled. An appropriate spare sample bottle is filled in lieu;
- Relevant sampling data is recorded on a Groundwater Well Purging Sheet. Such information includes sample identification number, sample type, a description of the groundwater, and the number and type of sample containers filled;
- The origin of each groundwater sample retrieved is identified by the sample number, eg. 123/GW4/5. The number 123 identifies the site, GW4 refers to the groundwater monitoring well from which the groundwater sample was taken and 5 indicates the number of the sampling event (in this case, the groundwater from well GW4 has been sampled five times);

- After the collection of the samples, the pump and tubing are removed from the well. The tubing, unless permanently installed, must either be disposed of in accordance with environmental best practice, or be dedicated to the well for resampling by hanging the tubing inside the well;
- The well depth is measured and recorded on the Groundwater Well Purging and Sampling Sheet; and
- The well is then closed and locked.

2.2.4.1 Filtration of Groundwater Samples

Filtration is a form of preservation and involves passing the groundwater sample through a filter to remove suspended solids. Filtration permits the determination of soluble (dissolved) constituents or the determination of contaminants associated with suspended matter (eg metals and hydrophobic contaminants, including PCBs and organochlorine pesticides, sorbed onto suspended particles). Though filtration should not be considered as a 'fix' for poor purging and sampling practices it may, however, be necessary where it is not possible or practical to otherwise obtain a sample with low turbidity.

When filtration of a sample is required, the following guidelines are incorporated into the sampling procedure:

- Filtration occurs immediately after the collection of the sample and before chemical preservation;
- Filtration is undertaken using gravity or by applying vacuum or pump pressure. Only low pressures are applied;
- Filtering is traditionally performed using filters with a pore size of 0.45 μm. However, the use of filters with this pore size does not provide an accurate representation of truly dissolved metal concentrations. Filters with a pore size of 0.1 μm or 0.05 μm should be used as these are more appropriate under these circumstances;
- Filters are pre-rinsed following manufactures instructions;
- Filtering waters may result in a layer of 'filter cake' which reduces the effective pore diameter of the filter and may introduce sample bias. It may be necessary to pre-filter samples through a larger pore size filter;
- Filters and filtering devices are cleaned in a similar manner to sample containers, and care is taken to ensure that contamination is not introduced in the field; and
- On-site (between samples) final rinses from filtration equipment should also be submitted to the laboratory as 'rinsate blanks' for analysis.

Under some conditions it may not be possible to field filter a sample immediately after collection. In this situation the following procedures are to be followed:

- Collect the unfiltered sample in an appropriate container that has no preservatives;
- Overfill and immediately seal the sample container;
- Cool the sample and transport to the laboratory with minimum delay; and
- Inform the laboratory of the need to filter the sample immediately upon receipt. The laboratory should be pre-advised that they are being sent samples which have not been field filtered.

2.2.4.2 Sample Collection in the Event of Free Product LNAPL

In the event that free product LNAPL is detected when the standing water level is measured prior to purging, a sample of the LNAPL can be obtained using the following procedure:

- The well is not purged prior to collection of the free product LNAPL sample;
- A sample of the free product LNAPL is collected using either a single or double check valve (transparent) bailer;
- Based upon the depth to the free product and standing water level, the bailer is gently lowered to a depth so that the bailer bridges both the air/free product and free product/water interfaces;
- The bailer is removed; and
- The product/water interface is observed prior to draining the water from the bailer. The sample of free product is collected from the bailer once the water has been drained.

2.2.5 Pump Methods

2.2.5.1 Bladder Pump

When collecting a water sample using the bladder pump, an airline (thin tube) is connected to the pump from an air compressor or carbon dioxide gas bottle via a control box. The control box regulates the flow of air/gas into the pump. A water discharge line (thick tube) is connected to the pump.

The procedure for using the bladder pump is:

- Connect the airline from the air compressor/gas bottle to the control box and the control box to the bladder pump. Connect the water discharge line to the bladder pump. A nylon safety line is also to be securely tied to the pump designated anchor point;
- Using the safety line attached to the bladder pump (not the air or water discharge lines) slowly lower the bladder pump into the well so that the intake for the pump is within the required screened interval. This is generally slightly above the middle of the screened interval if the whole screen is submerged. The pump intake is not lowered any closer than approximately 0.6 m to the bottom of the well to prevent disturbance of sump sediment. The safety line is securely tied off to the well monument or other temporary fixture; and
- The compressor/gas bottle regulator and control box are turned on. The dials in the control box are adjusted to position such that a steady flow of discharge water from the bladder pump is achieved. The dial settings will vary depending on the head of water in the well, the well yield and flow rate required.

2.2.5.2 Bailer

When collecting a water sample using a bailer, the bailer is lowered gently into the well, until it is within the screened interval. The bailer is then steadily withdrawn, to minimise agitation of water in the well and disturbance of the surrounding sand filter and formation material.

The procedure for using the bailer is:

- Slowly lower the bailer into the water and allow it to sink and fill with a minimum of disturbance. Discard the first bailer sample into a container in order to rinse the bailer with well water; and
- Collect samples for semi-volatile organics first, followed by other organics and then inorganics. The samples are collected by emptying the bailer through the bottom emptying device (BED). The sample is discharged down the side of the sample bottle to minimise entry turbulence. The flow from the BED is adjusted so that a relatively low flowrate is maintained.

2.2.5.3 Inertia Pump

The intake of the inertia pump is placed within the well screen when collecting a water sample or purging a well.

The procedure for using the inertia pump is:

- Securely fasten the inertia pump to the discharge tube without using any glues or solvent based adhesive tapes;
- Slowly lower the inertia pump and discharge tube into the well to the full depth of the well;
- Carefully pull the discharge tube approximately 0.5 m off the base of the well and cut the discharge tube with approximately 1.0 m of tubing extending out of the well; and
- Commence agitation of the inertia pump and direct the discharge tube into a volume measurement vessel for a few moments to rinse the discharge tube; The flow from the inertia pump is adjusted so that a relatively low flowrate is maintained.

2.3 PID Measurements

A PID is used on-site to measure the concentration of total ionisable compounds released from the matrix of soil and water samples. Total ionisable compounds are measured by taking a headspace reading of the sample. This provides an initial qualitative screening of the degree of contamination of the sample with VOCs. The PID specifications are listed in Section 3.1.1.

Background concentrations of total ionisable compounds in the ambient air in the general vicinity of the work area are established prior to the commencement of site activities. Background measurements are normally taken approximately 5-10 m upwind of the work area. The PID readings are observed before and after each measurement of a sample to ensure that the PID is operating correctly. Readings of PID maximums, fluctuations and general comments of observation are recorded.

2.3.1 Field Headspace

During a field headspace analysis the entrapped volatile ionisable vapours which are released from the soil matrix or water in the headspace of a sealed container are measured using a PID. The screening of recovered samples provides a semi quantitative assessment of the concentration of VOCs.

The procedures followed in performing field headspace on soil samples are:

- Fill a small sealable plastic sample bag with the recovered soil sample to no more than ¾ full;
- Keep samples out of direct sunlight as this may affect the readings;
- Approximately 20 minutes to one hour after placing the sample into the bag, check that the PID reading is constant and similar to the background. Insert the tip of the PID through the wall of the plastic bag and measure the airspace above the sample;
- Monitor and record the PID readings noting fluctuations and maximum readings;
- Monitor the readings after returning the PID to a location with background concentrations; and
- If perforations are present in the bag prior to analysis transfer the sample to a new plastic bag and test after one hour.

2.4 Sample Containers, Preservation and Holding Times

The type of sample containers, preservation techniques and holding times required by the analyses are selected on the basis of the analyte of interest and sample matrix according to Australian and USEPA protocols.

Sample preservation techniques are required to ensure that degradation of the sample does not occur. Most analytes have a finite stability in a sample matrix. Therefore, published holding times are not exceeded prior to extraction and/or analysis of the samples.

2.5 Sample Documentation and Custody

The name of the field consultant is recorded on the Soil Profile Logs. All sample containers are labelled as previously described (beginning of Section 2).

The method for the collection of the soil or water samples is described, and the depths from which the soil samples are recovered is stated on the logs.

Chain of Custody (COC) documentation is prepared by the field consultant prior to delivery of samples to the laboratory. Information recorded on the COC form includes:

- Site identifier (referred to as job number on the COC);
- Sample number;
- Sample type;
- Chemical analyses required;

- Date of sample collection;
- Laboratory address;
- Date and time that COC is sent to laboratory;
- Receival time at laboratory (completed by laboratory);
- Due date for preliminary and final results;
- Person sending samples;
- Person receiving samples;
- Method of delivery to laboratory;
- Analytical methods used for each analyte;
- Detection limits required; and
- Notes to the laboratory which outline specific instructions.

Relevant works and major activities carried out on-site are recorded on Record of Progress Reports. Records of groundwater sampling activities will include details of well materials installed, as well as details of sampling, measurement of groundwater parameters and the field tests performed.

3. FIELD INSTRUMENTATION / MEASUREMENT

3.1 Equipment and Calibration

3.1.1 Photoionisation Detector (PID)

A PID is used on-site to measure the presence of VOCs. The PID generally used by Peter J Ramsay & Associates has the following specifications:

- Type: MiniRae 2000 (intrinsically safe)
- Type of lamp: 10.2 eV
- Calibration gas: Isobutylene
- Gas concentration: 102 ppm

The PID is calibrated and its battery charge checked prior to site work. It is recalibrated on a daily basis, using standard laboratory grade calibration quality gas. Interchangeable, clean, in-line filters for the PID probe are available to allow rapid decontamination of the unit in the field if background readings measured by the instrument are significantly greater than the background air concentration initially established. The battery in the PID unit is recharged after every day's use in the field.

3.1.2 pH Meter

For groundwater monitoring and development/purging purposes, surface water and wastewater monitoring, a portable water quality meter is used to measure pH levels, temperature, conductivity, TDS, DO and redox potential. The water meter used in field measurements has the following specifications:

- Type: TPS Field Lab Analyser
- Model: 90-FLMV
- Range: pH 0.00 to 14.00
Temp – 10.0 to 110.0 °C
0 to 200 mS
0 to 100 ppk
0 to 32 ppm
–1999 to +1999 mV
- Resolution: pH 0.01
Temp 0.1 °C
0.025 mS
0.1 ppk
0.01 ppm
1.0 mV
- Accuracy: pH ±0.01
Temp (including sensor error) ±0.2 °C
0.25 ppk
0.5 ppm
±1.0 mV
- Temperature compensation: All readings autonormalised to 25 °C at -2.2%/°C
- Calibration: Two point automatic in pH 4.01, pH 6.86, pH 7.00, pH 9.18 and pH 10.01 buffered solution.
All other probes automatic to user defined standard

The water quality meter is hired from ThemoFisher Scientific and is calibrated prior to hire using user defined standards as described above. An equipment certification report is provided with the water quality meter detailing the calibration of the meter. The meter readings, measuring maximums and general comments of observations made during monitoring are recorded.

3.1.3 Bladder Pump

For groundwater sampling from monitoring wells a bladder pump may be used. The bladder pump used has the following specifications:

- Type: QED Micropurge Sample Pro
- Description: Stainless steel pump (47 mm OD) 6.4 mm OD air fitting and 9.5 mm OD fluid discharge polyethylene tubing low density (food grade)
- Model: QS-P6-PSD

The bladder pump is hired from ThermoFisher Scientific and an equipment report is provided on hire. The bladder pump is disassembled and decontaminated between wells. The bladder is replaced should it become damaged or is used to sample significantly contaminated groundwater.

3.1.4 Teflon Bailer

For groundwater monitoring well development/ purging and sampling of groundwater from monitoring wells an opaque Teflon bailer may be used. The bailer is fitted with a Teflon bottom emptying device to

minimise sample turbulence. The bailer used in field measurements has the following specifications:

- Type: Timco regular bailer
- Description: Opaque Teflon 42.2 mm OD.

The Teflon bailer is solvent free. This type of bailer can be easily decontaminated and the Teflon material will not introduce contamination to the sample.

3.1.5 Inertia Pump

An inertia pump may be used for groundwater monitoring well development/ purging prior to sampling. The typical inertial pump has the following specifications:

- Type: Waterra PowerPack PP-1, Inertial Pump Actuator
- Description: Delrin (acetal thermoplastic or stainless steel) foot valve (16 mm ID, 23 mm OD) 12 mm ID, 16 mm OD polyethylene tubing low density (food grade).

The pump and tubing are dedicated to the development/purging of a well, eliminating the need to decontaminate the equipment between sampling events. The pump rate is variable depending on the vigour of the agitation.

4. DECONTAMINATION PROCEDURES

4.1 Drilling/Excavating Equipment and Materials

Drilling/excavating equipment and materials that are decontaminated include:

- Equipment which is used directly in soil boring/ excavation and sampling activities prior to mobilisation onto the site;
- Any part of drilling equipment, trailer or other vehicle which operate above or immediately adjacent to the sample location;
- Down-hole drilling equipment (eg. augers, down-hole hammer, rods, bits etc.);
- Sampling equipment (eg. split spoon samplers, push tubes, bailers etc.);
- In-line micro-filters in compressor lines used when down-hole hammer techniques are deployed;
- Groundwater monitoring well materials where appropriate; and
- Backhoe buckets.

Decontamination procedures comprise:

- Removal of encrusted material;
- High pressure water scrubbing using laboratory grade detergent;
- Rinsing with water of potable quality; and
- Final rinsing with deionised water.

Decontamination is undertaken at a specified cleaning station located on-site, comprising:

- Appropriate drainage and bunding if available;
- A grassed area if bunded area is not available;
- Power and water services; and
- Soil removed from decontaminated equipment is collected and disposed of in accordance with environmental best practice.

Large machinery or equipment are decontaminated at this location so as not to disrupt site activities or potentially contaminate other areas.

4.2 Sampling Equipment

Sampling equipment is cleaned prior to sampling to prevent cross contamination. The cleaning procedure is:

- Wash and brush scrub with phosphate free laboratory grade detergent;
- Rinse with water of potable quality; and
- Rinse with deionised water.

4.3 Personnel

Personnel involved with site activities are required to comply with the Peter J Ramsay & Associates' Health and Safety Plan for the project. Decontamination requirements as outlined in the Health and Safety Plan refer to:

- The use of proper and effective clothing and personal protective equipment during sampling and site activities; and
- The proper and appropriate disposal of contaminated clothing that is not reusable (eg. disposable gloves, respirator cartridges, tyvek suits, etc.).

Reusable personal protective equipment (eg. steel cap boots, face mask, hard hat etc.) are decontaminated on a daily basis and on the conclusion of the site activities by:

- Removing encrusted material;
- Washing and brush scrubbing with detergent; and
- Rinsing with potable quality water.

4.4 General Site

Sample locations are backfilled and excess material is disposed of appropriately off-site and if necessary, inside sealed containers. Wash down of sealed areas (eg. concrete, bitumen etc.) is carried out subject to availability of water, site drainage considerations and site activity constraints.

5. QUALITY CONTROL (QC) SAMPLES AND ANALYSIS

Inaccuracies in sampling and analytical programs can result from many causes, including collection of unrepresentative samples, cross contamination between samples, unanticipated interferences between elements during laboratory analyses, equipment malfunctions and operator error (USEPA 1986). Inappropriate sampling, preservation, handling, storage and analytical

techniques can also reduce the precision and accuracy of results.

The NEPM has documented quality assurance procedures to be implemented during an environmental investigation. An integral component of this is a QC program for sampling and analysis to ensure that the required degree of accuracy and precision is obtained. The NEPM and EPA recommend the use of two laboratories for the implementation of a QC program for the analyses in addition to the QC procedures followed by the laboratories.

Peter J Ramsay & Associates initiate a QC program to monitor and measure the effectiveness of the QA procedures by comparison with acceptance criteria, and to appraise the accuracy and reproducibility of the analyses. The accuracy of an analysis is a measure of the variation between the concentration of an analyte obtained by the method and the true concentration in the sample. This is determined by comparing the analytical results from field duplicate samples analysed at two laboratories, and by the laboratory's internal QC programs. The precision of a result is a measure of the reproducibility of the result. This is, in effect, a measure of the natural spread of data about the mean result.

According to the NEPM a split of a minimum of 10% of the samples and field duplicate samples (5% split/inter-laboratory and 5% blind replicate/intra-laboratory) as well as blanks is required. Where less than 20 samples are to be analysed, a minimum of two field duplicate samples (one split/inter-laboratory and one blind replicate/intra-laboratory) and a blank is considered appropriate.

5.1 Peter J Ramsay & Associates' Quality Control Program

The QC program undertaken by Peter J Ramsay & Associates is in accordance with the recommendations of the environmental agencies, and follows the protocols in the NEPM. Samples are retrieved and analysed in accordance with the NEPM recommendations for the use of containers, preservation techniques and holding times.

5.1.1 Field Split/Inter-Laboratory Samples

Split/inter-laboratory samples are used as a check on the accuracy of the field sampling and analytical procedures. The QC program implemented by Peter J Ramsay & Associates involves sending duplicates of approximately 5% of the primary samples analysed at the primary laboratory to a second laboratory. Primary soil and groundwater samples are selected at random. Each of these samples is split in the field to form a primary sample and a split/ inter-laboratory sample. The results of the analyses of the split/inter-laboratory samples (analysed by the secondary laboratory) are compared with the results from the primary laboratory to determine the accuracy of the sampling and analytical procedures.

5.1.2 Blind/Intra-Laboratory Replicate Samples

Blind replicate/intra-laboratory samples are used to determine the precision of the field sampling procedures and laboratory analyses. The QC program for the sampling and analytical program are implemented by sending duplicate samples at a frequency of approximately 5% of the total number of primary samples for analysis by the primary laboratory. Primary soil and groundwater samples are selected at random. Each of these samples is split in the field to form a primary sample and a blind replicate/intra-laboratory sample. Each blind replicate/intra-laboratory sample is dispatched to the primary laboratory with a sample identification number different to its primary sample number in order to conceal its identity. The results of the blind replicate/intra-laboratory sample are used to determine the precision of the sampling and analytical procedures.

5.1.3 Blank Samples (Rinsate Blanks and Trip Blanks)

Up to 5% of the total number of primary samples are blanks collected in the field. Blanks are comprised of trip blanks and rinsate blanks. A trip blank is a sample of deionised water prepared prior to sampling. The trip blank is carried through the sampling program, transported with the samples to the laboratory and stored with the samples. They are used to identify laboratory errors or to identify sources of contamination due to sample storage and handling.

Rinsate blanks are samples of deionised water collected from the field equipment after decontamination. They are used to determine the effectiveness of the decontamination procedures.

5.1.4 Relative Percentage Difference

The analytical results of the split/inter-laboratory and blind replicate/intra-laboratory analyses are compared using the Relative Percent Difference (RPD). The RPD is a measure of the difference between the results of the duplicate analyses. The RPD is calculated by:

$$RPD = \frac{Sample(A) - Sample(B)}{Mean of Samples (A) + (B)} x100$$

According to the USEPA methodology (USEPA 1986) the criteria for valid results for laboratory duplicates are that the RPDs are required to be <20% for water and <35% for soil. Where the duplicate results are lower than five times the detection limit, the USEPA methodology indicates that the results are valid if the difference between the results for the duplicate soil sample is equal to or less than twice the detection limit.

For samples split in the field, the NEPM refers to Australian Standard AS4482.1-2005 which provides a guide to the validity of the data obtained from duplicate samples. According to the Australian Standard an RPD of up to 50% is the acceptance criteria. RPDs of up to 50% are considered to demonstrate good correlation between duplicate analytical results. The Australian Standard also states that the variation can be expected to be higher for organic analytes than for inorganics, and for low concentrations of analytes. Based on Peter J Ramsay & Associates' experience RPDs up to 70% are considered to be acceptable for organic species. RPDs of 100% or more are generally considered to demonstrate poor correlation.

5.2 Laboratory Quality Control Program

The laboratories perform internal QC programs in accordance with their NATA registration to ensure that the analytical procedures are followed correctly and with the required degree of accuracy. This involves the laboratories preparing and analysing their own duplicate samples, blanks and analytical standards.

The results from the laboratories' internal duplicate samples are compared with the results from the primary (field) samples, in order to determine the precision of the analyses. The duplicate samples are subjected to the same preparation and analytical procedures as the primary samples.

Reagent blank analyses and instrument calibrations using chemical standards are routinely conducted by the laboratories.

The laboratories will also determine the accuracy of the analytical procedures used as part of their internal quality control procedures. This is determined using either control samples (where the concentration of the species to be determined is known) or matrix spikes.

The laboratories are required to analyse matrix spikes or control samples at a minimum frequency of 5% of the total number of primary samples. The results of the analysis of the laboratory spiked samples are compared with the theoretical recovery. This is consistent with the approach recommended by the USEPA.

The results of analyses of method blanks, duplicates and control samples are compared to established laboratory quality assurance criteria for precision and accuracy. If the results do not meet the criteria the analyses are repeated. These criteria are:

- Method blanks should not return any positives on analysis;
- Duplicate soil samples should not vary by more than 35% from the mean result;
- Duplicate water samples should not vary by more than 20% from the mean result; and
- Control samples should generally give a recovery of 75-125%, depending on the chemical and medium.

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Figure 1 Groundwater Monitoring Well Construction Details

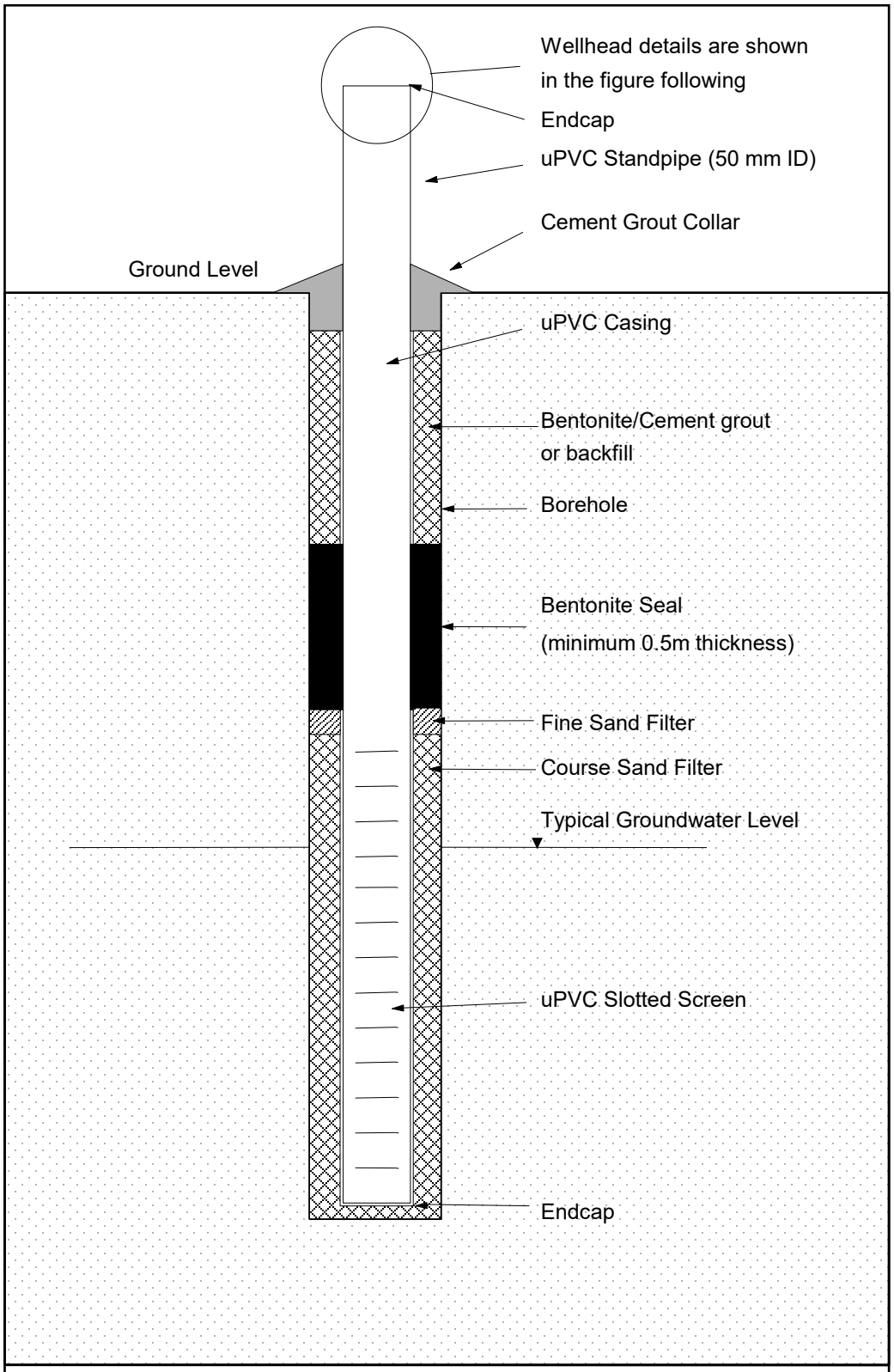
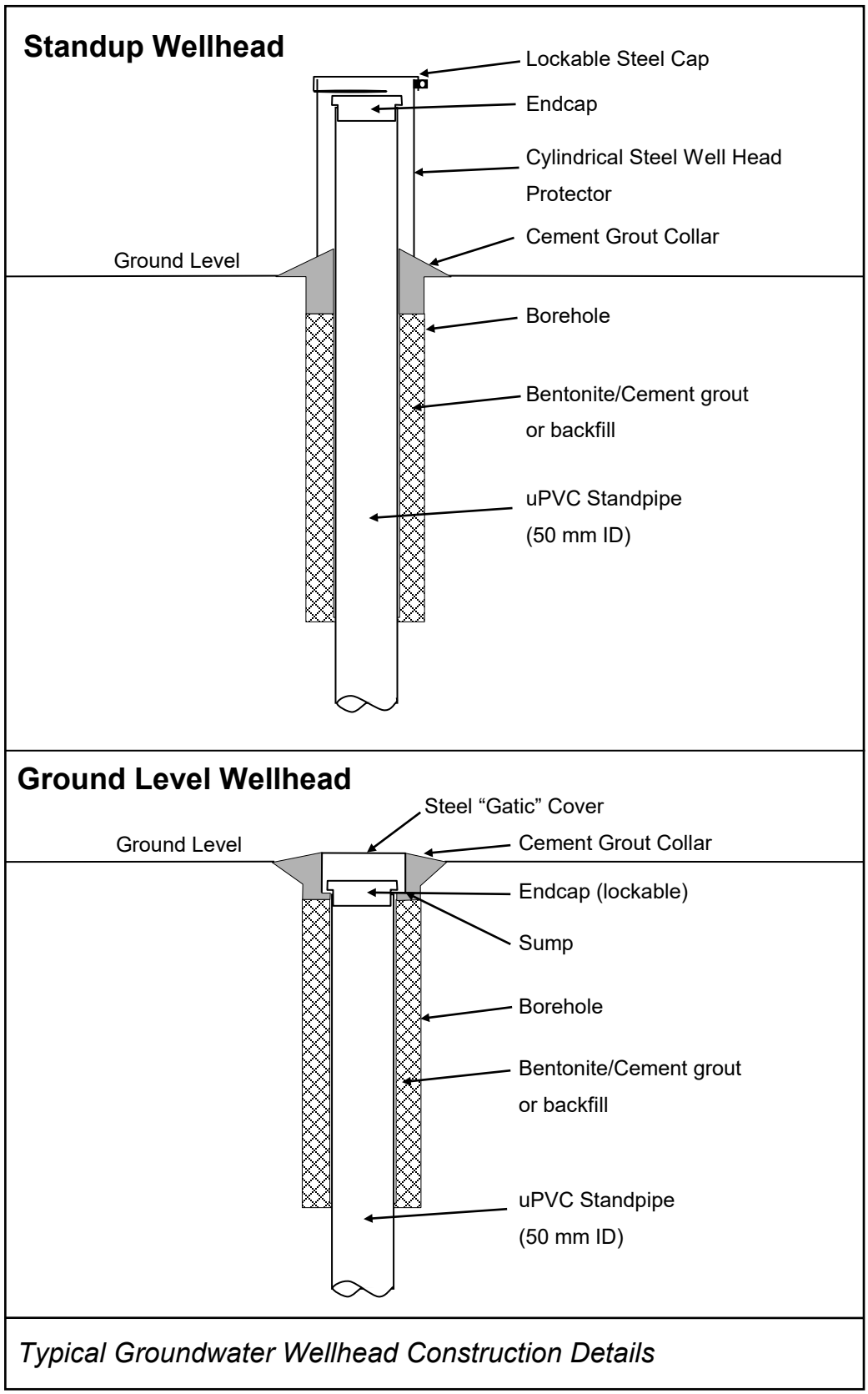


Figure 2 Groundwater Wellhead Construction Details



Typical Groundwater Wellhead Construction Details

Appendix I

Soil Profile Logs

PETER J RAMSAY & ASSOCIATES
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Borehole Log: SB01

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** NA **Coordinates:** N E **Borehole Location:** Western boundary	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.72 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Grass

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silty clay with occasional fragments of brick, metal and concrete	M		M		NIL	TP	DS 991/SB01_0.0_0.1 + ACM	NP	0.4	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
		SAND: Greyish brown	F		M			HA	DS 991/SB01_0.3_0.4	NP	0.7	
0.50		CLAY: Grey and orange mottled		M	M				DS 991/SB01_0.5_0.6	NP	1.3	
		Borehole terminated at 0.72 mbgl in NATURAL CLAY										
1.00												

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

PETER J RAMSAY & ASSOCIATES
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Borehole Log: SB02

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** Western boundary	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.70 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Grass

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silty clay with occasional fragments of brick and concrete and common rootlets	M		M		NIL	TP	DS 991/SB02_0.0_0.1 + ACM	NP	0.9	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
0.50		SAND: Greyish brown	F		M			HA	DS 991/SB02_0.4_0.5	NP	0.6	
		CLAY: Grey and orange mottled		M	M				DS 991/SB02_0.6_0.7	NP	0.7	
1.00		Borehole terminated at 0.7 mbgl in NATURAL CLAY										

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB03

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** South-western area of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.75 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Grass

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silt and sand with regular gravels of brick and concrete	M		M		NIL	TP	DS 991/SB03_0.0_0.1 + ACM	NP	0.9	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
0.50		SAND: Greyish brown	F		M			HA	DS 991/SB03_0.4_0.5	NP	1.2	
		CLAY: Grey and orange mottled		L-M	M				DS 991/SB03_0.6_0.7	NP	0.0	
1.00		Borehole terminated at 0.75 mbgl in NATURAL CLAY										

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB04

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** South-western area of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.77 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Grass

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silty gravel with occasional fragments of brick	C		M		NIL	TP	DS 991/SB04_0.0_0.1 + ACM [DUP03] x 2	NP	1.1	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
0.50		SAND: Greyish brown	F		M			HA	DS 991/SB04_0.4_0.5	NP	0.6	
		CLAY: Grey and orange mottled		L	M				DS 991/SB04_0.6_0.7	NP	0.1	
1.00		Borehole terminated at 0.77 mbgl in NATURAL CLAY										

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB05

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** Centre of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.62 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Paving Stones

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		PAVING BLOCKS					NIL					Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
		FILL: Yellow sand	M		M			TP				
		FILL: Dark brown sandy, gravelly silt with occasional cobbles of brick and concrete	M		M				DS 991/SB05_0.2_0.3 + ACM	NP	0.2	
		SILTY SAND: Greyish brown	F		M			HA	DS 991/SB05_0.3_0.4	NP	0.3	
0.50		CLAY: Grey and orange mottled		H	M				DS 991/SB05_0.4_0.5	NP	10.3	
		Borehole terminated at 0.62 mbgl in NATURAL CLAY										
1.00												

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB06

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** Southern boundary of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.80 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Exposed Soil

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silt with sand and regular gravels and common rootlets. Gravel is fine to coarse fragments of brick, concrete and mixed lithologies	F-M		M		NIL	TP				Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
									DS 991/SB06_0.1_0.2 + ACM [DUP02] x 2	NP	1.1	
		FILL: Dark brown silty sand with regular gravels of brick and mixed lithologies and common rootlets	F		M				DS 991/SB06_0.3_0.4	NP	0.3	
0.50		SAND: Greyish brown	F		M			HA	DS 991/SB06_0.6_0.7	NP	0.0	
		CLAY: Grey and orange mottled		L	M							
1.00		Borehole terminated at 0.8 mbgl in NATURAL CLAY										

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB07

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** North east of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.50 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Paving Stones

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown sandy silt with regular crushed gravel comprised of brick and concrete blocks	M		M		NIL	TP	DS 991/SB07_0.0_0.1	NP	0.2	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
									DS 991/SB07_0.1_0.2 + ACM	NP	0.5	
			M		D				DS 991/SB07_0.4_0.5	NP	0.8	
0.50		Borehole refusal at 0.5 mbgl in FILL MATERIAL										
1.00												

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB08

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** Eastern boudary of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 1.40 m **Bore Diameter:** 150 mm	**Logged By:** RM **Start Date:** 19/05/2020 **End Date:** 19/05/2020 **Checked By:** AD

Surface Conditions: Exposed Soil

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown sandy silt with brick fragments and rootlets. Inclusion of green fertilizer beads	F-C		M		NIL	TP	DS 991/SB08_0.0_0.1 + ACM	NP	1.1	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
		FILL: Light brown gravelly sand with occasional brick fragments and tree roots	M		D				DS 991/SB08_0.4_0.5 + ACM	NP	0.8	
0.50									DS 991/SB08_0.7_0.8	NP	0.9	
		SILTY SAND: Grey	M		M				DS 991/SB08_0.8_0.9	NP	0.4	
1.00		CLAY: Grey and orange mottled with occasional black bands of organic matter		M	M			HA				
									DS 991/SB08_1.3_1.4	NP	0.1	
		Borehole terminated at 1.4 mbgl in NATURAL CLAY										
1.50												
2.00												

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB09

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** Eastern boundary of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 1.00 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Paving Stones

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silty sand with common gravels of brick and mixed lithologies	M		M		NIL	TP	DS 991/SB09_0.0_0.1 + ACM	NP	0.4	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
0.50		FILL: Dark brown gravelly silt with common cobbles of brick and concrete	M		M							
		SAND: Greyish brown	F		M			HA	DS 991/SB09_0.6_0.7	NP	0.9	
1.00		CLAY: Grey and orange mottled with occasional black bands of organic matter and sand		M	M				DS 991/SB09_0.9_1.0	NP	0.1	
		Borehole terminated at 1.0 mbgl in NATURAL CLAY										
1.50												
2.00												

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB10

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** Eastern boundary of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 1.50 m **Bore Diameter:** 150 mm	**Logged By:** RM **Start Date:** 19/05/2020 **End Date:** 19/05/2020 **Checked By:** AD

Surface Conditions: Exposed Soil

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown sandy silt with brick fragments and occasional rootlets	F-C		D		NIL	TP	DS 991/SB10_0.0_0.1 + ACM	NP	0.6	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
		FILL: Light brown gravelly silty sand with brick fragments and rootlets	M		D				DS 991/SB10_0.4_0.5 + ACM	NP	0.1	
0.50												
		SILTY SAND: Greyish brown	M		M			HA	DS 991/SB10_0.8_0.9	NP	0.1	
1.00												
		CLAY: Grey and orange mottled with occasional black bands of organic matter and sand		M	M				DS 991/SB10_1.4_1.5	NP	0.4	
1.50		Borehole terminated at 1.5 mbgl in NATURAL CLAY										
2.00												

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB11

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** North west portion of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.80 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Wood Chips

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silt and sand with occasional rootlets	F		M		NIL	TP	DS 991/SB11_0.0_0.1 + ACM	NP	0.8	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
		FILL: Dark brown gravelly silt with regular brick and concrete cobbles	F		M							
0.50		SAND: Greyish brown	F		M			HA	DS 991/SB11_0.4_0.5	NP	0.5	
		CLAY: Grey and orange mottled		M	M				DS 991/SB11_0.6_0.7	NP	0.1	
1.00		Borehole terminated at 0.8 mbgl in NATURAL CLAY										

GRAIN SIZE
- F Fine
- M Medium
- C Coarse

PLASTICITY
- L Low
- M Medium
- H High

MOISTURE
- D Dry
- M Moist
- W Wet

WATER STRIKES
- ▼ Observation During Drilling

GROUNDWATER
- ▼ Standing Water Level on completion of drilling

SAMPLE TYPE
- D Disturbed Sample
- U Undisturbed Sample
- D/I Intact Sample Disturbed

DRILL METHOD
- HA Hand Auger
- SP Split Spoon
- SS Solid Stem Auger
- HS Hollow Stem Auger
- PT Push Tube
- AH Air Hammer
- SO Sonic
- NDD Non Destructive Drilling
- CC Concrete Core

ODOUR
- NP Not Perceptible
- W Weak (Type)
- D Distinct (Type)
- S Strong (Type)
- VS Very Strong (Type)

OTHER
- PID Photoionisation Detector
- ppm parts per million
- h/c Hydrocarbon

Photoionisation Detector (PID) Measurements

All PID readings are headspace unless otherwise indicated as per below
- I In situ
- A Above soil
- - No measurment recorded

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Borehole Log: SB12

Client: Port Phillip City Council **Project:** Detailed Site Investigation **Job Number:** 991.4 **Site Address:** 46-58 Marlborough Street, Balaclava	**Locate Method:** N/A **Coordinates:** N E **Borehole Location:** North west portion of site	**Drill Contractor:** N/A **Drill Model:** Hand Pit/HA **Drill Fluid:** N/A **Total Depth:** 0.80 m **Bore Diameter:** 150 mm	**Logged By:** AT **Start Date:** 20/05/2020 **End Date:** 20/05/2020 **Checked By:** AD

Surface Conditions: Grass

DEPTH (mBGL)	GRAPHIC LOG	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)	COMMENTS
0.00		FILL: Dark brown silt and sand with occasional rootlets	M		M		NIL	TP	DS 991/SB12_0.0_0.1	NP	0.3	Test pitting undertaken to base of fill material. Borehole completed using a hand auger in natural soil.
		FILL: Dark brown gravelly silt with regular brick and concrete cobbles	M		M							
0.50		SAND: Greyish brown	F		M			HA	DS 991/SB12_0.5_0.6	NP	0.2	
		CLAY: Grey and orange mottled with trace sand content		M	M				DS 991/SB12_0.6_0.7	NP	0.4	
1.00		Borehole terminated at 0.8 mbgl in NATURAL CLAY										

GRAIN SIZE
F Fine
M Medium
C Coarse

PLASTICITY
L Low
M Medium
H High

MOISTURE
D Dry
M Moist
W Wet

WATER STRIKES
▼ Observation During Drilling

GROUNDWATER
▼ Standing Water Level on completion of drilling

SAMPLE TYPE
D Disturbed Sample
U Undisturbed Sample
D/I Intact Sample Disturbed

DRILL METHOD
HA Hand Auger
SP Split Spoon
SS Solid Stem Auger
HS Hollow Stem Auger
PT Push Tube
AH Air Hammer
SO Sonic
NDD Non Destructive Drilling
CC Concrete Core

ODOUR
NP Not Perceptible
W Weak (Type)
D Distinct (Type)
S Strong (Type)
VS Very Strong (Type)

OTHER
PID Photoionisation Detector
ppm parts per million
h/c Hydrocarbon

Photoionisation Detector (PID) Measurements
All PID readings are headspace unless otherwise indicated as per below
I In situ
A Above soil
- No measurment recorded

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Well Log GW01

Client: Port Phillip City Council

Project: Detailed Site Investigation

Job Number: 991.4

Site Address: 46-58 Marlborough Street, Balaclava

Locate Method: GIS

Coordinates: N 5806799.576
E 323498.286

Top of Casing Elevation: 6.625 mAHD

Borehole Location: North east corner of site

Drill Contractor: Connolly Environmental

Drill Model: HA/SS

Drill Fluid: NA

Total Depth: 6.50 m

Bore Diameter: 100.0 mm

Logged By: RM
Checked By: AD
Date Started: 19/05/2020
End Date: 19/05/2020

Well Permit No.: WRK120924
Well Casing: PVC Class 18 (50 mm)
Well Screen: PVC Class 18 (50 mm)
Stick Up: -

Surface Conditions: garden bed

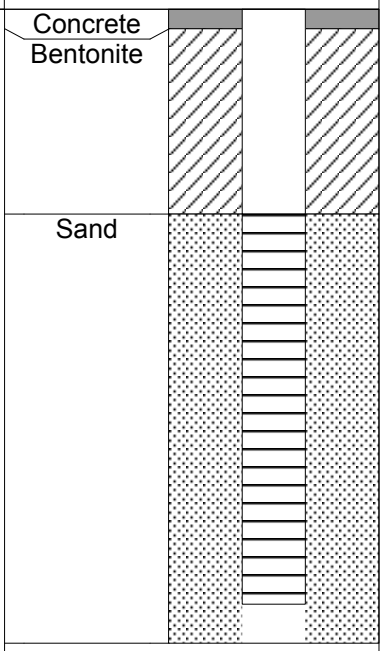
DEPTH (m)	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	SAMPLES	ODOUR	PID (ppm)
0.0	FILL: Brown silty clay with fragments of brick and wood and regular rootlets	F-C	L	M	DS 991/GW01_0.0_0.1 + ACM	NP	0.5
		M	M	M		NP	0.6
	FILL: Brown silty, sandy clay with occasional brick fragments and rootlets	M	L	D	DS 991/GW01_0.4_0.5	NP	0.1
1.0			M	D			
	SILTY SAND: Greyish brown		M	M	DS 991/GW01_0.9_1.0	NP	0.0
	SANDY CLAY: Brown with occasional rootlets						
2.0	SILTY CLAY: Brown					NP	0.1
3.0	becoming more orange brown		M	M	DS 991/GW01_3.2_3.4	NP	0.0
4.0							
5.0							
6.0	SILTY CLAY: Orange brown with coarse gravels and moderate sand content	C	H	W			
7.0	Borehole terminated at 6.5 m bgl in NATURAL SOIL						
8.0							
9.0							
10.0							
11.0							
12.0							

WATER STRIKES: 6 mBGL on 19/05/2020

GROUNDWATER: 3.650 mBGL on 26/05/2020

DRILL METHOD: HA (0.0–6.5 m), SS (0.9–1.0 m)

WELL CONSTRUCTION DETAILS
End Cap & Gatic



GRAIN SIZE
F Fine
M Medium
C Coarse

PLASTICITY
L Low
M Medium
H High

MOISTURE
D Dry
M Moist
W Wet

WATER STRIKES
◀ Observation During Drilling

GROUNDWATER
▼ Standing Water Level on completion of drilling
▽ Standing Water Level at Date Shown (mBGL)

SAMPLE TYPE
D Disturbed Sample
U Undisturbed Sample
D/I Intact Sample Disturbed

DRILL METHOD
HA Hand Auger
SP Split Spoon
SS Solid Stem Auger
HS Hollow Stem Auger
PT Push Tube
AH Air Hammer
SO Sonic
NDD Non Destructive Drilling
CC Concrete Core

ODOUR
NP Not Perceptible
W Weak (Type)
D Distinct (Type)
S Strong (Type)
VS Very Strong (Type)

OTHER
h/c Hydrocarbon
PID Photoionisation Detector
ppm parts per million

Photoionisation Detector (PID) Measurements
All PID readings are headspace unless otherwise indicated as per below
I In situ
A Above soil

PETER J RAMSAY & ASSOCIATES
www.pjra.com.au

Well Log GW02

Client: Port Phillip City Council

Project: Detailed Site Investigation

Job Number: 991.4

Site Address: 46-58 Marlborough Street, Balaclava

Locate Method: GIS

Coordinates: N 5806768.558
E 323484.155

Top of Casing Elevation: 6.608 mAHD

Borehole Location: South west corner of site

Drill Contractor: Connolly Environmental

Drill Model: HA/SS

Drill Fluid: NA

Total Depth: 6.50 m

Bore Diameter: 100.0 mm

Logged By: RM
Checked By: AD
Date Started: 19/05/2020
End Date: 19/05/2020

Well Permit No.: WRK120925
Well Casing: PVC Class 18 (50 mm)
Well Screen: PVC Class 18 (50 mm)
Stick Up: -

Surface Conditions: grass

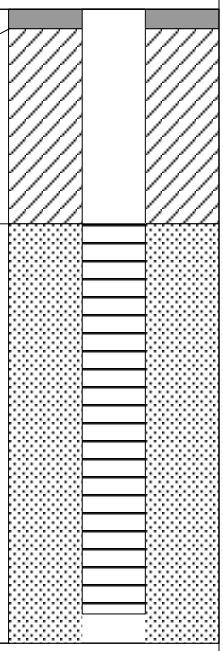
DEPTH (m)	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	SAMPLES	ODOUR	PID (ppm)
0.0	FILL: Brown silty, sandy clay with occasional rootlets and fragments of brick	F-M	M	M	991/GW02_0.1_0.2 + ACM [DUP01] x 2	NP	0.4
		M		M		NP	0.2
	FILL: Light brown silty sand		L	D	991/GW02_0.5_0.6	NP	0.0
1.0	SANDY CLAY: Brown with mottled orange. Occasional rootlets						
2.0					991/GW02_1.5_1.6	NP	0.0
3.0	becoming sandier		L	D		NP	0.0
4.0	CLAYEY SAND: Whitish grey		M	M		NP	0.0
5.0						NP	0.0
6.0	becoming orange	M	H	M			
	GRAVELLY SAND: Orange	F-C		W		NP	0.0
	Borehole terminated at 6.5 m bgl in NATURAL SOIL						
7.0							
8.0							
9.0							
10.0							
11.0							
12.0							

WATER STRIKES: ◀ 5.78 mBGL 19/05/2020

GROUNDWATER: ▼ 3.650 mBGL 26/05/2020

DRILL METHOD: HA (0.0–1.0), SS (1.0–2.0)

WELL CONSTRUCTION DETAILS
End Cap & Gatic



GRAIN SIZE
F Fine
M Medium
C Coarse

PLASTICITY
L Low
M Medium
H High

MOISTURE
D Dry
M Moist
W Wet

WATER STRIKES
◀ Observation During Drilling

GROUNDWATER
▼ Standing Water Level on completion of drilling
▽ Standing Water Level at Date Shown (mBGL)

SAMPLE TYPE
D Disturbed Sample
U Undisturbed Sample
D/I Intact Sample Disturbed

DRILL METHOD
HA Hand Auger
SP Split Spoon
SS Solid Stem Auger
HS Hollow Stem Auger
PT Push Tube
AH Air Hammer
SO Sonic
NDD Non Destructive Drilling
CC Concrete Core

ODOUR
NP Not Perceptible
W Weak (Type)
D Distinct (Type)
S Strong (Type)
VS Very Strong (Type)

OTHER
h/c Hydrocarbon
PID Photoionisation Detector
ppm parts per million

Photoionisation Detector (PID) Measurements
All PID readings are headspace unless otherwise indicated as per below
I In situ
A Above soil

PETER J RAMSAY & ASSOCIATES
www.pjra.com.au

Well Log GW03

Client: Port Phillip City Council

Project: Detailed Site Investigation

Job Number: 991.4

Site Address: 46-58 Marlborough Street, Balaclava

Locate Method: GIS

Coordinates: N 5806774.244
E 323453.479

Top of Casing Elevation: 6.315 mAHD

Borehole Location: Southern boundary of site

Drill Contractor: Connolly Environmental

Drill Model: HA/SS

Drill Fluid: NA

Total Depth: 6.30 m

Bore Diameter: 100.0 mm

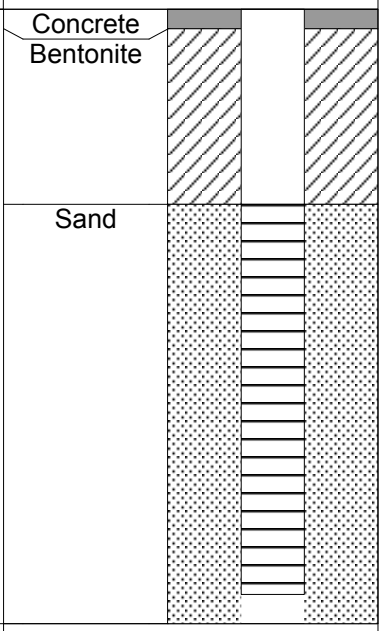
Logged By: RM
Checked By: AD
Date Started: 19/05/2020
End Date: 19/05/2020

Well Permit No.: WRK120926
Well Casing: PVC Class 18 (50 mm)
Well Screen: PVC Class 18 (50 mm)
Stick Up: -

Surface Conditions: garden bed

DEPTH (m)	STRATIGRAPHY	GRAIN SIZE	PLASTICITY	MOISTURE	WATER STRIKES	GROUNDWATER	DRILL METHOD	SAMPLES	ODOUR	PID (ppm)
0.0	FILL: Dark brown clayey silty sand with rootlets and occasional brick fragments	M F-M		M M			HA	991/GW03_0.0_0.1 + ACM	NP	0.6
	FILL: Grey silty sand		M	D				991/GW03_0.4_0.5	NP	0.4
1.0	SILTY CLAY: Grey and orange mottled						SS	991/GW03_0.7_0.8	NP	0.1
2.0	SANDY CLAY: Grey and orange mottled		M	D						
3.0								991/GW03_3.0_3.1	NP	0.0
4.0	CLAYEY SAND: Whitish grey	M	H	M		3.670 mBGL ▼ 26/05/2020				
5.0	becoming orange	M	H	M	5.5 mBGL ◀ 19/05/2020					
6.0	GRAVELLY SAND: Orange	F-C		W						
	Borehole terminated at 6.3 m bgl in NATURAL SOIL									
7.0										
8.0										
9.0										
10.0										
11.0										
12.0										

WELL CONSTRUCTION DETAILS
End Cap & Gatic



GRAIN SIZE
F Fine
M Medium
C Coarse

PLASTICITY
L Low
M Medium
H High

MOISTURE
D Dry
M Moist
W Wet

WATER STRIKES
◀ Observation During Drilling

GROUNDWATER
▼ Standing Water Level on completion of drilling
▽ Standing Water Level at Date Shown (mBGL)

SAMPLE TYPE
D Disturbed Sample
U Undisturbed Sample
D/I Intact Sample Disturbed

DRILL METHOD
HA Hand Auger
SP Split Spoon
SS Solid Stem Auger
HS Hollow Stem Auger
PT Push Tube
AH Air Hammer
SO Sonic
NDD Non Destructive Drilling
CC Concrete Core

ODOUR
NP Not Perceptible
W Weak (Type)
D Distinct (Type)
S Strong (Type)
VS Very Strong (Type)

OTHER
h/c Hydrocarbon
PID Photoionisation Detector
ppm parts per million

Photoionisation Detector (PID) Measurements
All PID readings are headspace unless otherwise indicated as per below
I In situ
A Above soil

Appendix J

Chain of Custody Documentation

URGENT

CHAIN OF CUSTODY RECORD

CoC Number: GWCOC1

Peter J. Ramsay & Associates Pty Ltd
Environmental Engineering Consultants ACN 005 842 393
222 Kings Way, SOUTH MELBOURNE VIC 3205
Telephone: (03) 9690 0522
E-mail: Roddy.McQuade@pjra.com.au
Contact: Roddy McQuade
Laboratory: ALS Environmental
2-4 Westall Rd, Springvale
Telephone: 03 8549 9600 **Contact:** Shirley LeCornu

Job No. 991.4

ANALYSIS

Laboratory Number	Sample Name	jar/ bottle	vial	Date sampled	Sample type	Comments	TRH C6-C40	NEPM Heavy Metals
1	991/GW02	3	2	26/05/2020	Water		x	x
TOTAL							1	1

Environmental Division
Melbourne
Work Order Reference
EM2008748

Telephone : +61-3-8549 9600

Released by PJR&A. Roddy McQuade **Date:** 26/05/2020 **Method of shipment:** Courier
Time: **Consignment Number:**

Signed: **<48 hour turnaround**

Your quotation: EN-106-18

Received by: J Simpson ALS **Date:** 26/5/20 **Preliminary results by:** 29/05/2020 **Final results by:** 29/05/2020

Signed: **Time:** 15:30 **Number of Eskys:** 1

Comments: Please store samples for three months unless otherwise requested.
Standard Detection Limits Apply
Note: Purge & Trap GC/MS for C6-C9 fraction and BTEX. C10-C36 fractions by GC/FID.
Metals by ICP/AES. Tin extraction by Aqua Regia.
Ensure that VOC analysis includes chlorobenzene

PETER J RAMSAY & ASSOCIATES

CoC Number: 991.4/SCOC1

CHAIN OF CUSTODY RECORD

Peter J. Ramsay & Associates Pty Ltd
Environmental Engineering Consultants ACN 005 842 393
222 Kings Way, SOUTH MELBOURNE VIC 3205
Telephone: (03) 9690 0522
E-mail: Roddy.McQuade@pjra.com.au
Contact: Roddy McQuade

Job No. 991.4

Laboratory: ALS Environmental
2-4 Westall Rd, SPRINGVALE VIC 3171
Telephone: (03) 8549 9644 **Contact:** Shirley LeCornu

Laboratory Number	Sample Name	jar/ bottle	vial	Date sampled	Sample type	Comments	ANALYSIS: TRH (C6-C40)/BTEXN	ANALYSIS: Heavy Metals	ANALYSIS: HOLD
1	991/GW02_0.1_0.2	1		19/05/2020	SOIL				x
2	991/SB06_0.1_0.2	1		20/05/2020	SOIL	labelled 991/Dup-02	x	x	
3	991/SB04_0.0_0.1	1		20/05/2020	SOIL		x	x	
TOTAL		3	0				2	2	1

Environmental Division
Melbourne
Work Order Reference
EM2008566

Telephone : +61-3-8549 9600

Released by PJR&A. Roddy McQuade **Date:** 21/05/2020 **Time:** 12:00

Method of shipment: Courier
Consignment Number:

Signed:

Received by: [signature] **Date:** 21/5/20 **Time:** 14:40

Signed:

Your quotation: EN-106-18
Preliminary results by: 28/05/2020 **Final results by:** 28/05/2020
Number of Eskys: 1

Comments: Please store samples for three months unless otherwise requested.
Standard Detection Limits Apply
Note: Purge & Trap GC/MS for C6-C9 fraction and BTEX. C10-C36 fractions by GC/FID.
Metals by ICP/AES. Tin extraction by Aqua Regia.

[signature]
21/5/20
1440

PETER J RAMSAY & ASSOCIATES

Ranil Weerakkody

From: Hannah White
Sent: Thursday, 21 May 2020 4:57 PM
To: COC Melbourne
Subject: FW: [EXTERNAL] - 991.4 - Sample Delivery
Attachments: Copy of 991.4 COC ALS.pdf

Please see attached COC for samples received from Peter J Ramsay today.

Thank you

Regards,

Hannah White
Client Services Officer, Environmental
Melbourne

T +61 3 8549 9600 D +61 3 8549 9608
Hannah.White@ALSglobal.com
2-4 Westall Rd
Springvale VIC 3171
AUSTRALIA

From: Roddy McQuade <roddy.mcquade@pjra.com.au>
Sent: Thursday, 21 May 2020 4:50 PM
To: ALS Enviro Melbourne <ALSEnviroMelbourne@ALSGlobal.com>
Subject: [EXTERNAL] - 991.4 - Sample Delivery

Good afternoon,

Please find attached the COC for the samples that I had delivered to the laboratory today.

Let me know if you have any questions.

Kind Regards,

Roddy
Roddy McQuade
Senior Consultant

Melbourne +61 3 9690 0522 | **Sydney** +61 2 8338 1655 | **Brisbane** +61 7 3285 6655

PETER J RAMSAY & ASSOCIATES

INOGEN

www.pjra.com.au

CHAIN OF CUSTODY RECORD

CoC Number: 991.4/PCOC2

Peter J. Ramsay & Associates Pty Ltd
Environmental Engineering Consultants ACN 005 842 393
222 Kings Way, SOUTH MELBOURNE VIC 3205
Telephone: (03) 9690 0522
E-mail: Roddy.McQuade@pjra.com.au
Contact: Roddy McQuade

Job No. 991.4

Laboratory: Eurofins | MGT Laboratories
2-5 Kingston Town Close, OAKLEIGH VIC 3166
Telephone: (03) 9564 7055 **Contact:** Michael Morrison

Laboratory Number	Sample Name	Jar/ bottle	vial	Date sampled	Sample type	Comments	ASLP (Lead)	ASLP (Nickel)	ASLP (Arsenic)	ASLP (Benzo(a)Pyrene) Max LOR of 0.001 mg/L	ANALYSIS
	991/SB01_0.0_0.1	1		20/05/2020	SOIL		x		x	x	<48 Hr Turnaround
	991/SB02_0.4_0.5	1		20/05/2020	SOIL		x			x	<48 Hr Turnaround
	991/SB03_0.4_0.5	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/SB04_0.0_0.1	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/SB05_0.2_0.3	1		20/05/2020	SOIL			x			<48 Hr Turnaround
	991/SB05_0.3_0.4	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/SB06_0.1_0.2	1		20/05/2020	SOIL		x			x	<48 Hr Turnaround
	991/SB07_0.1_0.2	1		20/05/2020	SOIL			x			<48 Hr Turnaround
	991/SB07_0.4_0.5	1		20/05/2020	SOIL		x	x	x	x	<48 Hr Turnaround
	991/SB08_0.0_0.1	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/SB09_0.0_0.1	1		20/05/2020	SOIL		x			x	<48 Hr Turnaround
	991/SB10_0.4_0.5	1		20/05/2020	SOIL		x			x	<48 Hr Turnaround
	991/SB10_0.8_0.9	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/SB11_0.0_0.1	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/SB12_0.0_0.1	1		20/05/2020	SOIL		x			x	<48 Hr Turnaround
	991/SB12_0.6_0.7	1		20/05/2020	SOIL		x				<48 Hr Turnaround
	991/DUP02	1		20/05/2020	SOIL		x			x	<48 Hr Turnaround
TOTAL							14	3	2	7	

My31821 RT448
31822
My31830
31832
35
My31836 RT449
31836

Released by PJR&A. Chris Trim **Date:** 27/05/2020 **Time:** 12:50 **Method of shipment:** Courier **Consignment Number:**

Signed:

Your quotation:

Received by: **Date:** **Preliminary results by:** 29/05/2020 **Final results by:** 29/05/2020

Signed: **Time:** **Number of Eskys:** Samples in laboratory custody

Comments: Please store samples for three months unless otherwise requested.
Standard Detection Limits Apply
Metals by ICP/AES. Tin extraction by Aqua Regia.
leachability testing is to be undertaken in accordance with the Australian Standard Leaching Procedure (ASLP) (Australian Standards AS4439.2 and 44396.3) using the acetate buffer solution (pH of 2.9 or pH 5, dependant on the pretesting step as outline in the Australian Standard).

722026

PETER J RAMSAY & ASSOCIATES

#AU_CAU001_EnviroSampleVic

From: Michael Morrison
Sent: Wednesday, 27 May 2020 1:05 PM
To: #AU_CAU001_EnviroSampleVic
Cc: Catherine Wilson
Subject: FW: Additional Analysis for Eurofins Batch Ref. 721018
Attachments: 991.4 PCOC2.pdf

Hi Adlin
Please book this 2 day additional in

Kind Regards,

Michael Morrison
Analytical Services Manager
Phone: 03 8564 5933
Mobile: 0499 201 025
Email : michaelmorrison@eurofins.com

From: Chris Trim <Chris.Trim@pjra.com.au>
Sent: Wednesday, 27 May 2020 1:02 PM
To: Michael Morrison <MichaelMorrison@eurofins.com>
Cc: Roddy McQuade <roddy.mcquade@pjra.com.au>; Andrew Green <andrew.green@pjra.com.au>
Subject: Additional Analysis for Eurofins Batch Ref. 721018

EXTERNAL EMAIL*

Hi Michael,

I hope you are well.

Please find attached a coc requesting additional leachate analysis for samples provided last week (Eurofins ref: 721018).

Could you please provide a cost for the requested analysis and proceed with the analysis on a 48 hour TAT.

Please note that the analysis is for IWRG classification, so leachability testing is to be undertaken in accordance with the Australian Standard Leaching Procedure (ASLP) (Australian Standards AS4439.2 and 44396.3) using the acetate buffer solution (pH of 2.9 or pH 5, dependant on the pretesting step as outline in the Australian Standard).

Please don't hesitate to contact me or Roddy on 9690 0522 / 0421230480 or by return email if you have any questions.

722026

Thanks,
Chris

Chris Trim
Senior Consultant

Melbourne +61 3 9690 0522 | **Sydney** +61 2 8338 1655 | **Brisbane** +61 7 3285 6655

CHAIN OF CUSTODY RECORD

Peter J. Ramsay & Associates Pty Ltd
Environmental Engineering Consultants ACN 005 842 393
222 Kings Way, SOUTH MELBOURNE VIC 3205
Telephone: (03) 9690 0522
E-mail: roddy.mcquade@pjra.com.au
Contact: Roddy McQuade
Laboratory: Eurofins MGT
6 Monterey Rd, Dandenonng South
Telephone: 03 8564 5000

Job No. 991.4

Contact: Michael Morrison

CoC Number: 991.4/GWPCOC1

Laboratory Number	Sample Name	jar/ bottle	vial	Date sampled	Sample type	Comments	M13 - NEPM 2013 Metals (As,Be,B,Cd,Co,Cu,Hg,Pb,Ni ,Mn,Se,Zn), Cr6+	B4A - TRH/ BTEXN/ PAH/ Phenols	B15 - OCP/ OPP/ PCB	Nitrogens - speciated (TKN, NH3, NO2, NO3, Total N, Organic N)	VOC P&T GC/MS USEPA 8260	Total Dissolved Solids (TDS)	TRH (C6-C40)/BTEXN	HOLD
	991/GW01	3	2	26/05/2020	Water		x	x	x	x	x	x		
	991/GW02	3	2	26/05/2020	Water		x	x	x	x	x	x		
	991/GW03	3	2	26/05/2020	Water		x	x	x	x	x	x		
	991/DUP01	3	2	26/05/2020	Water		x	x	x	x	x	x		
	991/TB01	1		26/05/2020	Water		x						x	
	991/RB01	2	1	26/05/2020	Water								x	x
TOTAL							5	3	3	3	3	3	2	1

Released by PJR&A. Roddy McQuade Date: 26/05/2020
Time:

Signed:

Received by: GANA TO EF Date: 26/5/20 - 4pm

Signed: Time: ICE 3 Courier

Method of shipment: Courier
Consignment Number:

Your quotation:

Preliminary results by: <48 Hour turnaround

29/05/2020 Final results by: 29/05/2020

Number of Eskys: 1

Comments: Please store samples for three months unless otherwise requested.
Standard Detection Limits Apply
Note: Purge & Trap GC/MS for C6-C9 fraction and BTEX. C10-C36 fractions by GC/FID.
Metals by ICP/AES. Tin extraction by Aqua Regia.

quote : 200526PJRV

Mike Reeve
721768

PETER J RAMSAY & ASSOCIATES

CHAIN OF CUSTODY RECORD

CoC Number: 991.4/PCOC1

Peter J. Ramsay & Associates Pty Ltd
Environmental Engineering Consultants ACN 005 842 393
222 Kings Way, SOUTH MELBOURNE VIC 3205
Telephone: (03) 9690 0522
E-mail: Roddy.McQuade@pjra.com.au
Contact: Roddy McQuade
Laboratory: Eurofins | MGT Laboratories
2-5 Kingston Town Close, OAKLEIGH VIC 3166
Telephone: (03) 9564 7055 **Contact:** Michael Morrison

Job No. 991.4

Laboratory Number	Sample Name	jar/ bottle	vial	Date sampled	Sample type	Comments	ANALYSIS: IWRG621 Screen (P-16)	TRH(C6-C40)/BTEXN/PAH/8 Metals	(R-17) Asbestos (presence/absence)	Cation Exchange Capacity (CEC)	8 Metals	TRH (C6-C40)	
	991/GW01_0.0_0.1	1		19/05/2020	SOIL	ACM Bag			x	x			<48 Hr Turnaround
•	991/GW01_0.4_0.5	1		19/05/2020	SOIL								
•	991/GW01_0.9_1.0	1		19/05/2020	SOIL								
•	991/GW01_3.2_3.4	1		19/05/2020	SOIL			x					
	991/GW02_0.1_0.2	1		19/05/2020	SOIL	ACM Bag			x				<48 Hr Turnaround
•	991/GW02_0.5_0.6	1		19/05/2020	SOIL								
•	991/GW02_1.5_1.6	1		19/05/2020	SOIL								
•	991/GW03_0.0_0.1	1		19/05/2020	SOIL	ACM Bag				x			
•	991/GW03_0.4_0.5	1		19/05/2020	SOIL								
•	991/GW03_3.0_3.1	1		19/05/2020	SOIL			x					
	991/SB01_0.0_0.1	1		20/05/2020	SOIL			x	x				<48 Hr Turnaround
•	991/SB01_0.3_0.4	1		20/05/2020	SOIL								
•	991/SB01_0.5_0.6	1		20/05/2020	SOIL								
•	991/SB02_0.0_0.1	1		20/05/2020	SOIL	ACM Bag	x						
	991/SB02_0.4_0.5	1		20/05/2020	SOIL			x					<48 Hr Turnaround
•	991/SB02_0.6_0.7	1		20/05/2020	SOIL								
•	991/SB03_0.0_0.1	1		20/05/2020	SOIL	ACM Bag	x						
	991/SB03_0.4_0.5	1		20/05/2020	SOIL			x					<48 Hr Turnaround
•	991/SB03_0.6_0.7	1		20/05/2020	SOIL								
	991/SB04_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x					<48 Hr Turnaround
•	991/SB04_0.4_0.5	1		20/05/2020	SOIL								
•	991/SB04_0.6_0.7	1		20/05/2020	SOIL								
	991/SB05_0.2_0.3	1		20/05/2020	SOIL	ACM Bag		x	x	x			<48 Hr Turnaround
	991/SB05_0.3_0.4	1		20/05/2020	SOIL		x						<48 Hr Turnaround
•	991/SB05_0.4_0.5	1		20/05/2020	SOIL								
	991/SB06_0.1_0.2	1		20/05/2020	SOIL	ACM Bag		x					<48 Hr Turnaround
	991/SB06_0.3_0.4	1		20/05/2020	SOIL								<48 Hr Turnaround
•	991/SB06_0.6_0.7	1		20/05/2020	SOIL								

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Mollie Reeve 72023

	991/SB07_0.0_0.1	1		20/05/2020	SOIL								<48 Hr Turnaround
	991/SB07_0.1_0.2	1		20/05/2020	SOIL	ACM Bag	x						<48 Hr Turnaround
	991/SB07_0.4_0.5	1		20/05/2020	SOIL			x					<48 Hr Turnaround
	991/SB08_0.0_0.1	1		20/05/2020	SOIL	ACM Bag	x						<48 Hr Turnaround
•	991/SB08_0.4_0.5	1		20/05/2020	SOIL	ACM Bag							
•	991/SB08_0.7_0.8	1		20/05/2020	SOIL			x					
	991/SB08_1.3_1.4	1		20/05/2020	SOIL			x					<48 Hr Turnaround
	991/SB09_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x		x			<48 Hr Turnaround
•	991/SB09_0.6_0.7	1		20/05/2020	SOIL								
•	991/SB09_0.9_1.0	1		20/05/2020	SOIL								
•	991/SB10_0.0_0.1	1		20/05/2020	SOIL	ACM Bag							
	991/SB10_0.4_0.5	1		20/05/2020	SOIL	ACM Bag	x						<48 Hr Turnaround
	991/SB10_0.8_0.9	1		20/05/2020	SOIL			x					<48 Hr Turnaround
•	991/SB10_1.4_1.5	1		20/05/2020	SOIL								
	991/SB11_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x	x				<48 Hr Turnaround
•	991/SB11_0.4_0.5	1		20/05/2020	SOIL								
•	991/SB11_0.6_0.7	1		20/05/2020	SOIL								
	991/SB12_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x	x				<48 Hr Turnaround
•	991/SB12_0.5_0.6	1		20/05/2020	SOIL					x			
	991/SB12_0.6_0.7	1		20/05/2020	SOIL			x					<48 Hr Turnaround
•	991/DUP01	1		19/05/2020	SOIL								
	991/DUP02	1		20/05/2020	SOIL			x					<48 Hr Turnaround
	991/DUP03	1		20/05/2020	SOIL			x					<48 Hr Turnaround
•	991/TB01	1		19/05/2020	SOIL								
•	991/TB02	1		20/05/2020	SOIL								
•	991/RB01		4	19/05/2020	WATER						x	x	
•	991/RB02		4	20/05/2020	WATER								
TOTAL							6	18	6	5	1	1	

Released by PJR&A. Roddy McQuade **Date:** 21/05/2020 **Time:** 15:00 **Method of shipment:** Courier **Consignment Number:**

Signed: **Your quotation:**

Received by: **Date:** **Preliminary results by:** <48 Hr **Final results by:** <48 Hr

Signed: **Time:** **Number of Eskys:** 1

Comments: Please store samples for three months unless otherwise requested.
Standard Detection Limits Apply
Note: Purge & Trap GC/MS for C6-C9 fraction and BTEX, C10-C36 fractions by GC/FID.

PETER J RAMSAY & ASSOCIATES

Mellie Reeve 721023

#AU_CAU001_EnviroSampleVic

From: Michael Morrison
Sent: Thursday, 21 May 2020 3:22 PM
To: #AU_CAU001_EnviroSampleVic
Cc: Catherine Wilson
Subject: FW: Quote for lab analysis - 991.4
Attachments: Copy of 991.4 COC.pdf

FYI –incoming samples

Kind Regards,

Michael Morrison
Analytical Services Manager
Phone: 03 8564 5933
Mobile: 0499 201 025
Email : michaelmorrison@eurofins.com

From: Roddy McQuade <roddy.mcquade@pjra.com.au>
Sent: Thursday, 21 May 2020 3:17 PM
To: Michael Morrison <MichaelMorrison@eurofins.com>
Subject: Quote for lab analysis - 991.4

EXTERNAL EMAIL*

Hi Michael,

As discussed, could you provide a quote based on the attached COC.

Thanks,

Roddy
Roddy McQuade
Senior Consultant

Melbourne	**Sydney**	**Brisbane**
+61 3 9690 0522	+61 2 8338 1655	+61 7 3285 6655

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INOGEN in
www.pjra.com.au

721023

eurofins | Environment Testing

PROJECT INFORMATION

Date Received: 21-5-20 3:13pm

Company: PJRA

Contact person:

Contact Number:

Contact E-mail:

Project Name/site: PJRA 991.4

Project Number:

COC: **Attached** ☐
E-mailed ☑
Not received ☐

2-8° LCE COOL

Last modified on: 16 October 2019	Approved on: 16 October 2019	Version: QS1039_R2
Last modified by: H. Le	Approver: M. Makarios	Page 1 of 1
Editorial Committee: T. Lakeland, F. Sanjaya, H. Le, M. Makarios		Next required review date: 16 October 2022

Michelle Reeve 721023

CHAIN OF CUSTODY RECORD

CoC Number: 991.4/PCOC1

Peter J. Ramsay & Associates Pty Ltd
Environmental Engineering Consultants ACN 005 842 393
222 Kings Way, SOUTH MELBOURNE VIC 3205
Telephone: (03) 9690 0522
E-mail: Roddy.McQuade@pjra.com.au
Contact: Roddy McQuade

Job No. 991.4

Laboratory: Eurofins | MGT Laboratories
2-5 Kingston Town Close, OAKLEIGH VIC 3166
Telephone: (03) 9564 7055 **Contact:** Michael Morrison

Laboratory Number	Sample Name	jar/ bottle	vial	Date sampled	Sample type	Comments	ANALYSIS: IWRG621 Screen (P-16)	TRH(C6-C40)/BTEXN/PAH/8 Metals (R-17)	Asbestos (presence/absence)	Cation Exchange Capacity (CEC)	8 Metals	TRH (C6-C40)	
	991/GW01_0.0_0.1	1		19/05/2020	SOIL	ACM Bag			x	x			<48 Hr Turnaround
	991/GW01_0.4_0.5	1		19/05/2020	SOIL								
	991/GW01_0.9_1.0	1		19/05/2020	SOIL								
	991/GW01_3.2_3.4	1		19/05/2020	SOIL			x					
	991/GW02_0.1_0.2	1		19/05/2020	SOIL	ACM Bag			x				<48 Hr Turnaround
	991/GW02_0.5_0.6	1		19/05/2020	SOIL								
	991/GW02_1.5_1.6	1		19/05/2020	SOIL								
	991/GW03_0.0_0.1	1		19/05/2020	SOIL	ACM Bag				x			
	991/GW03_0.4_0.5	1		19/05/2020	SOIL								
	991/GW03_3.0_3.1	1		19/05/2020	SOIL			x					
	991/SB01_0.0_0.1	1		20/05/2020	SOIL			x	x				<48 Hr Turnaround
	991/SB01_0.3_0.4	1		20/05/2020	SOIL								
	991/SB01_0.5_0.6	1		20/05/2020	SOIL								
	991/SB02_0.0_0.1	1		20/05/2020	SOIL	ACM Bag	x						
	991/SB02_0.4_0.5	1		20/05/2020	SOIL			x					<48 Hr Turnaround
	991/SB02_0.6_0.7	1		20/05/2020	SOIL								
	991/SB03_0.0_0.1	1		20/05/2020	SOIL	ACM Bag	x						
	991/SB03_0.4_0.5	1		20/05/2020	SOIL			x					<48 Hr Turnaround
	991/SB03_0.6_0.7	1		20/05/2020	SOIL								
	991/SB04_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x					<48 Hr Turnaround
	991/SB04_0.4_0.5	1		20/05/2020	SOIL								
	991/SB04_0.6_0.7	1		20/05/2020	SOIL								
	991/SB05_0.2_0.3	1		20/05/2020	SOIL	ACM Bag		x	x	x			<48 Hr Turnaround
	991/SB05_0.3_0.4	1		20/05/2020	SOIL		x						<48 Hr Turnaround
	991/SB05_0.4_0.5	1		20/05/2020	SOIL								
	991/SB06_0.1_0.2	1		20/05/2020	SOIL	ACM Bag		x					<48 Hr Turnaround
	991/SB06_0.3_0.4	1		20/05/2020	SOIL								<48 Hr Turnaround
	991/SB06_0.6_0.7	1		20/05/2020	SOIL								

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Melbourne 221018

991/SB07_0.0_0.1	1		20/05/2020	SOIL									
991/SB07_0.1_0.2	1		20/05/2020	SOIL	ACM Bag	x							<48 Hr Turnaround
991/SB07_0.4_0.5	1		20/05/2020	SOIL			x						<48 Hr Turnaround
991/SB08_0.0_0.1	1		20/05/2020	SOIL	ACM Bag	x							<48 Hr Turnaround
991/SB08_0.4_0.5	1		20/05/2020	SOIL	ACM Bag								
991/SB08_0.7_0.8	1		20/05/2020	SOIL			x						
991/SB08_1.3_1.4	1		20/05/2020	SOIL			x						<48 Hr Turnaround
991/SB09_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x		x				<48 Hr Turnaround
991/SB09_0.6_0.7	1		20/05/2020	SOIL									
991/SB09_0.9_1.0	1		20/05/2020	SOIL									
991/SB10_0.0_0.1	1		20/05/2020	SOIL	ACM Bag								
991/SB10_0.4_0.5	1		20/05/2020	SOIL	ACM Bag	x							<48 Hr Turnaround
991/SB10_0.8_0.9	1		20/05/2020	SOIL			x						<48 Hr Turnaround
991/SB10_1.4_1.5	1		20/05/2020	SOIL									
991/SB11_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x	x					<48 Hr Turnaround
991/SB11_0.4_0.5	1		20/05/2020	SOIL									
991/SB11_0.6_0.7	1		20/05/2020	SOIL									
991/SB12_0.0_0.1	1		20/05/2020	SOIL	ACM Bag		x	x					<48 Hr Turnaround
991/SB12_0.5_0.6	1		20/05/2020	SOIL					x				
991/SB12_0.6_0.7	1		20/05/2020	SOIL			x						<48 Hr Turnaround
991/DUP01	1		19/05/2020	SOIL									
991/DUP02	1		20/05/2020	SOIL			x						<48 Hr Turnaround
991/DUP03	1		20/05/2020	SOIL			x						<48 Hr Turnaround
991/TB01	1		19/05/2020	SOIL									
991/TB02	1		20/05/2020	SOIL									
991/RB01		4	19/05/2020	WATER						x	x		
991/RB02		4	20/05/2020	WATER									
TOTAL						6	18	6	5	1	1		

Released by PJR&A. Roddy McQuade **Date:** 21/05/2020 **Time:** 15:00 **Method of shipment:** Courier **Consignment Number:**

Signed:

Received by: **Date:** **Time:**

Your quotation:

Preliminary results by: <48 Hr **Final results by:** <48 Hr

Signed:

Number of Eskys: 1

Comments: Please store samples for three months unless otherwise requested.
Standard Detection Limits Apply
Note: Purge & Trap GC/MS for C6-C9 fraction and BTEX. C10-C36 fractions by GC/FID.

PETER J RAMSAY & ASSOCIATES

#AU_CAU001_EnviroSampleVic

From: Michael Morrison
Sent: Thursday, 21 May 2020 3:22 PM
To: #AU_CAU001_EnviroSampleVic
Cc: Catherine Wilson
Subject: FW: Quote for lab analysis - 991.4
Attachments: Copy of 991.4 COC.pdf

FYI –incoming samples

Kind Regards,

Michael Morrison
Analytical Services Manager
Phone: 03 8564 5933
Mobile: 0499 201 025
Email : michaelmorrison@eurofins.com

From: Roddy McQuade <roddy.mcquade@pjra.com.au>
Sent: Thursday, 21 May 2020 3:17 PM
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EXTERNAL EMAIL*

Hi Michael,

As discussed, could you provide a quote based on the attached COC.

Thanks,

Roddy
Roddy McQuade
Senior Consultant

Melbourne +61 3 9690 0522 | **Sydney** +61 2 8338 1655 | **Brisbane** +61 7 3285 6655

PETER J RAMSAY & ASSOCIATES

INOGEN in

www.pjra.com.au

Mike Reeve 721018

eurofins | Environment Testing

PROJECT INFORMATION

Date Received: 21-5-20 3:13pm

Company: PJRA

Contact person:

Contact Number:

Contact E-mail:

Project Name/site: PJRA 991.4

Project Number:

COC: Attached ☐
E-mailed ☑
Not received ☐

2.8° ICE COOL

Last modified on: 16 October 2019	Approved on: 16 October 2019	Version: QS1039_R2
Last modified by: H. Le	Approver: M. Makarios	Page 1 of 1
Editorial Committee: T. Lakeland, F. Sanjaya, H. Le, M. Makarios		Next required review date: 16 October 2022

Mollie Reeve 721018

Appendix K

Bore Construction Licence

Date 18/05/2020

TAX INVOICE

Department of Environment,
Land, Water & Planning
Victorian Water Register
PO Box 500
EAST MELBOURNE, 8002

ABN 90 719 052 204

RODDY MCQUADE

Order No: 205121
Date: 18/05/2020
Internet address: www.waterregister.vic.gov.au

Description	**Amount AUD$**
Payment for bore construction licence application BCL015490	$235.00
Total amount paid	$235.00

This payment will appear on your bank account / statement as "DELWP VIC GOV".

Department of Environment, Land, Water & Planning
State Government Victoria

Works Licence ID:

WLE078429

Printed on: 18 May 2020 12:28:44 pm

COPY OF RECORD IN THE VICTORIAN WATER REGISTER

LICENCE TO CONSTRUCT WORKS

under Section 67 of the Water Act 1989

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

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

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

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

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

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

Licence Holder(s)

PETER J RAMSAY & ASSOCIATES of LEVEL 10, 222 KINGS WAY SOUTH MELBOURNE VIC 3205

Licence Contact Details

PETER J RAMSAY & ASSOCIATES	LEVEL 10, 222 KINGS WAY SOUTH MELBOURNE VIC 3205

Licence Details

Expiry date	18 May 2021
Status	Active
Authority	Southern Rural Water
Name of waterway or aquifer	NA for construct/decommission
Water system	Moorabbin (GMU)

Summary of Licensed Works

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

Works ID	*Works type*	*Use of water*
WRK120924	Bore	Observation
WRK120925	Bore	Observation
WRK120926	Bore	Observation

Description of Licensed Works

WORKS ID WRK120924

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

Works location

Easting	*Northing*	*Zone MGA*
323454.701	5806773.566	Zone 55

Land description

Volume 3652 Folio 255
Lot 1 of Plan TP895352J

Property address

48 MARLBOROUGH STREET, BALACLAVA, VIC 3183

Description of Licensed Works

WORKS ID WRK120925

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

Works location

Easting	*Northing*	*Zone MGA*
323476.139	5806800.032	Zone 55

Land description

Volume 5291 Folio 118
Lot 1 of Plan TP219094F

Property address

50-58 MARLBOROUGH STREET, BALACLAVA, VIC 3183

Description of Licensed Works

WORKS ID WRK120926

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

Works location

Easting	*Northing*	*Zone MGA*
323487.801	5806769.274	Zone 55

Land description

Volume 4573 Folio 423
Lot 1 of Plan TP697841W

Property address

50-58 MARLBOROUGH STREET, BALACLAVA, VIC 3183

Related Instruments

Related entitlements Nil

Related water-use entities Nil

Application History

Reference	*Type*	*Status*	*Lodged date*	*Approved date*	*Recorded date*
WLI612894	Issue	Approved	18 May 2020	18 May 2020	

Conditions

Licence WLE078429 is subject to the following conditions:

Siting and construction

1 The bore(s) must be drilled at the location specified in the application approved by the Authority.

2 If after drilling the bore is considered unsatisfactory a replacement bore may be drilled on the land specified in the licence.

Preventing pollution

3 All earthworks must be carried out, and all drilling fluids and waters produced during construction and development must be disposed of, in ways that avoid contaminating native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.

4 Construction must stop immediately if the Authority reasonably believes that fuel, lubricant, drilling fluid, soil or water produced during construction and development is at risk of being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.

5 The licence holder must construct and maintain bund walls, in accordance with the timeframe, specifications, guidelines or standards prescribed by the Authority, to prevent fuel, lubricant, drilling fluid, soil or water produced during construction and development from being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.

Construction standards

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

Drilling licence and supervision requirements

7 The bore(s) must be constructed by, or under the direct supervision of, a driller licensed under the Water Act 1989 and endorsed as a Class 1, 2, or 3 driller, with appropriate endorsements.

8 If artesian pressure is expected or encountered, then a driller licensed under the Water Act 1989, and endorsed as a class 3 driller, must install casing in the bore(s) to a suitable depth, and in a suitable manner, to prevent its outbreak. A suitable valve must also be fitted to the bore.

Bore completion report

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

Protecting water resources

10 No more than 3 bore(s) may be brought to final development under this licence.

11 At the completion of drilling and before the drilling rig leaves the site, all but 3 bore(s) must be decommissioned so as to eliminate physical hazards, conserve aquifer yield, prevent groundwater contamination and prevent the intermingling of desirable and undesirable waters.

12 The bore(s) must be located at least 30 metres from any authority's channel, reserve or easement unless authorised by the Authority.

Protecting water quality

13 Drilling must not exceed the maximum depth.

14 The bore(s) must be constructed so as to prevent aquifer contamination caused by vertical flow outside the casing.

15 If two or more aquifers are encountered, the bore(s) must be constructed to ensure that an impervious seal is made and maintained between each aquifer to prevent aquifer connection through vertical flow outside the casing; under no circumstances are two or more aquifers to be screened within the one bore or in any other manner to allow connection between them.

16 Boreheads must be constructed, to ensure that no flood water, surface runoff or potential

subsurface contaminated soakage can enter the bore or bore annulus.

Protecting other water users

17 The diameter of the drill casing must not exceed 130 millimetres.

18 The bore(s) must be constructed so that water levels in the bore(s) can be measured by an airline, a piezometer or a method approved in writing by the Authority.

Fees and charges

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

END OF COPY OF RECORD

Appendix L

Groundwater Sampling Logs

Groundwater Sampling Sheet

Borehole and Job Details			
Well No.	GW01	**Job No.**	991.4
Date	26/5/20	**Project**	46-58 Marlborough Street
by	Roddy	**Client**	Port Phillip City Council
Time Start	12:51		
Time End	13:15	**Address**	46-58 Marlborough Street

Primary Sample	
Sample	991/GW01
Primary Sample Bottles	
3	bottles (metals/TRH/Solids)
2	Vials (TRH/Volatiles)
5	**Total Primary Bottles**

Pump Details and Level		Weather		Water Quality at Time of Sampling	
Depth to water (m BTOC)	3.64	**Temperature**	17.5	**Odour**	NP
Depth to water after sampling (m BTOC)	3.660	**Humidity**	78	**Turbidity**	Low-medium
Depth of well (m BTOC)	6.000	**Cloud**	Clear	**Sheen**	NP
Depth to pump intake (m BTOC)	4.500	**Wind**	0		
Pump Method	micropurge				
Meters Calibrated	Yes				

Split and Blind Samples*	
Blind Sample	
Split/Blind Sample Bottles	
0	**Total Split/Blind Bottles**

**Note where an interlab blind replicate sample is collected it is labelled as per the primary sample, and where an intralab blind sample is collected it is labelled with the job code/blind sample name*

Stabilisation Achieved? Yes

Purging Parameters				Stabilisation criteria					Observations and Comments
				+/-3%		+/-0.1	+/-10	+/-10%	
Time (min)	Draw Down (m)	Flowrate (L/min)	Cum Vol. (L)	Temp (C)	EC (uS/cm)	pH (units)	Redox (mV)	DO (ppm)	
3	0	0.03	0.1	17.1	1776	6.52	-169.7	3.77	
6	0.1	0.03	0.2	17.5	1802	6.4	-171.3	2.9	
9	0	0.03	0.3	17.5	1808	6.35	-170.2	2.59	
12	0	0.03	0.3	17.6	1812	6.28	-170.7	2.6	
15	0	0.01	0.2	17.6	1815	6.21	-170.1	2.4	
18	0	0.01	0.1	17.6	1818	6.25	-167.8	2.21	
21	0	0.00	0.1	17.6	1819	6.27	-170.3	2.25	

Groundwater Sampling Sheet

Borehole and Job Details

Well No.	GW02	**Job No.**	991.4
Date	26/5/20	**Project**	46-58 Marlborough Street
by	Roddy	**Client**	Port Phillip City Council
Time Start	10:24		
Time End		**Address**	46-58 Marlborough Street

Primary Sample

Sample	991/GW02

Primary Sample Bottles

3	bottles (metals/TRH/Solids)
2	Vials (TRH/Volatiles)
5	**Total Primary Bottles**

Pump Details and Level

Depth to water (m BTOC)	3.65
Depth to water after sampling (m BTOC)	3.500
Depth of well (m BTOC)	6.000
Depth to pump intake (m BTOC)	4.500
Pump Method	micropurge
Meters Calibrated	Yes

Weather

Temperature	14
Humidity	78
Cloud	Clear
Wind	0

Water Quality at Time of Sampling

Odour	NP
Turbidity	Low-medium
Sheen	NP

Split and Blind Samples*

Blind Sample	

Split/Blind Sample Bottles

1	Duplicate
1	Split
2	**Total Split/Blind Bottles**

**Note where an interlab blind replicate sample is collected it is labelled as per the primary sample, and where an intralab blind sample is collected it is labelled with the job code/blind sample name*

Stabilisation Achieved? Yes

Purging Parameters				Stabilisation criteria					Observations and Comments
					+/-3%	+/-0.1	+/-10	+/-10%	
Time (min)	Draw Down (m)	Flowrate (L/min)	Cum Vol. (L)	Temp (C)	EC (uS/cm)	pH (units)	Redox (mV)	DO (ppm)	
3	0	0.07	0.2	14.3	1689	6.34	-162.7	5.54	
6	0.1	0.05	0.3	15.4	1730	6.1	-155.9	5.46	
9	0	0.03	0.3	15.6	2131	5.95	-152.8	3.88	
12	0	0.03	0.3	15.7	2142	5.91	-147.1	3.55	
15	0	0.01	0.2	15.7	2150	5.89	-150.5	3.4	
18	0	0.01	0.1	15.7	2151	5.9	-151.1	3.21	
21	0	0.00	0.1	15.7	2150	5.88	-155.1	3.33	

Groundwater Sampling Sheet

Borehole and Job Details			
Well No.	GW03	**Job No.**	991.4
Date	26/5/20	**Project**	46-58 Marlborough Street
by	Roddy	**Client**	Port Phillip City Council
Time Start	12:08		
Time End	12:45	**Address**	46-58 Marlborough Street

Primary Sample	
Sample	991/GW03
Primary Sample Bottles	
3	bottles (metals/TRH/Solids)
2	Vials (TRH/Volatiles)
5	**Total Primary Bottles**

Pump Details and Level		Weather		Water Quality at Time of Sampling	
Depth to water (m BTOC)	3.67	**Temperature**	16	**Odour**	NP
Depth to water after sampling (m BTOC)	3.680	**Humidity**	78	**Turbidity**	Low-medium
Depth of well (m BTOC)	6.000	**Cloud**	Clear	**Sheen**	NP
Depth to pump intake (m BTOC)	4.500	**Wind**	0		
Pump Method	micropurge				
Meters Calibrated	Yes				

Split and Blind Samples*	
Blind Sample	
Split/Blind Sample Bottles	
0	**Total Split/Blind Bottles**

**Note where an interlab blind replicate sample is collected it is labelled as per the primary sample, and where an intralab blind sample is collected it is labelled with the job code/blind sample name*

Stabilisation Achieved?
Yes

Purging Parameters				Stabilisation criteria					
					+/-3%	+/-0.1	+/-10	+/-10%	Observations and Comments
Time (min)	Draw Down (m)	Flowrate (L/min)	Cum Vol. (L)	Temp (C)	EC (uS/cm)	pH (units)	Redox (mV)	DO (ppm)	
3	0	0.03	0.1	17.9	1765	6.2	-150.7	3.24	
6	0.1	0.02	0.1	18.3	1763	6.09	-150.4	2.72	
9	0	0.03	0.3	18.3	1758	6.07	-158	2.59	
12	0.1	0.03	0.3	18.3	1758	6.02	-160	2.35	
15	0	0.01	0.2	18.4	1756	5.99	-160.3	2.2	
18	0	0.01	0.1	18.4	1756	5.98	-163.2	2.07	
21	0	0.00	0.1	18.5	1756	5.98	-162.1	2.2	

Appendix M

Calibration Certificates

EQUIPMENT QUALITY REPORT

Water Quality Meter:

Equipment Code: MWQ-2992 **Serial Number: 18B102992** **Description: YSI-ProPlus**

The following equipment has been issued as follows:

✓ Equipment is clean ✓ Impeller and probe check

Calibration Results							
Parameter	**Solution Brand and Batch no.**	**Standard**		**Error Range**	**Result**	
Temperature (^{0}C)	-	13		-	13.4	
pH	*Titripac* - HC86308677/HC87163875	7.05	4.00	± 0.2	7.05	3.99
Sp. Conductivity (µS/cm)	*ACR* - 334064	12880		± 20	12883	
DO (%)	*Emsure* – K49156557829	0	100	± 3	-0.3	100.3
Redox (mV)	*ACR* – 339732/338238	255.4		± 10	255.6	

Date: 25/05/2020

Calibrated by: Ben Butson

Please check that the following items are received and all items are returned. Please clean equipment before retuning. **A minimum $20 service/repair charge applies to any unclean or damaged items.**

Item	HT Id No.	Sent	Returned
Water Quality Meter	MWQ-2992	✓	
Manual	N/A	✓	
Probe Cluster	N/A	✓	
In situ monitoring cage	N/A	✓	
Storage cup	N/A	✓	
Flow through Cell	N/A	✓	
Calibration cup and lid	N/A	✓	
Spare Batteries / Screwdriver	N/A	✓	
Test and Tag	N/A	✓	

✓ Equipment voltage ✓ Pre-Delivery Calibration Confirmation Test

Date: 25/05/2020

Calibrated by: Ben Butson

HT JOB NO: 16576 CLIENTS REF: P/O No: 869.6

RETURN DATE: / /	TIME:	CONDITION ON RETURN:

EQUIPMENT QUALITY REPORT

Interface Meter

Equipment Code: MIM-7585 Serial Number: 267585 Length: 30m

The following equipment has been issued as follows:

☑ Equipment is clean and mechanically undamaged.

Calibration Results		
Parameter	Standard	Result
Water	Intermittent beeping	✓
Oil	Consistent beep	✓
Battery	9.0 V	9.11 V

Date: 25/05/2020

Calibrated by: Ben Butson

Please check that the following items are received and all items are returned. Please clean equipment before retuning. **A minimum $20 service/repair charge applies to any unclean or damaged items.**

Photo Ref.	Item (See photo at the back of the form)	HT Id No.	Sent	Returned
1	Carry Case	N/A	✓	
2	Interface Meter	MIM-7585	✓	
3	Tape Guide	N/A	✓	
4	Spare 9V battery. Qty 1 Voltage 9.0 v	N/A	✓	
-	Instruction leaflet	N/A	✓	

Date: 25/05/2020

Checked by: Ben Butson

HT JOB NO: 16576 CLIENTS REF: P/O No: 869.6

RETURN DATE: / / TIME: CONDITION ON RETURN:


1
2
3
4
Solinst
Interface Meter
HydroTerra

Appendix N

NATA Endorsed Analytical Results and Analytical Methods

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2008748**	Page	: 1 of 5
Client	: **PETER J RAMSAY & ASSOCIATES**	Laboratory	: Environmental Division Melbourne
Contact	: RODDY MCQUADE	Contact	: Customer Services EM
Address	: LEVEL 10 222 KINGS WAY SOUTH MELBOURNE VIC, AUSTRALIA 3205	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: 991.4	Date Samples Received	: 26-May-2020 15:30
Order number	: ----	Date Analysis Commenced	: 26-May-2020
C-O-C number	: GWCOC1	Issue Date	: 28-May-2020 17:01
Sampler	: ----		
Site	: ----		
Quote number	: EN/106/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	991/GW02	----	----	----	----
				Client sampling date / time	26-May-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2008748-001	--------	--------	--------	--------
					Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		**0.002**	----	----	----	----
Boron	7440-42-8	0.05	mg/L		**0.19**	----	----	----	----
Barium	7440-39-3	0.001	mg/L		**0.024**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L		<0.001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.007**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.015**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.016**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.01	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.096**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	991/GW02	----	----	----	----
				Client sampling date / time	26-May-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EM2008748-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080: BTEXN - Continued									
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**95.7**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**109**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**124**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2008566**	Page	: 1 of 5
Client	: **PETER J RAMSAY & ASSOCIATES**	Laboratory	: Environmental Division Melbourne
Contact	: RODDY MCQUADE	Contact	: Customer Services EM
Address	: LEVEL 10 222 KINGS WAY SOUTH MELBOURNE VIC, AUSTRALIA 3205	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: 991.4	Date Samples Received	: 21-May-2020 14:40
Order number	: ----	Date Analysis Commenced	: 22-May-2020
C-O-C number	: 991.4/SCOC1	Issue Date	: 27-May-2020 12:44
Sampler	: ----		
Site	: ----		
Quote number	: EN/106/18		
No. of samples received	: 3		
No. of samples analysed	: 2		

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- Analytical Results
- Surrogate Control Limits

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Signatories

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

Signatories	*Position*	*Accreditation Category*
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	991/SB06_0.1_0.2	991/SB04_0.0_0.1	----	----	----
				Client sampling date / time	20-May-2020 00:00	20-May-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2008566-002	EM2008566-003	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content									
Moisture Content	----	1.0	%		**12.5**	**12.4**	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		**12**	**6**	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg		**8**	**13**	----	----	----
Copper	7440-50-8	5	mg/kg		**33**	**44**	----	----	----
Lead	7439-92-1	5	mg/kg		**495**	**23**	----	----	----
Nickel	7440-02-0	2	mg/kg		**12**	**36**	----	----	----
Zinc	7440-66-6	5	mg/kg		**489**	**64**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		**0.4**	<0.1	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**170**	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**170**	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		**80**	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**200**	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**280**	<50	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**80**	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	991/SB06_0.1_0.2	991/SB04_0.0_0.1	----	----	----
				Client sampling date / time	20-May-2020 00:00	20-May-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2008566-002	EM2008566-003	--------	--------	--------
					Result	Result	----	----	----
EP080: BTEXN - Continued									
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**74.2**	**75.8**	----	----	----
Toluene-D8	2037-26-5	0.2	%		**80.6**	**82.5**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**103**	**104**	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Peter J Ramsay & Associates
222 Kings Way
South Melbourne
VIC 3205

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Roddy McQuade**

Report **722026-L**
Project name
Project ID 991.4
Received Date May 27, 2020

Client Sample ID			**991/SB01_0.0_0.1**	**991/SB02_0.4_0.5**	**991/SB03_0.4_0.5**	**991/SB04_0.0_0.1**
Sample Matrix			**AUS Leachate**	**AUS Leachate**	**AUS Leachate**	**AUS Leachate**
Eurofins Sample No.			**M20-My40225**	**M20-My40226**	**M20-My40227**	**M20-My40228**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Heavy Metals						
Arsenic	0.01	mg/L	0.01	< 0.01	-	-
Lead	0.01	mg/L	0.44	0.59	0.05	< 0.01
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	9.0	9.1	9.6	8.3
pH (Leachate fluid)	0.1	pH Units	5.1	5.1	5.1	5.1
pH (off)	0.1	pH Units	5.8	4.9	5.0	6.5

Client Sample ID			**991/SB05_0.2_0.3**	**991/SB05_0.3_0.4**	**991/SB06_0.1_0.2**	**991/SB07_0.1_0.2**
Sample Matrix			**AUS Leachate**	**AUS Leachate**	**AUS Leachate**	**AUS Leachate**
Eurofins Sample No.			**M20-My40229**	**M20-My40230**	**M20-My40231**	**M20-My40232**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.001	mg/L	-	-	< 0.001	-
Heavy Metals						
Lead	0.01	mg/L	-	0.04	0.26	-
Nickel	0.01	mg/L	0.02	-	-	0.03
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	5.9	9.3	9.3	9.1
pH (Leachate fluid)	0.1	pH Units	5.1	5.1	5.1	5.1
pH (off)	0.1	pH Units	5.7	5.2	5.3	5.1

Client Sample ID			991/SB07_0.4_0.5	991/SB08_0.0_0.1	991/SB09_0.0_0.1	991/SB10_0.4_0.5
Sample Matrix			AUS Leachate	AUS Leachate	AUS Leachate	AUS Leachate
Eurofins Sample No.			M20-My40233	M20-My40234	M20-My40235	M20-My40236
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.001	mg/L	< 0.001	-	< 0.001	< 0.001
Heavy Metals						
Arsenic	0.01	mg/L	0.06	-	-	-
Lead	0.01	mg/L	0.09	0.04	0.02	0.11
Nickel	0.01	mg/L	0.01	-	-	-
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	9.2	8.8	8.9	7.8
pH (Leachate fluid)	0.1	pH Units	5.1	5.1	5.1	5.1
pH (off)	0.1	pH Units	6.3	5.2	6.3	5.2

Client Sample ID			991/SB10_0.8_0.9	991/SB11_0.0_0.1	991/SB12_0.0_0.1	991/SB12_0.6_0.7
Sample Matrix			AUS Leachate	AUS Leachate	AUS Leachate	AUS Leachate
Eurofins Sample No.			M20-My40237	M20-My40238	M20-My40239	M20-My40240
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.001	mg/L	-	-	< 0.001	-
Heavy Metals						
Lead	0.01	mg/L	0.21	0.13	0.24	0.04
AUS Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	7.6	6.5	7.0	8.5
pH (Leachate fluid)	0.1	pH Units	5.1	5.1	5.1	5.1
pH (off)	0.1	pH Units	5.1	5.1	5.5	5.1

Client Sample ID			991/DUP02
Sample Matrix			AUS Leachate
Eurofins Sample No.			M20-My40241
Date Sampled			May 20, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene	0.001	mg/L	< 0.001
Heavy Metals			
Lead	0.01	mg/L	0.39
AUS Leaching Procedure			
Leachate Fluid[C01]		comment	1.0
pH (initial)	0.1	pH Units	8.0
pH (Leachate fluid)	0.1	pH Units	5.1
pH (off)	0.1	pH Units	5.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Melbourne	May 28, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Heavy Metals	Melbourne	May 27, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
AUS Leaching Procedure			
pH (initial)	Melbourne	May 27, 2020	0 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			
pH (Leachate fluid)	Melbourne	May 27, 2020	0 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			
pH (off)	Melbourne	May 27, 2020	0 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			

eurofins | Environment Testing

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NATA # 1261 Site # 20794

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IANZ # 1290

Company Name: Peter J Ramsay & Associates
Address: 222 Kings Way
South Melbourne
VIC 3205

Project Name:
Project ID: 991.4

Order No.:
Report #: 722026
Phone: 9690 0522
Fax: 9690 0585

Received: May 27, 2020 1:05 PM
Due: May 29, 2020
Priority: 2 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						Arsenic	Benzo(a)pyrene	Lead	Nickel	AUS Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	991/SB01_0.0_0.1	May 20, 2020		AUS Leachate	M20-My40225	X	X	X		X
2	991/SB02_0.4_0.5	May 20, 2020		AUS Leachate	M20-My40226	X	X	X		X
3	991/SB03_0.4_0.5	May 20, 2020		AUS Leachate	M20-My40227			X		X
4	991/SB04_0.0_0.1	May 20, 2020		AUS Leachate	M20-My40228			X		X
5	991/SB05_0.2_0.3	May 20, 2020		AUS Leachate	M20-My40229				X	X
6	991/SB05_0.3_0.4	May 20, 2020		AUS Leachate	M20-My40230			X		X

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Sample Detail						Arsenic	Benzo(a)pyrene	Lead	Nickel	AUS Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
7	991/SB06_0.1_0.2	May 20, 2020		AUS Leachate	M20-My40231		X	X		X
8	991/SB07_0.1_0.2	May 20, 2020		AUS Leachate	M20-My40232				X	X
9	991/SB07_0.4_0.5	May 20, 2020		AUS Leachate	M20-My40233	X	X	X	X	X
10	991/SB08_0.0_0.1	May 20, 2020		AUS Leachate	M20-My40234			X		X
11	991/SB09_0.0_0.1	May 20, 2020		AUS Leachate	M20-My40235		X	X		X
12	991/SB10_0.4_0.5	May 20, 2020		AUS Leachate	M20-My40236		X	X		X
13	991/SB10_0.8_0.9	May 20, 2020		AUS Leachate	M20-My40237			X		X
14	991/SB11_0.0	May 20, 2020		AUS Leachate	M20-My40238			X		X

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Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						Arsenic	Benzo(a)pyrene	Lead	Nickel	AUS Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
	_0.1									
15	991/SB12_0.0 _0.1	May 20, 2020		AUS Leachate	M20-My40239		X	X		X
16	991/SB12_0.6 _0.7	May 20, 2020		AUS Leachate	M20-My40240			X		X
17	991/DUP02	May 20, 2020		AUS Leachate	M20-My40241		X	X		X
Test Counts						3	8	15	3	17

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Heavy Metals									
Arsenic			mg/L	< 0.01			0.01	Pass	
Lead			mg/L	< 0.01			0.01	Pass	
Nickel			mg/L	< 0.01			0.01	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(a)pyrene	M20-My40231	CP	%	114			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-My40234	CP	%	94			75-125	Pass	
Lead	M20-My40234	CP	%	92			75-125	Pass	
Nickel	M20-My40234	CP	%	96			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(a)pyrene	M20-My40226	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-My40234	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Lead	M20-My40234	CP	mg/L	0.04	0.04	2.0	30%	Pass	
Nickel	M20-My40234	CP	mg/L	0.01	< 0.01	23	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Peter J Ramsay & Associates
222 Kings Way
South Melbourne
VIC 3205

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Roddy McQuade**

Report **721768-W**
Project name
Received Date May 26, 2020

Client Sample ID			**991/GW01**	**991/GW02**	**991/GW03**	**991/DUP01**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**M20-My38597**	**M20-My38598**	**M20-My38599**	**M20-My38600**
Date Sampled			**May 26, 2020**	**May 26, 2020**	**May 26, 2020**	**May 26, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	99	100	100	96
Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
2-Butanone (MEK)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
2-Propanone (Acetone)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
4-Chlorotoluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Allyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-

Client Sample ID			991/GW01	991/GW02	991/GW03	991/DUP01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M20-My38597	M20-My38598	M20-My38599	M20-My38600
Date Sampled			May 26, 2020	May 26, 2020	May 26, 2020	May 26, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
Bromobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Bromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Carbon disulfide	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dichlorodifluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Styrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
Total MAH*	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005	-
4-Bromofluorobenzene (surr.)	1	%	99	100	100	-
Toluene-d8 (surr.)	1	%	95	99	98	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			991/GW01	991/GW02	991/GW03	991/DUP01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M20-My38597	M20-My38598	M20-My38599	M20-My38600
Date Sampled			May 26, 2020	May 26, 2020	May 26, 2020	May 26, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	66	96	88	-
p-Terphenyl-d14 (surr.)	1	%	75	111	105	-
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibutylchlorendate (surr.)	1	%	88	126	104	-
Tetrachloro-m-xylene (surr.)	1	%	66	103	92	-

Client Sample ID			991/GW01	991/GW02	991/GW03	991/DUP01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M20-My38597	M20-My38598	M20-My38599	M20-My38600
Date Sampled			May 26, 2020	May 26, 2020	May 26, 2020	May 26, 2020
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Azinphos-methyl	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Bolstar	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Chlorfenvinphos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Chlorpyrifos	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Chlorpyrifos-methyl	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Coumaphos	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Demeton-S	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Demeton-O	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Diazinon	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Dichlorvos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Dimethoate	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Disulfoton	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
EPN	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Ethion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Ethoprop	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Ethyl parathion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Fenitrothion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Fensulfothion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Fenthion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Malathion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Merphos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Methyl parathion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Mevinphos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Monocrotophos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Naled	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Omethoate	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Phorate	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Pirimiphos-methyl	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
Pyrazophos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Ronnel	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Terbufos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Tetrachlorvinphos	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Tokuthion	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Trichloronate	0.002	mg/L	< 0.002	< 0.002	< 0.002	-
Triphenylphosphate (surr.)	1	%	72	103	96	-
Polychlorinated Biphenyls						
Aroclor-1016	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Aroclor-1232	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Aroclor-1242	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Aroclor-1248	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Aroclor-1254	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Aroclor-1260	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Total PCB*	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibutylchlorendate (surr.)	1	%	88	126	104	-
Tetrachloro-m-xylene (surr.)	1	%	66	103	92	-

Client Sample ID			991/GW01	991/GW02	991/GW03	991/DUP01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M20-My38597	M20-My38598	M20-My38599	M20-My38600
Date Sampled			May 26, 2020	May 26, 2020	May 26, 2020	May 26, 2020
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	-
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	-
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	-
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Phenol-d6 (surr.)	1	%	52	77	68	-
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
Chromium (hexavalent)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Nitrate & Nitrite (as N)	0.05	mg/L	7.0	6.1	6.4	-
Nitrate (as N)	0.02	mg/L	6.9	6.0	6.3	-
Nitrite (as N)	0.02	mg/L	0.11	0.08	0.04	-
Organic Nitrogen (as N)*	0.2	mg/L	1.2	0.7	1	-
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	1300	1100	1000	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.2	0.7	1.0	-
Total Nitrogen (as N)*	0.2	mg/L	8.2	6.8	7.4	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.002	0.002	0.002	0.002
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Boron (filtered)	0.05	mg/L	0.20	0.23	0.17	0.22
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cobalt (filtered)	0.001	mg/L	0.002	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.003	0.006	0.005	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	0.068	0.014	0.019	0.016
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.006	0.012	0.008	0.015
Selenium (filtered)	0.001	mg/L	< 0.001	0.001	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	0.041	0.085	0.091	0.091

Client Sample ID			991/RB01
Sample Matrix			Water
Eurofins Sample No.			M20-My38601
Date Sampled			May 26, 2020
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	97
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
Organochlorine Pesticides			
Chlordanes - Total	0.001	mg/L	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001
Endrin	0.0001	mg/L	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001
Toxaphene	0.01	mg/L	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001
Dibutylchlorendate (surr.)	1	%	66
Tetrachloro-m-xylene (surr.)	1	%	72

Client Sample ID			991/RB01
Sample Matrix			Water
Eurofins Sample No.			M20-My38601
Date Sampled			May 26, 2020
Test/Reference	LOR	Unit	
Organophosphorus Pesticides			
Azinphos-methyl	0.002	mg/L	< 0.002
Bolstar	0.002	mg/L	< 0.002
Chlorfenvinphos	0.002	mg/L	< 0.002
Chlorpyrifos	0.02	mg/L	< 0.02
Chlorpyrifos-methyl	0.002	mg/L	< 0.002
Coumaphos	0.02	mg/L	< 0.02
Demeton-S	0.02	mg/L	< 0.02
Demeton-O	0.002	mg/L	< 0.002
Diazinon	0.002	mg/L	< 0.002
Dichlorvos	0.002	mg/L	< 0.002
Dimethoate	0.002	mg/L	< 0.002
Disulfoton	0.002	mg/L	< 0.002
EPN	0.002	mg/L	< 0.002
Ethion	0.002	mg/L	< 0.002
Ethoprop	0.002	mg/L	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002
Fenitrothion	0.002	mg/L	< 0.002
Fensulfothion	0.002	mg/L	< 0.002
Fenthion	0.002	mg/L	< 0.002
Malathion	0.002	mg/L	< 0.002
Merphos	0.002	mg/L	< 0.002
Methyl parathion	0.002	mg/L	< 0.002
Mevinphos	0.002	mg/L	< 0.002
Monocrotophos	0.002	mg/L	< 0.002
Naled	0.002	mg/L	< 0.002
Omethoate	0.002	mg/L	< 0.002
Phorate	0.002	mg/L	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02
Pyrazophos	0.002	mg/L	< 0.002
Ronnel	0.002	mg/L	< 0.002
Terbufos	0.002	mg/L	< 0.002
Tetrachlorvinphos	0.002	mg/L	< 0.002
Tokuthion	0.002	mg/L	< 0.002
Trichloronate	0.002	mg/L	< 0.002
Triphenylphosphate (surr.)	1	%	60
Polychlorinated Biphenyls			
Aroclor-1016	0.001	mg/L	< 0.001
Aroclor-1221	0.001	mg/L	< 0.001
Aroclor-1232	0.001	mg/L	< 0.001
Aroclor-1242	0.001	mg/L	< 0.001
Aroclor-1248	0.001	mg/L	< 0.001
Aroclor-1254	0.001	mg/L	< 0.001
Aroclor-1260	0.001	mg/L	< 0.001
Total PCB*	0.001	mg/L	< 0.001
Dibutylchlorendate (surr.)	1	%	66
Tetrachloro-m-xylene (surr.)	1	%	72

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B4A			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	May 26, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 26, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Volatile Organics	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Eurofins | mgt Suite B15			
Organochlorine Pesticides	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Organophosphorus Pesticides	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS (USEPA 8081)			
Polychlorinated Biphenyls	Melbourne	May 26, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Nitrogens (speciated)			
Ammonia (as N)	Melbourne	May 26, 2020	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	May 26, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	May 26, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	May 26, 2020	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Organic Nitrogen (as N)*	Melbourne	May 26, 2020	7 Days
- Method: APHA 4500 Organic Nitrogen (N)			
Total Kjeldahl Nitrogen (as N)	Melbourne	May 26, 2020	7 Days
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Chromium (hexavalent)	Melbourne	May 26, 2020	28 Days
- Method: LTM-INO-4100 Hexavalent Chromium in water			
Heavy Metals (filtered)	Melbourne	May 26, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Mobil Metals : Metals M15	Melbourne	May 26, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Dissolved Solids Dried at 180°C ± 2°C	Melbourne	May 26, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			

eurofins | Environment Testing

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Project Name:

Order No.:
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Received: May 26, 2020 4:00 PM
Due: May 28, 2020
Priority: 2 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						HOLD	Eurofins | mgt Suite B15	Nitrogens (speciated)	NEPM 2013 Metals : Metals M13 filtered	BTEX and Naphthalene	Volatile Organics	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B4A	NEPM 1999 Metals : Metals M15 (Filtered)	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217															
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	991/GW01	May 26, 2020		Water	M20-My38597		X	X	X		X		X	X	X
2	991/GW02	May 26, 2020		Water	M20-My38598		X	X	X		X		X		X
3	991/GW03	May 26, 2020		Water	M20-My38599		X	X	X		X		X		X
4	991/DUP01	May 26, 2020		Water	M20-My38600				X	X		X			
5	991/RB01	May 26, 2020		Water	M20-My38601		X			X		X			
6	991/TB01	May 26, 2020		Water	M20-My38602	X									
Test Counts						1	4	3	4	2	3	2	3	1	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	0.002			0.001	Fail	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	0.002			0.001	Fail	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4.4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	
Demeton-S	mg/L	< 0.02			0.02	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.002			0.002	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Pirimiphos-methyl	mg/L	< 0.02			0.02	Pass	
Pyrazophos	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Terbufos	mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.001			0.001	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.001			0.001	Pass	
Aroclor-1242	mg/L	< 0.001			0.001	Pass	
Aroclor-1248	mg/L	< 0.001			0.001	Pass	
Aroclor-1254	mg/L	< 0.001			0.001	Pass	
Aroclor-1260	mg/L	< 0.001			0.001	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chromium (hexavalent)	mg/L	< 0.005			0.005	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Boron (filtered)	mg/L	< 0.05			0.05	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	86			70-130	Pass	
TRH C10-C14	%	84			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	106			70-130	Pass	
Toluene	%	97			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	99			70-130	Pass	
Xylenes - Total*	%	99			70-130	Pass	
LCS - % Recovery							
Volatile Organics							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.1-Dichloroethene	%	116			70-130	Pass	
1.1.1-Trichloroethane	%	109			70-130	Pass	
1.2-Dichlorobenzene	%	97			70-130	Pass	
1.2-Dichloroethane	%	118			70-130	Pass	
Trichloroethene	%	109			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	102			70-130	Pass	
TRH C6-C10	%	86			70-130	Pass	
TRH >C10-C16	%	79			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	121			70-130	Pass	
Acenaphthylene	%	130			70-130	Pass	
Anthracene	%	117			70-130	Pass	
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	122			70-130	Pass	
Benzo(b&j)fluoranthene	%	119			70-130	Pass	
Benzo(g.h.i)perylene	%	123			70-130	Pass	
Benzo(k)fluoranthene	%	102			70-130	Pass	
Chrysene	%	118			70-130	Pass	
Dibenz(a.h)anthracene	%	130			70-130	Pass	
Fluoranthene	%	126			70-130	Pass	
Fluorene	%	130			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	130			70-130	Pass	
Naphthalene	%	121			70-130	Pass	
Phenanthrene	%	111			70-130	Pass	
Pyrene	%	117			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	92			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	130			30-130	Pass	
2.4-Dichlorophenol	%	122			30-130	Pass	
2.4.5-Trichlorophenol	%	108			30-130	Pass	
2.4.6-Trichlorophenol	%	105			30-130	Pass	
2.6-Dichlorophenol	%	61			30-130	Pass	
4-Chloro-3-methylphenol	%	126			30-130	Pass	
Pentachlorophenol	%	72			30-130	Pass	
Tetrachlorophenols - Total	%	69			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	80			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	96			30-130	Pass	
2-Methylphenol (o-Cresol)	%	112			30-130	Pass	
2-Nitrophenol	%	109			30-130	Pass	
2.4-Dimethylphenol	%	117			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	118			30-130	Pass	
4-Nitrophenol	%	45			30-130	Pass	
Dinoseb	%	109			30-130	Pass	
Phenol	%	84			30-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	94			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium (hexavalent)			%	90			70-130	Pass	
Nitrate & Nitrite (as N)			%	100			70-130	Pass	
Nitrate (as N)			%	100			70-130	Pass	
Nitrite (as N)			%	106			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C			%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)			%	104			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic (filtered)			%	94			80-120	Pass	
Boron (filtered)			%	91			80-120	Pass	
Cadmium (filtered)			%	94			80-120	Pass	
Cobalt (filtered)			%	95			80-120	Pass	
Copper (filtered)			%	97			80-120	Pass	
Lead (filtered)			%	97			80-120	Pass	
Manganese (filtered)			%	97			80-120	Pass	
Mercury (filtered)			%	97			70-130	Pass	
Nickel (filtered)			%	97			80-120	Pass	
Selenium (filtered)			%	90			80-120	Pass	
Zinc (filtered)			%	97			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M20-My31773	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M20-My31773	NCP	%	77			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	S20-My33479	NCP	%	93			70-130	Pass	
Chromium (hexavalent)	S20-My35072	NCP	%	100			70-130	Pass	
Nitrate & Nitrite (as N)	S20-My33479	NCP	%	98			70-130	Pass	
Nitrate (as N)	S20-My33479	NCP	%	98			70-130	Pass	
Nitrite (as N)	S20-My33479	NCP	%	105			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-My32195	NCP	%	105			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	S20-My34467	NCP	%	95			70-130	Pass	
Beryllium (filtered)	S20-My34467	NCP	%	90			75-125	Pass	
Boron (filtered)	S20-My34467	NCP	%	56			75-125	Fail	Q08
Cadmium (filtered)	S20-My34467	NCP	%	84			70-130	Pass	
Cobalt (filtered)	S20-My34467	NCP	%	85			75-125	Pass	
Copper (filtered)	S20-My34467	NCP	%	83			70-130	Pass	
Lead (filtered)	S20-My34467	NCP	%	86			70-130	Pass	
Manganese (filtered)	S20-My34467	NCP	%	63			70-130	Fail	
Mercury (filtered)	S20-My34467	NCP	%	96			70-130	Pass	
Nickel (filtered)	S20-My34467	NCP	%	79			70-130	Pass	
Selenium (filtered)	S20-My34467	NCP	%	86			70-130	Pass	
Zinc (filtered)	S20-My34467	NCP	%	73			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	M20-My38598	CP	%	112			70-130	Pass	
Aroclor-1260	M20-My38598	CP	%	122			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-My31742	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-My31742	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-My31742	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-My31742	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-My31742	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-My31742	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S20-My33479	NCP	mg/L	0.07	0.08	8.0	30%	Pass	
Chromium (hexavalent)	M20-My38597	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nitrate & Nitrite (as N)	S20-My33479	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Nitrate (as N)	S20-My33479	NCP	mg/L	0.03	0.03	5.0	30%	Pass	
Nitrite (as N)	S20-My33479	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	M20-My38597	CP	mg/L	1300	1400	11	30%	Pass	
Total Kjeldahl Nitrogen (as N)	M20-My38597	CP	mg/L	1.2	1.0	23	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S20-My34467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	S20-My34467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron (filtered)	S20-My34467	NCP	mg/L	0.48	0.49	1.0	30%	Pass	
Cadmium (filtered)	S20-My34467	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Cobalt (filtered)	S20-My34467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S20-My34467	NCP	mg/L	0.007	0.007	3.0	30%	Pass	
Lead (filtered)	S20-My34467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	S20-My34467	NCP	mg/L	0.23	0.22	1.0	30%	Pass	
Mercury (filtered)	S20-My34467	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S20-My34467	NCP	mg/L	0.081	0.079	2.0	30%	Pass	
Selenium (filtered)	S20-My34467	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	S20-My34467	NCP	mg/L	0.10	0.078	28	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Peter J Ramsay & Associates
222 Kings Way
South Melbourne
VIC 3205

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Roddy McQuade**

Report **721023-W**
Project name
Project ID 991.4
Received Date May 21, 2020

Client Sample ID			**991/RB01**
Sample Matrix			**Water**
Eurofins Sample No.			**M20-My31883**
Date Sampled			**May 19, 2020**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
Heavy Metals			
Arsenic	0.001	mg/L	< 0.001
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 21, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 21, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 21, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Eurofins | mgt Suite B7			
Metals M8	Melbourne	May 21, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Company Name: Peter J Ramsay & Associates
Address: 222 Kings Way
South Melbourne
VIC 3205

Project Name:
Project ID: 991.4

Order No.:
Report #: 721023
Phone: 9690 0522
Fax: 9690 0585

Received: May 21, 2020 3:22 PM
Due: May 28, 2020
Priority: 5 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	991/GW01_3.2_3.4	May 19, 2020		Soil	M20-My31876			X			X	
2	991/GW03_0.0_0.1	May 19, 2020		Soil	M20-My31877			X	X			
3	991/GW03_3.0_3.1	May 19, 2020		Soil	M20-My31878			X			X	
4	991/SB02_0.0_0.1	May 20, 2020		Soil	M20-My31879			X				X
5	991/SB03_0.0_0.1	May 20, 2020		Soil	M20-My31880			X				X
6	991/SB08_0.7_0.8	May 20, 2020		Soil	M20-My31881			X			X	

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Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
7	991/SB12_0.5_0.6	May 20, 2020		Soil	M20-My31882			X	X			
8	991/RB01	May 19, 2020		Water	M20-My31883		X			X		
9	991/GW01_0.4_0.5	May 19, 2020		Soil	M20-My31884	X						
10	991/GW01_0.9_1.0	May 19, 2020		Soil	M20-My31885	X						
11	991/GW02_0.5_0.6	May 19, 2020		Soil	M20-My31886	X						
12	991/GW02_1.5_1.6	May 19, 2020		Soil	M20-My31887	X						
13	991/GW03_0.4_0.5	May 19, 2020		Soil	M20-My31888	X						
14	991/SB01_0.3_0.4	May 20, 2020		Soil	M20-My31889	X						

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Project Name:
Project ID: 991.4

Order No.:
Report #: 721023
Phone: 9690 0522
Fax: 9690 0585

Received: May 21, 2020 3:22 PM
Due: May 28, 2020
Priority: 5 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
15	991/SB01_0.5_0.6	May 20, 2020		Soil	M20-My31890	X						
16	991/SB02_0.6_0.7	May 20, 2020		Soil	M20-My31891	X						
17	991/SB03_0.6_0.7	May 20, 2020		Soil	M20-My31892	X						
18	991/SB04_0.4_0.5	May 20, 2020		Soil	M20-My31893	X						
19	991/SB04_0.6_0.7	May 20, 2020		Soil	M20-My31894	X						
20	991/SB05_0.4_0.5	May 20, 2020		Soil	M20-My31895	X						
21	991/SB06_0.6_0.7	May 20, 2020		Soil	M20-My31896	X						
22	991/SB08_0.4	May 20, 2020		Soil	M20-My31897	X						

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Company Name: Peter J Ramsay & Associates
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Project Name:
Project ID: 991.4

Order No.:
Report #: 721023
Phone: 9690 0522
Fax: 9690 0585

Received: May 21, 2020 3:22 PM
Due: May 28, 2020
Priority: 5 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
	_0.5											
23	991/SB09_0.6 _0.7	May 20, 2020		Soil	M20-My31898	X						
24	991/SB09_0.9 _1.0	May 20, 2020		Soil	M20-My31899	X						
25	991/SB10_0.0 _0.1	May 20, 2020		Soil	M20-My31900	X						
26	991/SB10_1.4 _1.5	May 20, 2020		Soil	M20-My31901	X						
27	991/SB11_0.4 _0.5	May 20, 2020		Soil	M20-My31902	X						
28	991/SB11_0.6 _0.7	May 20, 2020		Soil	M20-My31903	X						
29	991/DUP01	May 19, 2020		Soil	M20-My31904	X						
30	991/TB01	May 19, 2020		Soil	M20-My31905	X						

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Company Name: Peter J Ramsay & Associates
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Project Name:
Project ID: 991.4

Order No.:
Report #: 721023
Phone: 9690 0522
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Received: May 21, 2020 3:22 PM
Due: May 28, 2020
Priority: 5 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
31	991/TB02	May 20, 2020		Soil	M20-My31906	X						
32	991/RB02	May 20, 2020		Water	M20-My31907	X						
33	GW03_0.7-0.8	May 19, 2020		Soil	M20-My31908	X						
34	SB08_0.9-1.0	May 19, 2020		Soil	M20-My31909	X						
Test Counts						26	1	7	2	1	3	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	109			70-130	Pass	
TRH C10-C14	%	79			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	81			70-130	Pass	
TRH C6-C10	%	107			70-130	Pass	
TRH >C10-C16	%	74			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	94			80-120	Pass	
Cadmium	%	97			80-120	Pass	
Chromium	%	96			80-120	Pass	
Copper	%	97			80-120	Pass	
Lead	%	96			80-120	Pass	
Mercury	%	98			75-125	Pass	
Nickel	%	97			80-120	Pass	
Zinc	%	95			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M20-My32279	NCP	%	105			70-130	Pass	
TRH C10-C14	M20-My32160	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-My32279	NCP	%	88			70-130	Pass	
TRH C6-C10	M20-My32279	NCP	%	100			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH >C10-C16	M20-My32160	NCP	%	73			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-My33507	NCP	%	90			75-125	Pass	
Cadmium	M20-My33507	NCP	%	87			75-125	Pass	
Chromium	M20-My33507	NCP	%	91			75-125	Pass	
Copper	M20-My33507	NCP	%	84			75-125	Pass	
Lead	M20-My33507	NCP	%	89			75-125	Pass	
Mercury	M20-My33507	NCP	%	93			70-130	Pass	
Nickel	M20-My33507	NCP	%	91			75-125	Pass	
Zinc	M20-My33507	NCP	%	87			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M20-My32348	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M20-My32121	NCP	mg/L	0.97	0.96	1.0	30%	Pass	
TRH C15-C28	M20-My32121	NCP	mg/L	0.5	0.6	11	30%	Pass	
TRH C29-C36	M20-My32121	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-My32348	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M20-My32348	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M20-My32121	NCP	mg/L	1.0	1.0	1.0	30%	Pass	
TRH >C16-C34	M20-My32121	NCP	mg/L	0.4	0.4	15	30%	Pass	
TRH >C34-C40	M20-My32121	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-My33507	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M20-My33507	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M20-My33507	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M20-My33507	NCP	mg/L	0.050	0.051	2.0	30%	Pass	
Lead	M20-My33507	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M20-My33507	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M20-My33507	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M20-My33507	NCP	mg/L	0.030	0.032	7.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Peter J Ramsay & Associates
222 Kings Way
South Melbourne
VIC 3205

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Roddy McQuade**

Report **721023-S**
Project name
Project ID 991.4
Received Date May 21, 2020

Client Sample ID			**991/GW01_3.2_3.4**	**991/GW03_0.0_0.1**	**991/GW03_3.0_3.1**	**991/SB02_0.0_0.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31876**	**M20-My31877**	**M20-My31878**	**M20-My31879**
Date Sampled			**May 19, 2020**	**May 19, 2020**	**May 19, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	-	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	-	< 50	930
TRH C29-C36	50	mg/kg	< 50	-	< 50	410
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	1340
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	130	-	131	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	-	< 100	1200
TRH >C34-C40	100	mg/kg	< 100	-	< 100	150
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	1350
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	46
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	46
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	46
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	4.0
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	9.9
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	27
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	32
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	24
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	21
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	23
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	24

Client Sample ID			991/GW01_3.2_3.4	991/GW03_0.0_0.1	991/GW03_3.0_3.1	991/SB02_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31876	M20-My31877	M20-My31878	M20-My31879
Date Sampled			May 19, 2020	May 19, 2020	May 19, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	4.1
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	56
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	1.1
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	21
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	34
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	55
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	336.1
2-Fluorobiphenyl (surr.)	1	%	96	-	80	91
p-Terphenyl-d14 (surr.)	1	%	108	-	92	91
Heavy Metals						
Arsenic	2	mg/kg	7.0	-	2.9	9.2
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	0.7
Chromium	5	mg/kg	89	-	21	17
Copper	5	mg/kg	< 5	-	< 5	180
Lead	5	mg/kg	6.6	-	6.4	1900
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	0.7
Molybdenum	5	mg/kg	-	-	-	< 5
Nickel	5	mg/kg	19	-	7.5	21
Selenium	2	mg/kg	-	-	-	< 2
Silver	0.2	mg/kg	-	-	-	0.4
Tin	10	mg/kg	-	-	-	29
Zinc	5	mg/kg	18	-	9.3	850
% Moisture	1	%	15	11	14	16
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	280	-	-
Chromium (hexavalent)	1	mg/kg	-	-	-	< 1
Cyanide (total)	5	mg/kg	-	-	-	< 5
Fluoride (Total)	100	mg/kg	-	-	-	< 100
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	-	7.4
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	19	-	-
Volatile Organics						
1.2.4-Trichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
Hexachlorobutadiene	0.5	mg/kg	-	-	-	< 0.5
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dibromoethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichloroethane	0.5	mg/kg	-	-	-	< 0.5
1.2-Dichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			991/GW01_3.2_3.4	991/GW03_0.0_0.1	991/GW03_3.0_3.1	991/SB02_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31876	M20-My31877	M20-My31878	M20-My31879
Date Sampled			May 19, 2020	May 19, 2020	May 19, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
1.3-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
1.3-Dichloropropane	0.5	mg/kg	-	-	-	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	-	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	-	-	-	< 0.5
2-Butanone (MEK)	0.5	mg/kg	-	-	-	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	-	-	-	< 0.5
4-Chlorotoluene	0.5	mg/kg	-	-	-	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	-	< 0.5
Allyl chloride	0.5	mg/kg	-	-	-	< 0.5
Benzene	0.1	mg/kg	-	-	-	< 0.1
Bromobenzene	0.5	mg/kg	-	-	-	< 0.5
Bromochloromethane	0.5	mg/kg	-	-	-	< 0.5
Bromodichloromethane	0.5	mg/kg	-	-	-	< 0.5
Bromoform	0.5	mg/kg	-	-	-	< 0.5
Bromomethane	0.5	mg/kg	-	-	-	< 0.5
Carbon disulfide	0.5	mg/kg	-	-	-	< 0.5
Carbon Tetrachloride	0.5	mg/kg	-	-	-	< 0.5
Chlorobenzene	0.5	mg/kg	-	-	-	< 0.5
Chloroethane	0.5	mg/kg	-	-	-	< 0.5
Chloroform	0.5	mg/kg	-	-	-	< 0.5
Chloromethane	0.5	mg/kg	-	-	-	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	-	< 0.5
Dibromochloromethane	0.5	mg/kg	-	-	-	< 0.5
Dibromomethane	0.5	mg/kg	-	-	-	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	-	-	-	< 0.5
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
Iodomethane	0.5	mg/kg	-	-	-	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	-	< 0.5
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
Methylene Chloride	0.5	mg/kg	-	-	-	< 0.5
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Styrene	0.5	mg/kg	-	-	-	< 0.5
Tetrachloroethene	0.5	mg/kg	-	-	-	< 0.5
Toluene	0.1	mg/kg	-	-	-	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	-	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	-	< 0.5
Trichloroethene	0.5	mg/kg	-	-	-	< 0.5
Trichlorofluoromethane	0.5	mg/kg	-	-	-	< 0.5
Vinyl chloride	0.5	mg/kg	-	-	-	< 0.5
Xylenes - Total*	0.3	mg/kg	-	-	-	< 0.3
Total MAH*	0.5	mg/kg	-	-	-	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	-	-	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	-	-	< 0.5
4-Bromofluorobenzene (surr.)	1	%	-	-	-	59
Toluene-d8 (surr.)	1	%	-	-	-	60

Client Sample ID			991/GW01_3.2_3.4	991/GW03_0.0_0.1	991/GW03_3.0_3.1	991/SB02_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31876	M20-My31877	M20-My31878	M20-My31879
Date Sampled			May 19, 2020	May 19, 2020	May 19, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	0.14
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.05	mg/kg	-	-	-	< 0.05
Toxaphene	1	mg/kg	-	-	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	0.14
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	0.14
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	115
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	77
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	115
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	77
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	-	-	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	-	< 1
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Tetrachlorophenols - Total	10	mg/kg	-	-	-	< 10
Total Halogenated Phenol*	1	mg/kg	-	-	-	< 1

Client Sample ID			991/GW01_3.2_3.4	991/GW03_0.0_0.1	991/GW03_3.0_3.1	991/SB02_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31876	M20-My31877	M20-My31878	M20-My31879
Date Sampled			May 19, 2020	May 19, 2020	May 19, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	-	-	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	-	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	-	< 0.2
2-Nitrophenol	1.0	mg/kg	-	-	-	< 1
2.4-Dimethylphenol	0.5	mg/kg	-	-	-	< 0.5
2.4-Dinitrophenol	5	mg/kg	-	-	-	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	-	< 0.4
4-Nitrophenol	5	mg/kg	-	-	-	< 5
Dinoseb	20	mg/kg	-	-	-	< 20
Phenol	0.5	mg/kg	-	-	-	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	-	-	-	< 20
Phenol-d6 (surr.)	1	%	-	-	-	95

Client Sample ID			991/SB03_0.0_0.1	991/SB08_0.7_0.8	991/SB12_0.5_0.6
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			M20-My31880	M20-My31881	M20-My31882
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	79	-
TRH C29-C36	50	mg/kg	< 50	100	-
TRH C10-C36 (Total)	50	mg/kg	< 50	179	-
BTEX					
Benzene	0.1	mg/kg	-	< 0.1	-
Toluene	0.1	mg/kg	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	149	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	140	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	140	-
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.9	1.7	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.1	2.0	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.4	2.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-

Client Sample ID			991/SB03_0.0_0.1	991/SB08_0.7_0.8	991/SB12_0.5_0.6
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31880**	**M20-My31881**	**M20-My31882**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	0.6	1.1	-
Benzo(a)pyrene	0.5	mg/kg	0.6	1.3	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.8	1.0	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	0.9	-
Benzo(k)fluoranthene	0.5	mg/kg	1.2	1.1	-
Chrysene	0.5	mg/kg	0.7	1.2	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	1.4	2.4	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	0.8	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	1.1	0.9	-
Pyrene	0.5	mg/kg	1.7	2.4	-
Total PAH*	0.5	mg/kg	8.1	13.1	-
2-Fluorobiphenyl (surr.)	1	%	75	84	-
p-Terphenyl-d14 (surr.)	1	%	103	91	-
Heavy Metals					
Arsenic	2	mg/kg	7.0	10	-
Cadmium	0.4	mg/kg	< 0.4	0.4	-
Chromium	5	mg/kg	21	13	-
Copper	5	mg/kg	23	28	-
Lead	5	mg/kg	120	270	-
Mercury	0.1	mg/kg	< 0.1	0.3	-
Molybdenum	5	mg/kg	< 5	-	-
Nickel	5	mg/kg	52	12	-
Selenium	2	mg/kg	< 2	-	-
Silver	0.2	mg/kg	< 0.2	-	-
Tin	10	mg/kg	< 10	-	-
Zinc	5	mg/kg	94	390	-
% Moisture	1	%	14	15	11
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	190
Chromium (hexavalent)	1	mg/kg	< 1	-	-
Cyanide (total)	5	mg/kg	< 5	-	-
Fluoride (Total)	100	mg/kg	< 100	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	9.3	-	-
Cation Exchange Capacity					
Cation Exchange Capacity	0.05	meq/100g	-	-	12
Volatile Organics					
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-
Volatile Organics					
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	-

Client Sample ID			991/SB03_0.0_0.1	991/SB08_0.7_0.8	991/SB12_0.5_0.6
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			M20-My31880	M20-My31881	M20-My31882
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit			
Volatile Organics					
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	-
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	-
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	-
Allyl chloride	0.5	mg/kg	< 0.5	-	-
Benzene	0.1	mg/kg	< 0.1	-	-
Bromobenzene	0.5	mg/kg	< 0.5	-	-
Bromochloromethane	0.5	mg/kg	< 0.5	-	-
Bromodichloromethane	0.5	mg/kg	< 0.5	-	-
Bromoform	0.5	mg/kg	< 0.5	-	-
Bromomethane	0.5	mg/kg	< 0.5	-	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	-
Chloroethane	0.5	mg/kg	< 0.5	-	-
Chloroform	0.5	mg/kg	< 0.5	-	-
Chloromethane	0.5	mg/kg	< 0.5	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	-
Dibromomethane	0.5	mg/kg	< 0.5	-	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-
Iodomethane	0.5	mg/kg	< 0.5	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-
Methylene Chloride	0.5	mg/kg	< 0.5	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-
Styrene	0.5	mg/kg	< 0.5	-	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	-
Toluene	0.1	mg/kg	< 0.1	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	-
Trichloroethene	0.5	mg/kg	< 0.5	-	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	-
Total MAH*	0.5	mg/kg	< 0.5	-	-

Client Sample ID			991/SB03_0.0_0.1	991/SB08_0.7_0.8	991/SB12_0.5_0.6
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31880**	**M20-My31881**	**M20-My31882**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit			
Volatile Organics					
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	-	-
4-Bromofluorobenzene (surr.)	1	%	59	-	-
Toluene-d8 (surr.)	1	%	52	-	-
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-
Methoxychlor	0.05	mg/kg	< 0.05	-	-
Toxaphene	1	mg/kg	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	81	-	-
Tetrachloro-m-xylene (surr.)	1	%	67	-	-
Polychlorinated Biphenyls					
Aroclor-1016	0.1	mg/kg	< 0.1	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	-
Aroclor-1254	0.1	mg/kg	0.2	-	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	-
Total PCB*	0.1	mg/kg	0.2	-	-
Dibutylchlorendate (surr.)	1	%	81	-	-
Tetrachloro-m-xylene (surr.)	1	%	67	-	-
Phenols (Halogenated)					
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	-
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	-
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-

Client Sample ID			991/SB03_0.0_0.1	991/SB08_0.7_0.8	991/SB12_0.5_0.6
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31880**	**M20-My31881**	**M20-My31882**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit			
Phenols (Halogenated)					
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-
Tetrachlorophenols - Total	10	mg/kg	< 10	-	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	-
Phenols (non-Halogenated)					
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-
2-Nitrophenol	1.0	mg/kg	< 1	-	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-
2.4-Dinitrophenol	5	mg/kg	< 5	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-
Dinoseb	20	mg/kg	< 20	-	-
Phenol	0.5	mg/kg	< 0.5	-	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	-
Phenol-d6 (surr.)	1	%	65	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Vic EPA IWRG 621 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 23, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 23, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 23, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 23, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals IWRG 621 : Metals M12	Melbourne	May 22, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Chromium (hexavalent)	Melbourne	May 22, 2020	28 Days
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	May 22, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride (Total)	Melbourne	May 23, 2020	28 Days
- Method: LTM-INO-4150 Determination of Total Fluoride PART B – ISE			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	May 22, 2020	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Volatile Organics	Melbourne	May 22, 2020	7 Days
- Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS			
Volatile Organics	Melbourne	May 22, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Organochlorine Pesticides	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	May 22, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Eurofins | mgt Suite B7			
BTEX	Melbourne	May 23, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	May 23, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	May 21, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Melbourne	May 22, 2020	7 Days
- Method: LTM-INO-4030 Conductivity			
Cation Exchange Capacity	Melbourne	May 25, 2020	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			

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Company Name: Peter J Ramsay & Associates
Address: 222 Kings Way
South Melbourne
VIC 3205

Project Name:
Project ID: 991.4

Order No.:
Report #: 721023
Phone: 9690 0522
Fax: 9690 0585

Received: May 21, 2020 3:22 PM
Due: May 28, 2020
Priority: 5 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	991/GW01_3.2_3.4	May 19, 2020		Soil	M20-My31876			X			X	
2	991/GW03_0.0_0.1	May 19, 2020		Soil	M20-My31877			X	X			
3	991/GW03_3.0_3.1	May 19, 2020		Soil	M20-My31878			X			X	
4	991/SB02_0.0_0.1	May 20, 2020		Soil	M20-My31879			X				X
5	991/SB03_0.0_0.1	May 20, 2020		Soil	M20-My31880			X				X
6	991/SB08_0.7_0.8	May 20, 2020		Soil	M20-My31881			X			X	

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
7	991/SB12_0.5_0.6	May 20, 2020		Soil	M20-My31882			X	X			
8	991/RB01	May 19, 2020		Water	M20-My31883		X			X		
9	991/GW01_0.4_0.5	May 19, 2020		Soil	M20-My31884	X						
10	991/GW01_0.9_1.0	May 19, 2020		Soil	M20-My31885	X						
11	991/GW02_0.5_0.6	May 19, 2020		Soil	M20-My31886	X						
12	991/GW02_1.5_1.6	May 19, 2020		Soil	M20-My31887	X						
13	991/GW03_0.4_0.5	May 19, 2020		Soil	M20-My31888	X						
14	991/SB01_0.3_0.4	May 20, 2020		Soil	M20-My31889	X						

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Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
15	991/SB01_0.5_0.6	May 20, 2020		Soil	M20-My31890	X						
16	991/SB02_0.6_0.7	May 20, 2020		Soil	M20-My31891	X						
17	991/SB03_0.6_0.7	May 20, 2020		Soil	M20-My31892	X						
18	991/SB04_0.4_0.5	May 20, 2020		Soil	M20-My31893	X						
19	991/SB04_0.6_0.7	May 20, 2020		Soil	M20-My31894	X						
20	991/SB05_0.4_0.5	May 20, 2020		Soil	M20-My31895	X						
21	991/SB06_0.6_0.7	May 20, 2020		Soil	M20-My31896	X						
22	991/SB08_0.4	May 20, 2020		Soil	M20-My31897	X						

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Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
	_0.5											
23	991/SB09_0.6 _0.7	May 20, 2020		Soil	M20-My31898	X						
24	991/SB09_0.9 _1.0	May 20, 2020		Soil	M20-My31899	X						
25	991/SB10_0.0 _0.1	May 20, 2020		Soil	M20-My31900	X						
26	991/SB10_1.4 _1.5	May 20, 2020		Soil	M20-My31901	X						
27	991/SB11_0.4 _0.5	May 20, 2020		Soil	M20-My31902	X						
28	991/SB11_0.6 _0.7	May 20, 2020		Soil	M20-My31903	X						
29	991/DUP01	May 19, 2020		Soil	M20-My31904	X						
30	991/TB01	May 19, 2020		Soil	M20-My31905	X						

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Sample Detail						HOLD	Metals M8	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217												
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
31	991/TB02	May 20, 2020		Soil	M20-My31906	X						
32	991/RB02	May 20, 2020		Water	M20-My31907	X						
33	GW03_0.7-0.8	May 19, 2020		Soil	M20-My31908	X						
34	SB08_0.9-1.0	May 19, 2020		Soil	M20-My31909	X						
Test Counts						26	1	7	2	1	3	2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride (Total)	mg/kg	< 100			100	Pass	
Method Blank							
Cation Exchange Capacity							
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
Method Blank							
Volatile Organics							
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	111			70-130	Pass	
TRH C10-C14	%	99			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	84			70-130	Pass	
Toluene	%	85			70-130	Pass	
Ethylbenzene	%	94			70-130	Pass	
m&p-Xylenes	%	103			70-130	Pass	
Xylenes - Total*	%	103			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	90			70-130	Pass	
TRH C6-C10	%	105			70-130	Pass	
TRH >C10-C16	%	94			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	83			70-130	Pass	
Acenaphthylene	%	85			70-130	Pass	
Anthracene	%	76			70-130	Pass	
Benz(a)anthracene	%	75			70-130	Pass	
Benzo(a)pyrene	%	75			70-130	Pass	
Benzo(b&j)fluoranthene	%	77			70-130	Pass	
Benzo(g.h.i)perylene	%	78			70-130	Pass	
Benzo(k)fluoranthene	%	84			70-130	Pass	
Chrysene	%	76			70-130	Pass	
Dibenz(a.h)anthracene	%	79			70-130	Pass	
Fluoranthene	%	80			70-130	Pass	
Fluorene	%	81			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	86			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	79			70-130	Pass	
Pyrene	%	79			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	83			80-120	Pass	
Cadmium	%	107			80-120	Pass	
Chromium	%	93			80-120	Pass	
Copper	%	89			80-120	Pass	
Lead	%	99			80-120	Pass	
Mercury	%	117			75-125	Pass	
Molybdenum	%	84			80-120	Pass	
Nickel	%	86			80-120	Pass	
Selenium	%	90			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Silver	%	111			80-120	Pass	
Tin	%	81			80-120	Pass	
Zinc	%	87			80-120	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	92			70-130	Pass	
Cyanide (total)	%	84			70-130	Pass	
Fluoride (Total)	%	117			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	84			70-130	Pass	
1.1.1-Trichloroethane	%	84			70-130	Pass	
1.2-Dichlorobenzene	%	93			70-130	Pass	
1.2-Dichloroethane	%	95			70-130	Pass	
Trichloroethene	%	94			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	91			70-130	Pass	
4.4'-DDD	%	86			70-130	Pass	
4.4'-DDE	%	92			70-130	Pass	
4.4'-DDT	%	88			70-130	Pass	
a-BHC	%	92			70-130	Pass	
Aldrin	%	86			70-130	Pass	
b-BHC	%	77			70-130	Pass	
d-BHC	%	79			70-130	Pass	
Dieldrin	%	78			70-130	Pass	
Endosulfan I	%	106			70-130	Pass	
Endosulfan II	%	82			70-130	Pass	
Endosulfan sulphate	%	86			70-130	Pass	
Endrin	%	83			70-130	Pass	
Endrin aldehyde	%	74			70-130	Pass	
Endrin ketone	%	96			70-130	Pass	
g-BHC (Lindane)	%	90			70-130	Pass	
Heptachlor	%	94			70-130	Pass	
Heptachlor epoxide	%	91			70-130	Pass	
Hexachlorobenzene	%	84			70-130	Pass	
Methoxychlor	%	101			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	82			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	73			30-130	Pass	
2.4-Dichlorophenol	%	70			30-130	Pass	
2.4.5-Trichlorophenol	%	67			30-130	Pass	
2.4.6-Trichlorophenol	%	71			30-130	Pass	
2.6-Dichlorophenol	%	73			30-130	Pass	
4-Chloro-3-methylphenol	%	80			30-130	Pass	
Pentachlorophenol	%	36			30-130	Pass	
Tetrachlorophenols - Total	%	59			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	51			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	33			30-130	Pass	
2-Methylphenol (o-Cresol)	%	79			30-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Nitrophenol			%	81			30-130	Pass	
2.4-Dimethylphenol			%	113			30-130	Pass	
2.4-Dinitrophenol			%	85			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)			%	79			30-130	Pass	
4-Nitrophenol			%	77			30-130	Pass	
Dinoseb			%	45			30-130	Pass	
Phenol			%	79			30-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M20-My32451	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	M20-My32451	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M20-My31430	NCP	%	115			70-130	Pass	
Acenaphthylene	M20-My31430	NCP	%	112			70-130	Pass	
Anthracene	M20-My31430	NCP	%	107			70-130	Pass	
Benz(a)anthracene	M20-My31430	NCP	%	74			70-130	Pass	
Benzo(a)pyrene	M20-My31430	NCP	%	75			70-130	Pass	
Benzo(b&j)fluoranthene	M20-My31430	NCP	%	79			70-130	Pass	
Benzo(g.h.i)perylene	M20-My31430	NCP	%	81			70-130	Pass	
Benzo(k)fluoranthene	M20-My31430	NCP	%	89			70-130	Pass	
Chrysene	M20-My31430	NCP	%	78			70-130	Pass	
Dibenz(a.h)anthracene	M20-My31430	NCP	%	74			70-130	Pass	
Fluoranthene	M20-My31430	NCP	%	85			70-130	Pass	
Fluorene	M20-My31430	NCP	%	107			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M20-My31430	NCP	%	84			70-130	Pass	
Naphthalene	M20-My31430	NCP	%	112			70-130	Pass	
Phenanthrene	M20-My31430	NCP	%	103			70-130	Pass	
Pyrene	M20-My31430	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-My31324	NCP	%	104			75-125	Pass	
Cadmium	M20-My31324	NCP	%	105			75-125	Pass	
Chromium	M20-My31324	NCP	%	143			75-125	Fail	Q08
Copper	M20-My31324	NCP	%	114			75-125	Pass	
Lead	M20-My31324	NCP	%	122			75-125	Pass	
Mercury	M20-My31324	NCP	%	124			70-130	Pass	
Nickel	M20-My31324	NCP	%	122			75-125	Pass	
Zinc	M20-My31324	NCP	%	123			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Molybdenum	M20-My31324	NCP	%	108			75-125	Pass	
Selenium	M20-My31324	NCP	%	102			75-125	Pass	
Silver	M20-My31324	NCP	%	107			75-125	Pass	
Tin	M20-My31324	NCP	%	109			75-125	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M20-My32512	NCP	%	105			70-130	Pass	
Fluoride (Total)	M20-My35258	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Chlorophenol	M20-My31420	NCP	%	78			30-130	Pass	
2.4-Dichlorophenol	M20-My31420	NCP	%	73			30-130	Pass	
2.4.5-Trichlorophenol	M20-My31420	NCP	%	79			30-130	Pass	
2.4.6-Trichlorophenol	M20-My31420	NCP	%	73			30-130	Pass	
2.6-Dichlorophenol	M20-My31420	NCP	%	74			30-130	Pass	
4-Chloro-3-methylphenol	M20-My31420	NCP	%	81			30-130	Pass	
Pentachlorophenol	M20-My31420	NCP	%	76			30-130	Pass	
Tetrachlorophenols - Total	M20-My31420	NCP	%	70			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	M20-My31420	NCP	%	106			30-130	Pass	
2-Methyl-4.6-dinitrophenol	M20-My31420	NCP	%	89			30-130	Pass	
2-Methylphenol (o-Cresol)	M20-My31420	NCP	%	84			30-130	Pass	
2-Nitrophenol	M20-My31420	NCP	%	82			30-130	Pass	
2.4-Dimethylphenol	M20-My31420	NCP	%	125			30-130	Pass	
2.4-Dinitrophenol	M20-My31420	NCP	%	112			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M20-My31420	NCP	%	83			30-130	Pass	
4-Nitrophenol	M20-My31420	NCP	%	67			30-130	Pass	
Dinoseb	M20-My31420	NCP	%	92			30-130	Pass	
Phenol	M20-My31420	NCP	%	83			30-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-My31880	CP	%	88			70-130	Pass	
Toluene	M20-My31880	CP	%	87			70-130	Pass	
Ethylbenzene	M20-My31880	CP	%	102			70-130	Pass	
m&p-Xylenes	M20-My31880	CP	%	108			70-130	Pass	
o-Xylene	M20-My31880	CP	%	109			70-130	Pass	
Xylenes - Total*	M20-My31880	CP	%	108			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-My31880	CP	%	93			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	M20-My31880	CP	%	73			70-130	Pass	
1.1.1-Trichloroethane	M20-My31880	CP	%	83			70-130	Pass	
1.2-Dichlorobenzene	M20-My31880	CP	%	98			70-130	Pass	
1.2-Dichloroethane	M20-My31880	CP	%	84			70-130	Pass	
Trichloroethene	M20-My31880	CP	%	75			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M20-My31881	CP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M20-My31881	CP	%	101			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M20-My32403	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M20-My32403	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M20-My32403	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M20-My32403	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M20-My32403	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
o-Xylene	M20-My32403	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	M20-My32403	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-My32403	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M20-My32403	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M20-My31429	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-My31324	NCP	mg/kg	8.0	8.2	2.0	30%	Pass	
Cadmium	M20-My31324	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M20-My31324	NCP	mg/kg	50	50	<1	30%	Pass	
Copper	M20-My31324	NCP	mg/kg	13	13	<1	30%	Pass	
Lead	M20-My31324	NCP	mg/kg	9.6	9.7	1.0	30%	Pass	
Mercury	M20-My31324	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M20-My31324	NCP	mg/kg	28	28	1.0	30%	Pass	
Zinc	M20-My31324	NCP	mg/kg	26	25	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-My31862	NCP	%	25	25	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	M20-My32512	NCP	uS/cm	31	33	7.3	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Molybdenum	M20-My31324	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Selenium	M20-My31324	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M20-My31324	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tin	M20-My31324	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	M20-My33701	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Fluoride (Total)	M20-My27870	NCP	mg/kg	260	160	50	30%	Fail	Q15
pH (1:5 Aqueous extract at 25°C as rec.)	B20-My27651	NCP	pH Units	6.8	6.9	pass	30%	Pass	

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.2.4-Trichlorobenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorotoluene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromobenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Iodomethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	M20-My32259	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M20-My31579	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M20-My31579	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	M20-My31579	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	M20-My31579	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	M20-My31579	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	M20-My31579	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	M20-My31579	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	M20-My31579	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	M20-My31579	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	M20-My31579	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	M20-My31579	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	M20-My31579	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	M20-My31579	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
2-Nitrophenol	M20-My31579	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	M20-My31579	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	M20-My31579	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M20-My31579	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	M20-My31579	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	M20-My31579	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	M20-My31579	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M20-My31880	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M20-My31880	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M20-My31880	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M20-My31880	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M20-My31880	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M20-My31880	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Peter J Ramsay & Associates
222 Kings Way
South Melbourne
VIC 3205

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Roddy McQuade**

Report **721018-S**
Project name
Project ID 991.4
Received Date May 21, 2020

Client Sample ID			**991/GW01_0.0_0.1**	**991/SB01_0.0_0.1**	**991/SB02_0.4_0.5**	**991/SB03_0.4_0.5**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31819**	**M20-My31821**	**M20-My31822**	**M20-My31823**
Date Sampled			**May 19, 2020**	**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	290	-	-	-
% Moisture	1	%	19	17	8.5	7.0
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	27	-	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	380	< 50	< 50
TRH C29-C36	50	mg/kg	-	160	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	-	540	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	122	138	128
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	480	< 100	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	480	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	13	1.0	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	13	1.3	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	13	1.6	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	1.4	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	3.8	< 0.5	< 0.5

Client Sample ID			991/GW01_0.0_0.1	991/SB01_0.0_0.1	991/SB02_0.4_0.5	991/SB03_0.4_0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31819**	**M20-My31821**	**M20-My31822**	**M20-My31823**
Date Sampled			**May 19, 2020**	**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	8.5	0.6	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	9.0	0.8	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	6.0	0.6	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	4.7	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	6.9	0.8	< 0.5
Chrysene	0.5	mg/kg	-	8.7	0.7	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	1.2	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	20	1.0	< 0.5
Fluorene	0.5	mg/kg	-	0.8	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	3.8	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	14	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	19	1.1	< 0.5
Total PAH*	0.5	mg/kg	-	107.8	5.6	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	99	56	71
p-Terphenyl-d14 (surr.)	1	%	-	78	83	108
Heavy Metals						
Arsenic	2	mg/kg	-	16	13	2.5
Cadmium	0.4	mg/kg	-	0.5	< 0.4	< 0.4
Chromium	5	mg/kg	-	16	6.8	< 5
Copper	5	mg/kg	-	95	12	< 5
Lead	5	mg/kg	-	1500	120	21
Mercury	0.1	mg/kg	-	1.6	< 0.1	< 0.1
Nickel	5	mg/kg	-	16	< 5	< 5
Zinc	5	mg/kg	-	940	120	16

Client Sample ID			991/SB04_0.0_0.1	991/SB05_0.2_0.3	991/SB05_0.3_0.4	991/SB06_0.1_0.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31824**	**M20-My31825**	**M20-My31826**	**M20-My31827**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	82	-	-
% Moisture	1	%	14	12	9.3	13
Chromium (hexavalent)	1	mg/kg	-	-	< 1	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
Fluoride (Total)	100	mg/kg	-	-	< 100	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	8.9	-
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	31	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	130
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	89
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	219

Client Sample ID			991/SB04_0.0_0.1	991/SB05_0.2_0.3	991/SB05_0.3_0.4	991/SB06_0.1_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31824	M20-My31825	M20-My31826	M20-My31827
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	135	70	-	148
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	180
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	180
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	6.6
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	6.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	6.6
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.8
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.8
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	4.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.3
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.4
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	4.1
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.9
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.7
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	8.4
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.0
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.0
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	8.9
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	46.4
2-Fluorobiphenyl (surr.)	1	%	83	85	79	86
p-Terphenyl-d14 (surr.)	1	%	130	120	114	113
Heavy Metals						
Arsenic	2	mg/kg	5.5	< 2	2.2	8.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	23	8.7	11
Copper	5	mg/kg	19	33	14	39
Lead	5	mg/kg	23	< 5	63	530
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.5
Molybdenum	5	mg/kg	-	-	< 5	-
Nickel	5	mg/kg	31	110	34	19
Selenium	2	mg/kg	-	-	< 2	-

Client Sample ID			991/SB04_0.0_0.1	991/SB05_0.2_0.3	991/SB05_0.3_0.4	991/SB06_0.1_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31824	M20-My31825	M20-My31826	M20-My31827
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Silver	0.2	mg/kg	-	-	< 0.2	-
Tin	10	mg/kg	-	-	< 10	-
Zinc	5	mg/kg	81	60	48	320
Volatile Organics						
1.2.4-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	-
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	-	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	-	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	< 0.5	-
Allyl chloride	0.5	mg/kg	-	-	< 0.5	-
Benzene	0.1	mg/kg	-	-	< 0.1	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	0.5	mg/kg	-	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	0.5	mg/kg	-	-	< 0.5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	0.5	mg/kg	-	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dibromomethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
Iodomethane	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-

Client Sample ID			991/SB04_0.0_0.1	991/SB05_0.2_0.3	991/SB05_0.3_0.4	991/SB06_0.1_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31824	M20-My31825	M20-My31826	M20-My31827
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
Methylene Chloride	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	-	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	-	-	< 0.5	-
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3	-
Total MAH*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	-	-	69	-
Toluene-d8 (surr.)	1	%	-	-	89	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.05	mg/kg	-	-	< 0.05	-
Toxaphene	1	mg/kg	-	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	-	125	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	81	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	-	-	< 0.1	-

Client Sample ID			991/SB04_0.0_0.1	991/SB05_0.2_0.3	991/SB05_0.3_0.4	991/SB06_0.1_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31824	M20-My31825	M20-My31826	M20-My31827
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1248	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	-	-	< 0.1	-
Total PCB*	0.1	mg/kg	-	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	-	125	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	81	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2.4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2.4.5-Trichlorophenol	1	mg/kg	-	-	< 1	-
2.4.6-Trichlorophenol	1	mg/kg	-	-	< 1	-
2.6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	-	-	< 1	-
Pentachlorophenol	1	mg/kg	-	-	< 1	-
Tetrachlorophenols - Total	10	mg/kg	-	-	< 10	-
Total Halogenated Phenol*	1	mg/kg	-	-	< 1	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	-	< 20	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	< 5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	-
2-Nitrophenol	1.0	mg/kg	-	-	< 1	-
2.4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	-
2.4-Dinitrophenol	5	mg/kg	-	-	< 5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	-
4-Nitrophenol	5	mg/kg	-	-	< 5	-
Dinoseb	20	mg/kg	-	-	< 20	-
Phenol	0.5	mg/kg	-	-	< 0.5	-
Total Non-Halogenated Phenol*	20	mg/kg	-	-	< 20	-
Phenol-d6 (surr.)	1	%	-	-	68	-

Client Sample ID			991/SB07_0.1_0.2	991/SB07_0.4_0.5	991/SB08_0.0_0.1	991/SB08_1.3_1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31828	M20-My31829	M20-My31830	M20-My31831
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
% Moisture	1	%	4.7	6.5	11	18
Chromium (hexavalent)	1	mg/kg	< 1	-	< 1	-
Cyanide (total)	5	mg/kg	< 5	-	< 5	-
Fluoride (Total)	100	mg/kg	< 100	-	< 100	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	9.1	-	8.3	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	25	< 20
TRH C15-C28	50	mg/kg	< 50	120	88	< 50
TRH C29-C36	50	mg/kg	< 50	100	84	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	220	197	< 50

Client Sample ID			991/SB07_0.1_0.2	991/SB07_0.4_0.5	991/SB08_0.0_0.1	991/SB08_1.3_1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31828	M20-My31829	M20-My31830	M20-My31831
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	117	-	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	180	130	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	180	130	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	4.1	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	4.4	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	4.6	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	2.3	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	3.2	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	2.4	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	1.8	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	2.7	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	2.7	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	5.2	0.8	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	1.3	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	2.0	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	5.7	0.8	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	30.5	1.6	< 0.5
2-Fluorobiphenyl (surr.)	1	%	66	88	71	87
p-Terphenyl-d14 (surr.)	1	%	93	119	94	140
Heavy Metals						
Arsenic	2	mg/kg	< 2	17	10	4.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	32	20	11	28
Copper	5	mg/kg	29	54	17	< 5
Lead	5	mg/kg	< 5	770	98	9.4
Mercury	0.1	mg/kg	< 0.1	0.4	0.1	< 0.1
Molybdenum	5	mg/kg	< 5	-	< 5	-
Nickel	5	mg/kg	97	43	8.7	8.2
Selenium	2	mg/kg	< 2	-	< 2	-

Client Sample ID			991/SB07_0.1_0.2	991/SB07_0.4_0.5	991/SB08_0.0_0.1	991/SB08_1.3_1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31828	M20-My31829	M20-My31830	M20-My31831
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Silver	0.2	mg/kg	< 0.2	-	< 0.2	-
Tin	10	mg/kg	< 10	-	< 10	-
Zinc	5	mg/kg	59	470	120	14
Volatile Organics						
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	< 0.5	-
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	< 0.5	-
Allyl chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Bromobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromoform	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloroform	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibromomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Iodomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-

Client Sample ID			991/SB07_0.1_0.2	991/SB07_0.4_0.5	991/SB08_0.0_0.1	991/SB08_1.3_1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31828	M20-My31829	M20-My31830	M20-My31831
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
Methylene Chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Styrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	< 0.5	-
Trichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
Total MAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	55	-	67	-
Toluene-d8 (surr.)	1	%	72	-	88	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	78	-	115	-
Tetrachloro-m-xylene (surr.)	1	%	80	-	80	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-

Client Sample ID			991/SB07_0.1_0.2	991/SB07_0.4_0.5	991/SB08_0.0_0.1	991/SB08_1.3_1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31828	M20-My31829	M20-My31830	M20-My31831
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	78	-	115	-
Tetrachloro-m-xylene (surr.)	1	%	80	-	80	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	< 1	-
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	< 1	-
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	< 1	-
Pentachlorophenol	1	mg/kg	< 1	-	< 1	-
Tetrachlorophenols - Total	10	mg/kg	< 10	-	< 10	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	< 1	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	< 20	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	< 5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	< 0.2	-
2-Nitrophenol	1.0	mg/kg	< 1	-	< 1	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2.4-Dinitrophenol	5	mg/kg	< 5	-	< 5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	< 0.4	-
4-Nitrophenol	5	mg/kg	< 5	-	< 5	-
Dinoseb	20	mg/kg	< 20	-	< 20	-
Phenol	0.5	mg/kg	< 0.5	-	< 0.5	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	< 20	-
Phenol-d6 (surr.)	1	%	58	-	68	-

Client Sample ID			991/SB09_0.0_0.1	991/SB10_0.4_0.5	991/SB10_0.8_0.9	991/SB11_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31832	M20-My31833	M20-My31834	M20-My31835
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	100	-	-	-
% Moisture	1	%	12	9.4	11	18
Chromium (hexavalent)	1	mg/kg	-	< 1	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
Fluoride (Total)	100	mg/kg	-	< 100	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	8.6	-	-
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	29	-	-	-

Client Sample ID			991/SB09_0.0_0.1	991/SB10_0.4_0.5	991/SB10_0.8_0.9	991/SB11_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31832	M20-My31833	M20-My31834	M20-My31835
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	130	180	< 50	< 50
TRH C29-C36	50	mg/kg	110	170	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	240	350	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	63	-	64	67
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	190	290	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	190	290	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	4.6	2.4	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	4.6	2.7	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	4.6	3.0	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	0.8	0.8	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.4	1.7	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	3.1	1.9	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.3	1.6	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	1.6	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	2.8	1.9	< 0.5	< 0.5
Chrysene	0.5	mg/kg	2.6	1.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	5.1	4.2	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.3	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.7	3.1	< 0.5	< 0.5
Pyrene	0.5	mg/kg	5.6	3.8	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	30.4	20.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	73	89	62	66
p-Terphenyl-d14 (surr.)	1	%	100	78	130	92

Client Sample ID			991/SB09_0.0_0.1	991/SB10_0.4_0.5	991/SB10_0.8_0.9	991/SB11_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31832	M20-My31833	M20-My31834	M20-My31835
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	7.2	4.9	2.4	3.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	19	21	5.3	6.3
Copper	5	mg/kg	40	26	7.2	23
Lead	5	mg/kg	210	160	120	470
Mercury	0.1	mg/kg	0.3	0.5	< 0.1	0.2
Molybdenum	5	mg/kg	-	< 5	-	-
Nickel	5	mg/kg	22	13	< 5	< 5
Selenium	2	mg/kg	-	< 2	-	-
Silver	0.2	mg/kg	-	< 0.2	-	-
Tin	10	mg/kg	-	< 10	-	-
Zinc	5	mg/kg	210	200	170	190
Volatile Organics						
1.2.4-Trichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
Hexachlorobutadiene	0.5	mg/kg	-	< 0.5	-	-
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
2-Butanone (MEK)	0.5	mg/kg	-	< 0.5	-	-
2-Propanone (Acetone)	0.5	mg/kg	-	< 0.5	-	-
4-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	< 0.5	-	-
Allyl chloride	0.5	mg/kg	-	< 0.5	-	-
Benzene	0.1	mg/kg	-	< 0.1	-	-
Bromobenzene	0.5	mg/kg	-	< 0.5	-	-
Bromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromodichloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromoform	0.5	mg/kg	-	< 0.5	-	-
Bromomethane	0.5	mg/kg	-	< 0.5	-	-
Carbon disulfide	0.5	mg/kg	-	< 0.5	-	-
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5	-	-
Chlorobenzene	0.5	mg/kg	-	< 0.5	-	-
Chloroethane	0.5	mg/kg	-	< 0.5	-	-
Chloroform	0.5	mg/kg	-	< 0.5	-	-
Chloromethane	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID			991/SB09_0.0_0.1	991/SB10_0.4_0.5	991/SB10_0.8_0.9	991/SB11_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31832	M20-My31833	M20-My31834	M20-My31835
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Dibromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Dibromomethane	0.5	mg/kg	-	< 0.5	-	-
Dichlorodifluoromethane	0.5	mg/kg	-	< 0.5	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
Iodomethane	0.5	mg/kg	-	< 0.5	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
Methylene Chloride	0.5	mg/kg	-	< 0.5	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Styrene	0.5	mg/kg	-	< 0.5	-	-
Tetrachloroethene	0.5	mg/kg	-	< 0.5	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Trichloroethene	0.5	mg/kg	-	< 0.5	-	-
Trichlorofluoromethane	0.5	mg/kg	-	< 0.5	-	-
Vinyl chloride	0.5	mg/kg	-	< 0.5	-	-
Xylenes - Total*	0.3	mg/kg	-	< 0.3	-	-
Total MAH*	0.5	mg/kg	-	< 0.5	-	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	< 0.5	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	< 0.5	-	-
4-Bromofluorobenzene (surr.)	1	%	-	52	-	-
Toluene-d8 (surr.)	1	%	-	75	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.05	mg/kg	-	< 0.05	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-

Client Sample ID			991/SB09_0.0_0.1	991/SB10_0.4_0.5	991/SB10_0.8_0.9	991/SB11_0.0_0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31832	M20-My31833	M20-My31834	M20-My31835
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	99	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	82	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1242	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1248	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1254	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1260	0.1	mg/kg	-	< 0.1	-	-
Total PCB*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	99	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	82	-	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	< 0.5	-	-
2.4-Dichlorophenol	0.5	mg/kg	-	< 0.5	-	-
2.4.5-Trichlorophenol	1	mg/kg	-	< 1	-	-
2.4.6-Trichlorophenol	1	mg/kg	-	< 1	-	-
2.6-Dichlorophenol	0.5	mg/kg	-	< 0.5	-	-
4-Chloro-3-methylphenol	1	mg/kg	-	< 1	-	-
Pentachlorophenol	1	mg/kg	-	< 1	-	-
Tetrachlorophenols - Total	10	mg/kg	-	< 10	-	-
Total Halogenated Phenol*	1	mg/kg	-	< 1	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	< 20	-	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	< 5	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.2	-	-
2-Nitrophenol	1.0	mg/kg	-	< 1	-	-
2.4-Dimethylphenol	0.5	mg/kg	-	< 0.5	-	-
2.4-Dinitrophenol	5	mg/kg	-	< 5	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 0.4	-	-
4-Nitrophenol	5	mg/kg	-	< 5	-	-
Dinoseb	20	mg/kg	-	< 20	-	-
Phenol	0.5	mg/kg	-	< 0.5	-	-
Total Non-Halogenated Phenol*	20	mg/kg	-	< 20	-	-
Phenol-d6 (surr.)	1	%	-	118	-	-

Client Sample ID			991/SB12_0.0_0.1	991/SB12_0.6_0.7	991/DUP02	991/DUP03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-My31836	M20-My31837	M20-My31838	M20-My31839
Date Sampled			May 20, 2020	May 20, 2020	May 20, 2020	May 20, 2020
Test/Reference	LOR	Unit				
% Moisture	1	%	13	20	12	13
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	31	< 20
TRH C15-C28	50	mg/kg	140	< 50	160	< 50
TRH C29-C36	50	mg/kg	100	< 50	120	< 50
TRH C10-C36 (Total)	50	mg/kg	240	< 50	311	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	142	141	140	146
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	59	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	59	< 50
TRH >C16-C34	100	mg/kg	210	< 100	220	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	210	< 100	279	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	5.2	< 0.5	4.7	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	5.2	0.6	4.7	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	5.2	1.2	4.7	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	0.7	< 0.5	0.6	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.6	< 0.5	2.3	< 0.5
Benzo(a)pyrene	0.5	mg/kg	3.5	< 0.5	3.1	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.7	< 0.5	2.4	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	1.9	< 0.5	1.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	3.1	< 0.5	3.0	< 0.5
Chrysene	0.5	mg/kg	3.1	< 0.5	2.7	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	0.6	< 0.5	0.6	< 0.5
Fluoranthene	0.5	mg/kg	5.3	< 0.5	5.6	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.6	< 0.5	1.4	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.6	< 0.5	1.5	< 0.5
Pyrene	0.5	mg/kg	5.9	< 0.5	5.8	< 0.5
Total PAH*	0.5	mg/kg	32.6	< 0.5	30.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	70	83	92	97
p-Terphenyl-d14 (surr.)	1	%	115	131	115	126

Client Sample ID			991/SB12_0.0_0.1	991/SB12_0.6_0.7	991/DUP02	991/DUP03
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**M20-My31836**	**M20-My31837**	**M20-My31838**	**M20-My31839**
Date Sampled			**May 20, 2020**	**May 20, 2020**	**May 20, 2020**	**May 20, 2020**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	10	10	17	6.6
Cadmium	0.4	mg/kg	1.1	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	19	37	24	21
Copper	5	mg/kg	180	15	83	24
Lead	5	mg/kg	840	50	360	31
Mercury	0.1	mg/kg	0.7	0.1	0.2	< 0.1
Nickel	5	mg/kg	28	18	25	42
Zinc	5	mg/kg	970	62	270	93

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Conductivity (1:5 aqueous extract at 25°C as rec.)	Melbourne	May 22, 2020	7 Days
- Method: LTM-INO-4030 Conductivity			
Cation Exchange Capacity	Melbourne	May 25, 2020	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			
% Moisture	Melbourne	May 21, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Vic EPA IWRG 621 (Solids)			
Chromium (hexavalent)	Melbourne	May 21, 2020	28 Days
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	May 21, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride (Total)	Melbourne	May 22, 2020	28 Days
- Method: LTM-INO-4150 Determination of Total Fluoride PART B – ISE			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	May 21, 2020	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 22, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals IWRG 621 : Metals M12	Melbourne	May 21, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Volatile Organics	Melbourne	May 21, 2020	7 Days
- Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS			
Volatile Organics	Melbourne	May 21, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Organochlorine Pesticides	Melbourne	May 21, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	May 21, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	May 21, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	May 21, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Eurofins | mgt Suite B7			
BTEX	Melbourne	May 22, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	May 22, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Company Name: Peter J Ramsay & Associates
Address: 222 Kings Way
South Melbourne
VIC 3205

Project Name:
Project ID: 991.4

Order No.:
Report #: 721018
Phone: 9690 0522
Fax: 9690 0585

Received: May 21, 2020 3:22 PM
Due: May 25, 2020
Priority: 2 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						Asbestos - AS4964	HOLD	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X					
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	991/GW01_0.0_0.1	May 19, 2020		Soil	M20-My31819	X		X	X		
2	991/GW02_0.1_0.2	May 19, 2020		Soil	M20-My31820	X					
3	991/SB01_0.0_0.1	May 20, 2020		Soil	M20-My31821	X		X		X	
4	991/SB02_0.4_0.5	May 20, 2020		Soil	M20-My31822			X		X	
5	991/SB03_0.4_0.5	May 20, 2020		Soil	M20-My31823			X		X	
6	991/SB04_0.0_0.1	May 20, 2020		Soil	M20-My31824			X		X	

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Sample Detail						Asbestos - AS4964	HOLD	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X					
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
7	991/SB05_0.2_0.3	May 20, 2020		Soil	M20-My31825	X		X	X	X	
8	991/SB05_0.3_0.4	May 20, 2020		Soil	M20-My31826			X			X
9	991/SB06_0.1_0.2	May 20, 2020		Soil	M20-My31827			X		X	
10	991/SB07_0.1_0.2	May 20, 2020		Soil	M20-My31828			X			X
11	991/SB07_0.4_0.5	May 20, 2020		Soil	M20-My31829			X		X	
12	991/SB08_0.0_0.1	May 20, 2020		Soil	M20-My31830			X			X
13	991/SB08_1.3_1.4	May 20, 2020		Soil	M20-My31831			X		X	
14	991/SB09_0.0	May 20, 2020		Soil	M20-My31832			X	X	X	

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Sample Detail						Asbestos - AS4964	HOLD	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X					
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
	_0.1										
15	991/SB10_0.4_0.5	May 20, 2020		Soil	M20-My31833			X			X
16	991/SB10_0.8_0.9	May 20, 2020		Soil	M20-My31834			X		X	
17	991/SB11_0.0_0.1	May 20, 2020		Soil	M20-My31835	X		X		X	
18	991/SB12_0.0_0.1	May 20, 2020		Soil	M20-My31836	X		X		X	
19	991/SB12_0.6_0.7	May 20, 2020		Soil	M20-My31837			X		X	
20	991/DUP02	May 20, 2020		Soil	M20-My31838			X		X	
21	991/DUP03	May 20, 2020		Soil	M20-My31839			X		X	
22	991/SB06_0.3_0.4	May 20, 2020		Soil	M20-My31840		X				

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Fax: 9690 0585

Received: May 21, 2020 3:22 PM
Due: May 25, 2020
Priority: 2 Day
Contact Name: Roddy McQuade

Eurofins Analytical Services Manager : Michael Morrison

Sample Detail						Asbestos - AS4964	HOLD	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7	Vic EPA IWRG 621 (Solids)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X					
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
23	991/SB07_0.0_0.1	May 20, 2020		Soil	M20-My31841		X				
Test Counts						6	2	20	3	15	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Cyanide (total)	mg/kg	< 5			5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Molybdenum	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Tin	mg/kg	< 10			10	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Cyanide (total)	%	114			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	120			70-130	Pass	
TRH C10-C14	%	116			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	109			70-130	Pass	
Toluene	%	114			70-130	Pass	
Ethylbenzene	%	117			70-130	Pass	
m&p-Xylenes	%	115			70-130	Pass	
Xylenes - Total*	%	116			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	111			70-130	Pass	
TRH C6-C10	%	119			70-130	Pass	
TRH >C10-C16	%	108			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	119			70-130	Pass	
Acenaphthylene	%	128			70-130	Pass	
Anthracene	%	128			70-130	Pass	
Benz(a)anthracene	%	124			70-130	Pass	
Benzo(a)pyrene	%	123			70-130	Pass	
Benzo(b&j)fluoranthene	%	112			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene	%	98			70-130	Pass	
Benzo(k)fluoranthene	%	124			70-130	Pass	
Chrysene	%	116			70-130	Pass	
Dibenz(a.h)anthracene	%	94			70-130	Pass	
Fluoranthene	%	119			70-130	Pass	
Fluorene	%	129			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	94			70-130	Pass	
Naphthalene	%	110			70-130	Pass	
Phenanthrene	%	128			70-130	Pass	
Pyrene	%	123			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
Benzene	%	97			70-130	Pass	
Ethylbenzene	%	114			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
Toluene	%	100			70-130	Pass	
Xylenes - Total*	%	113			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	97			30-130	Pass	
2.4-Dichlorophenol	%	90			30-130	Pass	
2.4.5-Trichlorophenol	%	97			30-130	Pass	
2.4.6-Trichlorophenol	%	84			30-130	Pass	
2.6-Dichlorophenol	%	93			30-130	Pass	
4-Chloro-3-methylphenol	%	91			30-130	Pass	
Pentachlorophenol	%	55			30-130	Pass	
Tetrachlorophenols - Total	%	80			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	34			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	31			30-130	Pass	
2-Methylphenol (o-Cresol)	%	99			30-130	Pass	
2-Nitrophenol	%	78			30-130	Pass	
2.4-Dimethylphenol	%	94			30-130	Pass	
2.4-Dinitrophenol	%	30			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	103			30-130	Pass	
4-Nitrophenol	%	54			30-130	Pass	
Dinoseb	%	37			30-130	Pass	
Phenol	%	93			30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M20-My31826	CP	%	101			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M20-My31828	CP	%	96			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-My31828	CP	%	112			70-130	Pass	
Toluene	M20-My31828	CP	%	111			70-130	Pass	
Ethylbenzene	M20-My31828	CP	%	96			70-130	Pass	
m&p-Xylenes	M20-My31828	CP	%	95			70-130	Pass	
o-Xylene	M20-My31828	CP	%	102			70-130	Pass	
Xylenes - Total*	M20-My31828	CP	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-My31828	CP	%	104			70-130	Pass	
TRH >C10-C16	M20-My31828	CP	%	92			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	M20-My31828	CP	%	89			70-130	Pass	
1.1.1-Trichloroethane	M20-My31828	CP	%	91			70-130	Pass	
1.2-Dichlorobenzene	M20-My31828	CP	%	100			70-130	Pass	
1.2-Dichloroethane	M20-My31828	CP	%	127			70-130	Pass	
Trichloroethene	M20-My31828	CP	%	105			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M20-My31838	CP	%	105			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M20-My31838	CP	%	106			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M20-My31839	CP	%	105			70-130	Pass	
Acenaphthylene	M20-My31839	CP	%	111			70-130	Pass	
Anthracene	M20-My31839	CP	%	127			70-130	Pass	
Benz(a)anthracene	M20-My31839	CP	%	106			70-130	Pass	
Benzo(a)pyrene	M20-My31839	CP	%	103			70-130	Pass	
Benzo(b&j)fluoranthene	M20-My31839	CP	%	116			70-130	Pass	
Benzo(g.h.i)perylene	M20-My31839	CP	%	75			70-130	Pass	
Benzo(k)fluoranthene	M20-My31839	CP	%	109			70-130	Pass	
Chrysene	M20-My31839	CP	%	115			70-130	Pass	
Dibenz(a.h)anthracene	M20-My31839	CP	%	72			70-130	Pass	
Fluoranthene	M20-My31839	CP	%	130			70-130	Pass	
Fluorene	M20-My31839	CP	%	114			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M20-My31839	CP	%	72			70-130	Pass	
Naphthalene	M20-My31839	CP	%	115			70-130	Pass	
Phenanthrene	M20-My31839	CP	%	114			70-130	Pass	
Pyrene	M20-My31839	CP	%	130			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M20-My31839	CP	%	80			30-130	Pass	
2.4-Dichlorophenol	M20-My31839	CP	%	71			30-130	Pass	
2.4.5-Trichlorophenol	M20-My31839	CP	%	77			30-130	Pass	
2.4.6-Trichlorophenol	M20-My31839	CP	%	63			30-130	Pass	
2.6-Dichlorophenol	M20-My31839	CP	%	75			30-130	Pass	
4-Chloro-3-methylphenol	M20-My31839	CP	%	74			30-130	Pass	
Pentachlorophenol	M20-My31839	CP	%	33			30-130	Pass	
Tetrachlorophenols - Total	M20-My31839	CP	%	41			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	M20-My31839	CP	%	35			30-130	Pass	
2-Methyl-4.6-dinitrophenol	M20-My31839	CP	%	31			30-130	Pass	
2-Methylphenol (o-Cresol)	M20-My31839	CP	%	81			30-130	Pass	
2-Nitrophenol	M20-My31839	CP	%	58			30-130	Pass	
2.4-Dimethylphenol	M20-My31839	CP	%	84			30-130	Pass	
2.4-Dinitrophenol	M20-My31839	CP	%	31			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M20-My31839	CP	%	87			30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4-Nitrophenol	M20-My31839	CP	%	46			30-130	Pass	
Dinoseb	M20-My31839	CP	%	37			30-130	Pass	
Phenol	M20-My31839	CP	%	76			30-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M20-My27755	NCP	mg/kg	0.7	0.5	29	30%	Pass	
Benzo(b&j)fluoranthene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M20-My27755	NCP	mg/kg	0.6	< 0.5	38	30%	Fail	Q15
Chrysene	M20-My27755	NCP	mg/kg	0.6	< 0.5	30	30%	Pass	
Dibenz(a.h)anthracene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M20-My27755	NCP	mg/kg	1.5	1.4	3.0	30%	Pass	
Fluorene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M20-My27755	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M20-My27755	NCP	mg/kg	1.7	1.6	7.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M20-My31823	CP	%	7.0	7.0	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	M20-My29676	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Fluoride (Total)	M20-My23355	NCP	mg/kg	270	410	43	30%	Fail	Q15
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.2.4-Trichlorobenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorotoluene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
4-Methyl-2-pentanone (MIBK)	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromobenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Iodomethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	M20-My32632	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M20-My31191	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M20-My31191	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	M20-My31191	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	M20-My31191	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	M20-My31191	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	M20-My31191	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	M20-My31191	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	M20-My31191	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	M20-My31191	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	M20-My31191	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	M20-My31191	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	M20-My31191	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	M20-My31191	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
2-Nitrophenol	M20-My31191	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	M20-My31191	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	M20-My31191	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M20-My31191	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	M20-My31191	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	M20-My31191	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	M20-My31191	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M20-My31827	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M20-My31827	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M20-My31827	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M20-My31827	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M20-My31827	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M20-My31827	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	M20-My31827	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-My31827	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M20-My31827	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-My31832	CP	mg/kg	7.2	7.9	10	30%	Pass	
Cadmium	M20-My31832	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M20-My31832	CP	mg/kg	19	22	18	30%	Pass	
Copper	M20-My31832	CP	mg/kg	40	41	2.0	30%	Pass	
Lead	M20-My31832	CP	mg/kg	210	180	14	30%	Pass	
Mercury	M20-My31832	CP	mg/kg	0.3	0.3	1.0	30%	Pass	
Molybdenum	M20-My31832	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Nickel	M20-My31832	CP	mg/kg	22	25	14	30%	Pass	
Selenium	M20-My31832	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M20-My31832	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tin	M20-My31832	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	M20-My31832	CP	mg/kg	210	180	17	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	M20-My31833	CP	uS/cm	150	160	4.1	30%	Pass	
% Moisture	M20-My31833	CP	%	9.4	12	22	30%	Pass	
Chromium (hexavalent)	M20-My31833	CP	mg/kg	< 1	< 1	<1	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	M20-My31833	CP	pH Units	8.6	8.6	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-My31833	CP	mg/kg	4.9	5.0	3.0	30%	Pass	
Cadmium	M20-My31833	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M20-My31833	CP	mg/kg	21	21	1.0	30%	Pass	
Copper	M20-My31833	CP	mg/kg	26	26	<1	30%	Pass	
Lead	M20-My31833	CP	mg/kg	160	160	<1	30%	Pass	
Mercury	M20-My31833	CP	mg/kg	0.5	0.5	3.0	30%	Pass	
Molybdenum	M20-My31833	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Nickel	M20-My31833	CP	mg/kg	13	13	2.0	30%	Pass	
Selenium	M20-My31833	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M20-My31833	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tin	M20-My31833	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	M20-My31833	CP	mg/kg	200	200	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M20-My31837	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M20-My31837	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M20-My31837	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M20-My31837	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M20-My31837	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M20-My31837	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Michael Morrison	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Appendix O

ProUCL Output Sheets

1	UCL Statistics for Data Sets with Non-Detects												
2													
3	User Selected Options												
4	Date/Time of Computation			ProUCL 5.11/06/2020 11:53:25 AM									
5	From File			WorkSheet.xls									
6	Full Precision			OFF									
7	Confidence Coefficient			95%									
8	Number of Bootstrap Operations			2000									
9													
10	Zinc												
11													
12	General Statistics												
13	Total Number of Observations					11	Number of Distinct Observations					11	
14	Number of Detects					10	Number of Non-Detects					1	
15	Number of Distinct Detects					10	Number of Distinct Non-Detects					1	
16	Minimum Detect					81	Minimum Non-Detect					5	
17	Maximum Detect					970	Maximum Non-Detect					5	
18	Variance Detects					96799	Percent Non-Detects					9.09%	
19	Mean Detects					366	SD Detects					311.1	
20	Median Detects					277	CV Detects					0.85	
21	Skewness Detects					1.203	Kurtosis Detects					0.345	
22	Mean of Logged Detects					5.575	SD of Logged Detects					0.868	
23													
24	Normal GOF Test on Detects Only												
25	Shapiro Wilk Test Statistic					0.839	Shapiro Wilk GOF Test						
26	5% Shapiro Wilk Critical Value					0.842	Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic					0.228	Lilliefors GOF Test						
28	5% Lilliefors Critical Value					0.262	Detected Data appear Normal at 5% Significance Level						
29	Detected Data appear Approximate Normal at 5% Significance Level												
30													
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs												
32	KM Mean					333.2	KM Standard Error of Mean					95.33	
33	KM SD					299.9	95% KM (BCA) UCL					489.1	
34	95% KM (t) UCL					506	95% KM (Percentile Bootstrap) UCL					501.8	
35	95% KM (z) UCL					490	95% KM Bootstrap t UCL					630.5	
36	90% KM Chebyshev UCL					619.2	95% KM Chebyshev UCL					748.7	
37	97.5% KM Chebyshev UCL					928.5	99% KM Chebyshev UCL					1282	
38													
39	Gamma GOF Tests on Detected Observations Only												
40	A-D Test Statistic					0.3	Anderson-Darling GOF Test						
41	5% A-D Critical Value					0.738	Detected data appear Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic					0.138	Kolmogorov-Smirnov GOF						
43	5% K-S Critical Value					0.271	Detected data appear Gamma Distributed at 5% Significance Level						
44	Detected data appear Gamma Distributed at 5% Significance Level												
45													
46	Gamma Statistics on Detected Data Only												
47	k hat (MLE)					1.674	k star (bias corrected MLE)					1.239	
48	Theta hat (MLE)					218.6	Theta star (bias corrected MLE)					295.5	
49	nu hat (MLE)					33.48	nu star (bias corrected)					24.77	
50	Mean (detects)					366							
51													
52	Gamma ROS Statistics using Imputed Non-Detects												
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs												
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)												
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs												
56	This is especially true when the sample size is small.												
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates												

	A	B	C	D	E	F	G	H	I	J	K	L	M
58	Minimum					0.01	Mean					332.7	
59	Maximum					970	Median					231	
60	SD					315.1	CV					0.947	
61	k hat (MLE)					0.542	k star (bias corrected MLE)					0.455	
62	Theta hat (MLE)					614	Theta star (bias corrected MLE)					731.7	
63	nu hat (MLE)					11.92	nu star (bias corrected)					10	
64	Adjusted Level of Significance (β)					0.0278							
65	Approximate Chi Square Value (10.00, α)					3.944	Adjusted Chi Square Value (10.00, β)					3.347	
66	95% Gamma Approximate UCL (use when n>=50)					843.9	95% Gamma Adjusted UCL (use when n<50)					994.4	
67													
68	Estimates of Gamma Parameters using KM Estimates												
69	Mean (KM)					333.2	SD (KM)					299.9	
70	Variance (KM)					89969	SE of Mean (KM)					95.33	
71	k hat (KM)					1.234	k star (KM)					0.958	
72	nu hat (KM)					27.15	nu star (KM)					21.08	
73	theta hat (KM)					270	theta star (KM)					347.8	
74	80% gamma percentile (KM)					538.1	90% gamma percentile (KM)					775.3	
75	95% gamma percentile (KM)					1013	99% gamma percentile (KM)					1568	
76													
77	Gamma Kaplan-Meier (KM) Statistics												
78	Approximate Chi Square Value (21.08, α)					11.65	Adjusted Chi Square Value (21.08, β)					10.52	
79	95% Gamma Approximate KM-UCL (use when n>=50)					602.9	95% Gamma Adjusted KM-UCL (use when n<50)					667.4	
80													
81	Lognormal GOF Test on Detected Observations Only												
82	Shapiro Wilk Test Statistic					0.949	Shapiro Wilk GOF Test						
83	5% Shapiro Wilk Critical Value					0.842	Detected Data appear Lognormal at 5% Significance Level						
84	Lilliefors Test Statistic					0.133	Lilliefors GOF Test						
85	5% Lilliefors Critical Value					0.262	Detected Data appear Lognormal at 5% Significance Level						
86	Detected Data appear Lognormal at 5% Significance Level												
87													
88	Lognormal ROS Statistics Using Imputed Non-Detects												
89	Mean in Original Scale					335.5	Mean in Log Scale					5.38	
90	SD in Original Scale					312	SD in Log Scale					1.048	
91	95% t UCL (assumes normality of ROS data)					506	95% Percentile Bootstrap UCL					488.7	
92	95% BCA Bootstrap UCL					523.7	95% Bootstrap t UCL					625.6	
93	95% H-UCL (Log ROS)					1045							
94													
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
96	KM Mean (logged)					5.215	KM Geo Mean					183.9	
97	KM SD (logged)					1.384	95% Critical H Value (KM-Log)					3.782	
98	KM Standard Error of Mean (logged)					0.44	95% H-UCL (KM -Log)					2510	
99	KM SD (logged)					1.384	95% Critical H Value (KM-Log)					3.782	
100	KM Standard Error of Mean (logged)					0.44							
101													
102	DL/2 Statistics												
103	DL/2 Normal						DL/2 Log-Transformed						
104	Mean in Original Scale					333	Mean in Log Scale					5.152	
105	SD in Original Scale					314.9	SD in Log Scale					1.628	
106	95% t UCL (Assumes normality)					505	95% H-Stat UCL					5994	
107	DL/2 is not a recommended method, provided for comparisons and historical reasons												
108													
109	Nonparametric Distribution Free UCL Statistics												
110	Detected Data appear Approximate Normal Distributed at 5% Significance Level												
111													
112	Suggested UCL to Use												
113	95% KM (t) UCL					506							
114													
115	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test												
116	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL												

	A	B	C	D	E	F	G	H	I	J	K	L	M
117													
118	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
119	Recommendations are based upon data size, data distribution, and skewness.												
120	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).												
121	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.11/06/2020 11:54:07 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	PAH EPA											
11												
12	General Statistics											
13	Total Number of Observations					10	Number of Distinct Observations					8
14	Number of Detects					7	Number of Non-Detects					3
15	Number of Distinct Detects					6	Number of Distinct Non-Detects					2
16	Minimum Detect					8.35	Minimum Non-Detect					7.5
17	Maximum Detect					76.85	Maximum Non-Detect					8
18	Variance Detects					570.2	Percent Non-Detects					30.00%
19	Mean Detects					25.28	SD Detects					23.88
20	Median Detects					15.1	CV Detects					0.945
21	Skewness Detects					2.181	Kurtosis Detects					4.964
22	Mean of Logged Detects					2.957	SD of Logged Detects					0.739
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.713	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.803	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.307	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.304	Detected Data Not Normal at 5% Significance Level					
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					19.95	KM Standard Error of Mean					6.904
33	KM SD					20.21	95% KM (BCA) UCL					32.1
34	95% KM (t) UCL					32.6	95% KM (Percentile Bootstrap) UCL					31.02
35	95% KM (z) UCL					31.3	95% KM Bootstrap t UCL					58.86
36	90% KM Chebyshev UCL					40.66	95% KM Chebyshev UCL					50.04
37	97.5% KM Chebyshev UCL					63.06	99% KM Chebyshev UCL					88.64
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.536	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.715	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.252	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.315	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					1.982	k star (bias corrected MLE)					1.228
48	Theta hat (MLE)					12.76	Theta star (bias corrected MLE)					20.59
49	nu hat (MLE)					27.74	nu star (bias corrected)					17.19
50	Mean (detects)					25.28						
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
58	Minimum					0.01	Mean					17.7
59	Maximum					76.85	Median					13.03
60	SD					23	CV					1.3
61	k hat (MLE)					0.313	k star (bias corrected MLE)					0.286
62	Theta hat (MLE)					56.48	Theta star (bias corrected MLE)					61.88
63	nu hat (MLE)					6.267	nu star (bias corrected)					5.72
64	Adjusted Level of Significance (β)					0.0267						
65	Approximate Chi Square Value (5.72, α)					1.498	Adjusted Chi Square Value (5.72, β)					1.157
66	95% Gamma Approximate UCL (use when n>=50)					67.56	95% Gamma Adjusted UCL (use when n<50)					87.52
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					19.95	SD (KM)					20.21
70	Variance (KM)					408.5	SE of Mean (KM)					6.904
71	k hat (KM)					0.974	k star (KM)					0.748
72	nu hat (KM)					19.48	nu star (KM)					14.97
73	theta hat (KM)					20.48	theta star (KM)					26.65
74	80% gamma percentile (KM)					32.7	90% gamma percentile (KM)					49.28
75	95% gamma percentile (KM)					66.27	99% gamma percentile (KM)					106.6
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (14.97, α)					7.238	Adjusted Chi Square Value (14.97, β)					6.327
79	95% Gamma Approximate KM-UCL (use when n>=50)					41.24	95% Gamma Adjusted KM-UCL (use when n<50)					47.18
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.919	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.803	Detected Data appear Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.201	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.304	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					18.6	Mean in Log Scale					2.395
90	SD in Original Scale					22.27	SD in Log Scale					1.095
91	95% t UCL (assumes normality of ROS data)					31.51	95% Percentile Bootstrap UCL					31.63
92	95% BCA Bootstrap UCL					37.16	95% Bootstrap t UCL					50.13
93	95% H-UCL (Log ROS)					66.62						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					2.674	KM Geo Mean					14.5
97	KM SD (logged)					0.717	95% Critical H Value (KM-Log)					2.561
98	KM Standard Error of Mean (logged)					0.245	95% H-UCL (KM -Log)					34.57
99	KM SD (logged)					0.717	95% Critical H Value (KM-Log)					2.561
100	KM Standard Error of Mean (logged)					0.245						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					18.85	Mean in Log Scale					2.473
105	SD in Original Scale					22.08	SD in Log Scale					0.986
106	95% t UCL (Assumes normality)					31.64	95% H-Stat UCL					52.91
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Gamma Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM Adjusted Gamma UCL					47.18	95% GROS Adjusted Gamma UCL					87.52
114	Warning: Recommended UCL exceeds the maximum observation											

	A	B	C	D	E	F	G	H	I	J	K	L
115												
116	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
117	Recommendations are based upon data size, data distribution, and skewness.											
118	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
119	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.11/06/2020 11:52:39 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Lead											
11												
12	General Statistics											
13	Total Number of Observations					11	Number of Distinct Observations					11
14	Number of Detects					10	Number of Non-Detects					1
15	Number of Distinct Detects					10	Number of Distinct Non-Detects					1
16	Minimum Detect					23	Minimum Non-Detect					5
17	Maximum Detect					1180	Maximum Non-Detect					5
18	Variance Detects					128130	Percent Non-Detects					9.09%
19	Mean Detects					510.1	SD Detects					358
20	Median Detects					465.5	CV Detects					0.702
21	Skewness Detects					0.443	Kurtosis Detects					-0.235
22	Mean of Logged Detects					5.836	SD of Logged Detects					1.173
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.967	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.842	Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.145	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.262	Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					464.2	KM Standard Error of Mean					112.8
33	KM SD					354.8	95% KM (BCA) UCL					637.6
34	95% KM (t) UCL					668.6	95% KM (Percentile Bootstrap) UCL					647
35	95% KM (z) UCL					649.7	95% KM Bootstrap t UCL					699
36	90% KM Chebyshev UCL					802.5	95% KM Chebyshev UCL					955.8
37	97.5% KM Chebyshev UCL					1168	99% KM Chebyshev UCL					1586
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.335	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.741	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.211	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.272	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					1.398	k star (bias corrected MLE)					1.046
48	Theta hat (MLE)					364.8	Theta star (bias corrected MLE)					487.9
49	nu hat (MLE)					27.97	nu star (bias corrected)					20.91
50	Mean (detects)					510.1						
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
58	Minimum					4.33	Mean					464.1
59	Maximum					1180	Median					461
60	SD					372.3	CV					0.802
61	k hat (MLE)					0.841	k star (bias corrected MLE)					0.672
62	Theta hat (MLE)					551.9	Theta star (bias corrected MLE)					690.5
63	nu hat (MLE)					18.5	nu star (bias corrected)					14.79
64	Adjusted Level of Significance (β)					0.0278						
65	Approximate Chi Square Value (14.79, α)					7.114	Adjusted Chi Square Value (14.79, β)					6.266
66	95% Gamma Approximate UCL (use when n>=50)					964.7	95% Gamma Adjusted UCL (use when n<50)					1095
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					464.2	SD (KM)					354.8
70	Variance (KM)					125918	SE of Mean (KM)					112.8
71	k hat (KM)					1.711	k star (KM)					1.305
72	nu hat (KM)					37.65	nu star (KM)					28.71
73	theta hat (KM)					271.3	theta star (KM)					355.7
74	80% gamma percentile (KM)					728.9	90% gamma percentile (KM)					1001
75	95% gamma percentile (KM)					1267	99% gamma percentile (KM)					1875
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (28.71, α)					17.48	Adjusted Chi Square Value (28.71, β)					16.07
79	95% Gamma Approximate KM-UCL (use when n>=50)					762.3	95% Gamma Adjusted KM-UCL (use when n<50)					829.4
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.86	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.842	Detected Data appear Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.257	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.262	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					466	Mean in Log Scale					5.598
90	SD in Original Scale					369.7	SD in Log Scale					1.364
91	95% t UCL (assumes normality of ROS data)					668.1	95% Percentile Bootstrap UCL					639.3
92	95% BCA Bootstrap UCL					649.7	95% Bootstrap t UCL					697.7
93	95% H-UCL (Log ROS)					3437						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					5.452	KM Geo Mean					233.2
97	KM SD (logged)					1.613	95% Critical H Value (KM-Log)					4.281
98	KM Standard Error of Mean (logged)					0.513	95% H-UCL (KM -Log)					7604
99	KM SD (logged)					1.613	95% Critical H Value (KM-Log)					4.281
100	KM Standard Error of Mean (logged)					0.513						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					464	Mean in Log Scale					5.389
105	SD in Original Scale					372.5	SD in Log Scale					1.854
106	95% t UCL (Assumes normality)					667.5	95% H-Stat UCL					20651
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Normal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					668.6						
114												

	A	B	C	D	E	F	G	H	I	J	K	L
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.11/06/2020 11:51:33 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Copper											
11												
12	General Statistics											
13	Total Number of Observations					11	Number of Distinct Observations					9
14	Number of Detects					10	Number of Non-Detects					1
15	Number of Distinct Detects					8	Number of Distinct Non-Detects					1
16	Minimum Detect					12	Minimum Non-Detect					5
17	Maximum Detect					180	Maximum Non-Detect					5
18	Variance Detects					3329	Percent Non-Detects					9.09%
19	Mean Detects					62.6	SD Detects					57.7
20	Median Detects					42.5	CV Detects					0.922
21	Skewness Detects					1.347	Kurtosis Detects					0.775
22	Mean of Logged Detects					3.77	SD of Logged Detects					0.903
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.804	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.842	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.263	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.262	Detected Data Not Normal at 5% Significance Level					
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					57.36	KM Standard Error of Mean					17.4
33	KM SD					54.75	95% KM (BCA) UCL					86.91
34	95% KM (t) UCL					88.9	95% KM (Percentile Bootstrap) UCL					85.91
35	95% KM (z) UCL					85.99	95% KM Bootstrap t UCL					117.4
36	90% KM Chebyshev UCL					109.6	95% KM Chebyshev UCL					133.2
37	97.5% KM Chebyshev UCL					166	99% KM Chebyshev UCL					230.5
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.468	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.739	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.221	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.271	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					1.51	k star (bias corrected MLE)					1.124
48	Theta hat (MLE)					41.45	Theta star (bias corrected MLE)					55.71
49	nu hat (MLE)					30.2	nu star (bias corrected)					22.47
50	Mean (detects)					62.6						
51												

	A	B	C	D	E	F	G	H	I	J	K	L
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58	Minimum					0.01	Mean					56.91
59	Maximum					180	Median					28
60	SD					57.9	CV					1.017
61	k hat (MLE)					0.599	k star (bias corrected MLE)					0.496
62	Theta hat (MLE)					95.06	Theta star (bias corrected MLE)					114.7
63	nu hat (MLE)					13.17	nu star (bias corrected)					10.91
64	Adjusted Level of Significance (β)					0.0278						
65	Approximate Chi Square Value (10.91, α)					4.52	Adjusted Chi Square Value (10.91, β)					3.871
66	95% Gamma Approximate UCL (use when n>=50)					137.4	95% Gamma Adjusted UCL (use when n<50)					160.4
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					57.36	SD (KM)					54.75
70	Variance (KM)					2998	SE of Mean (KM)					17.4
71	k hat (KM)					1.098	k star (KM)					0.859
72	nu hat (KM)					24.15	nu star (KM)					18.9
73	theta hat (KM)					52.26	theta star (KM)					66.79
74	80% gamma percentile (KM)					93.35	90% gamma percentile (KM)					137.1
75	95% gamma percentile (KM)					181.4	99% gamma percentile (KM)					285.4
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (18.90, α)					10.04	Adjusted Chi Square Value (18.90, β)					9.006
79	95% Gamma Approximate KM-UCL (use when n>=50)					107.9	95% Gamma Adjusted KM-UCL (use when n<50)					120.4
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.937	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.842	Detected Data appear Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.186	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.262	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					57.34	Mean in Log Scale					3.569
90	SD in Original Scale					57.45	SD in Log Scale					1.086
91	95% t UCL (assumes normality of ROS data)					88.73	95% Percentile Bootstrap UCL					87.09
92	95% BCA Bootstrap UCL					89.5	95% Bootstrap t UCL					114
93	95% H-UCL (Log ROS)					189.8						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					3.574	KM Geo Mean					35.66
97	KM SD (logged)					1.026	95% Critical H Value (KM-Log)					3.049
98	KM Standard Error of Mean (logged)					0.326	95% H-UCL (KM -Log)					162.4
99	KM SD (logged)					1.026	95% Critical H Value (KM-Log)					3.049
100	KM Standard Error of Mean (logged)					0.326						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					57.14	Mean in Log Scale					3.511
105	SD in Original Scale					57.66	SD in Log Scale					1.214
106	95% t UCL (Assumes normality)					88.64	95% H-Stat UCL					260.8
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											

	A	B	C	D	E	F	G	H	I	J	K	L
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Gamma Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM Adjusted Gamma UCL					120.4	95% GROS Adjusted Gamma UCL					160.4
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.11/06/2020 11:50:19 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	BaP											
11												
12	General Statistics											
13	Total Number of Observations					11	Number of Distinct Observations					9
14	Number of Detects					8	Number of Non-Detects					3
15	Number of Distinct Detects					8	Number of Distinct Non-Detects					1
16	Minimum Detect					0.6	Minimum Non-Detect					0.5
17	Maximum Detect					7.4	Maximum Non-Detect					0.5
18	Variance Detects					5.181	Percent Non-Detects					27.27%
19	Mean Detects					2.313	SD Detects					2.276
20	Median Detects					1.4	CV Detects					0.984
21	Skewness Detects					1.943	Kurtosis Detects					3.934
22	Mean of Logged Detects					0.496	SD of Logged Detects					0.851
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.767	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.818	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.264	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.283	Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Approximate Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					1.818	KM Standard Error of Mean					0.641
33	KM SD					1.987	95% KM (BCA) UCL					2.9
34	95% KM (t) UCL					2.979	95% KM (Percentile Bootstrap) UCL					2.918
35	95% KM (z) UCL					2.872	95% KM Bootstrap t UCL					4.699
36	90% KM Chebyshev UCL					3.74	95% KM Chebyshev UCL					4.61
37	97.5% KM Chebyshev UCL					5.818	99% KM Chebyshev UCL					8.191
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.369	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.727	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.219	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.299	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					1.609	k star (bias corrected MLE)					1.089
48	Theta hat (MLE)					1.438	Theta star (bias corrected MLE)					2.124
49	nu hat (MLE)					25.74	nu star (bias corrected)					17.42
50	Mean (detects)					2.313						
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											

	A	B	C	D	E	F	G	H	I	J	K	L
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58	Minimum					0.01	Mean					1.685
59	Maximum					7.4	Median					1
60	SD					2.187	CV					1.298
61	k hat (MLE)					0.455	k star (bias corrected MLE)					0.392
62	Theta hat (MLE)					3.702	Theta star (bias corrected MLE)					4.302
63	nu hat (MLE)					10.01	nu star (bias corrected)					8.615
64	Adjusted Level of Significance (β)					0.0278						
65	Approximate Chi Square Value (8.61, α)					3.096	Adjusted Chi Square Value (8.61, β)					2.582
66	95% Gamma Approximate UCL (use when n>=50)					4.687	95% Gamma Adjusted UCL (use when n<50)					5.621
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					1.818	SD (KM)					1.987
70	Variance (KM)					3.949	SE of Mean (KM)					0.641
71	k hat (KM)					0.837	k star (KM)					0.669
72	nu hat (KM)					18.42	nu star (KM)					14.73
73	theta hat (KM)					2.172	theta star (KM)					2.716
74	80% gamma percentile (KM)					2.993	90% gamma percentile (KM)					4.612
75	95% gamma percentile (KM)					6.289	99% gamma percentile (KM)					10.31
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (14.73, α)					7.073	Adjusted Chi Square Value (14.73, β)					6.228
79	95% Gamma Approximate KM-UCL (use when n>=50)					3.786	95% Gamma Adjusted KM-UCL (use when n<50)					4.3
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.953	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.818	Detected Data appear Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.168	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.283	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					1.736	Mean in Log Scale					-0.0997
90	SD in Original Scale					2.146	SD in Log Scale					1.262
91	95% t UCL (assumes normality of ROS data)					2.908	95% Percentile Bootstrap UCL					2.791
92	95% BCA Bootstrap UCL					3.254	95% Bootstrap t UCL					4.499
93	95% H-UCL (Log ROS)					8.198						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					0.172	KM Geo Mean					1.188
97	KM SD (logged)					0.861	95% Critical H Value (KM-Log)					2.739
98	KM Standard Error of Mean (logged)					0.277	95% H-UCL (KM -Log)					3.626
99	KM SD (logged)					0.861	95% Critical H Value (KM-Log)					2.739
100	KM Standard Error of Mean (logged)					0.277						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					1.75	Mean in Log Scale					-0.0171
105	SD in Original Scale					2.134	SD in Log Scale					1.131
106	95% t UCL (Assumes normality)					2.916	95% H-Stat UCL					5.975
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Approximate Normal Distributed at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					2.979						
114												
115	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
116	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
117												
118	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
119	Recommendations are based upon data size, data distribution, and skewness.											
120	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
121	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.12/06/2020 11:35:14 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Zinc											
12												
13	General Statistics											
14	Total Number of Observations					15	Number of Distinct Observations					14
15							Number of Missing Observations					0
16	Minimum					40	Mean					279.6
17	Maximum					1500	Median					60
18	SD					386.4	Std. Error of Mean					9976.00%
19	Coefficient of Variation					1.382	Skewness					2.528
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic					0.665	Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value					0.881	Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic					0.268	Lilliefors GOF Test					
25	5% Lilliefors Critical Value					0.22	Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL					455.3	95% Adjusted-CLT UCL (Chen-1995)					513.3
31							95% Modified-t UCL (Johnson-1978)					466.2
32												
33	Gamma GOF Test											
34	A-D Test Statistic					1.059	Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value					0.772	Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.295	Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value					0.23	Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)					0.817	k star (bias corrected MLE)					0.698
42	Theta hat (MLE)					342.1	Theta star (bias corrected MLE)					400.4
43	nu hat (MLE)					24.52	nu star (bias corrected)					20.95
44	MLE Mean (bias corrected)					279.6	MLE Sd (bias corrected)					334.6
45							Approximate Chi Square Value (0.05)					11.55
46	Adjusted Level of Significance					0.0324	Adjusted Chi Square Value					10.7
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))					507	95% Adjusted Gamma UCL (use when n<50)					547.3
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.85	Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value					0.881	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.28	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.22	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					3.689	Mean of logged Data					4.909
60	Maximum of Logged Data					7.313	SD of logged Data					1.227
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					802	90% Chebyshev (MVUE) UCL					549.4
64	95% Chebyshev (MVUE) UCL					677.6	97.5% Chebyshev (MVUE) UCL					855.6
65	99% Chebyshev (MVUE) UCL					1205						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					443.7	95% Jackknife UCL					455.3
72	95% Standard Bootstrap UCL					439.1	95% Bootstrap-t UCL					628
73	95% Hall's Bootstrap UCL					1108	95% Percentile Bootstrap UCL					442.5
74	95% BCA Bootstrap UCL					506.7						
75	90% Chebyshev(Mean, Sd) UCL					578.9	95% Chebyshev(Mean, Sd) UCL					714.4
76	97.5% Chebyshev(Mean, Sd) UCL					902.6	99% Chebyshev(Mean, Sd) UCL					1272
77												
78	Suggested UCL to Use											
79	95% Chebyshev (Mean, Sd) UCL					714.4						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.12/06/2020 11:33:47 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	PAH											
11												
12	General Statistics											
13	Total Number of Observations					15	Number of Distinct Observations					10
14	Number of Detects					7	Number of Non-Detects					8
15	Number of Distinct Detects					7	Number of Distinct Non-Detects					3
16	Minimum Detect					3.75	Minimum Non-Detect					7
17	Maximum Detect					43.85	Maximum Non-Detect					8
18	Variance Detects					217.3	Percent Non-Detects					53.33%
19	Mean Detects					22.94	SD Detects					14.74
20	Median Detects					28.85	CV Detects					0.643
21	Skewness Detects					-0.27	Kurtosis Detects					-0.86
22	Mean of Logged Detects					2.811	SD of Logged Detects					1.013
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.906	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.803	Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.227	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.304	Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					12.8	KM Standard Error of Mean					3.711
33	KM SD					13.3	95% KM (BCA) UCL					20.67
34	95% KM (t) UCL					19.34	95% KM (Percentile Bootstrap) UCL					18.99
35	95% KM (z) UCL					18.9	95% KM Bootstrap t UCL					20.62
36	90% KM Chebyshev UCL					23.93	95% KM Chebyshev UCL					28.98
37	97.5% KM Chebyshev UCL					35.97	99% KM Chebyshev UCL					49.72
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.704	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.719	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.285	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.316	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					1.7	k star (bias corrected MLE)					1.067
48	Theta hat (MLE)					13.5	Theta star (bias corrected MLE)					21.51
49	nu hat (MLE)					23.8	nu star (bias corrected)					14.93
50	Mean (detects)					22.94						
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
58	Minimum					0.01	Mean					13.66
59	Maximum					43.85	Median					8.647
60	SD					13.52	CV					0.99
61	k hat (MLE)					0.716	k star (bias corrected MLE)					0.617
62	Theta hat (MLE)					19.07	Theta star (bias corrected MLE)					22.13
63	nu hat (MLE)					21.48	nu star (bias corrected)					18.52
64	Adjusted Level of Significance (β)					0.0324						
65	Approximate Chi Square Value (18.52, α)					9.767	Adjusted Chi Square Value (18.52, β)					8.992
66	95% Gamma Approximate UCL (use when n>=50)					25.9	95% Gamma Adjusted UCL (use when n<50)					28.13
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					12.8	SD (KM)					13.3
70	Variance (KM)					177	SE of Mean (KM)					3.711
71	k hat (KM)					0.926	k star (KM)					0.785
72	nu hat (KM)					27.78	nu star (KM)					23.55
73	theta hat (KM)					13.83	theta star (KM)					16.3
74	80% gamma percentile (KM)					20.94	90% gamma percentile (KM)					31.27
75	95% gamma percentile (KM)					41.8	99% gamma percentile (KM)					66.73
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (23.55, α)					13.51	Adjusted Chi Square Value (23.55, β)					12.58
79	95% Gamma Approximate KM-UCL (use when n>=50)					22.32	95% Gamma Adjusted KM-UCL (use when n<50)					23.97
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.784	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.803	Detected Data Not Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.289	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.304	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Approximate Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					13.46	Mean in Log Scale					2.127
90	SD in Original Scale					13.44	SD in Log Scale					1.007
91	95% t UCL (assumes normality of ROS data)					19.57	95% Percentile Bootstrap UCL					19.3
92	95% BCA Bootstrap UCL					19.98	95% Bootstrap t UCL					21.26
93	95% H-UCL (Log ROS)					29.22						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					2.04	KM Geo Mean					7.694
97	KM SD (logged)					0.965	95% Critical H Value (KM-Log)					2.688
98	KM Standard Error of Mean (logged)					0.27	95% H-UCL (KM -Log)					24.51
99	KM SD (logged)					0.965	95% Critical H Value (KM-Log)					2.688
100	KM Standard Error of Mean (logged)					0.27						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					12.77	Mean in Log Scale					2.034
105	SD in Original Scale					13.79	SD in Log Scale					1.004
106	95% t UCL (Assumes normality)					19.04	95% H-Stat UCL					26.44
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Normal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					19.34						
114												

	A	B	C	D	E	F	G	H	I	J	K	L
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.12/06/2020 11:32:17 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Nickel											
12												
13	General Statistics											
14	Total Number of Observations					15	Number of Distinct Observations					14
15							Number of Missing Observations					0
16	Minimum					3	Mean					54.07
17	Maximum					110	Median					68
18	SD					37.64	Std. Error of Mean					971.80%
19	Coefficient of Variation					0.696	Skewness					-0.0695
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic					0.905	Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value					0.881	Data appear Normal at 5% Significance Level					
24	Lilliefors Test Statistic					0.178	Lilliefors GOF Test					
25	5% Lilliefors Critical Value					0.22	Data appear Normal at 5% Significance Level					
26	Data appear Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL					71.18	95% Adjusted-CLT UCL (Chen-1995)					69.86
31							95% Modified-t UCL (Johnson-1978)					71.15
32												
33	Gamma GOF Test											
34	A-D Test Statistic					0.735	Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value					0.758	Detected data appear Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic					0.246	Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value					0.227	Data Not Gamma Distributed at 5% Significance Level					
38	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)					1.292	k star (bias corrected MLE)					1.078
42	Theta hat (MLE)					41.85	Theta star (bias corrected MLE)					50.15
43	nu hat (MLE)					38.76	nu star (bias corrected)					32.34
44	MLE Mean (bias corrected)					54.07	MLE Sd (bias corrected)					52.07
45							Approximate Chi Square Value (0.05)					20.34
46	Adjusted Level of Significance					0.0324	Adjusted Chi Square Value					19.18
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))					85.96	95% Adjusted Gamma UCL (use when n<50)					91.18
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.85	Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value					0.881	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.248	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.22	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					1.099	Mean of logged Data					3.556
60	Maximum of Logged Data					4.7	SD of logged Data					1.169
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					178.5	90% Chebyshev (MVUE) UCL					130
64	95% Chebyshev (MVUE) UCL					159.6	97.5% Chebyshev (MVUE) UCL					200.6
65	99% Chebyshev (MVUE) UCL					281.2						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data appear to follow a Discernible Distribution at 5% Significance Level											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					70.05	95% Jackknife UCL					71.18
72	95% Standard Bootstrap UCL					69.12	95% Bootstrap-t UCL					70.76
73	95% Hall's Bootstrap UCL					68.88	95% Percentile Bootstrap UCL					69.53
74	95% BCA Bootstrap UCL					70.27						
75	90% Chebyshev(Mean, Sd) UCL					83.22	95% Chebyshev(Mean, Sd) UCL					96.42
76	97.5% Chebyshev(Mean, Sd) UCL					114.8	99% Chebyshev(Mean, Sd) UCL					150.8
77												
78	Suggested UCL to Use											
79	95% Student's-t UCL					71.18						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												
86	Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be											
87	reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.											

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.12/06/2020 11:29:51 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Lead											
11												
12	General Statistics											
13	Total Number of Observations					15	Number of Distinct Observations					10
14	Number of Detects					9	Number of Non-Detects					6
15	Number of Distinct Detects					9	Number of Distinct Non-Detects					1
16	Minimum Detect					7	Minimum Non-Detect					5
17	Maximum Detect					770	Maximum Non-Detect					5
18	Variance Detects					72067	Percent Non-Detects					40.00%
19	Mean Detects					345.7	SD Detects					268.5
20	Median Detects					381	CV Detects					0.777
21	Skewness Detects					0.0692	Kurtosis Detects					-1.262
22	Mean of Logged Detects					5.121	SD of Logged Detects					1.738
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.929	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.829	Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.182	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.274	Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					209.4	KM Standard Error of Mean					70.51
33	KM SD					257.5	95% KM (BCA) UCL					324.6
34	95% KM (t) UCL					333.6	95% KM (Percentile Bootstrap) UCL					324.1
35	95% KM (z) UCL					325.4	95% KM Bootstrap t UCL					364.3
36	90% KM Chebyshev UCL					420.9	95% KM Chebyshev UCL					516.7
37	97.5% KM Chebyshev UCL					649.7	99% KM Chebyshev UCL					911
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.655	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.749	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.233	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.289	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					0.817	k star (bias corrected MLE)					0.619
48	Theta hat (MLE)					423.1	Theta star (bias corrected MLE)					558.6
49	nu hat (MLE)					14.71	nu star (bias corrected)					11.14
50	Mean (detects)					345.7						
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
58	Minimum					0.01	Mean					208.6
59	Maximum					770	Median					17.94
60	SD					267.2	CV					1.281
61	k hat (MLE)					0.203	k star (bias corrected MLE)					0.207
62	Theta hat (MLE)					1026	Theta star (bias corrected MLE)					1007
63	nu hat (MLE)					6.099	nu star (bias corrected)					6.213
64	Adjusted Level of Significance (β)					0.0324						
65	Approximate Chi Square Value (6.21, α)					1.75	Adjusted Chi Square Value (6.21, β)					1.475
66	95% Gamma Approximate UCL (use when n>=50)					740.7	95% Gamma Adjusted UCL (use when n<50)					878.8
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					209.4	SD (KM)					257.5
70	Variance (KM)					66289	SE of Mean (KM)					70.51
71	k hat (KM)					0.661	k star (KM)					0.574
72	nu hat (KM)					19.84	nu star (KM)					17.21
73	theta hat (KM)					316.6	theta star (KM)					365
74	80% gamma percentile (KM)					345.1	90% gamma percentile (KM)					550.1
75	95% gamma percentile (KM)					765.8	99% gamma percentile (KM)					1290
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (17.21, α)					8.822	Adjusted Chi Square Value (17.21, β)					8.091
79	95% Gamma Approximate KM-UCL (use when n>=50)					408.5	95% Gamma Adjusted KM-UCL (use when n<50)					445.4
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.79	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.829	Detected Data Not Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.237	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.274	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Approximate Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					209.3	Mean in Log Scale					3.525
90	SD in Original Scale					266.6	SD in Log Scale					2.507
91	95% t UCL (assumes normality of ROS data)					330.6	95% Percentile Bootstrap UCL					323.6
92	95% BCA Bootstrap UCL					335.2	95% Bootstrap t UCL					352.8
93	95% H-UCL (Log ROS)					32954						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					3.716	KM Geo Mean					41.12
97	KM SD (logged)					2.138	95% Critical H Value (KM-Log)					4.834
98	KM Standard Error of Mean (logged)					0.585	95% H-UCL (KM -Log)					6393
99	KM SD (logged)					2.138	95% Critical H Value (KM-Log)					4.834
100	KM Standard Error of Mean (logged)					0.585						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					208.4	Mean in Log Scale					3.439
105	SD in Original Scale					267.3	SD in Log Scale					2.504
106	95% t UCL (Assumes normality)					330	95% H-Stat UCL					29734
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Normal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					333.6						
114												

	A	B	C	D	E	F	G	H	I	J	K	L
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.12/06/2020 11:28:11 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	BaP											
11												
12	General Statistics											
13	Total Number of Observations					15	Number of Distinct Observations					5
14	Number of Detects					5	Number of Non-Detects					10
15	Number of Distinct Detects					4	Number of Distinct Non-Detects					1
16	Minimum Detect					1.9	Minimum Non-Detect					0.5
17	Maximum Detect					4.5	Maximum Non-Detect					0.5
18	Variance Detects					0.848	Percent Non-Detects					66.67%
19	Mean Detects					3.16	SD Detects					0.921
20	Median Detects					3.1	CV Detects					0.291
21	Skewness Detects					0.216	Kurtosis Detects					1.986
22	Mean of Logged Detects					1.114	SD of Logged Detects					0.307
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.905	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.762	Detected Data appear Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.283	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.343	Detected Data appear Normal at 5% Significance Level					
29	Detected Data appear Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					1.387	KM Standard Error of Mean					0.387
33	KM SD					1.341	95% KM (BCA) UCL					N/A
34	95% KM (t) UCL					2.069	95% KM (Percentile Bootstrap) UCL					N/A
35	95% KM (z) UCL					2.023	95% KM Bootstrap t UCL					N/A
36	90% KM Chebyshev UCL					2.548	95% KM Chebyshev UCL					3.074
37	97.5% KM Chebyshev UCL					3.804	99% KM Chebyshev UCL					5.239
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.455	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.679	Detected data appear Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.307	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.357	Detected data appear Gamma Distributed at 5% Significance Level					
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					13.98	k star (bias corrected MLE)					5.725
48	Theta hat (MLE)					0.226	Theta star (bias corrected MLE)					0.552
49	nu hat (MLE)					139.8	nu star (bias corrected)					57.25
50	Mean (detects)					3.16						
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											

	A	B	C	D	E	F	G	H	I	J	K	L
58	Minimum					0.01	Mean					1.431
59	Maximum					4.5	Median					1.067
60	SD					1.444	CV					1.009
61	k hat (MLE)					0.488	k star (bias corrected MLE)					0.435
62	Theta hat (MLE)					2.931	Theta star (bias corrected MLE)					3.289
63	nu hat (MLE)					14.64	nu star (bias corrected)					13.05
64	Adjusted Level of Significance (β)					0.0324						
65	Approximate Chi Square Value (13.05, α)					5.925	Adjusted Chi Square Value (13.05, β)					5.345
66	95% Gamma Approximate UCL (use when n>=50)					3.151	95% Gamma Adjusted UCL (use when n<50)					3.493
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					1.387	SD (KM)					1.341
70	Variance (KM)					1.798	SE of Mean (KM)					0.387
71	k hat (KM)					1.069	k star (KM)					0.9
72	nu hat (KM)					32.07	nu star (KM)					26.99
73	theta hat (KM)					1.297	theta star (KM)					1.541
74	80% gamma percentile (KM)					2.25	90% gamma percentile (KM)					3.277
75	95% gamma percentile (KM)					4.313	99% gamma percentile (KM)					6.737
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (26.99, α)					16.15	Adjusted Chi Square Value (26.99, β)					15.12
79	95% Gamma Approximate KM-UCL (use when n>=50)					2.318	95% Gamma Adjusted KM-UCL (use when n<50)					2.476
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Test Statistic					0.892	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk Critical Value					0.762	Detected Data appear Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.322	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.343	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					1.806	Mean in Log Scale					0.407
90	SD in Original Scale					1.157	SD in Log Scale					0.633
91	95% t UCL (assumes normality of ROS data)					2.332	95% Percentile Bootstrap UCL					2.322
92	95% BCA Bootstrap UCL					2.413	95% Bootstrap t UCL					2.466
93	95% H-UCL (Log ROS)					2.671						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					-0.0906	KM Geo Mean					0.913
97	KM SD (logged)					0.867	95% Critical H Value (KM-Log)					2.539
98	KM Standard Error of Mean (logged)					0.25	95% H-UCL (KM -Log)					2.395
99	KM SD (logged)					0.867	95% Critical H Value (KM-Log)					2.539
100	KM Standard Error of Mean (logged)					0.25						
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					1.22	Mean in Log Scale					-0.553
105	SD in Original Scale					1.503	SD in Log Scale					1.231
106	95% t UCL (Assumes normality)					1.903	95% H-Stat UCL					3.439
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Normal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (t) UCL					2.069						
114												

	A	B	C	D	E	F	G	H	I	J	K	L
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												

Appendix P

Data Validation

Data Validation

PETER J RAMSAY & ASSOCIATES

Detailed Site Investigation

46-58 Marlborough Street, Balaclava, Victoria

May 2020

1. OBJECTIVE

The objective of this data validation is to evaluate the quality of data gathered during sampling of soil and groundwater at 46-58 Marlborough Street, Balaclava, Victoria ('the Site'), to assess whether the sample data is of a suitable standard to be utilised for the Detailed Site Assessment. The assessment was completed in general accordance with *Assessment of data quality of Schedule B2: Site Characterisation* of the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM 1999).

The general principles that were considered as part of the data validation process were:

- Completeness – were samples collected from the critical sample locations, and did the data points provide a suitable spatial assessment of the area under investigation?
- Comparability – was the sample methodology consistent across sampling events, what abiotic factors may have influenced the outcomes of the assessment?
- Representativeness – was the media sampled and analysed in accordance with the SAQP such that samples collected can be considered suitably representative of the environment in the area from which they were obtained?
- Precision and accuracy – was the laboratory data of a suitable reproducibility and closeness to the true value to be relied upon for interpretation purposes?

2. SUMMARY OF ASSESSMENT

Table 1 and **Table 2** provides a summary of the soil and groundwater assessments undertaken respectively to enable validation of the data based on the above considerations. Overall it is concluded that the data are of sufficient quality to form a basis for interpretation for the purpose of the Detailed Site Investigation.

Table 1 Summary of Quality Assurance Evaluation – Soil Sampling

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Completeness				
Soil sampling locations	All critical sample locations sampled.	Soil Samples retrieved from representative depths across the soil profile (until natural soils were observed) within boreholes.	Soil samples were retrieved from twelve (12) grid-based soil sampling locations across the site. Soil samples were retrieved from representative depths where there is a change of soil type or where there is presence of odour or discoloration that indicates potential contamination at each soil sampling location.	Yes
Calibration of field instruments	Equipment/ instrumentation calibrated correctly prior to use.	The PID used in the field is regularly calibrated as appropriate. Retain calibration certificates and records.	The PID was regularly calibrated and calibration certificates have been retained on file.	Yes
Sampling Procedures	Standard operating procedures as documented in SAQP appropriate and complied with.	Appropriate procedures complied with.	Samples were collected directly from the hand auger using clean trowel and/or a gloved hand and placed directly into laboratory supplied sample containers with appropriate preservatives. Samples were placed in eskies with ice for storage and during transportation to the laboratories.	Yes
Personnel	Experienced sampler utilised.	Sampling undertaken by appropriately trained personnel.	Sampling activities were performed by qualified and experienced environmental consultants.	Yes
Field Records	Use of standardised field forms including soil profile logs and COC documentation.	Fields records used and appropriately completed.	Field documentation was completed for each borehole including any observation that is likely to be an evidence of contamination during sample collection (refer to **Appendix I** of the body report).	Yes
Sample tracking	Appropriate documentation to verify that samples have been appropriately transported from site to the laboratory.	COC documentation and sample receipt notices utilised and appropriately completed.	COC documentation was completed and supplied to the laboratories as part of the sample delivery process (refer to **Appendix J** of the body report).	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Samples analysed	All critical samples analysed	Samples with evidence of contamination should be analysed for relevant parameters e.g. samples with elevated PID and/or organic odours to be analysed for volatile contaminants.	The sample analytical program was selected for each sample based on observations made in the field (including PID readings, presence of odours, staining, waste etc).	Yes
Analytical Suite	Samples analysed for CoPCs in accordance with DQOs and CSM.	As per DQI	The soil samples were appropriately tested for soil classification and for the CoPCs which were identified to have the potential to be present at the Site as per the CSM.	Yes
Laboratory methods	Analytical methods in accordance with ASC NEPM and NATA accredited where possible	Laboratory reports should denote methodologies applied and include a NATA accreditation stamp. Any non NATA accredited methods must be noted and implications considered.	The laboratory reports contain a NATA accreditation stamp with its accreditation number and site number.	Yes
Laboratory detection limits	Set below the guideline values for all of the contaminants, or sufficient to accurately quantify detectable contaminants.	As per DQI	All detection limits were below the guideline values wherever possible.	Yes
Holding times	Sample times complied with as denoted in laboratory reports	As specified for each analyte	Samples were generally supplied to the laboratory along with appropriate documentation within the required holding times.	Yes
Consistency of findings	The identification of contamination should accord with field indicators of contamination	Volatile results should be consistent with PID readings/presence of odour/staining.	Odour and high PID in fill material on site were noted on field forms and laboratory results were compared against field observations.	Yes
Comparability				
Sampling Methodology	Same sampling methodology used for each monitoring event for each media type	Utilisation of an appropriate sampling methodology for the objectives of the investigation.	Soil was retrieved directly from the hand auger with a clean trowel or a gloved hand and then placed directly into laboratory supplied sample containers with appropriate preservatives. Samples were placed in an esky with ice.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Decontamination procedures	Equipment in contact with samples sufficiently cleaned to prevent cross contamination	Field and laboratory blank samples below detection limits	Rinsate blank samples were collected directly from the hand auger/hand trowel following soil sampling to confirm suitability of decontamination procedures. The laboratory did not report any detections in the rinsate blank samples.	Yes
Personnel	Experienced sampler utilised	Sampling undertaken by appropriately trained personnel	Sampling was undertaken by an appropriately trained team member under the supervision of an SQP.	Yes
Sample handling	Samples collected, preserved and handled in the same manner.	Samples placed in appropriate containers. Sample retained at temperature of 0 - 4°C (or as specified for analytical methods).	Samples were collected directly from the hand auger using a clean hand trowel and/or gloved hand and placed directly into laboratory supplied sample containers with appropriate preservatives. Samples were placed in eskies with ice for storage. The sample preservation and storage procedures outlined are considered to be appropriate.	Yes
Laboratory methods and PQLs	Same analytical methods used between monitoring events	As per DQI	Similar analytical methods were utilised between laboratories. Laboratory reports denote methodologies applied and included a NATA accreditation stamp.	Yes
Laboratories	Same laboratories between monitoring events	As per DQI where possible	The same laboratory analysed all primary samples, which reduces the potential for variation. Split duplicate samples were analysed by a secondary laboratory for quality assurance purpose.	Yes
Units	Analytes are measured in the same units between monitoring events	As per DQI	Analytes were measured in the same units between samples. Where different units were reported, appropriate conversion factors were applied.	Yes
Representativeness				
Media sampled	Appropriate media sampled according to DQOs, CSM and SAQP	Samples collected to reflect the characteristics of the medium. Appropriate collection, handling, storage and preservation.	Soil samples were collected that are considered appropriate for the assessment undertaken.	Yes
Media analysed	All samples analysed according to SAQP	Samples analysed to reflect properties of field samples	Sample analysis is considered appropriate.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Homogeneity	Samples representative of media assessed	Homogeneity assessed by consideration of data variability, including statistics	The fill material on the site contains various anthropogenic materials as logged on the soil profile logs. The heterogenous nature and distribution of these materials through the fill profile resulted in RPD discrepancies. The RPD discrepancies is considered insignificant to the outcome of the assessment.	Yes (Refer to **Section 3.1**)
Precision				
Sampling Procedures	Standard operating procedures as documented in SAQP appropriate and complied with.	Appropriate procedures complied with.	Samples were collected from the hand auger directly into a laboratory supplied soil sample jar. The sample jars were placed in an esky with ice.	Yes
Laboratory duplicates	RPDs within acceptable ranges	RPDs >35% may compromise the data for duplicate soil samples	Laboratory Duplicate outliers were reported on an anonymous sample not retrieved from the site. However, the discrepancy is considered marginally and that the reported RPD pass the laboratory's AC Acceptance Criteria. It is considered unlikely discrepancy would impact the analytical results or affect the outcome of the assessment.	Yes
Field QC – field duplicate frequency	Duplicate frequencies in accordance with the ASC NEPM and AS4482.1-2005	Field split duplicate soil samples will be collected at a frequency of approximately 5% of the primary samples analysed at the primary laboratory. Field blind replicate samples will be collected at a frequency of approximately 5% of the total number of primary samples.	Blind replicate and split duplicate samples were collected and analysed by primary and secondary laboratories during soil sampling activities. The number of duplicate samples collected for these events satisfies the 5% split duplicate samples and 5% blind replicate samples required by the ASC NEPM.	Yes
Field duplicate results	RPDs within acceptable ranges	RPDs >50% may compromise the data for inorganic analytes. RPDs >70% may compromise the data for organic analytes. The level of error must be considered when interpreting the data set relevant to the RPDs	Field duplicates with RPDs outside of the acceptable range are discussed in **Section 3.1**. The discrepancies are not considered significant to affect the outcome of the assessment.	Yes
Accuracy (bias)				

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Sampling Procedures	Standard operating procedures as documented in SAQP appropriate and complied with.	Appropriate procedures complied with.	Samples were collected from the hand auger directly into a laboratory supplied soil sample jar.	Yes
Field QC – rinsate and trip blank samples	Analytes not detected	Contaminants of concern should not be detected, or should not be present above background concentrations.	As discussed in **Section 3.2,** the laboratories did not report any detections in rinsate samples.	Yes
Laboratory reagent blanks	Analytes not detected	Reagent blanks should not return any positives on analysis	The laboratories did not report any detections in laboratory reagent blanks.	Yes
Laboratory method blanks	Analytes not detected	Method blanks should not return any positives on analysis	The laboratories did not report any detections in laboratory method blanks.	Yes
Matrix spike samples	Recoveries within acceptable ranges for matrix spikes undertaken on site derived samples.	Control samples should generally give a recovery of 75-125%, depending on the chemical and medium	Laboratory matrix spike recovery outliers were reported on an anonymous sample not retrieved from the site. However, as the matrices that are not from the Site are not considered to provided information about the potential for matrix interference in the specific matrices encountered at the Site, therefore, considered unlikely that matrix interference would impact the analytical results or affect the outcome of the audit.	Yes
Laboratory surrogate spike samples	Recoveries within acceptable ranges	Control samples should generally give a recovery of 75-125%, depending on the chemical and medium	Discrepancies in laboratory surrogate spike sample results are discussed in **Section 4.2** Laboratory QC is considered acceptable to achieve the project objectives.	Yes (Refer to **Section 4.2**)
Laboratory duplicate samples	RPDs within acceptable ranges	RPDs >35% may compromise the data for duplicate soil samples	Laboratory Duplicate outliers were reported on an anonymous sample not retrieved from the site. However, the discrepancy is considered marginally and that the reported RPD pass the laboratory's AC Acceptance Criteria. It is considered unlikely discrepancy would impact the analytical results or affect the outcome of the assessment.	Yes
Laboratory Control Spikes	Recoveries within acceptable ranges	Control samples should generally give a recovery of 75-125%, depending on the chemical and medium	Laboratory Control Spikes are listed and discussed in **section 4.3**. The discrepancies were not considered significant to the outcome of the assessment.	Yes (Refer to **Section 4.3**)

Table 2 Summary of Quality Assurance Evaluation – Groundwater

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Completeness				
Groundwater monitoring well network	All critical sample locations sampled.	Potential sources of contamination targeted and sufficient wells to determine magnitude and extent of impact. Sufficient wells to determine groundwater flow direction.	Groundwater samples were retrieved from three (3) groundwater monitoring wells installed in the alluvial aquifer at the Site. The network of monitoring wells was sufficient to determine groundwater flow direction and the condition of groundwater migrating beneath the site. The wells were also sufficient to target potential contamination identified to be migrating onto the Site as a result of off-Site contamination.	Yes
Monitoring well installation	Wells constructed in accordance with PJRA's SAQP	Sufficient to screen the target zone. Sufficient to screen the water table for the presence of LNAPL where indicated as a CoPC Sufficient to screen the base of aquifer/impermeable zones for DNAPL where indicated as a CoPC	The wells were appropriately constructed in accordance with Southern Rural Water Licensing requirements for the groundwater conditions encountered. Groundwater construction logs are provided in **Appendix I** of the body report.	Yes
Calibration of field instruments	Equipment/ instrumentation calibrated correctly prior to use	Calibrated prior to use and at least daily, or as otherwise recommended by the manufacturer. Retain calibration certificates and records.	Calibration certificates for the water quality meter used during the groundwater monitoring event are presented in **Appendix M** of the body report.	Yes
Sampling Procedures	Standard operating procedures as documented in SAQP appropriate and complied with.	Appropriate procedures complied with.	Groundwater sampling was undertaken using low flow micropurge method which is appropriate for the targeted contaminants of concern. Laboratory supplied sample containers with appropriate preservatives were used to collect and store groundwater samples.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Personnel	Experienced sampler utilised.	Sampling undertaken by appropriately trained personnel.	Sampling was undertaken by suitably qualified persons.	Yes
Field Records	Use of standardised field forms including a site inspection proforma, well construction logs, well purge sheets, surface water proforma and COC documentation	Fields records used and appropriately completed.	Field documentation was completed during sample collection (refer to **Appendix L** of the body report).	Yes
Sample tracking	Appropriate documentation to verify that samples have been appropriately transported from site to the laboratory.	COC documentation and sample receipt notices utilised and appropriately completed.	COC documentation was completed and supplied to the laboratories as part of the sample delivery process (refer to **Appendix J** of the body report).	Yes
Samples analysed	All critical samples analysed	Samples with evidence of contamination should be analysed for relevant parameters e.g. samples with organic odours to be analysed for volatile contaminants.	All samples collected from groundwater monitoring wells were appropriately selected for analysis.	Yes
Analytical Suite	Samples analysed for CoPCs in accordance with DQOs and CSM.	As per DQI	The groundwater was appropriately tested for the contaminants of concern identified by the CSM.	Yes
Laboratory methods	Analytical methods in accordance with ASC NEPM and NATA accredited where possible	Laboratory reports should denote methodologies applied and include a NATA accreditation stamp. Any non-NATA accredited methods must be noted, and implications considered.	The laboratory reports contain a NATA accreditation stamp with its accreditation number and site number.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Laboratory detection limits	Set below the guideline values for all of the contaminants, or sufficient to accurately quantify detectable contaminants.	As per DQI	All detection limits were below the guideline values wherever possible. For some analytes lower detection limits (e.g. PAHs, Vinyl chloride) were not possible. Other analytes where the detection limit was above the guideline for water dependent ecosystems and species (e.g. OCPs/OPPs) are not significant as the lowest guidelines for groundwater apply at the point of discharge, not point of measurement which means that interpretation of risk is based on a number of lines of evidence, not just the data.	Yes
Holding times	Sample times complied with as denoted in laboratory reports	As specified for each analyte	Samples were supplied to the laboratory along with appropriate documentation within the required holding times.	Yes
Consistency of findings	The identification of contamination should accord with field indicators of contamination	Volatile results should be consistent with PID readings/presence of odour/sheen TDS results should be consistent with electrical conductivity/cation/anions	The field records utilised during groundwater sampling indicate if the presence of odours/sheen was noted. Field water quality parameters are recorded on the field records and included in the analytical results tables.	Yes
Comparability				
Sampling Methodology	Same sampling methodology used for each monitoring events for each media type.	Utilisation of low-flow and minimum drawdown sampling methods for each GME.	Groundwater sampling was undertaken using low flow micropurge method which is appropriate.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Decontamination procedures	Equipment in contact with samples sufficiently cleaned to prevent cross contamination	Field and laboratory blank samples below detection limits	Groundwater sampling equipment was thoroughly cleaned between each sampling location. Field blank samples were retrieved during sampling and analysed to confirm appropriate decontamination procedures were implemented. Reportable concentrations of analytes were not detected within any of the field or laboratory blank samples.	Yes
Personnel	Experienced sampler utilised	Sampling undertaken by appropriately trained personnel	Sampling was undertaken by an appropriately trained team member under the supervision of an SQP.	Yes
Climate	Temperature, rainfall, wind, barometric pressure and similar are unlikely to exert a significant influence between monitoring events.	Similar standing water levels between GMEs, or variation considered in the interpretation.	Rainfall, wind and temperature conditions during groundwater sampling was noted on field records and considered during the interpretation of the analytical data where applicable.	Yes
Sample handling	Samples collected, filtered, preserved and handled in the same manner	Samples placed in appropriate containers with appropriate laboratory supplied preservatives. Samples for metals filtered prior to acidification. Sample retained at temperature of 0 - 4^{o}C (or as specified for analytical methods).	The sample preservation and storage procedures used are considered to be appropriate.	Yes
Laboratory methods and PQLs	Same analytical methods used between monitoring events PQLs set to allow identification of analytes between monitoring events	As per DQI	Similar analytical methods were utilised between monitoring events. Laboratory reports denote methodologies applied and included a NATA accreditation stamp.	Yes
Laboratories	Same laboratories between monitoring events	As per DQI where possible	Eurofins was used as the primary laboratory and ALS Environmental was used as the secondary laboratory.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Units	Analytes are measured in the same units between monitoring events	As per DQI	Analytes were measured in the same units between monitoring events. Where different units were reported, appropriate conversion factors were applied.	Yes
Representativeness				
Media sampled	Appropriate media sampled according to DQOs, CSM and SAQP	Samples collected to reflect the characteristics of the medium. Appropriate collection, handling, storage and preservation	Groundwater samples were collected that are considered appropriate for the assessment undertaken.	Yes
Media analysed	All samples analysed according to SAQP	Samples analysed to reflect properties of field samples	Sample analysis is considered appropriate.	Yes
Homogeneity	Samples representative of media assessed	Homogeneity assessed by consideration of data variability, including statistics	No RPDs were reported outside the acceptable criteria indicating the matrix is relatively homogeneous.	Yes
Precision				
Sampling Procedures	Standard operating procedures as documented in SAQP appropriate and complied with.	Appropriate procedures complied with	Groundwater sampling was undertaken using low flow micropurge method which is appropriate.	Yes
Laboratory duplicates	RPDs within acceptable ranges	RPDs >35% may compromise the data for duplicate soil samples	There were no laboratory duplicates which were reported to have elevated RPDs above the acceptance criteria.	Yes
Field QC – field duplicate frequency	Duplicate frequencies in accordance with the ASC NEPM and AS4482.1-2005	Field split duplicate soil samples will be collected at a frequency of approximately 5% of the primary samples analysed at the primary laboratory. Field blind replicate samples will be collected at a frequency of approximately 5% of the total number of primary samples.	The number of duplicate samples collected for the groundwater events generally satisfies the 5% split duplicate samples and 5% blind replicate samples required by the NEPM and meets EPA requirements.	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Field duplicate results	RPDs within acceptable ranges	RPDs >50% may compromise the data for inorganic analytes. RPDs >70% may compromise the data for organic analytes. The level of error must be considered when interpreting the data set relevant to the RPDs	No RPD exceedances were reported in the field duplicate groundwater samples.	Yes
Accuracy (bias)				
Sampling Procedures	Standard operating procedures as documented in SAQP appropriate and complied with.	Appropriate procedures complied with.	Groundwater sampling was undertaken using low flow micropurge method which is appropriate.	Yes
Field QC – rinsate and trip blank samples	Analytes not detected	Contaminants of concern should not be detected or should not be present above background concentrations.	As discussed in **Section 3.2,** the laboratories did not report any detections in rinsate samples.	Yes
Laboratory reagent blanks	Analytes not detected	Method blanks should not return any positives on analysis	The laboratories did not report any detections in laboratory reagent blanks (where applicable). Laboratory QC is considered acceptable to achieve the project objectives.	Yes
Laboratory method blanks	Analytes not detected	Method blanks should not return any positives on analysis	The laboratories did not report any detections in laboratory method blanks. Laboratory QC is considered acceptable to achieve the project objectives.	Yes
Matrix spike samples	Recoveries within acceptable ranges for matrix spikes undertaken on site derived samples.	Control samples should generally give a recovery of 75-125%, depending on the chemical and medium	Laboratory matrix spike recovery outliers were reported on an anonymous sample not retrieved from the site. However, as the matrices that are not from the Site are not considered to provided information about the potential for matrix interference in the specific matrices encountered at the Site, therefore, considered unlikely that matrix interference would impact the analytical results or affect the outcome of the audit	Yes

QA Item	Data Quality Indicator	Acceptability Limits	Comment	Appropriate
Laboratory surrogate spike samples	Recoveries within acceptable ranges	Control samples should generally give a recovery of 75-125%, depending on the chemical and medium	Discrepancies in laboratory surrogate spike sample results are discussed in **Section 4.2**. Laboratory QC is considered acceptable to achieve the project objectives.	Yes (Refer to **Section 4.2)**
Laboratory duplicate samples	RPDs within acceptable ranges	RPDs >35% may compromise the data for duplicate soil samples	The laboratories did not report any Laboratory Duplicate outliers.	Yes
Laboratory Control Spikes	Recoveries within acceptable ranges	Control samples should generally give a recovery of 75-125%, depending on the chemical and medium	Laboratory Control Spikes are listed and discussed in **section 4.3**. The discrepancies were not considered significant to the outcome of the assessment.	Yes (Refer to **Section** Error! Reference source not found. **)**

3. FIELD QUALITY CONTROL SAMPLES

3.1 Field Duplicate Samples

Results for split duplicate and blind replicate samples for the soil sampling program and groundwater monitoring are presented in **Tables R5** and **R6** of the body report respectively.

Reported concentrations in primary samples were compared to those reported in split duplicate and blind replicate samples and relative percent difference (RPDs) were calculated using the following equation:

$$RPD = \frac{(a-b)}{\left((a+b) \div 2\right)} \times 100$$

RPDs reported outside the acceptable range results have been further assessed in **Tables 3.** It is noted that no RPD exceedances were identified in the groundwater samples, therefore no RPD results are presented herein.

Table 3 Summary and Evaluation of the RPD Discrepancies – Soil Sampling

Analyte	Primary Sample ID	Sample Date	Primary Sample (mg/kg)	Blind Replicate (mg/kg)	Primary /Blind RPD	Split Duplicate (mg/kg)	Primary/Split RPD	Comment
Copper	991/SB06_0.1_0.2	20/05/2020	39.0	83.0	**72%**	33.0	17%	The elevated RPDs are considered likely to be the result of heterogeneity in the soil sampled. However, the concentration of the analyte is well below the adopted soil screening values for both human health and ecological receptors, and is below the threshold concentration for fill material. Therefore, the discrepancy is not considered significant on the outcome of soil hazard categorization or the assessment.
Mercury			0.5	0.2	**86%**	0.4	22%	This RPD is considered likely to be the result of heterogeneity of in the soil sampled. It is noted that the primary result is representative of the highest concentrations therefore this RPD is not considered to alter the outcome of the assessment.

Bold RPDs exceed the adopted acceptance criteria of 50% for inorganic compounds and 70% for organic compounds.

3.2 Field Blanks

Rinsate samples were retrieved and analysed during the soil and groundwater sampling and analytical program undertaken at the Site. Trip bank samples were also prepared, however in view of the analytical results of the rinsate blank samples, the trip blank samples were not analysed.

The results of the blank analyses indicate that cross contamination between samples and/or sample locations during sampling, transport and the handling of samples is unlikely to have occurred that would affect the outcomes of the soil and groundwater sampling programs since all analytes were below laboratory detection limits in the rinsate blank samples.

3.3 Matrix Spike Samples

The results of the matrix spike recoveries for soil and groundwater were within the acceptance criteria specified in the DQOs.

It is noted that matrix spikes performed on samples not collected from the Site have not been considered herein. This is because soil and water matrices that are not from the Site are not considered to provided information about the potential for matrix interference in the specific matrices encountered at the Site.

4. LABORATORY QUALITY CONTROL

The QC procedures of all laboratories used for this investigation have been reviewed to ensure that the sample data is reliable and complete. The analytical methods used for the laboratories' internal QC program are NATA accredited and details of the methods are provided in the laboratory reports presented in **Appendix N** of the body report.

The laboratory QC programs include analysis of holding times, laboratory blanks, surrogate spikes, laboratory duplicate and laboratory control spikes. Results of the laboratory QC program which have not met the DQOs as described in the SAQP are discussed below.

4.1 Holding Times

The laboratory sets holding times for compounds based on their stability in environmental media. This holding time applies to the time period between when the sample was collected and when the laboratory performed the sample extraction process. No holding time discrepancies were reported for this sampling program.

4.2 Surrogate Spikes

A summary of the surrogate recoveries which were identified to be outside of the 75 – 125% is provided in **Table 4** (soil) and **Table 5** (groundwater).

It is noted that the majority of surrogate recoveries that fall outside the acceptable range are <75%, indicating that the soil and groundwater matrix in the samples collected is generally likely to result in an underestimation of analyte concentrations. Where surrogate recoveries are indicated to be <75% or >125%, they are generally only marginally beyond the acceptable level and relate to species that are not associated with CoPCs.

Overall, the identified surrogate recoveries outside of the acceptable range are not considered to alter the data interpretation.

Table 4 Summary and Evaluation of Surrogate Spike Recoveries in Soil

Surrogate Compound	Lab Batch # (SDG)	Field ID	Surrogate Recovery
4-Bromofluorobenzene	721018-S	991/SB02_0.4_0.5	138%
		991/SB03_0.4_0.5	128%
		991/SB04_0.0_0.1	135%
		991/SB05_0.2_0.3	70%
		991/SB05_0.3_0.4	69%
		991/SB06_0.1_0.2	148%
		991/SB08_1.3_1.4	67%
		991/SB07_0.1_0.2	55%
		991/SB08_0.0_1.1	67%
		991/SB09_0.0_0.1	63%
		991/SB10_0.8_0.9	64%
		991/SB11_0.0_0.1	67%
		991/SB10_0.4_0.5	52%
		991/SB12_0.0_0.1	142%
		991/SB12_0.6_0.7	141%
		991/GW01_3.2_3.2	130%
		991/GW03_3.0	131%
	721023-S	991/SB02_0.0_0.1	59%
		991/SB08_0.7_0.8	149%
		991/SB03_0.0_0.1	59%
2-Fluorobiphenyl	721018-S	991/SB02_0.4_0.5	56%

Surrogate Compound	Lab Batch # (SDG)	Field ID	Surrogate Recovery
		991/SB03_0.4_0.5	71%
		991/SB07_0.1_0.2	66%
		991/SB10_0.8_0.9	62%
		991/SB11_0.0_0.1	66%
		991/SB12_0.0_0.1	70%
p-Terphenyl-d14	721018-S	991/SB04_0.0_0.1	130%
		991/SB08_0.0_0.1	71%
		991/SB10_0.8_0.9	130%
		991/SB08_1.3_1.4	140%
Phenol-d6	721018-S	991/SB05_0.3_0.4	68%
		991/SB07_0.1_0.2	58%
		991/SB08_0.0_1.1	68%
	721023-S	991/SB03_0.0_	65%
Toluene-d8	721018-S	991/SB07_0.1_0.2	72%
	721023-S	991/SB02_0.0_0.1	60%
	721023-S	991/SB03_0.0_0.1	52%
Tetrachloro-m-xylene (surr.)	721023-S	991/SB03_0.0_0.1	67%

Table 54 Summary and Evaluation of Surrogate Spike Recoveries in Groundwater

Surrogate Compound	Lab Batch # (SDG)	Field ID	Surrogate Recovery
2-Fluorobiphenyl	721768-W	991/GW01	66%
Tetrachloro-m-xylene	721768-W	991/GW01	66%
Dibutylchlorendate	721768-W	991/GW02	126%
Phenol-d6	721768-W	991/GW01	52%
		991/GW03	68%
Triphenylphosphate	721768-W	991/GW01	72%

4.3 Laboratory Control Spikes

Table 6 provides a summary of the recoveries in laboratory control spikes analysed by the laboratories which were outside the acceptance criteria of 75% – 125%.

A review of the laboratory control spike analysis indicated laboratory control spike samples reported spike results outside the acceptance criteria of 75% - 125% during soil and groundwater sampling programs. The majority of the Laboratory Control recoveries are reported below the acceptance criteria which indicates an underestimation of the reported analytes as a result of minor interferences to laboratory processes. However, the recoveries are generally only marginal below or above the acceptance criteria, and the analytes are not chemicals of potential concern (CoPC) at the site, and therefore the biased estimation is considered insignificant on the outcome of the assessment.

Table 6 - Summary of Laboratory Control Spike Recoveries

Laboratory Report Number	Compound	Recovery (%)
721018-S	Acenaphthylene	128%
	Anthracene	128%
	Phenanthrene	128%
	Pentachlorophenol	55%
	2-Cyclohexyl-4.6-dinitrophenol	34%
	2-Methyl-4.6-dinitrophenol	31%
	2.4-Dinitrophenol	30%
	4-Nitrophenol	54%
	Dinoseb	37%
721023-S	2-Chlorophenol	73%
	2.4-Dichlorophenol	70%
	2.4.5-Trichlorophenol	67%
	2.4.6-Trichlorophenol	71%
	2.6-Dichlorophenol	73%
	Pentachlorophenol	36%
	Tetrachlorophenols - Total	59%
	2-Cyclohexyl-4.6-dinitrophenol	51%
	2-Methyl-4.6-dinitrophenol	33%
	Dinoseb	45%
721768-W	Acenaphthylene	130%
	Dibenz(a.h)anthracene	130%
	Fluorene	130%
	Indeno(1.2.3-cd)pyrene	130%
	2.6-Dichlorophenol	61%
	Pentachlorophenol	72%
	Tetrachlorophenols - Total	69%
	4-Nitrophenol	45%

4.4 Laboratory Blanks

Method blanks from all sampling were not noted to contain detectable concentrations of analytes.

4.5 Laboratory Duplicates

There were no laboratory duplicates which were reported to have elevated RPDs above the DQIs (>35%).

It is noted that laboratory duplicate analysis performed on samples not collected from the Site have not been considered herein. This is because soil and water matrices that are not from the Site are not considered to provided information about the potential for matrix interference in the specific matrices encountered at the Site.


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