Croskell PSP Proposed Drainage Strategy

Preliminary geotechnical site report

Prepared for Melbourne Water
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Revision History

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1 Introduction and background

Following an initial desktop study (W4G Ref: 3551531-268-RevB, dated 4 April 2022), Melbourne Water has commissioned Water4Good (W4G) to undertake a preliminary geotechnical investigation for the Croskell Precinct Structure Plan (PSP) Proposed Drainage Strategy Project (the Project). The project involves completing a drainage concept options assessment and functional design of major drainage assets (retarding basin, wetland and new waterway alignment) for the Croskell PSP.

We understand that the proposed project will include:

- Horizontal realignment of existing open drain features as well as possible deepening and widening works
- Construction of a new wetland retarding basin feature adjacent to Thompsons Road
- Construction of the wetland and retarding basin features shown in Plate 1.

This report presents the results of a geotechnical, groundwater and environmental investigation completed as part of the concept options assessment.

The Croskell PSP area is located within the suburbs of Cranbourne East and Clyde North and is bounded by Thompsons Rd in the north, Berwick-Cranbourne Rd in the east Narre Warren Rd in the west and Linsell Blvd and a mix of residential streets in the south.

The location of the site, and proposed drainage concept design is shown in Plate 1.

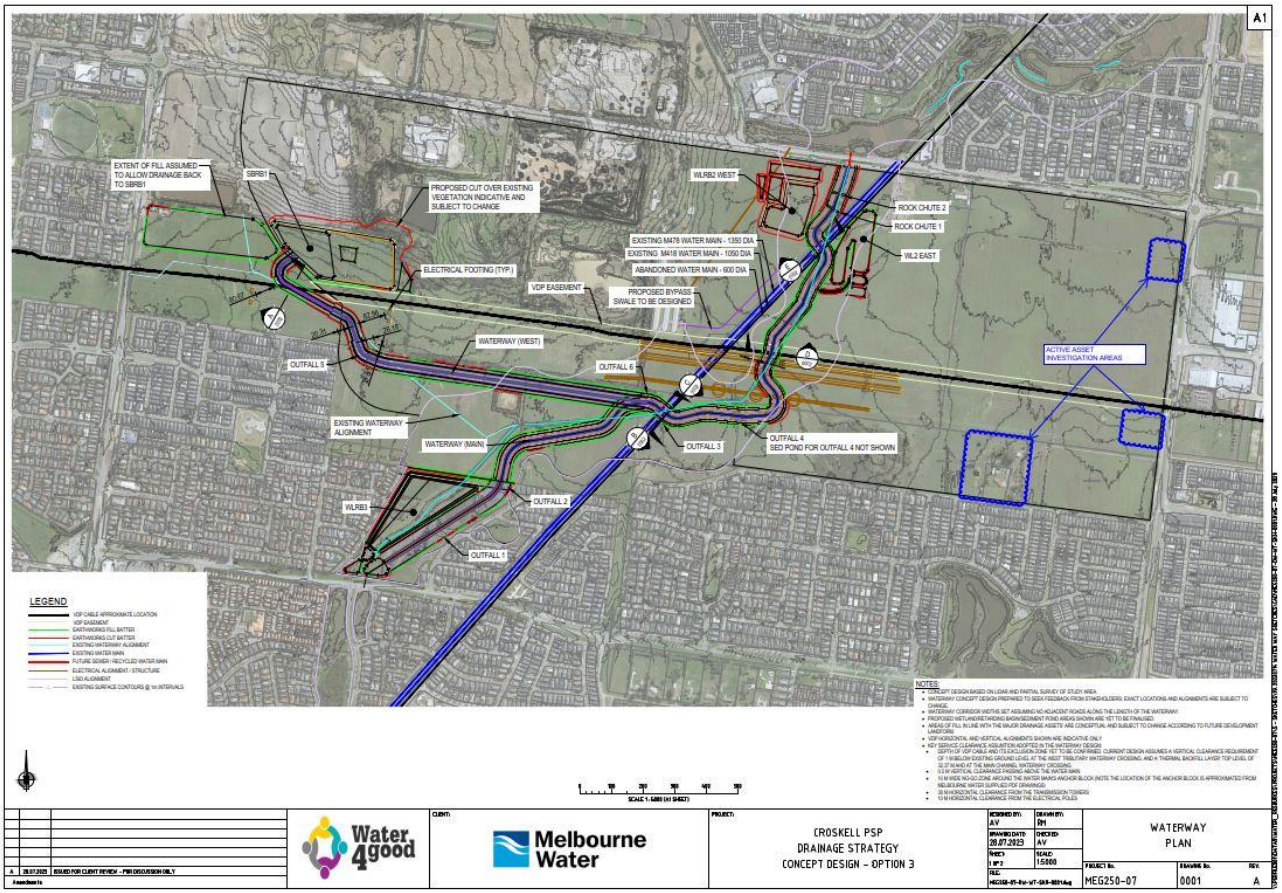


Plate 1: Croskell PSP proposed drainage plan, design option 3.

2 Aims of the investigation

Based on the findings of the desktop study report and workshop discussions with Melbourne Water, W4G were commissioned to undertake a limited intrusive geotechnical and contaminated soil investigation to support the next stage of the project.

The scope of these works is described in our proposal 3551531_286-O-Geotechnical variation order 1-Rev1, dated 14 December 2022. During the investigation, the scope was amended in consultation with Melbourne Water due to site access restrictions which precluded the completion of some test sites.

The aims of the investigation are to provide a preliminary understanding of the ground conditions at the site, relating to:

- Typical sub-surface profile and geotechnical engineering characteristics of the site soils
- Depth to groundwater
- Potential presence of soil contaminants and/or acid sulfate soils

3 Field investigation

The intrusive field investigation was undertaken across two periods, the first between 27 February and 2 March 2023 and the second between 31 March and 6 April 2023. A summary of the investigation works is presented below:

- Service locating for all borehole test site locations.
- Dynamic Cone Penetrometer testing (DCP) next to each test site to a depth of 1.5 m.
- 14 boreholes drilled to a maximum depth of 3 m.
- Advancement of seven boreholes to 6 m, followed by the installation of groundwater monitoring wells.
- Soil sampling of the boreholes for both contamination and geotechnical testing purposes.
- One round of groundwater level monitoring completed on 6 April 2023, for all wells, with the exception of BH16. Well measurement of groundwater depth in BH16 was recorded on the day of drilling completion on 4 April 2023.

The investigation locations are presented in Figure 1.

Reports (logs) of Boreholes are presented in Appendix A, together with the explanatory notes, relevant to the interpretation of the logs.

3.1 Service locating

Prior to any intrusive works being undertaken, WSP Golder completed a dial before you dig (DBYD) services search for the investigation area. Boreholes and DCP test locations were scanned for the presence of underground services by a specialist underground service locator. No additional services were detected at the proposed test locations however BH02 was relocated 5m south to maintain sufficient clearance from existing buried stormwater infrastructure.

3.2 Borehole investigation

Twenty-one boreholes (BH01 to BH10 and BH12 to BH22) were advanced to depths of between 3.00m and 6.45 m below the ground surface level using a Comacchio Geo 205 rig supplied and operated by Rockwell Drilling Pty Ltd. Of the proposed 24 boreholes, three were cancelled (BH11, BH23 and BH24) after consultation with Melbourne Water due to site access limitations.

In situ testing and sampling included:

- Dynamic Cone penetrometer testing (DCP) was undertaken at all borehole locations to a depth of 1.5m. DCP test results are included on the borehole logs in Appendix A.
- Standard penetration testing (SPT) was undertaken at regular intervals to collect samples and provide an indication of the in situ consistency/density of the soil profile. SPT test results are included on the borehole logs in Appendix A.
- Open standpipe wells were installed into selected boreholes to allow monitoring of groundwater levels.
- Five primary soil samples were collected from each borehole at the depths of 0.1m, 0.5m, 1.0m, 2.0m and 3.0m for assessment of contamination.

For boreholes not installed with wells, drilling spoil was used to backfill the drilled boreholes.

For groundwater wells, sand and bentonite construction materials were used to backfill the annular gap between the PVC standpipe and the surrounding ground as described on the borehole logs in Appendix B.

4 Results of the field investigation

4.1 Geology

As detailed in the desktop study for the project, surface geology across the project site indicated by the Geological Survey of Victoria (GSC) 1:25,000 'Berwick' map sheet consists of several geological units. Baxter Formation (Tbp) is predominately mapped across the project site with Older Volcanics (Tvo) in the far west and Quaternary Aeolian Sands (Qrd) in the north.

Quaternary Alluvium (Qra), while not mapped is also probable locally within the vicinity of the existing drainage lines.

4.2 Subsurface profile

Clayey soil types were predominantly encountered by the borehole test sites. Rock was not encountered in any of the drilled boreholes.

A summary of the subsurface conditions encountered by the boreholes is presented below and summarised in Table 1. The depths ranges presented have been rounded to the nearest 0.1 m.

A detailed description of the subsurface conditions is presented in the Reports of Boreholes and DCP plots included in Appendix A and should be referred to for further details.

4.2.1 Unit 1 – Fill (Topsoil)

Grass covered topsoil, comprising brown clayey silt to silty clay of low plasticity. Rootlets were commonly identified within this unit, while trace sand and gravel were also identified in boreholes. This topsoil profile was generally up to 300mm thick across the site, however thicknesses up to 600mm were recorded in some boreholes.

4.2.2 Unit 2 – Silty Clay / Clay (Tpb)

Unit 2 was encountered by all boreholes underlying Unit 1.

Unit 2 soils are generally orange-brown and grey in colour, with minor blue-grey lenses. Clays were typically silty and of medium to high plasticity. Sandy clay and clayey silt lenses were commonly encountered within this unit. Clays were observed to be wet, generally to a condition greater that the

plastic limit at depth. The in situ consistency varied from firm to very stiff, with weaker (firm) clay soils generally associated with higher moisture content.

4.2.3 Unit 3 – Clayey Sand (Tbp)

Unit 3 was encountered in several boreholes (BH5, BH13, BH15, BH18, BH19, BH20 and BH21), underlying Unit 2.

Unit 3 consisted of a brown to orange, fine to medium grained clayey sand. The clay fraction in the clayey sand was generally observed to be of low plasticity. The clayey sand was generally medium dense to dense.

4.2.4 Unit 4 – Sandy Clay / Silty Clay (Tvo)

Unit 4 was encountered in one borehole (BH10), drilled in the western most part of the site.

Unit 4 predominately consisted of a yellow brown to brown, sandy and silty clay type soil. This unit is generally described as being of high to medium plasticity, however plasticity of the unit generally decreases at depth.

Differentiated from units 2 and 3 above by colour and notably higher SPT N values this unit is inferred to be residual soil of the Older Volcanics.

4.2.5 Groundwater seepage encountered during borehole drilling

Groundwater seepage was encountered during drilling in the following boreholes:

- BH07 @ 3.45 m depth (at base of borehole)
- BH10 @ 4.5 m depth
- BH13 @ 6.0 m depth (through clayey sand layer)
- BH16 @ 5.8 m depth
- BH19 @ 4.5 m depth (though clayey sand layer)
- BH21 @ 3.6 m depth (through clayey sand layer)

In addition to the free groundwater seepage described above wet clayey sand soil was encountered in several boreholes (refer borehole logs presented in Appendix A).

Table 1: Summary of borehole subsurface profiles

	BH01	BH02	BH03	BH04	BH05	BH06	BH07	BH08	BH09	BH10	BH12
Unit 1 - Topsoil	0 - 0.4	0 - 0.3	0 - 0.2	0 - 0.2	0 - 0.6	0 – 0.6	0 - 0.1	0 - 0.4	0 - 0.2	0 - 0.6	0 - 0.3
Unit 2 – Silty CLAY / CLAY	0.4 - 3.45	0.3 - 3.45	0.2 - 6.45	0.2 - 3.45	0.6 - 3.1	0.6 – 6.45	0.1 - 3.45	0.4 - 3.45	0.2 - 3.45		0.3 - 3.4
Unit 3 – Clayey SAND					3.1 – 3.45						
Unit 4 - Sandy CLAY / Silty CLAY										0.6 – 6.45	

	BH13	BH14	BH15	BH16	BH17	BH18	BH19	BH20	BH21	BH22
Unit 1 - Topsoil	0 - 0.4	0 - 0.3	0 - 0.3	0 - 0.3	0 - 0.3	0 - 0.3	0 - 0.3	0 - 0.2	0 - 0.3	0 - 0.4
Unit 2 – Silty CLAY / CLAY	0.4 – 6.0	0.3 - 3.45	0.3 - 3.1	0.3 - 6.0	0.3 - 3.45	0.3 – 2.8	0.3 – 3.0 4.5 – 6.45	0.2 - 3.0	0.3 - 4.6	0.4 - 3.45
Unit 3 – Clayey SAND	6.0 – 6.45		3.1 – 3.45			2.8 – 3.45	3.0 – 4.5	3.0 – 3.45	4.6 - 6.4	
Unit 4 - Sandy CLAY / Silty CLAY										

4.3 Groundwater Monitoring Wells

A 50 mm diameter PVC open standpipe groundwater monitoring well, with a flush mounted gatic was constructed at seven borehole locations across the project site. Well construction details are summarised in Table 2 below with additional detail provided in Appendix B.

- A bore construction license from Southern Rural Water was obtained prior to construction of 50 mm PVC groundwater wells.
- One round of groundwater monitoring was completed on 6 April 2023 where groundwater levels were recorded from the existing ground surface. Measurements for BH16 were taken on 4 April 2023 following completion of drilling due to limitations with property access.
- No groundwater sampling was completed as part of this investigation.

Table 2: Well Construction Details and groundwater level measurements

	Borehole open standpipe groundwater well						
	BH03	**BH06**	**BH10**	**BH13**	**BH16**	**BH19**	**BH21**
Date constructed	02/03/2023	01/01/2023	02/03/2023	05/04/2023	03/04/2023	04/04/2023	06/04/2023
Well license work ID	WRK136851	WRK136852	WRK136858	WRK136857	WRK136856	WRK136855	WRK136853
Easting*	351440	351704	350762	352464	352572	352689	353098
Northing*	5782035	5782306	5782836	5782537	5782982	5782788	5782199
Depth to base of well (mbgl)	5.7	6.0	5.7	5.71	5.7	5.7	5.7
Screen depth interval (mbgl)	2.7 - 5.7	3 - 6	2.7 – 5.7	2.71 – 5.71	2.7 - 5.7	2.7 – 5.7	2.7 – 5.7
Groundwater depth (mbgl)	0.45	1.53	0.60	1.98	2.04	2.56	2.30
Date measured	06/04/2023	06/04/2023	06/04/2023	06/04/2023	04/04/2023	06/04/2023	06/04/2023

**Coordinates in GDA 2020*

mbgl = metres below existing ground level

5 Geotechnical laboratory test results

To support the field descriptions of subsurface materials encountered in the borehole investigation, WSP completed a suite of geotechnical laboratory tests including:

- Field moisture
- Emerson crumb sodic soil dispersion
- Pinhole dispersion
- Permeability
- Atterberg
- Particle size distribution
- Standard compaction test

The results are summarised in Table 3 to Table 6 below and laboratory test certificates are included in Appendix C. For samples where both Atterberg limit and particle size distribution testing was completed, the associated group symbol assigned in accordance with Australian standard AS 1726:2017 Geotechnical Site Investigations is provided. The results for samples tested for Atterberg limits has also been presented graphically in Plate 2.

Table 3 Summary of Atterberg limit and particle size test results

Borehole	BH02	BH04	BH05	BH07	BH10	BH14	BH15	BH17	BH20	BH22
Sample Depth (m)	1.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00
Atterberg Limits										
Liquid Limit (%)	52	47	42	53	60	48	37	47	44	65
Plastic Limit (%)	13	12	13	20	46	12	13	15	13	18
Plasticity Index (%)	39	35	29	33	14	36	24	32	31	47
Linear Shrinkage (%)	13	11	10.5	12	8	14.5	10	12	12	15.5
Field Moisture (%)	30.1	22.4	23.8	17.9	54.0	24.9	13.3	19.0	19.2	26.3
% Fines	72.3	88.4	11.9	38.2	61.8	41.8	24.8	42.2	23.6	54.2
Group Symbol	CH	CI	SP-SC	CH	MH	CI	SC	CI	SC	CH

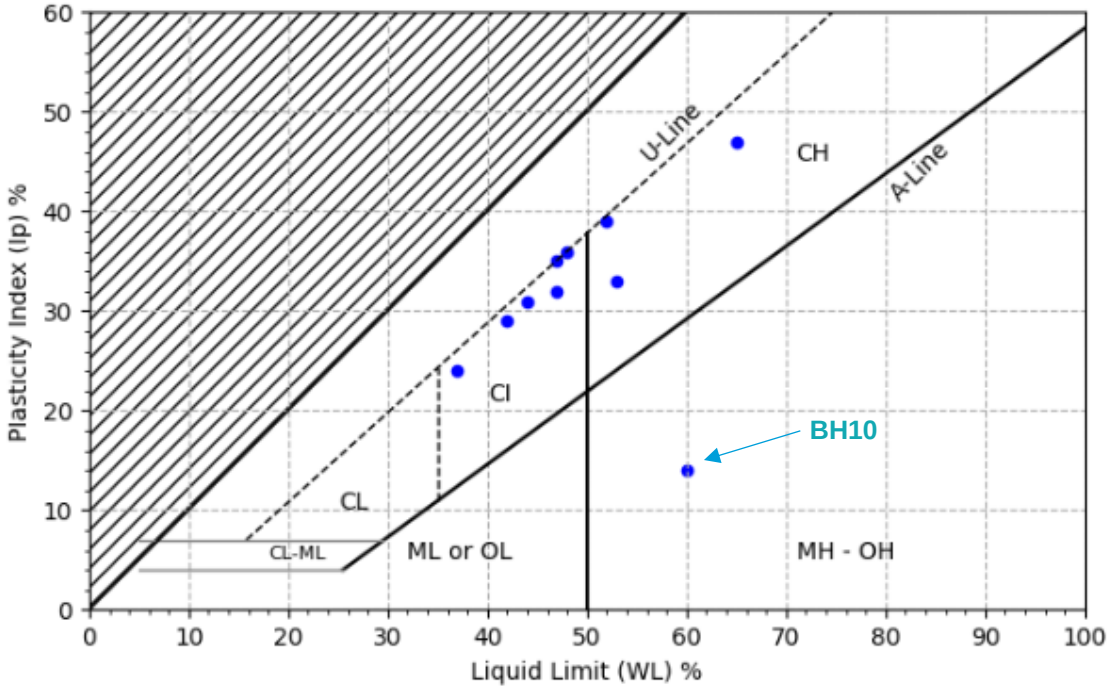


Plate 2: Plasticity chart for samples tested for Atterberg limits, indicating mostly medium to high plasticity clays.

Table 4 Summary of Field Moisture Content lab test results

Borehole	Sample Depth (m)	Field Moisture Content (%)
BH01	2.00	30.2
BH02	1.00	30.1
	2.00	53.5
BH04	2.00	17.4
	3.00	22.4
BH05	1.00	25.2
	3.00	23.8
BH06	3.00	36.6
BH07	2.00	28.2
	3.00	17.9

BH08	2.00	62.5
BH09	2.00	31.7
BH10	2.00	56.0
	3.00	54.0
BH12	2.00	35.7
BH14	2.00	24.9
	3.00	25.4
BH15	1.50	28.1
	3.00	13.3
BH17	1.50	23.2
	3.00	19.0
BH18	1.00	17.4
	2.00	22.8
BH20	2.00	27.1
	3.00	19.2
BH22	1.00	25.6
	2.00	31.6
	3.00	26.3

Table 5 Summary of Emerson crumb sodic soil dispersion test results

Borehole	Sample Depth (m)	Emerson Class Number		
		Distilled Water	Tap Water	Behavior
BH01	2.0	Class 2	-	Dispersive
BH01	3.0	Class 2	Class 2	Dispersive
BH02	2.0	Class 2	Class 2	Dispersive
BH04	1.0	Class 2	Class 2	Dispersive
BH04	2.0	Class 2	-	Dispersive
BH05	1.0	Class 2	-	Dispersive
BH05	2.0	Class 2	Class 2	Dispersive
BH06	2.0	Class 2	Class 2	Dispersive
BH06	3.0	Class 2	-	Dispersive
BH07	1.0	Class 2	Class 2	Dispersive
BH07	2.0	Class 2	-	Dispersive
BH08	2.0	Class 2	-	Dispersive
BH08	3.0	Class 2	Class 2	Dispersive
BH09	1.0	Class 4	Class 4	Intermediate to non-dispersive
BH09	2.0	Class 2	-	Dispersive
BH10	1.0	Class 2	Class 2	Dispersive
BH10	2.0	Class 2	-	Dispersive
BH12	2.0	Class 2	Class 2	Dispersive
BH14	3.0	Class 2	Class 2	Dispersive
BH15	1.5	Class 2	Class 2	Dispersive
BH17	1.5	Class 2	Class 2	Dispersive
BH18	2.0	Class 2	Class 2	Dispersive

BH20	2.0	Class 2	Class 2	Dispersive
BH22	2.0	Class 2	Class 2	Dispersive

Table 6 Summary of standard compaction, pinhole dispersion and permeability test results

Borehole	Sample Depth (m)	FMC (%)	OMC (%)	Max Dry Density (t/m3)	Pinhole Classification		Permeability (m/s)
BH02	1.0 - 1.8	29.4	22.0	1.62	D2	Dispersive	5.00E-11
BH17	1.0 - 2.0	24.0	18.0	1.75	D2	Dispersive	3.00E-12
BH20	1.0 - 2.5	23.8	19.5	1.69	PD1	Potentially Dispersive	2.00E-11
BH22	1.0 - 2.2	27.1	19.0	1.68	PD1	Potentially Dispersive	2.00E-11

FMC= Field Moisture Content

OMC= Optimum Moisture Content

6 Geotechnical Assessment

6.1 Summary of geotechnical conditions

The results of the preliminary geotechnical investigation indicate the site is generally suitable for the development of the proposed wetland basin(s) and ancillary open channel works.

The geotechnical investigation suggests the subsurface ground profile along the proposed drainage alignment consists of a shallow cover of topsoil (Unit 1) overlying clay rich soils (Unit 2) of moderate to high plasticity to a depth of at least 2.8m. Where present, clayey sands (Unit 3) are medium dense to dense. A sandy clay / silty clay (Unit 4) was observed in BH10, indicative of residual soil of Older Volcanics. As this unit was not identified in other boreholes, the extents of this unit along the proposed drainage alignment are uncertain.

All observed soils were generally wet, with groundwater levels measured between 0.45 m and 2.56 m, within the installed open standpipe groundwater wells. The groundwater depth appears to increase from southwest to northeast across the site.

Upon review of the geotechnical laboratory testing results, the following commentary can be made:

- Tested soils were generally moderate to high plasticity clays, with some clayey sands also identified.
- Whilst there is no clear trend regarding field moisture content either laterally, or with depth, the samples of elevated moisture content generally correlate with lenses of firm clay.
- Laboratory testing of clay soil samples indicate field moisture contents are greater than optimum condition (OMC) by approximately 4% to 8%.
- Emerson crumb testing undertaken on soil samples in distilled and tap water predominantly indicated dispersive behaviour (Emerson Class 2). One sample BH04 (1.0 m) indicated intermediate to non-dispersive behaviour (Emerson Class 4).
- Pinhole dispersion testing indicated the presence of potentially dispersive soils in BH20 (1.0-2.5m) and BH22 (1.0-2.2m). Clay soils in BH02 (1.0-1.8m) and BH17 (1.0-2.0m) were found to be dispersive (pinhole classification D2).

6.2 Geotechnical commentary on potential construction issues

The following potential geotechnical construction issues have been identified that may lead to difficulties during earthworks:

- The elevated in situ soil moisture content may lead to the following issues:
  - Additional effort in moisture conditioning of the material (i.e. difficulties in achieving a uniform moisture content within the material required for compaction).
  - Poor workability (i.e. difficult to place and compact), especially during periods of wet weather.
  - Inability to meet stringent proof-roll criteria (i.e. ‘deflecting’, ‘spongy’ or ‘springing’ subgrade).

  In such instances, the use of imported fill material or drying back of existing soils may be required to achieve compaction targets. Where drying back is considered as an option this is likely to require additional effort to re-scarify and rework the clay material, which may be unsuccessful if wet weather conditions are prevalent or in situ soil moisture content is very high. Consideration under such circumstances could be given to lime treatment to assist in drying back the soils if required.
- Exposed clay soils may be subject to potential loss of strength after placement if subjected to moisture ingress.
- Exposed clay soils may be subject to desiccation cracking if left exposed to drying.
- Erosion potential of batters will need to be managed, particularly given the generally dispersive soil properties. Utilizing gentle batter angles and providing erosion protection (geosynthetics/vegetation) to reduce surface run-off will assist in reducing erosion impacts.

- Erosion potential and the dispersive nature of soils at the site suggest measures such as filter zones within embankments or around proposed pipes/culverts may be required to reduce the risk of piping failure. Requirements for and details of such measures should be reviewed during detailed design.
- Shallow groundwater conditions were observed at several locations across the proposed alignment (from 0.45 m below existing ground level). Groundwater will require active management during construction via sumps and pumping, particularly at the basin locations.
- The site is mostly located in an area of low-lying land, which is subject to periodic saturation and flooding. Based on the site position and observed geotechnical conditions, trafficability during construction may be significantly impeded (i.e. become soft / boggy), particularly if undertaken during the wetter months of the year. For this reason, it is recommended that earthworks are scheduled to occur during the drier months of the year.

6.3 Permanent Batter Slopes (basins and embankments)

It is recommended that permanent earth batters not exceed 3H:1V slope.

A flatter slope than the maximum slope given above is considered desirable to reduce potential issues relating to erosion by surface waters of the exposed batters. Gentle batter slopes that are well vegetated should be adopted where practical for the basin design to assist in reducing scour and channel erosion issues associated with surface water run-off.

As general guidance, the Melbourne Water constructed waterway design manual (2019) typically recommends a gentle batter slope cross section geometry of between 1V:5H and 1V:8H for waterway channels and typically 1V:8H for waterways that hold water at all times (i.e. linear pool type arrangements). An excerpt from the design manual is given in Plate 3 below.

ELEMENT	CRITERIA
High flow channel batter slope	• Typically 1V:5H to 1V:8H • If the system is to be maintained by Council the acceptable batters for turf requiring maintenance is 1V:6H • 1V:3H only allowed in exceptional circumstances and if a valid restriction exists. Such a slope requires further protection and safety considerations.
Low flow channel batter slope	• Typically 1V:8H for waterways holding water at all times (e.g. linear pools type) • Typically 1V:5H for ephemeral waterways (only holding water in storm events)
Low flow channel shape	• Low flow channel base can be 'U' or dish shaped

Plate 3: Batter slope criteria - excerpt from Melbourne Water constructed waterway design manual (2019).

The Option 3 concept design proposed for the Croskell PSP includes two retarding basins, SBRB1 and WLRB3, that will comprise embankments and significant cut depths below existing ground levels (Plate 1).

SBRB1, located in the west of the site, is approximately 840m long in an east-west direction with vertical heights up to 9 m and batter slopes of up to approximately 1V:5H. While proposed slopes of this basin are shallower than the recommended 1V:3H, this recommendation pertains to cuts/embankments up to 3 m in vertical height. Given sections of this proposed retarding basin exceed 3 m in vertical height, further geotechnical testing and slope stability analysis would be required to determine suitability of the proposed design.

WLRB3, located in the south of the site, is approximately 400m long in a northeast-southwest direction with vertical heights of up to 2 m and batter slopes up to approximately 1V:3H. From a slope stability perspective this is acceptable however, as noted above, shallower slopes are generally considered desirable to reduce risks associated with erosion and scour.

Given the shallow groundwater conditions observed at these two basin locations (<0.6 mbgl) and the proposed cut depths, there is a risk of groundwater daylighting as a spring within the cut batter and/or through the base of the basin, which may impact slope stability and suitability of selected liners.

6.4 Clay Liners

6.4.1 Suitability and treatment of soil dispersion issues

Laboratory testing indicates that the Unit 2 to Unit 4 clayey soil material could be used as a compacted low permeability liner material. The remoulded (recompacted) vertical permeability (kv) of the tested soil samples was generally of a suitably low range and generally varied between kv=10^{-11} m/sec and 10^{-12} m/sec.

Compaction testing indicates the field moisture content of the soils is significantly greater (wet) of the optimum moisture content (OMC), which may lead to placement and compaction difficulties, unless successfully dried back (refer Table 6 and Section 6.2).

The Unit 2 to Unit 4 materials generally consist of intermediate to high plasticity clay soils that are prone to desiccation cracking if exposed. This may impact on the serviceability of the liner unless control measures are adopted to insulate the clay and/or reduce potential cracking issues. Potential controls to reduce liner cracking include placing an insulative layer of vegetated topsoil (minimum 200 mm) above the clay liner, and/or 3 % lime stabilisation treatment of the uppermost (minimum 200 mm thick) layer of the clay liner.

The site soils are potentially dispersive and may be prone to surface erosion and turbid water (discolouration) of ponded water if exposed within the wetlands water features.

Possible treatments to assist in reducing the dispersive potential and erosion of the clay soils include one or more of the following measures:

- Mixing of the site soils with either gypsum or lime. Further geotechnical testing would be required to assess the required dosage rates, which based on our experience may be in the order of between 2% and 4% of dry soil weight.

  Or

- Capping of existing clay soils using a compacted layer of imported non-dispersive clayey soil meeting the clay liner criteria specified in Section 6.4.2.

  Or

- Adoption of a Geosynthetic Clay Liner (GCL).

6.4.2 Clay Liner Option – Geotechnical Specifications

Clay liners should extend across the basin or channel floor, any internal fill embankment and cut batters.

Clay liner material should consist of a well graded locally sourced or imported soil that is free of rocky inclusions and which meets the following criteria:

- Free of topsoil, organics and other deleterious matter (as per AS 3798-2007, Section 4.3).
- Having a plasticity index of between 10% and not greater than 65%.

- Have a particle size distribution (grading) of at least 25% passing 0.075 mm standard AS sieve and at least 75% passing 4.75 mm AS sieve.
- Be free of oversize materials greater than 100 mm size that are not readily broken down by mechanical action during rolling with a heavy pad roller.
- Should have a remoulded permeability of not greater (more permeable) than 10^{-7} m/sec, when compacted to within 0% to +3% of OMC and not less than 98% MSDD.
- Have an Emerson Class of 3 or higher when tested using potable water.

The minimum clay liner (compacted) thickness should not be less than 300 mm.

Clay liner materials should be moisture conditioned to within 0% to +3% of OMC and compacted to not less than 98% MSDD. The finished clay liner should be protected by a layer of topsoil, consisting of not less than 200 mm thickness of non-dispersive top soil.

Compaction testing should be undertaken at a minimum frequency outlined in AS 3978-2007, Table 8.1 for Type 3 earthworks type (Concentrated operations). Based on this standard compaction density testing should be undertaken at the following minimum frequency:

- 1 test per layer per 500 m^2; or
- 1 test per 100 m^3 distributed evenly throughout the full thickness of the fill; or
- 3 tests per site visit

Whichever is greater.

Geotechnical laboratory testing suggests that the site soils may exhibit dispersive behaviour. An Emerson Class of 2 was generally returned for most of the tested clay soils, which is less than the recommended criteria described above. The liner soils may therefore be more susceptible to erosion damage if left untreated compared to non-dispersive soil types.

Possible treatments to assist in reducing the dispersive potential of the clay soils are described in Section 6.4.1.

6.4.3 Geosynthetic Liners

As an alternative to a clay liner system a geosynthetic liner could be adopted for wetland areas.

We consider that a bentonite impregnated Geosynthetic Clay Liner (GCL) may be suitable.

Prior to placement of the GCL, the exposed subgrade surface should be scarified to not less than 150 mm and compacted to not less than 90% MSDD. Any soft spots identified should be either, re-scarified and recompacted to achieve the target density, or replaced with an approved imported compacted engineered fill (for example VicRoads Type B fill, or Class 4 crushed rock fill).

The subgrade under the GCL should be free of sharp projections, or abrupt surface elevation changes (ruts, depressions, etc.) that may otherwise damage the liner. Loose stones should be removed (swept) and the surface conditioned using a smooth drum roller such that there is no hard, stony matter projecting greater than 10 mm above the subgrade.

Where the design of the basin is likely to be at, or below the groundwater level at the site, then installation of a suitable underdrainage system should be taken into account by the designer to relieve excessive upward pressure and stop the liner ‘floating’ or cracking under elevated hydrostatic conditions. The outlet for the system would need to consider if drainage outfall under gravity can be accommodated based on existing surface levels and basin design geometry. Alternatively, the GCL may be able to be ‘ballasted’ with an overlying confinement layer to resist uplift forces from elevated hydrostatic pressures, although this may be difficult to achieve where shallow groundwater conditions exist.

Where no underdrainage or ballast system is employed and elevated groundwater conditions place excess pressure on the liner system heave, cracking and local seepage through the liner is possible resulting in groundwater ingress and reduced liner system performance. The basin designer should consider if this is acceptable based on the design intent for the liner system. It is expected this would include consideration to groundwater quality/salinity impacts on any wetland components as well as any potential design capacity loss for surface water capture (i.e. due to groundwater seepage into the basin).

The liner should be installed to manufacturer's guidelines.

GCL's are typically anchored within a trench positioned not less than 0.5 m behind the batter crest line using an anchor trench detail specified by the manufacturer. The anchor trench is typically not less than 300 mm depth below subgrade level and approximately 300 mm wide. The GCL should extend into and across the full width of the anchor trench. Compacted soil should be used to backfill the trench and secure the GCL, prior to placing an additional protective soil layer above the trench zone and remaining exposed sections of GCL as described below. The above is given as a guide only and the manufacturer should be consulted to confirm all installation details relating to the GCL.

A lightly compacted clay soil cover of not less than 300 mm thickness should be placed over the GCL to protect it from damage. The clay soil should be free from hard rocky inclusions that may damage the GCL.

A finishing layer of not less than 200 mm of non-dispersive topsoil should be placed above the clay cover layer and vegetated. Vegetation should be selected based on Melbourne Water wetland design guidelines.

7 Contamination Assessment

In conjunction with the geotechnical drilling, soil sampling for contamination and acid sulfate soil testing was undertaken to provide preliminary advice on soil management options associated with the proposed drainage construction works (i.e. spoil disposal). Prior to mobilising to site, a limited desktop review of historical land use was undertaken to inform the analytical program and in particular whether testing for perfluoroalkyl substances (PFAS) would be included as a contaminant of concern.

7.1 Desktop review

7.1.1 Aerial photographs

Aerial photographs were viewed online through Landata[1]. The aerials indicated land within the overall PSP area has been cleared grazing land other than for:

- Cropping in the northwest corner of the PSP area
- Quarrying associated with what is now Boral Bricks through the central north of the PSP area
- Abattoir (Wagstaff) in the central north (which appears to have been part of the quarrying activity prior to abattoir)
- A presumed chicken/egg farm just to the east of the quarry.
- A farmhouse in southeast.

None of the proposed drainage infrastructure works were in areas directly affected by the above activities. (i.e., the works are located in undeveloped areas of open space). The one exception was a proposed retarding basin at the western end of the PSP / drainage network where it appeared some historical cropping may have occurred. The area is currently appears to be used as cleared grazing land.

[1] https://www.landata.vic.gov.au/

7.1.2 Acid sulfate potential

Published mapping[2] indicates that the site is not in an area characterised as coastal acid sulfate soils. This is consistent with mapped geology[3] at the site which predominately comprises areas of Quaternary sediments (non marine aeolian dune deposits: sand, clay, calcareous sand) overlying Tertiary Baxter Sandstone (non marine fluvial sediments: sandstone, conglomerate, siltstone, ironstone), which are not typically associated with acid sulfate conditions. Site elevation (circa 30-40 mAHD) is also not indicative of formation of coastal acid sulfate soils which are typically encountered below <20 m AHD.

7.2 Drilling program

7.2.1 Sampling methodology

Samples were recovered from each of the 21 investigation locations (BH1 to BH10, BH12 to BH22), for environmental testing purposes. Samples were recovered directly from the auger string typically at depths of 0.1, 0.5, 1, 2 and 3 m bgl, being the likely maximum depth of excavation for drainage channels and wetlands (groundwater monitoring well boreholes were progressed deeper to 6 m bgl). At each depth, a jar sample was recovered for contamination testing and a second sample was also recovered into a plastic bag at 0.5, 1, 2 and 3 m bgl for acid sulfate soil testing. Care was taken at each location to remove soils from the tip of the lead auger, scraping away any adhered material to reduce potential for cross contamination.

Samples were labelled with a unique ID according to borehole and depth and placed into a chilled container for transport to the laboratory under chain of custody document.

7.2.2 Analytical Program

The analytical program comprised allowance for 17 samples for an '1828.2' suite (contaminants listed in Table 3 of EPA Publication 1828.2), and 17 samples for a reduced suite of TRH, PAH, BTEX and 8 metals, and 17 samples for assessment of acid sulfate soils (Chromium Reducible Sulfur suite). An option was given for analysis of PFAS in soils, subject to findings of historical land use. Activities identified through the aerial photograph review, above, are not typically considered to be sources of PFAS. Occasionally, agriculture use (cropping) may be a source of PFAS if they are used as adjuvants within pesticides/herbicides sprays. This was generally considered a lower probability and noting that works are proposed outside of the cropped areas, in discussion with the client the PFAS analysis was not undertaken.

Of the available 21 sampling locations, a surface (0.1) and depth (0.5) sample were analysed at 17 of the locations (BH1, BH3 to BH8, BH10, BH12 to BH19, BH21, BH22) for the 1828.2 screen and reduced suite respectively. The 17 locations were selected to ensure coverage of all the proposed drainage works features.

For acid sulfate soils, the proposed 17 samples were distributed across six locations (BH04, BH06, BH10, BH13, BH16 and BH22), to provide information on any change in potential acidic conditions vertically through the soil profile. Typically the 0.5 m and then a mix of the depth samples from 1, 2 and 3 m intervals were selected. Again, the six locations were selected to provide coverage of the site geology and the excavation features.

7.3 Screening criteria

Industrial Waste is defined as "all waste from commercial, industrial or trade activities or from laboratories" (EPA Publication 1968.1 *Guide to classifying industrial waste*) and therefore includes surplus soils generated

[2] https://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vic_acid_sulphate_map3

[3] VANDENBERG, A.H.M., 1997. Queenscliff SJ 55-9 Edition 2 1:250,000 geological map. Geological Survey of Victoria.

from any development activity. Classification is used to determine if Industrial waste also falls into one of the categories below and therefore whether additional waste duties and regulatory controls apply:

- Priority Waste.
- Reportable Priority Waste.

EPA Publication 1828.2 *Waste Disposal Categories – Characteristics and Thresholds* is used to assess the hazard category for soils, prior to off-site re-use or disposal. The hazard categories for industrial waste soils are as follows:

- Category A (prohibited from disposal to landfill)
- Category B
- Category C
- Category D (with specific limitations in the Environment Protection Regulations on sites to which this category may be applied)
- Soil containing asbestos only
- Fill Material.

Descriptions of the threshold limit values (upper limits) of contaminants for these categories are outlined in EPA Publication 1828.2. Publication 1968.1 also refers to EPA Publication IWRG702, *Soil Sampling*, dated June 2009, which provides guidance on the minimum ex-situ soil sampling frequencies as follows:

- One sample per 25 m^3 for soil volumes of less than 200 m3 with a minimum of three samples; and
- One sample per 25 m^3 for soil volumes of greater than 200 m3 with a minimum of ten samples, where there is sufficient data to calculate the 95% upper confidence limit of the mean.

For acid sulfate soils, results were compared to criteria provided in EPA Publication 655.1, Acid Sulfate Soil and Rock. As the volumes of material to be disturbed is likely to be more than 1000 tonnes, the lowest net acidity screening levels (0.03%S and 18molH+/tonne) were adopted, independent of soil type.

7.4 Results

7.4.1 Waste classification

The threshold limit values (upper limits) of contaminants from EPA Publication 1828.2 are presented with the tabulated analytical data in Table 1, Appendix D. NATA certified laboratory certificates are presented in Appendix E.

All analytical results were below the Fill Material Upper Limits. The results of this initial screening assessment in conjunction with the absence of identified sources, indicates that soils are likely to suitable for offsite disposal as Fill with reference to the EPA Victorian Fill Determination[4].

Reuse of soils on site is also considered appropriate.

7.4.2 Acid sulfate soils

Field observations

Geological logs typically indicated soils as Silty Clay / Clay (Unit 2) sometimes overlying Clayey/Silty Sand (Unit 3) with no characteristics that were considered to be typical indicators of potential acid sulfate soils (e.g., soft muds or dark grey sands, jarosite staining, hydrogen sulfide odours etc). Soils were generally moist to wet (groundwater levels are reported to range from approximately 0.5 to 2 m bgl).

Analytical results

[4] Victorian Government Gazette No. S 301 Friday 18 June 2021

Tabulated analytical results with screening criteria are provided in Table 2, Appendix D. A review of the CRS results indicates:

- All pH_{KCL} values were below 6.5 (therefore potential acid neutralising capacity of soils is discounted), but above 4.5 (therefore retained acidity is not required to be assessed).
- All potential acidity results were below the adopted screening criteria.
- Actual acidity (TAA) was reported in soils, but in the absence of potential acidity (above criteria) or indicators of the presence of actual acid sulfate soils such as jarosite staining, the actual acidity was considered to be associated with organic material or oxidation of iron hydroxides, and not indicative of acid sulfate soils.
- The Net Acidity values are above the screening levels, but are attributable to the TAA, with potential acidity below criteria.

Taking into account the site setting, observed geological conditions, absence of field indicators and absence of potential acidity, the soils are not considered to be acid sulfate soils.

7.4.3 Quality control

A quality control (QC) sampling program was implemented comprising collection and analysis of blind and split duplicate samples as outlined in Table 7. Samples were analysed for 1828.2 screen (external split duplicates) and TPH, PAH, BTEX and metals (internal blind duplicates).

Table 7: Quality control analysis program

Primary sample (ALS)	Blind duplicate (ALS)	Secondary sample (Eurofins) – split dup
BH16/0.0-0.1	-	BH16/0.1
BH22/0.5-0.6	QC4	QC6
BH19/0.1-0.2	BH19/QC1	-

Additional QC samples were collected and submitted to the laboratories but were not analysed.

Results were compared by calculating the relative percentage difference (RPD) between the primary and secondary laboratory results. The RPD is calculated as the difference between the two samples divided by the average and expressed as a percentage. Typically, RPD values should be less than 30-50%, but may vary depending on the analyte and reporting of concentrations close to the laboratory limit of reporting.

Tabulated QC results and calculated RPDs are provided in Table 3, Appendix D and indicated acceptable analytical precision and accuracy, with only one duplicate analytical pair (chromium in split duplicate sample pair BH22/0.5-0.6 and QC6) reporting a result above the 50% screening level.

The laboratories also conducted their own internal quality control programs, with results reported within the analytical certificates in Appendix E.

In summary, the QC program is considered to have demonstrated that the data is of suitable quality for the assessment.

8 Summary of Conclusions

The preliminary geotechnical investigation provided an indication of the soil conditions that may be encountered along the proposed drain alignment and at basin for the proposed Croskell PSP. Completion of 21 boreholes and in situ testing, in addition to geotechnical and contamination sampling was used to characterise of the subsurface ground conditions.

The subsurface profile encountered at the test sites typically consisted of moderate to highly plastic clay rich soils, overlying sandy clays.

Geotechnically the site is generally considered suitable for the development of the proposed wetland basin(s) and ancillary channel works, however some issues have been identified which will require management.

The main geotechnical issues identified that have the potential to impact on the wetland design and construction activities and include:

- dispersive soils and increased erosion potential,
- elevated in situ soil moisture content,
- shallow groundwater.

Groundwater depth was measured using seven open standpipe monitoring wells that were installed during the field program. A single round of monitoring observed groundwater conditions between 0.45 m and 2.53 m along the proposed alignment.

Contamination and acid sulfate testing indicated the soils likely suitable both reuse onsite, or for offsite disposal as Fill Material.

The risk of acid sulfate soils being present at the site is considered low based on preliminary investigation results presented in this report.

9 Further Investigations

The information presented in the report is intended to provide a preliminary indication of the ground conditions at the site, sufficient to support early design stages of the project.

Further geotechnical, hydrogeological and contamination investigations are expected to be required to support future functional design and detailed design stages of the project.

These future investigations should preferably be scoped once the design matures and should be based on the final channel alignment and basin configuration, including any structural components such as weirs or culverts.

10 Limitations

10.1 Scope of services

This geotechnical site assessment report (the report) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and W4G (scope of services). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

10.2 Reliance on data

In preparing the report, WSP has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the report (the data). Except as otherwise stated in the report, WSP has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (conclusions) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WSP will not be liable in relation to incorrect conclusions should any

data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP.

10.3 Geotechnical Investigation

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared to meet the specific needs of individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor or even some other consulting civil engineer. This report was prepared expressly for the client and expressly for purposes indicated by the client or his representative. Use by any other persons for any purpose, or by the client for a different purpose, might result in problems. The client should not use this report for other than its intended purpose without seeking additional geotechnical advice.

10.4 This geotechnical report is based on project-specific factors

This geotechnical engineering report is based on a subsurface investigation which was designed for project-specification factors, including the nature of any development, its size and configuration, the location of any development on the site and its orientation, and the location of access roads and parking areas. Unless further geotechnical advice is obtained this geotechnical engineering report cannot be used:

- when the nature of any proposed development is changed
- when the size, configuration location or orientation of any proposed development is modified.

This geotechnical engineering report cannot be applied to an adjacent site.

10.5 Limitations of the site investigation

In making an assessment of a site from a limited number of boreholes or test pits there is the possibility that variations may occur between test locations. Site exploration identifies specific subsurface conditions only at those points from which samples have been taken. The risk that variations will not be detected can be reduced by increasing the frequency of test locations; however this often does not result in any overall cost savings for the project. The investigation program undertaken is a professional estimate of the scope of investigation required to provide a general profile of the subsurface conditions. The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geological model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite investigation the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

The borehole logs are the subjective interpretation of subsurface conditions at a particular location, made by trained personnel. The interpretation may be limited by the method of investigation, and can not always be definitive. For example, inspection of an excavation or test pit allows a greater area of the subsurface profile to be inspected than borehole investigation, however, such methods are limited by depth and site disturbance restrictions. In borehole investigation, the actual interface between materials may be more gradual or abrupt than a report indicates.

10.6 Subsurface conditions are time dependent

Subsurface conditions may be modified by changing natural forces or man-made influences. A geotechnical engineering report is based on conditions which existed at the time of subsurface exploration.

Construction operations at or adjacent to the site, and natural events such as floods, or groundwater fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical

report. The geotechnical engineer should be kept appraised of any such events, and should be consulted to determine if additional tests are necessary.

10.7 Avoid misinterpretation

A geotechnical engineer should be retained to work with other appropriate design professionals explaining relevant geotechnical findings and in reviewing the adequacy of their plans and specifications relative to geotechnical issues.

10.8 Bore profile logs should not be separated from the engineering report

Final bore/profile logs are developed by geotechnical engineers based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final bore/profile logs are included in geotechnical engineering reports. These logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings. To minimise the likelihood of bore/profile log misinterpretation, contractors should be given access to the complete geotechnical engineering report prepared or authorised for their use. Providing the best available information to contractors helps prevent costly construction problems. For further information on this matter reference should be made to ‘Guidelines for the Provision of Geotechnical Information in Construction Contracts’ published by the Institution of Engineers Australia, National Headquarters, Canberra 1987.

10.9 Geotechnical involvement during construction

During construction, excavation is frequently undertaken which exposes the actual subsurface conditions. For this reason geotechnical consultants should be retained through the construction stage, to identify variations if they are exposed and to conduct additional tests which may be required and to deal quickly with geotechnical problems if they arise.

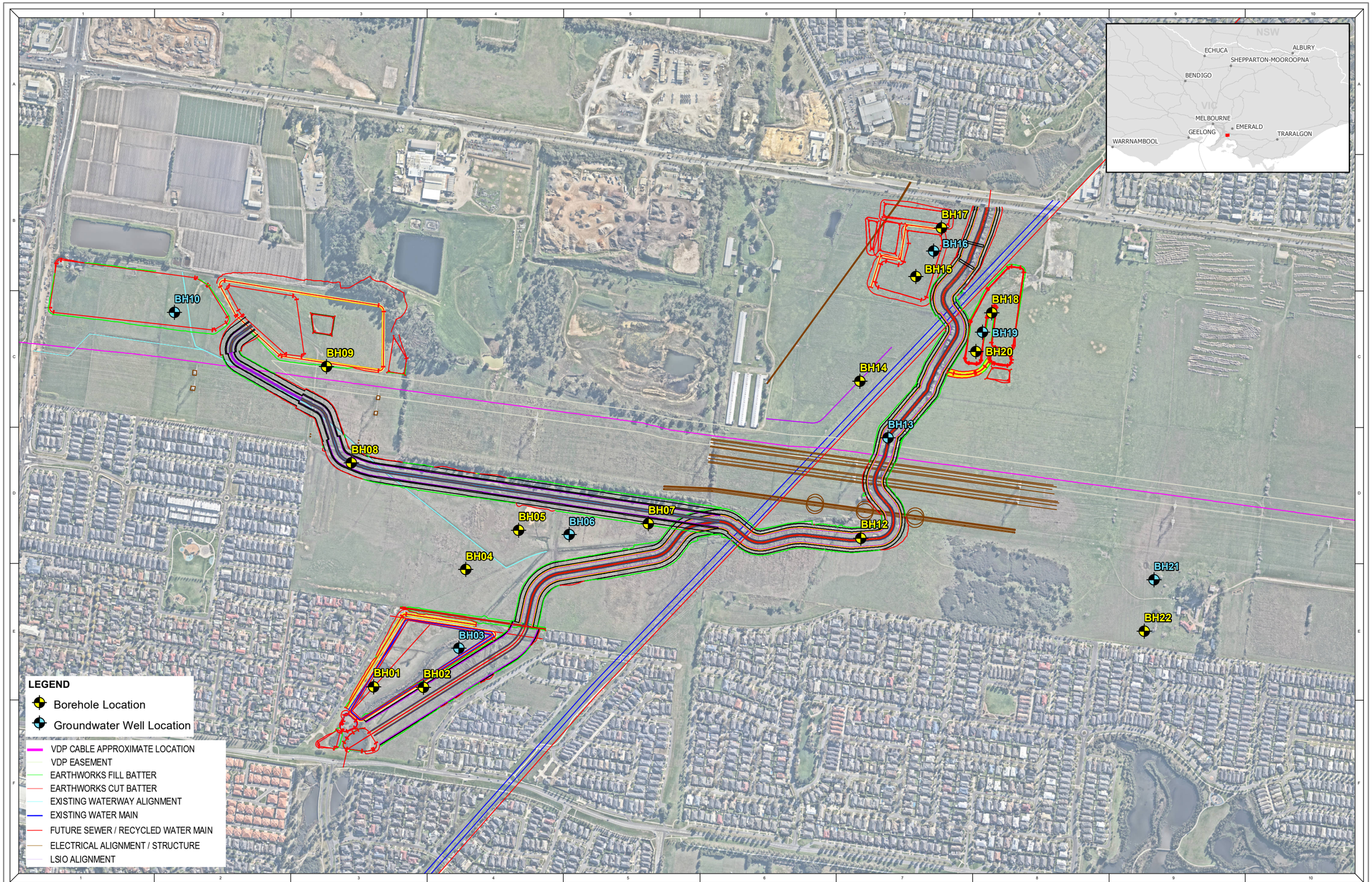
10.10 Report for benefit of the client

The report has been prepared for the benefit of the client and no other party. WSP assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of WSP or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

10.11 Other Limitations

WSP will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

FIGURES – Test Location Plan (Figure 1)



NOTE
W4G has prepared this document in accordance with instruction of Melbourne Water for their specific use.

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Contains Vicmap Information © State of Victoria 2020

0 0.075 0.15 0.3 Kilometers

1:8,500 at A3

Croskell PSP Proposed Drainage Strategy

Figure 1: Borehole Location Plan

REFERENCE: C:\Users\AUJE507134\WSP O365\AU-WKG - Geospatial - AIS - PS200637_Croskell_PSP\Mxd\PS200637_Croskell_PSP_v2.mxd

DATE: 19/09/2023 | SHEET: 1 of 1 | DRAWING NUMBER: 3551531_286-1

APPENDIX A - Reports of Boreholes

- Explanatory notes – Engineering Logs

Explanatory Notes – Engineering Logs

Engineering logs have been prepared in general accordance with AS1726:2017 “Geotechnical Site Investigations”, AGS 4.1AU data format and as defined below.

DRILLING/EXCAVATION METHODS

Symbol	Term
AD/T	Auger drilling with TC-bit
AD/V	Auger drilling with V-bit
AS	Auger screwing
AT	Air track / rotary air blast
DP	Direct push
DT	Diatube
E	Excavator
HA	Hand auger
HAND	Hand excavation
HSA	Hollow stem auger
NMLC/HMLC	Diamond core – triple tube
NQ3/HQ3/PQ3	Diamond core – wireline
RC	Reverse circulation
RR	Rock roller
S	Sonic drill
VB	Vibrocoring
VE	Vacuum extraction
WB	Washbore with blade or drag bit

WATER

Complete water loss — Outflow

Partial water loss — Inflow

Water level at date shown

NOT OBSERVED – not possible to assess groundwater conditions e.g. due to drilling water, surface seepage or cave-in
NOT ENCOUNTERED – the hole was dry soon after excavation, however, groundwater could be present in less permeable strata. Inflow may have been observed had the hole been left open for a longer period

FIELD TEST (Soil borehole and test pit logs)

DCP Dynamic Cone Penetrometer
HB Hammer bounce
HW/RW SPT penetration under rod/hammer weight only
OT Other test (e.g., plate load test)
PID Photoionisation detector
PKT Permeability test (various methods)
PRM Pressuremeter test
PP Pocket penetrometer
PSP Perth sand penetrometer
SPT Standard penetration test, with ‘N’ value
VST Shear vane test

SAMPLE

B Bulk disturbed sample
C Core sample
CBR CBR mould sample
D Small disturbed sample
ES Soil sample for environmental testing
EW Water sample for environmental testing
G Gas sample
P Piston sample
U63 Push tube sample (with diameter in mm)
W Water sample

TOTAL CORE RECOVERY (Rock logs only)

$$TCR\ (\%) = \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$$

ROCK QUALITY DESIGNATION (Rock logs only)

$$RQD\ (\%) = \frac{\sum \text{Length of sound core pieces} > 100\text{mm}}{\text{Length of core run}} \times 100$$

GROUP SYMBOL (Soil borehole and test pit logs)

Soils are classified to reflect their primary and significant secondary component/characteristic using the classification symbols described in AS1726-2017, summarised as follows.

Symbol	Major division	Typical names
GW, GP	GRAVEL	Gravel & gravel-sand mixtures, little/no fines
GM		Gravel-silt & gravel-sand-silt mixtures
GC		Gravel-clay & gravel-sand-clay mixtures
SW, SP	SAND	Sand & gravel-sand mixtures, little/no fines
SM		Sand-silt mixtures
SC		Sand-clay mixtures
ML	SILT & CLAY (low & medium plasticity)	Inorganic silt/clayey fine sand or silt
CL, CI		Inorganic clay, gravelly clay, sandy clay
OL		Organic silt
MH	SILT & CLAY (high plasticity)	Inorganic silt
CH		Inorganic clay, high plasticity
OH		Organic clay, med-high plasticity, organic silt
Pt	Highly organic soil	Peat, highly organic soil

FIELD DESCRIPTION

Soil and rock materials described in general accordance with AS1726-2017. The description of percentage of cobbles and boulders in a soil may be limited by sample size.

MOISTURE CONDITION

Coarse grained soils and rocks
Dry (D), Moist (M) or Wet (W).
Estimated based on appearance and feel.

Cohesive soils (estimated based on judgement)

Symbol	Term
MC<PL	Moist, dry of plastic limit
MC≈PL	Moist, near plastic limit
MC>PL	Moist, wet of plastic limit
MC≈LL	Wet, near liquid limit
MC>LL	Wet, wet of liquid limit

COHESIVE SOILS – CONSISTENCY

The consistency of a cohesive soil is assessed by tactile means or field measurement of undrained shear strength.
A Hand Penetrometer may be used in the field or the laboratory to provide approximate assessment of unconfined compressive strength of cohesive soils (kPa) as follows:

Strength	Symbol	Indicative undrained shear strength (kPa)	Hand Penetrometer Reading (kPa)
Very Soft	VS	≤ 12	< 25
Soft	S	>12 and ≤ 25	25 to 50
Firm	F	> 25 and ≤ 50	50 to 100
Stiff	St	>50 and ≤ 100	100 to 200
Very Stiff	VSt	> 100 and ≤ 200	200 to 400
Hard	H	>200	> 400
Friable	Fr	-	-

COHESIONLESS SOILS – RELATIVE DENSITY

Relative density terms are used to describe silty and sandy material, and these are usually based on resistance to drilling penetration or the Standard Penetration Test (SPT) ‘N’ values.

The Standard Penetration Test (SPT) is carried out in accordance with AS 1289, 6.3.1. For completed tests the number of blows required to drive the split spoon sampler 300 mm is recorded as the N value. For incomplete tests the number of blows and the penetration beyond the seating

depth of 150 mm are recorded. If the 150 mm seating penetration is not achieved the number of blows to achieve the measured penetration is recorded. SPT correlations may be subject to corrections for overburden pressure and equipment type.

Term	Symbol	Density Index	N Value (blows /0.3 m)	DCP (blows/100 mm)
Very Loose	VL	0 to 15	0 to 4	0 to 1
Loose	L	15 to 35	4 to 10	1 to 2
Medium Dense	MD	35 to 65	10 to 30	2 to 3
Dense	D	65 to 85	30 to 50	4 to 8
Very Dense	VD	>85	>50	>8

SOIL STRUCTURE

Soil structure is described to AS 1726-2017 if visible and present.

SOIL / ROCK ORIGIN

The geological origin of the soil or rock is presented as an interpretation of the geological and geomorphological setting. Origin cannot be deduced on the basis of material appearance and properties alone and is therefore limited by the availability of supporting geological information

ROCK MATERIAL WEATHERING

Rock weathering is described mainly using the following abbreviations and definitions used in AS1726.

Term	Symbol	Definition
Residual soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognizable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	Rock shows no sign of decomposition of individual minerals or colour changes.

If differentiation between highly and moderately weathered rock is not practicable, then Distinctly Weathered (DW) is used as defined in AS1726:2017.

INFERRED ROCK STRENGTH

Rock strength is inferred based on field assessment, Point Load Index (AS4133.4.1) or Uniaxial Compressive Strength (AS 4133.4.2.1) as follows:

Term	Symbol	UCS (MPa)	Point Load Index $Is_{(50)}$ (MPa)*
Very Low	VL	0.6 to 2	0.03 to 0.1
Low	L	2 to 6	0.1 to 0.3
Medium	M	6 to 20	0.3 to 1
High	H	20 to 60	1 to 3
Very High	VH	60 to 200	3 to 10
Extremely High	EH	>200	>10

*example based on UCS = 20 x $Is_{(50)}$, actual correlation factor varies across rock types and weathering grades

●○ Axial\Diametral Point Load Index test

■ Uniaxial Compressive Strength test

DEFECT SPACING/BEDDING SPACING (Rock)

Measured at right angles to defects of same set or bedding.

Term	Defect Spacing	Bedding
Extremely closely spaced	<6 mm 6 to 20 mm	Thinly Laminated Laminated
Very closely spaced	20 to 60 mm	Very Thin
Closely spaced	0.06 to 0.2 m	Thin
Moderately widely spaced	0.2 to 0.6 m	Medium
Widely spaced	0.6 to 2 m	Thick
Very widely spaced	>2 m	Very Thick

DEFECT TYPE (Rock)

Symbol	Term	Symbol	Term
CS	crushed seam	J	joint
DB	drilling break	MB	mechanical break
DL	drill lift	P	parting
EW	extremely weathered seam	S	sheared surface
HB	handling break	SS	shear seam
IS	infilled seam	SZ	shear zone

DEFECT ORIENTATION (Rock)

Dip measured relative to the horizontal plane in vertical boreholes and relative to core axis in inclined boreholes.

DEFECT ROUGHNESS AND SHAPE (Rock)

Roughness	Description	Roughness	Description
SM	Smooth	PO	Polished
RF	Rough	SL	Slickensided
VR	Very Rough		

Shape	Description	Shape	Description
PR	Planar	CU	Curved
UN	Undulating	ST	Stepped
IR	Irregular		

DEFECT APERTURE OBSERVATION (Rock)

Symbol	Term
CN	Clean
CT	Coating (<=1 mm)
SN	Stained
VN	Veneer

Aperture infill is denoted through presence of a value in the aperture thickness measurement and an infill material code or name in the infill material cell.

DEFECT INFILLING (Rock)

Where defects are infilled, the infilling material is either coded with a soil\mineral name (e.g. CLAY), a group symbol code (e.g. SC), or one of the material codes in the table below.

Term	Description	Term	Description
Ca	Calcite	Mn	Manganese
Ch	Chlorite	Py	Pyrite
Co	Coal/carbonaceous	Gp	Gypsum
CR	Crushed rock	Qz	Quartz
Fe	Limonite/ironstone	Ud	Unidentified
Fs	Feldspar		

OTHER OBSERVATIONS

Ranking of visually observable contamination and odour (applies on specific soil contamination projects only)

Symbol	Term
R = 0	No visible evidence of contamination
R = 1	Slight evidence of contamination
R = 2	Visible evidence of contamination
R = 3	Significant visible evidence of contamination
R = A	No non-natural odours identified
R = B	Slight non-natural odours identified
R = C	Moderate non-natural odours identified
R = D	Strong non-natural odours identified

Graphic Log Colour Scheme – Soils and Rocks

The soil and rock colour schemes presented on the logs and fences have been derived from those below.
The rock colour scheme is taken from Geoscience Australia's predecessor, the Bureau of Mineral Resources (BMR).

	Clay dominated soils	Soils
	Silt dominated soils, topsoil, undifferentiated fine grained soil	
	Sand dominated soils	
	Gravel or cobble dominated soils	
	Peat soils	
	Lithic sedimentary breccia and conglomerate	Sedimentary rocks
	Sandstone, arenite	
	Arkose	
	Pelitic rocks, shale, mudstone	
	Greywacke, siltstone, siltstone-sandstone mixtures	
	Coal, lignite, undifferentiated carbonaceous rock	
	Limestone, chert, undifferentiated calcareous soils, and rocks	
	Undifferentiated metamorphic rocks of any grade	Metamorphic rocks
	Schist, gneiss, and other high grade metamorphic rocks	
	Greenschist, phyllite, hornfels and lower grade metamorphic rocks	
	Undifferentiated igneous rock, tuff, volcanics	Igneous rocks
	Extrusive acid igneous rock, rhyolite	
	Extrusive basic igneous rock, basalt, spilite	
	Extrusive intermediate igneous rock, dacite	
	Extrusive ultrabasic igneous	
	Intrusive acid igneous rock, all granitoid rock	
	Intrusive basic igneous rock, gabbro, dolerite	
	Intrusive intermediate igneous rock, andesite, diorite	
	Intrusive ultrabasic igneous rock, peridotite	
	Fill, concrete, pavement	Secondary rock, man-made and other materials
	Water	
	Undifferentiated evaporite unit	
	Calcrete	
	Ironstone, ferricrete, ferruginous rock	

Graphic Symbols – Soils and Rocks

Typical symbols for soils and rocks are as follows. Combinations of these symbols may be used to indicate mixed materials such as clayey sand.

SOIL SYMBOLS

Main components


CLAY


SILT


SAND


GRAVEL


BOULDERS / COBBLES


TOPSOIL


PEAT

Minor components


CLAYEY


SILTY


SANDY


GRAVELLY

OTHER MATERIAL SYMBOLS


FILL


BITUMEN


CONCRETE

ROCK SYMBOLS

Sedimentary Rocks


SANDSTONE


SILTSTONE


CLAYSTONE, MUDSTONE


SHALE


COAL


LIMESTONE


CONGLOMERATE

Igneous rocks


GRANITE


BASALT


UNDIFFERENTIATED IGNEOUS

Metamorphic rocks


SLATE, PHYLLITE, SCHIST


GNEISS


QUARTZITE

BOREHOLE: BH01

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351237.0 m E 5781944.0 m N MGA2020-55	Date Started:	2/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	2/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	Not Encountered	0	0.40	ES 0.10-0.20 m BH01/2001			CL	TOPSOIL Silty CLAY: low plasticity, brown, with rootlets.	w<PL	St	0 5 10 15 20 25
					ES 0.50-0.60 m BH01/2002			CI	Silty CLAY: medium plasticity, brown.	w<PL	VSt	
			1	1.00	SPT 1.00-1.45 m HW/50mm,1/100mm,3 N=7 ES 1.00-1.10 m BH01/2003 D 1.00-1.45 m BH01-001			CH	Silty CLAY: high plasticity, orange brown pale grey.	w≈PL		
									Pale grey orange brown.	w>PL		
			2	2.00	SPT 2.00-2.45 m HW/150mm,2,3 N=5 ES 2.00-2.10 m BH01/2004 D 2.00-2.45 m BH01-002			CI	Silty CLAY: medium plasticity, orange brown pale grey.	w≈PL	F	
			3	3.45	ES 2.90-3.00 m BH01/2005 SPT 3.00-3.45 m HW/100mm,1/50mm,3 N=6 D 3.00-3.45 m BH01-003				Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

Checked AJD

Date 19/4/2023

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BOREHOLE: BH02

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351356.0 m E 5781942.0 m N MGA2020-55	Date Started:	4/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	4/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm 0 5 10 15 20 25
AD/V		Not Encountered	0	0.30	ES 0.10-0.20 m BH02_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, dark brown, with rootlets.	w<PL	F - St	
					ES 0.50-0.60 m BH02_0.5-0.6 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			
			1		SPT 1.00-1.45 m 2,3,4 N=7 ES 1.00-1.10 m BH02_1-1.1 0A B 1.00-1.80 m BH02-001 D 1.00-1.45 m BH02-002					w>PL	St	
			2		ES 2.00-2.10 m BH02_2-2.1 0A U63 2.00-2.40 m BH02-003 PP= 90,100,130							
			3	3.00	SPT 3.00-3.45 m 4,4,5 N=9 ES 3.00-3.10 m BH02_3-3.1 0A D 3.00-3.45 m BH02-004			CI	CLAY: medium plasticity, grey green and pale brown.	w≈PL		
				3.45					Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH03

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351440.0 m E 5782035.0 m N MGA2020-55	Date Started:	2/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	2/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	3/4/2023	0	0.20	ES 0.10-0.20 m BH03/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	F	0 5 10 15 20 25
					ES 0.50-0.60 m BH03/2002			CI	Silty CLAY: medium plasticity, pale grey orange brown.	w≈PL	S - F	
			1	1.00	SPT 1.00-1.45 m HW/150mm,2,3 N=5 ES 1.00-1.10 m BH03/2003 D 1.00-1.45 m BH03-001			CH	Silty CLAY: high plasticity, pale grey orange brown.	w≈PL	VSt	
			2	2.10	SPT 2.00-2.45 m HW/300mm,2 N=2 ES 2.00-2.10 m BH03/2004 D 2.00-2.45 m BH03-002			CI	Silty CLAY: medium plasticity, orange brown pale grey.	w>PL	F	
			3	3.40	ES 2.90-3.00 m BH03/2005 SPT 3.00-3.45 m HW/140mm,1/10mm,3 N=8 D 3.00-3.45 m BH03-003			CH	Silty CLAY: high plasticity, orange brown blue grey.	w≈PL		
									Orange brown pale grey.	w>PL		
			4	4.50	SPT 4.50-4.95 m HW/350mm,3/100mm N=3 D 4.50-4.95 m BH03-004				Blue grey.	w≈PL	F - St	
				4.90					Orange brown pale grey.	w>PL		
			5									
			6	6.45	SPT 6.00-6.45 m 3,4,3 N=7 D 6.00-6.45 m BH03-005				Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH04

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351457.0 m E 5782223.0 m N MGA2020-55	Date Started:	1/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	1/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	Not Encountered	0	0.20	ES 0.10-0.20 m			OL	TOPSOIL Clayey SILT: low plasticity, brown.	w<PL		0 5 10 15 20 25
								CH	Silty CLAY: high plasticity, pale orange brown pale grey, with rootlets.	w<PL	St	
					ES 0.50-0.60 m							
			1		SPT 1.00-1.45 m 2,3,3 N=6 D 1.00-1.45 m ES 1.00-1.10 m				Pale grey orange brown.	w>PL	F - St	
			2	2.10	SPT 2.00-2.45 m 2,2,3 N=5 D 2.00-2.45 m ES 2.00-2.10 m			CH	Sandy CLAY: high plasticity, pale grey orange brown, sand is fine to medium grained.	w>PL	F	
				3.00	ES 2.90-3.00 m							
			3	3.45	SPT 3.00-3.45 m 3,2,4 N=6 D 3.00-3.45 m			CH	Silty CLAY: high plasticity, pale grey.	w≈PL		
									Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH05

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351583.0 m E 5782317.0 m N MGA2020-55	Date Started:	1/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	1/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	Not Encountered	0		ES 0.10-0.20 m BH05/2001			CL	TOPSOIL Silty CLAY: low plasticity, brown, with rootlets.	w<PL	VSt	0 5 10 15 20 25
				0.60	ES 0.50-0.60 m BH05/2002			CI	Silty CLAY: medium plasticity, orange brown pale grey.			
			1		SPT 1.00-1.45 m 2,2,2 N=4 ES 1.00-1.10 m BH05/2003 D 1.00-1.45 m BH05-001					w≈PL	F - St	
				2.00								
			2		ES 2.00-2.10 m BH05/2004 U63 2.00-2.45 m BH05-002 R=0.4m , PP=210kPa			CH	CLAY: high plasticity, pale grey red-brown.	w≈PL	St	
									Pale grey orange brown.	w>PL	VSt	
			3	3.10	ES 2.90-3.00 m BH05/2005 SPT 3.00-3.45 m 2,2,2 N=4 D 3.00-3.45 m BH05-003			SC	Clayey SAND: fine to medium grained, pale grey orange brown, clay is medium plasticity.	w>PL	L	
				3.45					Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH06

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351704.0 m E 5782306.0 m N MGA2020-55	Date Started:	1/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	1/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	6/4/2023	0		ES 0.10-0.20 m BH06/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	St	0 5 10 15 20 25
								MH	Clayey SILT: medium plasticity, pale grey orange brown.			
					ES 0.50-0.60 m BH06/2002					w≈PL	F - St	
			1		SPT 1.00-1.45 m 2,2,3 N=5 ES 1.00-1.10 m BH06/2003 D 1.00-1.45 m BH06-001					w>PL		
				2.00								
			2		ES 2.00-2.10 m BH06/2004 U63 2.00-2.45 m BH06-002 R=0.4m , PP=110kPa			CH	Sandy CLAY: high plasticity, pale grey orange brown, sand is fine to medium grained.		F	
			3		ES 2.90-3.00 m BH06/2005 SPT 3.00-3.45 m 2,2,2 N=4 D 3.00-3.45 m BH06-003					w>PL		
				4.00								
			4					CH	Silty CLAY: high plasticity, orange brown pale grey.			
			5		SPT 4.50-4.95 m 3,4,5 N=9 D 4.50-4.95 m BH06-004					w>PL	St	
			6		SPT 6.00-6.45 m 4,6,6 N=12 D 6.00-6.45 m BH06-005							
				6.45					Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH07

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351892.0 m E 5782332.0 m N MGA2020-55	Date Started:	28/2/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	28/2/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	Encountered	0	0.10				OL	TOPSOIL Clayey SILT: low plasticity, brown.	w<PL	S	0 5 10 15 20 25
				0.20	ES 0.10-0.20 m BH07/2001			MH	Clayey SILT: medium plasticity, brown.	w<PL	VSt	
								CI	CLAY: medium plasticity, grey orange brown.			
					ES 0.50-0.60 m BH07/2002					w≈PL	St	
			1		SPT 1.00-1.45 m 2,3,4 N=7 ES 1.00-1.10 m BH07/2003 D 1.00-1.45 m BH07-001				Pale grey orange brown.			
			2		SPT 2.00-2.45 m 2,4,3 N=7 ES 2.00-2.10 m BH07/2004 D 2.00-2.45 m BH07-002					w>PL	F	
			3	3.00	ES 2.90-3.00 m BH07/2005 SPT 3.00-3.45 m 3,6,4 N=10 D 3.00-3.45 m BH07-003			CH	CLAY: high plasticity, pale grey brown with yellow.	w>PL	St	
				3.40				CH	Sandy CLAY: high plasticity, orange pale grey, sand is fine to medium grained.	w>PL		
			4						Hole Terminated at 3.45 m Target depth			
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH08

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351184.0 m E 5782477.0 m N MGA2020-55	Date Started:	2/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	2/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm (0 5 10 15 20 25)
AD/V	F	Not Encountered	0	0.40	ES 0.10-0.20 m BH08/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	St - VSt	
					ES 0.50-0.60 m BH08/2002			CI	Silty CLAY: medium plasticity, dark brown.	w<PL	St - VSt	
			1	1.50	SPT 1.00-1.45 m HW/150mm,2,3 N=5				Pale grey mottled orange brown.	w≈PL		
			2		SPT 2.00-2.45 m HW/150mm,2,2 N=4 ES 2.00-2.10 m BH08/2003 D 2.00-2.45 m BH08-002				Brown orange pale grey.	w>PL	F	
			3	3.00	ES 2.90-3.00 m BH08/2004 SPT 3.00-3.45 m 3,5,7 N=12 D 3.00-3.45 m BH08-003			MH	Clayey SILT: high plasticity, orange brown pale grey.	w>PL	St	
				3.45					Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH09

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351125.0 m E 5782707.0 m N MGA2020-55	Date Started:	28/2/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	28/2/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST (AS 1289.6.3.2-1997) Blows per 100 mm
AD/V	F	Not Encountered	0	0.20	ES 0.10-0.20 m BH09/2001			ML	TOPSOIL Clayey SILT: low plasticity, brown, trace fine to medium grained gravel; with rootlets.	w<PL	VSt	0 5 10 15 20 25
								MH	Clayey SILT: medium plasticity, brown.	w≈PL	VSt	
				0.50								
				0.60	ES 0.50-0.60 m BH09/2002			CH	Silty CLAY: high plasticity, brown.	w≈PL	St	
			1					CH	CLAY: high plasticity, pale grey red brown brown.			
					SPT 1.00-1.45 m 3,3,5 N=8 ES 1.00-1.10 m BH09/2003 D 1.00-1.45 m BH09-001							
									Pale grey yellow with brown.			
			2	2.00				CH	Silty CLAY: high plasticity, pale grey orange brown.	w>PL	St	
					SPT 2.00-2.45 m 3,4,8 N=12 ES 2.00-2.10 m BH09/2004 D 2.00-2.45 m BH09-002							
				3.00	ES 2.90-3.00 m BH09/2005			CI	Silty CLAY: medium plasticity, pale grey brown.			
			3	3.45	SPT 3.00-3.45 m 4,8,10 N=18 D 3.00-3.45 m BH09-003				Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

Checked AJD

Date 19/4/2023

WSP-AU 5.03.3 LIB.GLB Log IS AU BOREHOLE 3 PS200634 BECA_AD_REVIEWED - WITH MARCH SI.GPJ <<DrawingFile>> 18/8/2023 09:01 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: WSP 5.03.3 2023-01-19 Prj: WSP 5.03.3 2023-01-19

BOREHOLE: BH10

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	350762.0 m E 5782836.0 m N MGA2020-55	Date Started:	2/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	2/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm (0 5 10 15 20 25)
AD/V		6/4/2023	0		ES 0.10-0.20 m BH10/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	F	
				0.60	ES 0.50-0.60 m BH10/2002			CH	Silty CLAY: high plasticity, orange brown pale grey.			
	F		1		SPT 1.00-1.45 m HW/150mm,3,3 N=6 ES 1.00-1.10 m BH10/2003 D 1.00-1.45 m BH10-001					w≈PL	F	
			2	2.10	SPT 2.00-2.45 m 12,17,24 N=41 ES 2.00-2.10 m BH10/2004 D 2.00-2.45 m BH10-002			CI-CH	Silty CLAY: medium to high plasticity, orange brown pale grey.	w>PL		
	H			2.60				CH	Silty CLAY: high plasticity, orange brown yellow brown.			
	F		3		ES 2.90-3.00 m BH10/2005 SPT 3.00-3.45 m 6,14,18 N=32 D 3.00-3.45 m BH10-003					w≈PL	VSt - H	
			4	4.70	SPT 4.50-4.95 m 4,10,19 N=29 D 4.50-4.95 m BH10-004			CL	Sandy CLAY: low plasticity, yellow brown, sand is fine to medium grained.	w>PL		
	F		5	5.20				CL	Silty CLAY: low plasticity, pale grey orange brown.	w>PL	St	
			6	6.00								
	H			6.30	SPT 6.00-6.45 m 5,12,17 N=29 D 6.00-6.45 m BH10-005			CI	Silty CLAY: medium plasticity, pale orange brown dark brown.	w≈PL	VSt - H	
	F			6.45				SC	Clayey SAND: fine to medium grained, low plasticity, brown.	W	D	
			7						Hole Terminated at 6.45 m Target depth			
			8									
			9									
			10									

Comments

Checked AJD

Date 19/4/2023

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BOREHOLE: BH12

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352398.8 m E 5782298.0 m N MGA2020-55	Date Started:	5/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	5/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		Not Encountered	0	0.30	ES 0.10-0.20 m BH12_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, dark brown, with rootlets.			
					ES 0.50-0.60 m BH12_0.5-0.6 0A			CL	Silty CLAY: low plasticity, dark brown, with rootlets.	w<PL	F - St	
			1	1.20	SPT 1.00-1.45 m 2,3,5 N=8 ES 1.00-1.10 m BH12_1-1.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey, trace coarse grained gravel.	w>PL	F - St	
				1.80	D 1.00-1.45 m BH12-001			CH	CLAY: high plasticity, pale brown and pale grey.	w>PL	F	
			2		SPT 2.00-2.45 m 1,2,2 N=4 ES 2.00-2.10 m BH12_2-2.1 0A							
				2.80	D 2.00-2.45 m BH12-002			CH	CLAY: high plasticity, pale brown and pale grey.	w>PL	F - St	
			3	3.40	ES 3.00-3.10 m BH12_3-3.1 0A U63 3.00-3.40 m BH12-003 pp= 150,160,210				Hole Terminated at 3.40 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

Checked AJD

Date 19/4/2023

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BOREHOLE: BH13

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352464.2 m E 5782537.0 m N MGA2020-55	Date Started:	5/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	5/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		6/4/2023	0	0.40	ES 0.10-0.20 m BH13_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown, with rootlets.	w<PL	VSt - H	
			1		ES 0.50-0.60 m BH13_0.5-0.6 0A ES 1.00-1.10 m BH13_1-1.1 0A			CL-CI	Silty CLAY: low to medium plasticity, dark brown and pale brown.	w≈PL	VSt	
			2	1.50	SPT 1.50-1.95 m 2,2,4 N=6 D 1.50-1.95 m BH13-001 ES 2.00-2.10 m BH13_2-2.1 0A			CI-CH	Silty CLAY: medium to high plasticity, pale brown and pale grey.	w≈PL		
			3	3.00	SPT 3.00-3.45 m 2,2,4 N=6 ES 3.00-3.10 m BH13_3-3.1 0A D 3.00-3.45 m BH13-002			CI	Silty CLAY: medium plasticity, pale brown and pale grey.	w≈PL	F - St	
			4	4.50								
			5		SPT 4.50-4.95 m 3,5,7 N=12 D 4.50-4.95 m BH13-003			CI	Sandy Silty CLAY: medium plasticity, pale brown orange pale grey, sand is medium to coarse grained; trace coarse grained gravel.	w≈PL	St	
			6	6.00	SPT 6.00-6.45 m 5,14,25 N=39 D 6.00-6.45 m BH13-004			SC	Clayey SAND: medium grained, low plasticity, grey and orange.	M	D	
				6.45					Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

DCP TEST Blows per 100 mm: 0 5 10 15 20 25

Comments

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Date 19/4/2023

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BOREHOLE: BH14

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352396.8 m E 5782672.0 m N MGA2020-55	Date Started:	3/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	4/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm 0 5 10 15 20 25
AD/V		Not Encountered	0	0.30	ES 0.10-0.20 m BH14_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown, with rootlets.	w<PL	S - F	
					ES 0.50-0.60 m BH14_0.5-0.6 0A			CH	Silty CLAY: high plasticity, pale grey and pale brown.	w>PL	St - VSt	
			1	1.50	SPT 1.00-1.45 m 2,4,5 N=9 ES 1.00-1.10 m BH14_1-1.1 0A D 1.00-1.45 m BH14-001			CL-CI	Silty CLAY: low to medium plasticity, orange, with fine to medium grained sand.	w≈PL		
			2	2.20	SPT 2.00-2.45 m 2,1,3 N=4 ES 2.00-2.10 m BH14_2-2.1 0A D 2.00-2.45 m BH14-002			CH	CLAY: high plasticity, pale brown and pale grey.	w>PL	F - St	
			3	3.45	SPT 3.00-3.45 m 2,4,5 N=9 ES 3.00-3.10 m BH14_3-3.1 0A D 3.00-3.45 m BH14-003				Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH15

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352529.6 m E 5782921.0 m N MGA2020-55	Date Started:	3/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	3/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm	
AD/V		Not Encountered	0	0.30	ES 0.10-0.20 m BH15_0.1-0.2 0A			CI	TOPSOIL Silty CLAY: medium plasticity, dark brown, with rootlets.	w<PL	F - St		
			1		ES 0.50-0.60 m BH15_0.5-0.6 0A ES 1.00-1.10 m BH15_1-1.1 0A			CI-CH	Silty CLAY: medium to high plasticity, pale brown.	w>PL	St - VSt		
				1.50									
			2		SPT 1.50-1.95 m 2,2,3 N=5 D 1.50-1.95 m BH15-001 ES 2.00-2.10 m BH15_2-2.1 0A			CH	CLAY: high plasticity, pale brown and pale grey, with medium to coarse grained sand.	w>PL	St		
			3	3.10	SPT 3.00-3.45 m 6,7,5 N=12 D 3.00-3.45 m BH15-002			SC	Clayey SAND: fine to medium grained, orange brown, clay is high plasticity.		MD		
				3.45					Hole Terminated at 3.45 m Target depth				
			4										
			5										
			6										
			7										
			8										
			9										
			10										

Comments

Checked AJD

Date 19/4/2023

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BOREHOLE: BH16

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352572.4 m E 5782982.0 m N MGA2020-55	Date Started:	3/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	3/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		4/4/2023	0	0.30	ES 0.10-0.20 m BH16_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, grey pale grey, trace medium to coarse grained sand; with trace of roots.	w<PL	VSt	
					ES 0.50-0.60 m BH16_0.5-0.6 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			
			1		ES 1.00-1.10 m BH16_1-1.1 0A							
					SPT 1.50-1.95 m 2,3,4 N=7 D 1.50-1.95 m BH16-001					w>PL		
			2		ES 2.00-2.10 m BH16_2-2.1 0A							
				2.80				CH	Silty CLAY: high plasticity, pale brown and grey, with medium grained sand; sub rounded to sub angular sand.		F - St	
			3		SPT 3.00-3.45 m 2,2,3 N=5 D 3.00-3.45 m BH16-002					w>PL		
			4	4.20	ES 4.00-4.10 m BH16_4-4.1 0A			CH	CLAY: high plasticity, pale brown and pale grey.			
					SPT 4.50-4.95 m 2,4,5 N=9 D 4.50-4.95 m BH16-003					w>PL		
			5									
			6	6.00					Hole Terminated at 6.00 m Target depth			
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH17

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352590.8 m E 5783037.0 m N MGA2020-55	Date Started:	3/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	3/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm 0 5 10 15 20 25
AD/V		Not Encountered	0	0.30	ES 0.10-0.20 m BH17_0.1-0.2 0A			CI	TOPSOIL Silty CLAY: medium plasticity, dark brown, with rootlets.	w<PL	F - St	
			1		ES 0.50-0.60 m BH17_0.5-0.6 0A ES 1.00-1.10 m BH17_1-1.1 0A B 1.00-2.00 m BH17-001 SPT 1.50-1.95 m 2,3,3 N=6 D 1.50-1.95 m BH17-002 ES 2.00-2.10 m BH17_2-2.1 0A			CH	Silty CLAY: high plasticity, pale brown and red-brown.	w>PL	VSt - H F - St	
			2	2.80				CH	Sandy Silty CLAY: high plasticity, pale brown pale grey orange, sand is coarse grained.	w>PL		
			3	3.45	SPT 3.00-3.45 m 5,5,4 N=9 D 3.00-3.45 m BH17-003				Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH18

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352711.3 m E 5782835.0 m N MGA2020-55	Date Started:	4/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	4/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		Not Encountered	0	0.30	ES 0.10-0.20 m BH18_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown pale brown, with rootlets.	w<PL		
					ES 0.50-0.60 m BH18_0.5-0.6 0A			CL-CI	Silty CLAY: low to medium plasticity, dark brown and pale brown.		H	
			1		SPT 1.00-1.45 m 5,5,5 N=10 ES 1.00-1.10 m BH18_1-1.1 0A					w≈PL	St - VSt	
				1.60				CI-CH	Silty CLAY: medium to high plasticity, pale brown and pale grey.			
			2		ES 2.00-2.10 m BH18_2-2.1 0A U63 2.00-2.40 m BH18-002 pp=125,140 kpa					w>PL	St	
				2.80				SC	Clayey SAND: fine to medium grained, orange, clay is low to medium plasticity; with silt; with fine to medium grained gravel.	W	MD	
			3		SPT 3.00-3.45 m 4,8,9 N=17 ES 3.00-3.10 m BH18_3-3.1 0A D 3.00-3.45 m BH18-003							
				3.45					Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH19

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352688.8 m E 5782788.0 m N MGA2020-55	Date Started:	4/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	4/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		6/4/2023	0	0.30	ES 0.10-0.20 m BH19_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown, with rootlets.	w<PL		
					ES 0.50-0.60 m BH19_0.5-0.6 0A			CI	Silty CLAY: medium plasticity, dark brown and pale brown.	w≈PL	VSt - H	
			1	1.20	ES 1.00-1.10 m BH19_1-1.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			
					SPT 1.50-1.95 m 2,4,5 N=9 D 1.50-1.95 m BH19-001							
			2		ES 2.00-2.10 m BH19_2-2.1 0A					w>PL	VSt	
			3	3.00	SPT 3.00-3.45 m 5,9,10 N=19 ES 3.00-3.10 m BH19_3-3.1 0A D 3.00-3.45 m BH19-002			SC	Clayey SAND: fine to medium grained, orange, clay is low plasticity; with silt.	W	MD	
			4	4.50	SPT 4.50-4.95 m 4,4,6 N=10 D 4.50-4.95 m BH19-003			CH	CLAY: high plasticity, pale brown and pale grey.	w>PL	St	
			5									
			6	6.45	SPT 6.00-6.45 m 2,5,5 N=10 D 6.00-6.45 m BH19-004				Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH20

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352672.5 m E 5782743.0 m N MGA2020-55	Date Started:	5/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	5/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		Not Encountered	0	0.20	ES 0.10-0.20 m BH20_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, dark brown, with rootlets.	w<PL	VSt - H	0 5 10 15 20 25
					ES 0.50-0.60 m BH20_0.5-0.6 0A			CL-CI	Silty CLAY: low to medium plasticity, pale brown and dark brown, with rootlets.	w<PL		
			1	1.20	SPT 1.00-1.45 m 3,4,6 N=10 ES 1.00-1.10 m BH20_1-1.1 0A B 1.00-2.50 m BH20-001 001			CI	Silty CLAY: medium plasticity, pale brown and pale grey.	w≈PL	St - VSt	
			2	2.05	D 1.00-1.45 m BH20-002 SPT 2.00-2.45 m 2,3,4 N=7 ES 2.00-2.10 m BH20_2-2.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.	w>PL	St	
			3	3.00	D 2.00-2.45 m BH20-003 SPT 3.00-3.45 m 2,3,6 N=9			SC	Clayey SAND: fine to medium grained, orange pale brown pale grey, clay is low plasticity; with silt.	W	MD	
				3.45	ES 3.00-3.10 m BH20_3-3.1 0A D 3.00-3.45 m BH20-004				Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH21

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	353098.0 m E 5782199.0 m N MGA2020-55	Date Started:	6/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	6/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		6/4/2023	0	0.30	ES 0.10-0.20 m BH21_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, dark brown, with rootlets.	w<PL		
					ES 0.50-0.60 m BH21_0.5-0.6 0A			CI	Silty CLAY: medium plasticity, pale brown and pale grey dark brown.	w≈PL	St - VSt	
			1	1.00	ES 1.00-1.10 m BH21_1-1.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			
					SPT 1.50-1.95 m 2,3,3 N=6 D 1.50-1.95 m BH21-001					w>PL	St	
			2		ES 2.00-2.10 m BH21_2-2.1 0A							
			3	3.00	ES 3.00-3.10 m BH21_3-3.1 0A U63 3.00-3.40 m BH21-002 PP=230,340,530 kpa			CH	Silty CLAY: high plasticity, pale brown and pale grey.	w>PL	VSt - H	
			4	4.60	SPT 4.50-4.95 m 5,5,12 N=17 D 4.50-4.95 m BH21-003			SC	Silty Clayey SAND: fine to medium grained, low plasticity, orange.	W	MD	
			5	5.80				SC	Silty Clayey SAND: coarse grained, low plasticity, orange, trace medium grained gravel.	W	MD - D	
			6	6.40	SPT 6.00-6.45 m 3,13,12 N=25 D 6.00-6.45 m BH21-004			CH	Silty CLAY: high plasticity, pale grey and pale brown. Hole Terminated at 6.45 m Target depth	w>PL	St - VSt	
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH22

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	353075.0 m E 5782076.0 m N MGA2020-55	Date Started:	6/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	6/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	DCP TEST Blows per 100 mm
AD/V		Not Encountered	0	0.40	ES 0.10-0.20 m BH22_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown, with rootlets.	w<PL	VSt	
					ES 0.50-0.60 m BH22_0.5-0.6 0A			CI	Silty CLAY: medium plasticity, pale brown and dark brown.	w≈PL	St - VSt	
			1	1.10	SPT 1.00-1.45 m 2,3,5 N=8 ES 1.00-1.10 m BH22_1-1.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.	w>PL	F - St	
				1.80	B 1.00-2.20 m BH22-001 D 1.00-1.45 m BH22-002			CH	Silty CLAY: high plasticity, pale brown and pale grey.	w>PL	St	
			2	2.40	SPT 2.00-2.45 m 1,3,5 N=8 ES 2.00-2.10 m BH22_2-2.1 0A D 2.00-2.45 m BH22-003			CI-CH	Silty CLAY: medium to high plasticity, pale grey and pale brown, trace fine to medium grained sand.	w≈PL	F - St	
			3	3.45	SPT 3.00-3.45 m 2,2,4 N=6 ES 3.00-3.10 m BH22_3-3.1 0A D 3.00-3.45 m BH22-004				Hole Terminated at 3.45 m Target depth			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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APPENDIX B – Groundwater Well Construction Details

BOREHOLE: BH03

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351440.0 m E 5782035.0 m N MGA2020-55	Date Started:	2/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	2/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
												ID 1 Static Water Level
AD/V	F	6/4/2023	0	0.20	ES 0.10-0.20 m BH03/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	F	Gatic Cover Grout
					ES 0.50-0.60 m BH03/2002			CI	Silty CLAY: medium plasticity, pale grey orange brown.	w≈PL	S - F	
			1	1.00	SPT 1.00-1.45 m HW/150mm,2,3 N=5 ES 1.00-1.10 m BH03/2003 D 1.00-1.45 m BH03-001			CH	Silty CLAY: high plasticity, pale grey orange brown.	w≈PL	VSt	Bentonite
			2	2.10	SPT 2.00-2.45 m HW/300mm,2 N=2 ES 2.00-2.10 m BH03/2004 D 2.00-2.45 m BH03-002			CI	Silty CLAY: medium plasticity, orange brown pale grey.	w>PL	F	
			3	3.40	ES 2.90-3.00 m BH03/2005 SPT 3.00-3.45 m HW/140mm,1/10mm,3 N=8 D 3.00-3.45 m BH03-003			CH	Silty CLAY: high plasticity, orange brown blue grey.	w≈PL		2.7 m - 5.7 m: 50mm PVC, well screen, 0.5mm
									Orange brown pale grey.	w>PL		
			4	4.50					Blue grey.	w≈PL		Sand
			4.90		SPT 4.50-4.95 m HW/350mm,3/100mm N=3 D 4.50-4.95 m BH03-004				Orange brown pale grey.		F - St	
			5							w>PL		
			6	6.45	SPT 6.00-6.45 m 3,4,3 N=7 D 6.00-6.45 m BH03-005							
									Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH06

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	351704.0 m E 5782306.0 m N MGA2020-55	Date Started:	1/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	1/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS (ID 1, Static Water Level)
AD/V	F	6/4/2023	0		ES 0.10-0.20 m BH06/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	St	Gatic Cover
			1		ES 0.50-0.60 m BH06/2002			MH	Clayey SILT: medium plasticity, pale grey orange brown.	w≈PL	F - St	Grout
					SPT 1.00-1.45 m 2,2,3 N=5 ES 1.00-1.10 m BH06/2003 D 1.00-1.45 m BH06-001					w>PL		Bentonite
			2	2.00	ES 2.00-2.10 m BH06/2004 U63 2.00-2.45 m BH06-002 R=0.4m , PP=110kPa			CH	Sandy CLAY: high plasticity, pale grey orange brown, sand is fine to medium grained.		F	
			3		ES 2.90-3.00 m BH06/2005 SPT 3.00-3.45 m 2,2,2 N=4 D 3.00-3.45 m BH06-003					w>PL		2.7 m - 5.7 m: 50mm PVC, well screen, 0.5mm
			4	4.00				CH	Silty CLAY: high plasticity, orange brown pale grey.			Sand
			5		SPT 4.50-4.95 m 3,4,5 N=9 D 4.50-4.95 m BH06-004					w>PL	St	
			6		SPT 6.00-6.45 m 4,6,6 N=12 D 6.00-6.45 m BH06-005							
				6.45					Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH10

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	350762.0 m E 5782836.0 m N MGA2020-55	Date Started:	2/3/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	2/3/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	ML

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID 1 Static Water Level
AD/V		6/4/2023	0		ES 0.10-0.20 m BH10/2001			OL	TOPSOIL Clayey SILT: low plasticity, brown, with rootlets.	w<PL	F	Gatic Cover Grout
				0.60	ES 0.50-0.60 m BH10/2002			CH	Silty CLAY: high plasticity, orange brown pale grey.			
	F		1		SPT 1.00-1.45 m HW/150mm,3,3 N=6 ES 1.00-1.10 m BH10/2003 D 1.00-1.45 m BH10-001					w≈PL	F	Bentonite
			2	2.10	SPT 2.00-2.45 m 12,17,24 N=41 ES 2.00-2.10 m BH10/2004 D 2.00-2.45 m BH10-002			CI-CH	Silty CLAY: medium to high plasticity, orange brown pale grey.	w>PL		
	H			2.60				CH	Silty CLAY: high plasticity, orange brown yellow brown.			
	F		3		ES 2.90-3.00 m BH10/2005 SPT 3.00-3.45 m 6,14,18 N=32 D 3.00-3.45 m BH10-003					w≈PL	VSt - H	2.7 m - 5.7 m: 50mm PVC, well screen, 0.5mm
			4									Sand
				4.70	SPT 4.50-4.95 m 4,10,19 N=29 D 4.50-4.95 m BH10-004			CL	Sandy CLAY: low plasticity, yellow brown, sand is fine to medium grained.	w>PL		
	F		5	5.20				CL	Silty CLAY: low plasticity, pale grey orange brown.	w>PL	St	
			6	6.00	SPT 6.00-6.45 m 5,12,17 N=29 D 6.00-6.45 m BH10-005			CI	Silty CLAY: medium plasticity, pale orange brown dark brown.	w≈PL	VSt - H	
	H			6.30								
	F			6.45				SC	Clayey SAND: fine to medium grained, low plasticity, brown.	W	D	
			7						Hole Terminated at 6.45 m Target depth			
			8									
			9									
			10									

Comments

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Date 19/4/2023

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BOREHOLE: BH13

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352464.2 m E 5782537.0 m N MGA2020-55	Date Started:	5/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	5/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/V		6/4/2023	0	0.40	ES 0.10-0.20 m BH13_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown, with rootlets.	w<PL	VSt - H	BH13
			1		ES 0.50-0.60 m BH13_0.5-0.6 0A			CL-CI	Silty CLAY: low to medium plasticity, dark brown and pale brown.	w≈PL	VSt	
					ES 1.00-1.10 m BH13_1-1.1 0A							
				1.50								
			2		SPT 1.50-1.95 m 2,2,4 N=6 D 1.50-1.95 m BH13-001 ES 2.00-2.10 m BH13_2-2.1 0A			CI-CH	Silty CLAY: medium to high plasticity, pale brown and pale grey.	w≈PL		
				3.00								
			3		SPT 3.00-3.45 m 2,2,4 N=6 ES 3.00-3.10 m BH13_3-3.1 0A D 3.00-3.45 m BH13-002			CI	Silty CLAY: medium plasticity, pale brown and pale grey.	w≈PL	F - St	
			4	4.50								
			5		SPT 4.50-4.95 m 3,5,7 N=12 D 4.50-4.95 m BH13-003			CI	Sandy Silty CLAY: medium plasticity, pale brown orange pale grey, sand is medium to coarse grained; trace coarse grained gravel.	w≈PL	St	
			6	6.00	SPT 6.00-6.45 m 5,14,25 N=39 D 6.00-6.45 m BH13-004			SC	Clayey SAND: medium grained, low plasticity, grey and orange.	M	D	
				6.45					Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

PIEZOMETER DETAILS: Gatic Cover; Grout; Bentonite; 2.7 m - 5.7 m: 50mm PVC, well screen, 0.5mm; Sand

Comments

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Date 19/4/2023

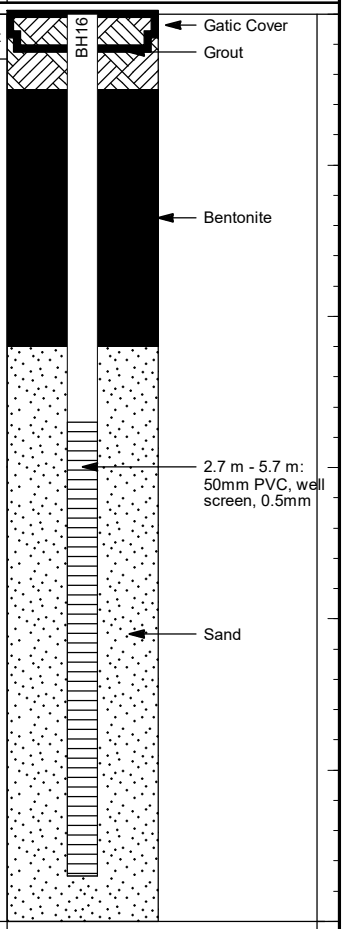
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BOREHOLE: BH16

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Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352572.4 m E 5782982.0 m N MGA2020-55	Date Started:	3/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	3/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/V		4/4/2023	0	0.30	ES 0.10-0.20 m BH16_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, grey pale grey, trace medium to coarse grained sand; with trace of roots.	w<PL	VSt	BH16
					ES 0.50-0.60 m BH16_0.5-0.6 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			
			1		ES 1.00-1.10 m BH16_1-1.1 0A							
					SPT 1.50-1.95 m 2,3,4 N=7 D 1.50-1.95 m BH16-001					w>PL		
			2		ES 2.00-2.10 m BH16_2-2.1 0A							
				2.80				CH	Silty CLAY: high plasticity, pale brown and grey, with medium grained sand; sub rounded to sub angular sand.		F - St	
			3		SPT 3.00-3.45 m 2,2,3 N=5 D 3.00-3.45 m BH16-002					w>PL		
			4	4.20	ES 4.00-4.10 m BH16_4-4.1 0A			CH	CLAY: high plasticity, pale brown and pale grey.			
					SPT 4.50-4.95 m 2,4,5 N=9 D 4.50-4.95 m BH16-003					w>PL		
			5									
			6	6.00					Hole Terminated at 6.00 m Target depth			
			7									
			8									
			9									
			10									



Comments

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BOREHOLE: BH19

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Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	352688.8 m E 5782788.0 m N MGA2020-55	Date Started:	4/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	4/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/V		6/4/2023	0	0.30	ES 0.10-0.20 m BH19_0.1-0.2 0A			CL-CI	TOPSOIL Silty CLAY: low to medium plasticity, dark brown, with rootlets.	w<PL		BH19
			1		ES 0.50-0.60 m BH19_0.5-0.6 0A			CI	Silty CLAY: medium plasticity, dark brown and pale brown.	w≈PL	VSt - H	Gatic Cover Grout
				1.20	ES 1.00-1.10 m BH19_1-1.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			Bentonite
			2		SPT 1.50-1.95 m 2,4,5 N=9 D 1.50-1.95 m BH19-001 ES 2.00-2.10 m BH19_2-2.1 0A					w>PL	VSt	
				3.00				SC	Clayey SAND: fine to medium grained, orange, clay is low plasticity; with silt.	W	MD	2.7 m - 5.7 m: 50mm PVC, well screen, 0.5mm
			4									Sand
				4.50	SPT 4.50-4.95 m 4,4,6 N=10 D 4.50-4.95 m BH19-003			CH	CLAY: high plasticity, pale brown and pale grey.			
			5							w>PL	St	
			6		SPT 6.00-6.45 m 2,5,5 N=10 D 6.00-6.45 m BH19-004							
				6.45					Hole Terminated at 6.45 m Target depth			
			7									
			8									
			9									
			10									

Comments

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BOREHOLE: BH21

Sheet 1 of 1

Project:	Croskell PSP Drainage Strategy				
Location:	Cranbourne VIC	Coords:	353098.0 m E 5782199.0 m N MGA2020-55	Date Started:	6/4/2023
Client:	Melbourne Water	Contractor:	Rockwell Drilling Drill Rig: Comacchio GEO 205	Date Completed:	6/4/2023
Job No.:	PS200634	Inclination:	-90°	Logged:	AS

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/V		6/4/2023	0	0.30	ES 0.10-0.20 m BH21_0.1-0.2 0A			CL	TOPSOIL Silty CLAY: low plasticity, dark brown, with rootlets.	w<PL		BH21
					ES 0.50-0.60 m BH21_0.5-0.6 0A			CI	Silty CLAY: medium plasticity, pale brown and pale grey dark brown.	w≈PL	St - VSt	
			1	1.00	ES 1.00-1.10 m BH21_1-1.1 0A			CH	Silty CLAY: high plasticity, pale brown and pale grey.			
					SPT 1.50-1.95 m 2,3,3 N=6 D 1.50-1.95 m BH21-001					w>PL	St	
			2		ES 2.00-2.10 m BH21_2-2.1 0A							
				3.00								
			3		ES 3.00-3.10 m BH21_3-3.1 0A U63 3.00-3.40 m BH21-002 PP=230,340,530 kpa			CH	Silty CLAY: high plasticity, pale brown and pale grey.	w>PL	VSt - H	
			4	4.60	SPT 4.50-4.95 m 5,5,12 N=17 D 4.50-4.95 m BH21-003			SC	Silty Clayey SAND: fine to medium grained, low plasticity, orange.	W	MD	
			5	5.80				SC	Silty Clayey SAND: coarse grained, low plasticity, orange, trace medium grained gravel.	W	MD - D	
			6	6.40	SPT 6.00-6.45 m 3,13,12 N=25 D 6.00-6.45 m BH21-004			CH	Silty CLAY: high plasticity, pale grey and pale brown. Hole Terminated at 6.45 m Target depth	w>PL	St - VSt	
			7									
			8									
			9									
			10									

PIEZOMETER DETAILS: Gatic Cover; Grout; Bentonite; 2.7 m - 5.7 m: 50mm PVC, well screen, 0.5mm; Sand

Comments

Checked AJD

Date 19/4/2023

WSP-AU 5.03.3 LIB.GLB Log IS AU BOREHOLE 3 PS200634 BECA_AD_REVIEWED - WITH MARCH SI.GPJ <<DrawingFile>> 18/8/2023 08:59 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: WSP 5.03.3 2023-01-19 Prj: WSP 5.03.3 2023-01-19

APPENDIX C - Reports of geotechnical laboratory testing

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0291**	**Specimen ID:**	LMEL202304211
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Location ID: BH02

Loc. ref.: -

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 1.00 - 1.45

Client sample ref: BH02-002

Specimen description: (AS 1726:2017 Section 6.1) (CH) CLAY, high plasticity, brown-grey, with fine to coarse grained sand, trace fine gravel

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	100%		
2.36 mm	99%		
1.18 mm	98%		
600 µm	94%		
425 µm	90%		
300 µm	86%		
212 µm	82%		
150 µm	77%		
75 µm	72%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	30.1% As Rcvd.	52%	13%	39%	13.0%	Curling
LB S:						-
UB S:						-

Att. preparation method: Dry sieved **LSM length (mm):** 127

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

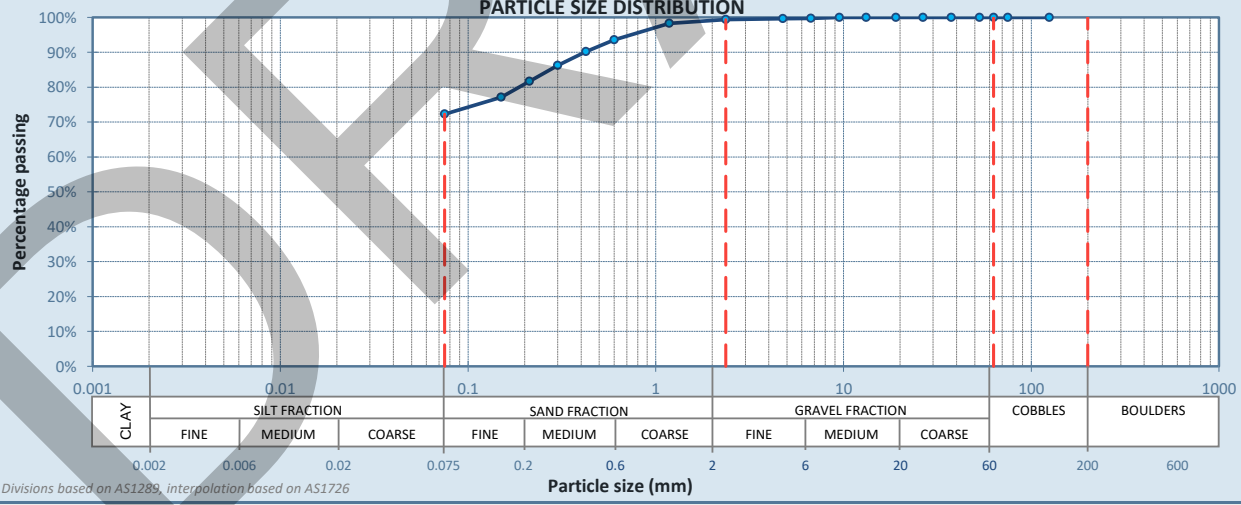
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
72.3%	27.1%	0.6%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: PDA **Dates:** 11/05/23 - 22/05/23 **Results reviewed by:** NLobb **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH02_TRM23-0291_PSD_2304211_Rep23097045

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
Accredited for compliance with ISO/IEC 17025 - Testing

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Nick Lobb - Senior Technician

Phone: +61 (03) 8862 3500 **Fax:** +61 (03) 8862 3501 **E-mail:** melgeolab@wsp.com **Web:** www.wsp.com

For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0182**	**Specimen ID:**	LMEL202303214
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH04**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	-

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45
Client sample ref: BH04-003

Specimen description: (AS 1726:2017 Section 6.1) (CI) CLAY, medium plasticty, grey, trace fine to coarse grained sand

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	100%		
2.36 mm	100%		
1.18 mm	100%		
600 µm	99%		
425 µm	98%		
300 µm	96%		
212 µm	93%		
150 µm	91%		
75 µm	88%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	22.4% As Rcvd.	47%	12%	35%	11.0%	Cracking / Curling
LB S:						-
UB S:						-

Att. preparation method:	Dry sieved	**LSM length (mm):**	250

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

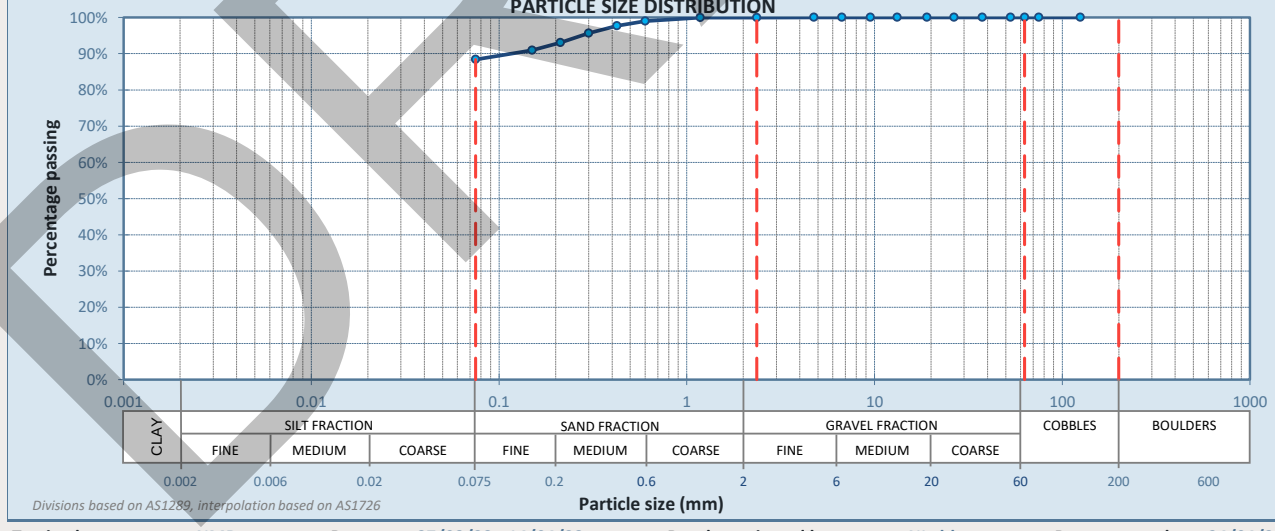
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
88.4%	11.6%	0.0%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: NMD **Dates:** 27/03/23 - 14/04/23 **Results reviewed by:** NLobb **Date reported:** 24/04/2023

Cert. ref.: PS200634_BH04_TRM23-0182_PSD_2303214_Rep23094807

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
Accredited for compliance with ISO/IEC 17025 - Testing

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For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0182**	**Specimen ID:**	LMEL202303217
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH05**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	-

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45
Client sample ref: BH05-003

Specimen description: (AS 1726:2017 Section 6.1) (SP-SC) SAND, fine to coarse grained, grey-brown, with medium plasticity clay, trace fine to medium gravel

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	99%		
4.75 mm	99%		
2.36 mm	94%		
1.18 mm	77%		
600 µm	48%		
425 µm	35%		
300 µm	25%		
212 µm	18%		
150 µm	14%		
75 µm	12%		

	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
Result:	23.8% As Rcvd.	42%	13%	29%	10.5%	Curling
LB S:						-
UB S:						-

Att. preparation method: Dry sieved **LSM length (mm):** 250

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

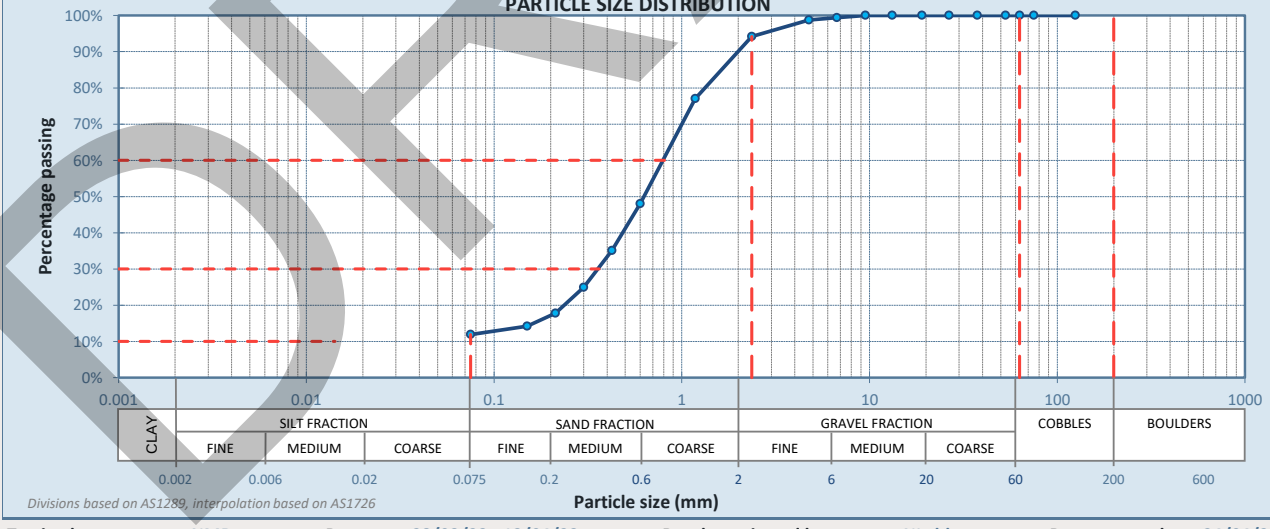
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
11.9%	82.3%	5.8%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: NMD **Dates:** 28/03/23 - 13/04/23 **Results reviewed by:** NLobb **Date reported:** 24/04/2023

Cert. ref.: PS200634_BH05_TRM23-0182_PSD_2303217_Rep23094808

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0182**	**Specimen ID:**	LMEL2023032113
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH07**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	-

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MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45
Client sample ref: BH07-003

Specimen description: (AS 1726:2017 Section 6.1) — (CH) Sandy CLAY, high plasticity, yellow-brown, trace fine gravel, fine to coarse grained sand

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	100%		
2.36 mm	99%		
1.18 mm	97%		
600 µm	80%		
425 µm	67%		
300 µm	56%		
212 µm	46%		
150 µm	40%		
75 µm	38%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	**4 point Liquid limit**	**Plastic limit**	**Plasticity index**	**Linear shrinkage**	**Curling/ Crumbling/ Cracking**
Result:	17.9% As Rcvd.	53%	20%	33%	12.0%	Cracking / Curling
LB S:						-
UB S:						-

Att. preparation method: Dry sieved — **LSM length (mm):** 250

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

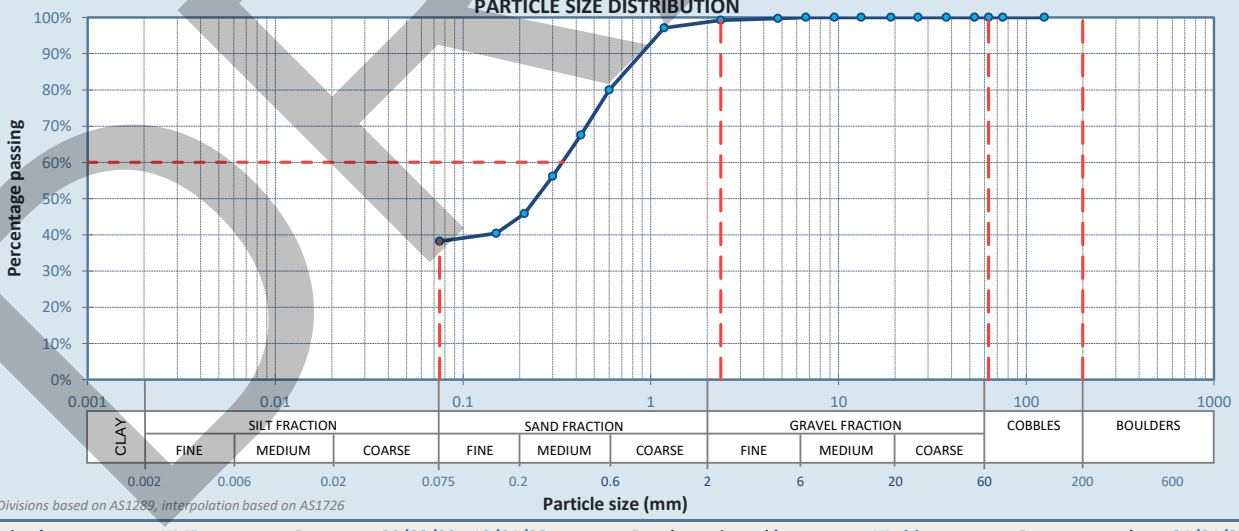
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
38.2%	61.1%	0.7%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: NMD **Dates:** 28/03/23 - 13/04/23 **Results reviewed by:** NLobb **Date reported:** 24/04/2023

Cert. ref.: PS200634_BH07_TRM23-0182_PSD_23032113_Rep23094809

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

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Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0182**	**Specimen ID:**	LMEL2023032120
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH10**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	-

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45
Client sample ref: BH10-003

Specimen description: (AS 1726:2017 Section 6.1) — (MH) Sandy SILT, high plasticity, yellow-brown, trace fine gravel, fine to coarse grained sand

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	100%		
2.36 mm	98%		
1.18 mm	96%		
600 µm	92%		
425 µm	89%		
300 µm	86%		
212 µm	82%		
150 µm	77%		
75 µm	62%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	**4 point Liquid limit**	**Plastic limit**	**Plasticity index**	**Linear shrinkage**	**Curling/ Crumbling/ Cracking**
Result:	54.0% As Rcvd.	60%	46%	14%	8.0%	Cracking / Curling
LB S:						-
UB S:						-

Att. preparation method: Dry sieved — **LSM length (mm):** 254

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

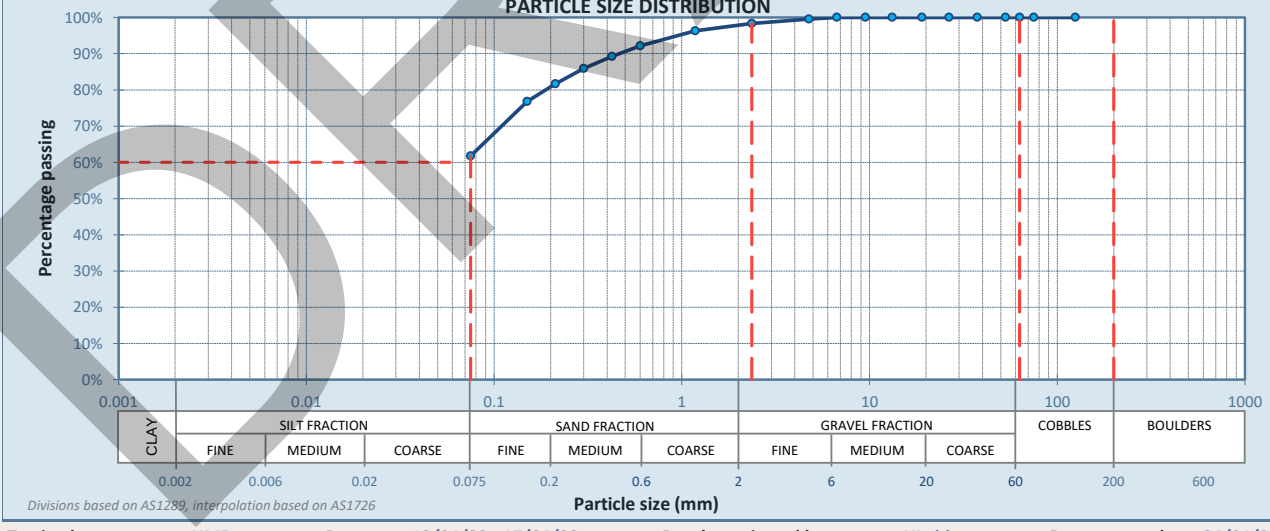
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
61.8%	36.6%	1.6%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: NMD **Dates:** 13/04/23 - 17/04/23 **Results reviewed by:** NLobb **Date reported:** 24/04/2023

Cert. ref.: PS200634_BH10_TRM23-0182_PSD_23032120_Rep23094810

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0291**	**Specimen ID:**	LMEL202304216
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Location ID: BH14

Loc. ref.: -

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 2.00 - 2.45

Client sample ref: BH14-002

Specimen description: (AS 1726:2017 Section 6.1)

(Cl) Sandy CLAY, medium plasticity, brown-yellow, trace fine gravel, fine to coarse grained sand

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	100%		
2.36 mm	99%		
1.18 mm	93%		
600 µm	77%		
425 µm	69%		
300 µm	62%		
212 µm	53%		
150 µm	47%		
75 µm	42%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	24.9% As Rcvd.	48%	12%	36%	14.5%	Curling
LB S:						-
UB S:						-

Att. preparation method:	Dry sieved	**LSM length (mm):**	250

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

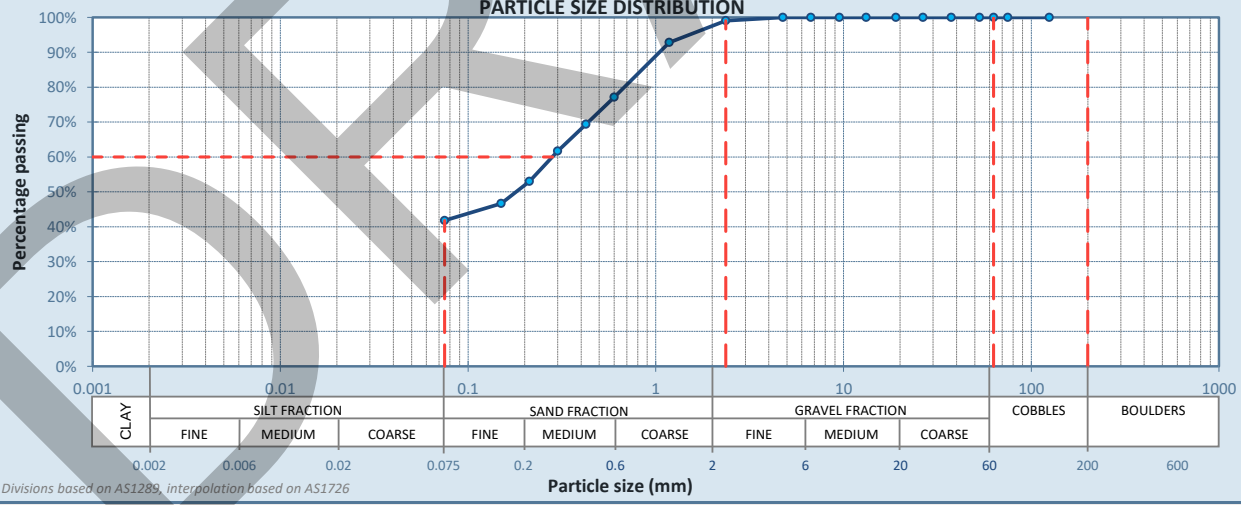
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
41.8%	57.3%	0.9%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: PDA **Dates:** 11/05/23 - 23/05/23 **Results reviewed by:** NLobb **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH14_TRM23-0291_PSD_2304216_Rep23097046

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
Accredited for compliance with ISO/IEC 17025 - Testing

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Nick Lobb - Senior Technician

Phone: +61 (03) 8862 3500 **Fax:** +61 (03) 8862 3501 **E-mail:** melgeolab@wsp.com **Web:** www.wsp.com

For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0291**	**Specimen ID:**	LMEL2023042111
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Location ID: BH15

Loc. ref.: -

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45

Client sample ref: BH15-002

Specimen description: (AS 1726:2017 Section 6.1) (SC) Clayey SAND, fine to coarse grained, orange brown grey, with fine to medium gravel, medium plasticity clay

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	99%		
9.5 mm	98%		
6.7 mm	97%		
4.75 mm	96%		
2.36 mm	90%		
1.18 mm	79%		
600 µm	62%		
425 µm	56%		
300 µm	49%		
212 µm	39%		
150 µm	31%		
75 µm	25%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	13.3% As Rcvd.	37%	13%	24%	10.0%	Cracking
LB S:						-
UB S:						-

Att. preparation method: Dry sieved **LSM length (mm):** 250

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

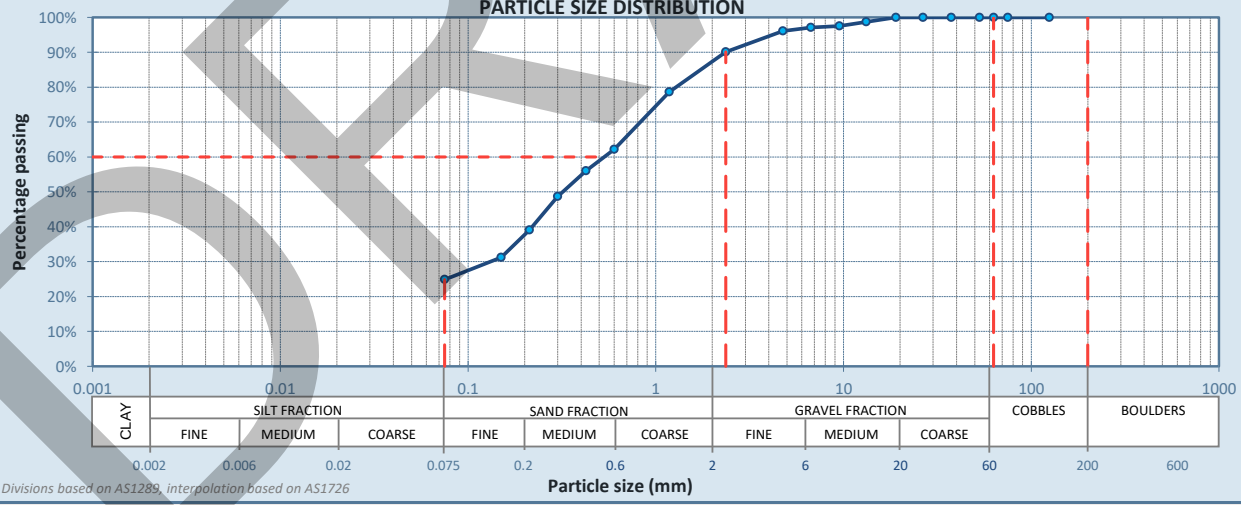
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
24.8%	65.3%	9.9%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: PDA **Dates:** 11/05/23 - 19/05/23 **Results reviewed by:** NLobb **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH15_TRM23-0291_PSD_23042111_Rep23097047

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

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Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0291**	**Specimen ID:**	LMEL2023042115
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Location ID: BH17

Loc. ref.: -

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45

Client sample ref: BH17-003

Specimen description: (AS 1726:2017 Section 6.1)

(Cl) Sandy CLAY, medium plasticity, brown-grey, trace fine gravel, fine to coarse grained sand

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	99%		
2.36 mm	94%		
1.18 mm	84%		
600 µm	69%		
425 µm	63%		
300 µm	58%		
212 µm	53%		
150 µm	48%		
75 µm	42%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	19.0% As Rcvd.	47%	15%	32%	12.0%	Curling
LB S:						-
UB S:						-

Att. preparation method: Dry sieved **LSM length (mm):** 127

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

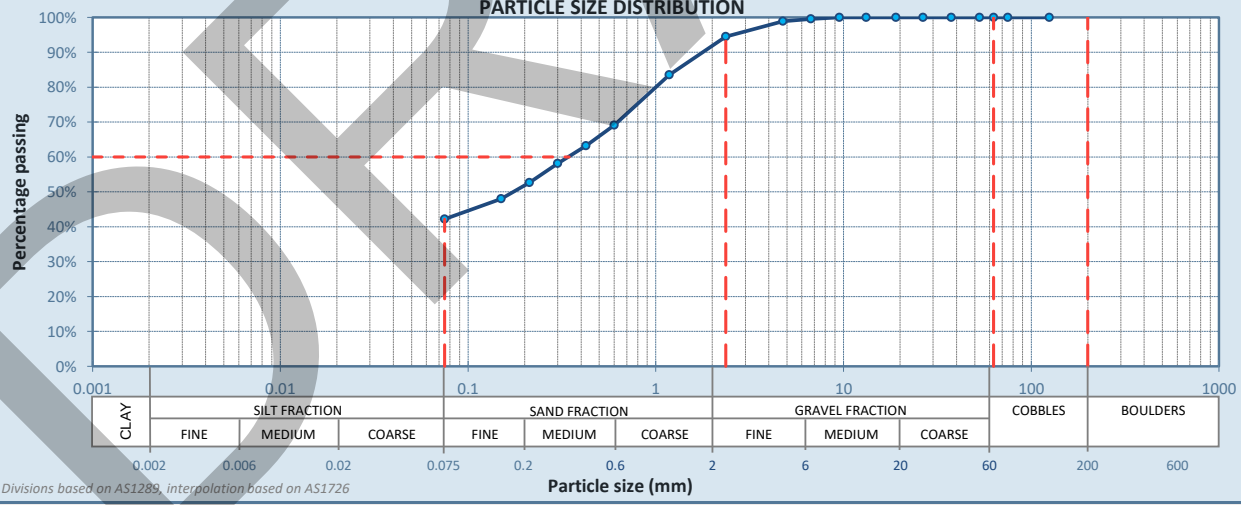
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
42.2%	52.3%	5.5%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: PDA **Dates:** 11/05/23 - 19/05/23 **Results reviewed by:** NLobb **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH17_TRM23-0291_PSD_23042115_Rep23097048

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0291**	**Specimen ID:**	LMEL2023042122
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Location ID: BH20

Loc. ref.: -

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45

Client sample ref: BH20-004

Specimen description: (AS 1726:2017 Section 6.1) (SC) Clayey SAND, fine to coarse grained, yellow-grey, trace fine gravel, medium plasticity clay

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	100%		
4.75 mm	100%		
2.36 mm	96%		
1.18 mm	84%		
600 µm	60%		
425 µm	50%		
300 µm	41%		
212 µm	33%		
150 µm	28%		
75 µm	24%		

Method:	AS 1289.2.1.1	AS 1289.3.1.1	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1	
	Moisture content	4 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	19.2% As Rcvd.	44%	13%	31%	12.0%	Cracking
LB S:						-
UB S:						-

Att. preparation method: Dry sieved **LSM length (mm):** 125

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

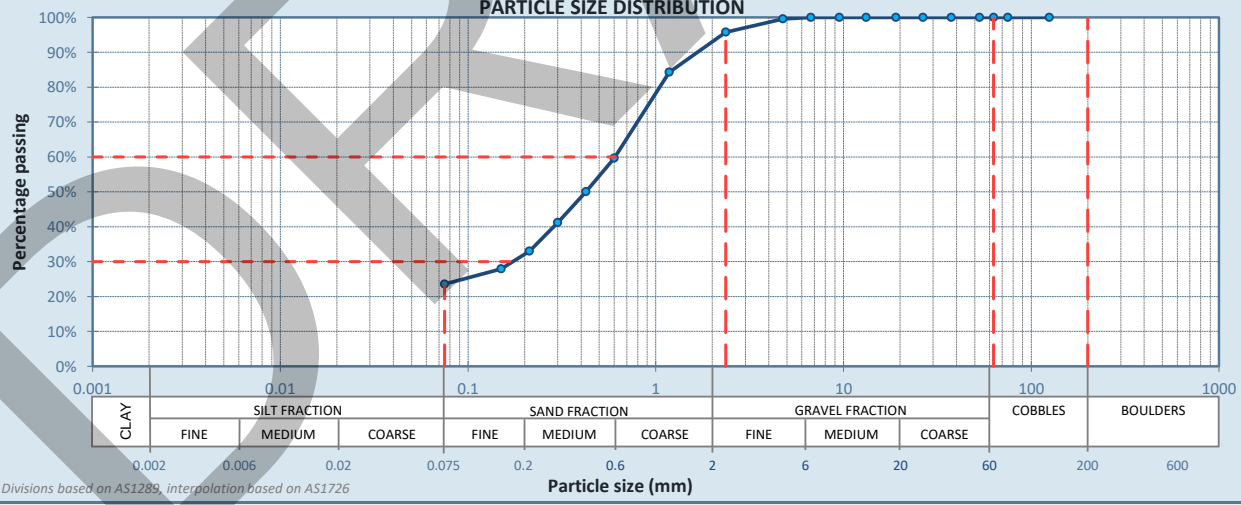
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
23.6%	72.2%	4.2%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: PDA **Dates:** 10/05/23 - 22/05/23 **Results reviewed by:** NLobb **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH20_TRM23-0291_PSD_23042122_Rep23097049

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

These tests were carried out in accordance with the Australian standards identified in this certificate.
Test results relate only to the specimens tested.

DRAFT

Soils testing - Particle size distribution & consistency limits test report

Standard method (by sieving)

AS1289.3.6.1, 2.1.1, 3.1.2, 3.2.1, 3.3.1, 3.4.1 & AS 1726:2017 Section 6.1

Test request #:	**TRM23-0291**	**Specimen ID:**	LMEL2023042127
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Location ID: BH22

Loc. ref.: -

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 3.00 - 3.45

Client sample ref: BH22-004

Specimen description: (AS 1726:2017 Section 6.1)

(CH) Sandy CLAY, high plasticity, brown, trace fine to medium gravel, fine to coarse grained sand

Sampling: Tested as received

Easting (m)	Northing (m)	Level (m)

PARTICLE SIZE DISTRIBUTION AS 1289.3.6.1

Sieve Size	Passing	LB S	UB S
125 mm	100%		
75 mm	100%		
63 mm	100%		
53 mm	100%		
37.5 mm	100%		
26.5 mm	100%		
19 mm	100%		
13.2 mm	100%		
9.5 mm	100%		
6.7 mm	99%		
4.75 mm	99%		
2.36 mm	95%		
1.18 mm	90%		
600 µm	80%		
425 µm	73%		
300 µm	68%		
212 µm	62%		
150 µm	58%		
75 µm	54%		

Method:	AS 1289.2.1.1	AS 1289.3.1.2	AS 1289.3.2.1	AS 1289.3.3.1	AS 1289.3.4.1
	Moisture content	1 point Liquid limit	Plastic limit	Plasticity index	Linear shrinkage	Curling/ Crumbling/ Cracking
Result:	26.3% As Rcvd.	65%	18%	47%	15.5%	Curling
LB S:						-
UB S:						-

Att. preparation method: insufficient material for - **LSM length (mm):** 127

Specimen history/notes: Preparation of specimen and testing performed on sample supplied to the laboratory

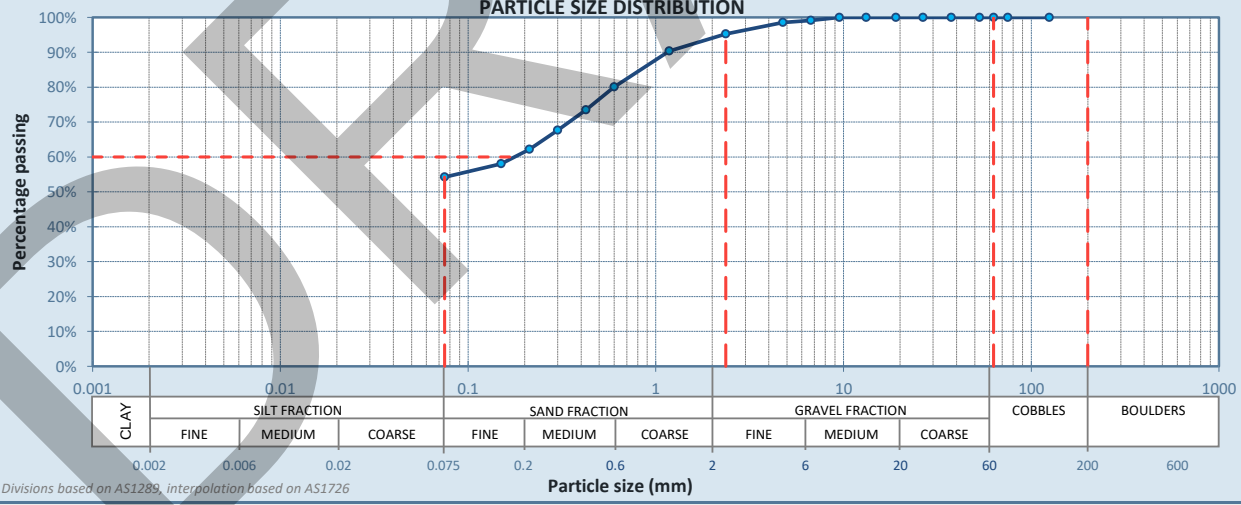
Definitions:
LB S = Lower bound specification
LSM = Linear shrinkage mould
UB S = Upper bound specification
N/A = Not applicable
ND = Not determined; SIB = Slip in bowl
NO = Not obtainable; NP = Non plastic

GRADING SUMMARY

Fines (<75 µm)	Sand* (>75 µm - <2.36 mm)	Gravel* (>2.36 mm - <63 mm)	Cobbles* (>63mm - <200 mm)
54.2%	41.0%	4.8%	0.0%

**Proportions based on guidance in AS1726-2017 Section 6.1.4.2*

PARTICLE SIZE DISTRIBUTION



Divisions based on AS1289, interpolation based on AS1726

Testing by: PDA **Dates:** 11/05/23 - 18/05/23 **Results reviewed by:** NLobb **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH22_TRM23-0291_PSD_23042127_Rep23097050

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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For Issue

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Test results relate only to the specimens tested.

DRAFT

Soils testing - Determination of the moisture content of soil

Oven drying method (standard method)

AS 1289.2.1.1-2005

Test request ID:	**TRM23-0182**	**Lab sample IDs:**	202303210-2023032118	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**				
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**Location:**	-		
		Project reference:			

TEST REPORT - SUMMARY OF ANALYSIS

Lab sample ID	Exploratory hole reference	Sample depth (m)	Specimen reference	Specimen description	Moisture content
LMEL202303210	BH01	2.00 2.45	BH01-002	(CH) CLAY, high plasticity, grey mottled brown	30.2% As Rcvd.
LMEL202303212	BH04	2.00 2.45	BH04-002	(CH) CLAY, high plasticity, yellow-grey	17.4% As Rcvd.
LMEL202303215	BH05	1.00 1.45	BH05-001	(CH) CLAY, high plasticity, brown, with fine to coarse grained sand	25.2% As Rcvd.
LMEL202303219	BH06	3.00 3.45	BH06-003	(CH) CLAY, high plasticity, yellow-grey, with fine to coarse grained sand	36.6% As Rcvd.
LMEL2023032111	BH07	2.00 2.45	BH07-002	(CH) CLAY, high plasticity, brown-grey	28.2% As Rcvd.
LMEL2023032114	BH08	2.00 2.45	BH08-002	(MH) Sandy SILT, high plasticity, brown-grey, fine to coarse grained sand	62.5% As Rcvd.
LMEL2023032116	BH09	2.00 2.45	BH09-002	(CH) CLAY, high plasticty, grey-brown	31.7% As Rcvd.
LMEL2023032118	BH10	2.00 2.45	BH10-002	(MH) SILT, high plasticity, yellow-grey	56.0% As Rcvd.
Notes:					

Definitions:

ND = Not determined

Specimen prepared by: PL **Test performed by:** PL

Result reviewed by: NLobb **Date reported:** **24/04/2023**

Cert. ref.:	**PS200634_TRM23-0182_SMC_202303210-2023032118_LMEL_23094811**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Nick Lobb - Senior Technician**

Phone: +61 (03) 8862 3500 **Fax:** +61 (03) 8862 3501 **E-mail:** melgeolab@wsp.com **Web:** www.wsp.com

This test was carried out in accordance with AS 1289.2.1.1-2005.

DRAFT

Soils testing - Determination of the moisture content of soil

Oven drying method (standard method)

AS 1289.2.1.1-2005

Test request ID:	**TRM23-0291**	**Lab sample IDs:**	202304213-2023042126	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park	
Project ID:	**PS200634**			570 - 588 Swan Street	
				Richmond, Victoria 3121	
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**Location:**	-		
		Project reference:			

TEST REPORT - SUMMARY OF ANALYSIS

Lab sample ID	Exploratory hole reference	Sample depth (m)	Specimen reference	Specimen description	Moisture content
LMEL202304213	BH02	2.00 2.40	BH02-003	(CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand	53.5% As Rcvd.
LMEL202304215	BH12	2.00 2.45	BH12-002	(CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand	35.7% As Rcvd.
LMEL202304218	BH14	3.00 3.45	BH14-003	(CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand	25.4% As Rcvd.
LMEL2023042110	BH15	1.50 1.95	BH15-001	(CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand	28.1% As Rcvd.
LMEL2023042114	BH17	1.50 1.95	BH17-002	(CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand	23.2% As Rcvd.
LMEL2023042116	BH18	1.00 1.45	BH18-001	(CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand	17.4% As Rcvd.
LMEL2023042118	BH18	2.00 2.40	BH18-002	(CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand	22.8% As Rcvd.
LMEL2023042121	BH20	2.00 2.45	BH20-003	(CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand	27.1% As Rcvd.
LMEL2023042124	BH22	1.00 1.45	BH22-002	(CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand	25.6% As Rcvd.
LMEL2023042126	BH22	2.00 2.45	BH22-003	(CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand	31.6% As Rcvd.
Notes:					

Definitions:

ND = Not determined

Specimen prepared by: PL **Test performed by:** MCC

Result reviewed by: NLobb **Date reported:** 05/06/2023

Cert. ref.:	**PS200634_TRM23-0291_SMC_202304213-2023042126_LMEL_23097054**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Nick Lobb - Senior Technician**

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This test was carried out in accordance with AS 1289.2.1.1-2005.

DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

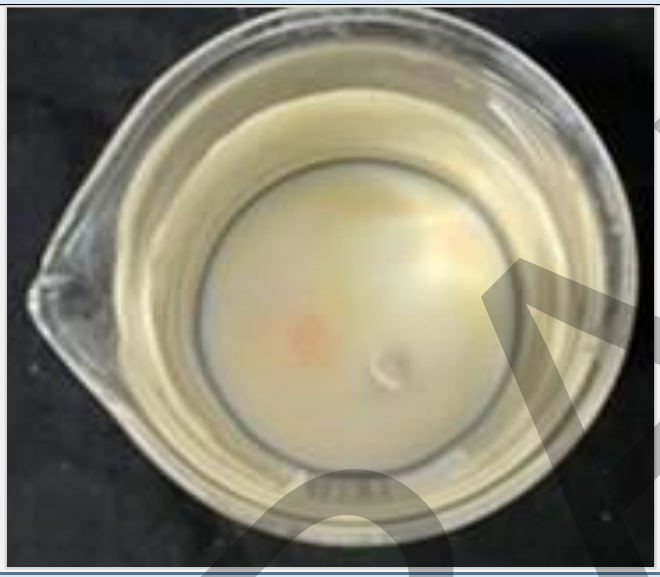
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL202303210**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH01**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH01-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) CLAY, high plasticity, grey mottled brown

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.7°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.: PS200634_TRM23-0182_Emerson_LMEL202303210_R094812

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041719**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH01**		**Sample depth (m):**	3.00 - 3.45
				Client sample ref:	BH01-003 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CI), Sandy CLAY, medium plasticity, pale orange pale brown, fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	20.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.:	**PS200634_TRM23-0274_Emerson_LMEL2023041719_R095134**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Aaron Stevenson - Senior Technician**

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041720**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH01**		**Sample depth (m):**	3.00 - 3.45
				Client sample ref:	BH01-003
Project reference:		**Loc. ref.:**		-	

Specimen description: (CI), Sandy CLAY, medium plasticity, pale orange pale brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	20.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041720_R095133

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304212**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**		**Sample depth (m):**	2.00 - 2.40
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH02**		**Client sample ref:**	BH02-003 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304212_R097056

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304213**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**		**Sample depth (m):**	2.00 - 2.40
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH02**		**Client sample ref:**	BH02-003
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304213_R097055

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041721**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH04**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH04-001 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	20.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041721_R095136 — **Approved signatory:**

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

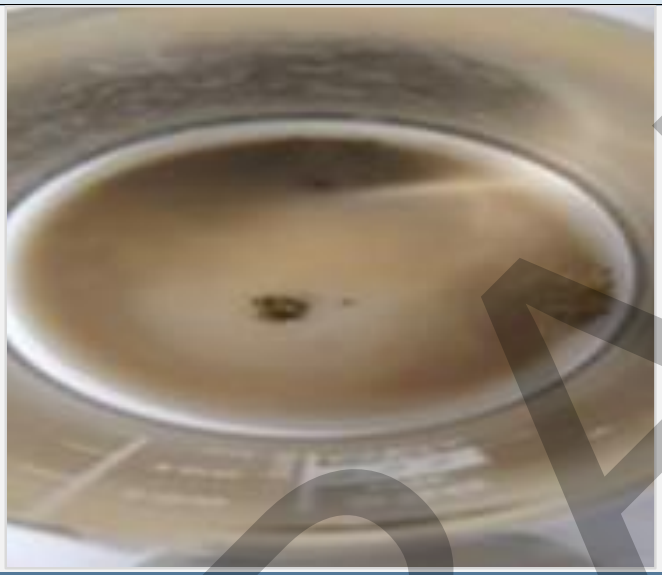
Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041722**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH04**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH04-001
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	20.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041722_R095135

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL

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This test was carried out in accordance with AS 1289.3.8.1-2017. Test results relate only to the specimens tested.

DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

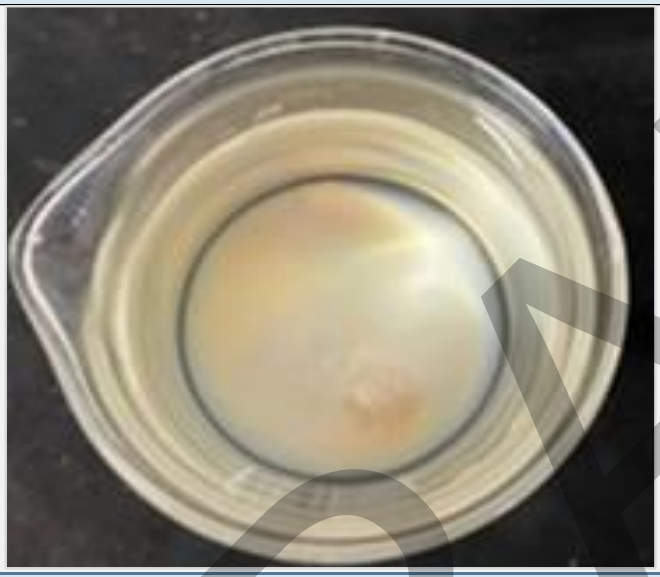
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL202303212**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH04**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH04-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) CLAY, high plasticity, yellow-grey

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.9°
Type of water used:	DISTILLED

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.: PS200634_TRM23-0182_Emerson_LMEL202303212_R094813

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

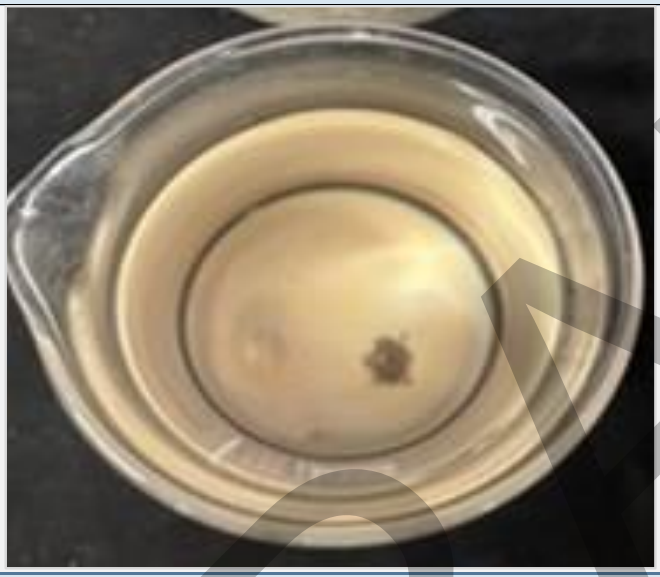
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL202303215**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH05**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH05-001
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) CLAY, high plasticity, brown, with fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.9°
Type of water used:	DISTILLED

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.: PS200634_TRM23-0182_Emerson_LMEL202303215_R094814

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041723**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH05**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH05-002 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	20.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.:	**PS200634_TRM23-0274_Emerson_LMEL2023041723_R095138**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Aaron Stevenson - Senior Technician**

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041724**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH05**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH05-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.:	**PS200634_TRM23-0274_Emerson_LMEL2023041724_R095137**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Aaron Stevenson - Senior Technician**

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

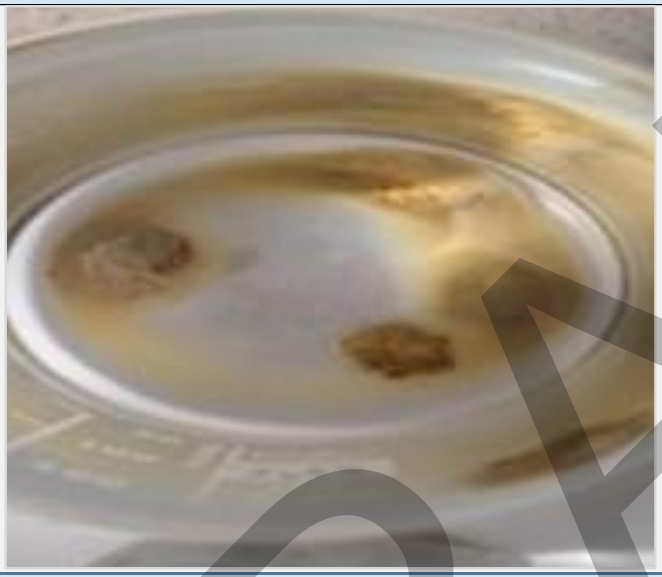
Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041725**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH06**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH06-002 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041725_R095140

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

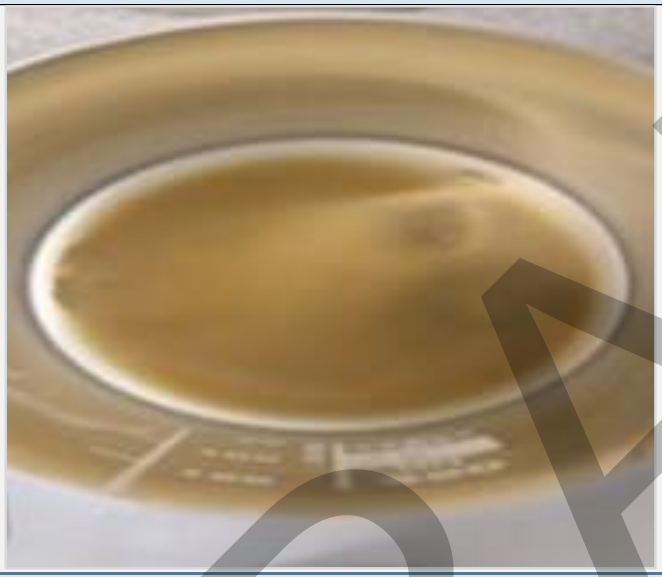
Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041726**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**		**Sample depth (m):**	2.00 - 2.45
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH06**		**Client sample ref:**	BH06-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates Easting (m) / Northing (m) — **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041726_R095139

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

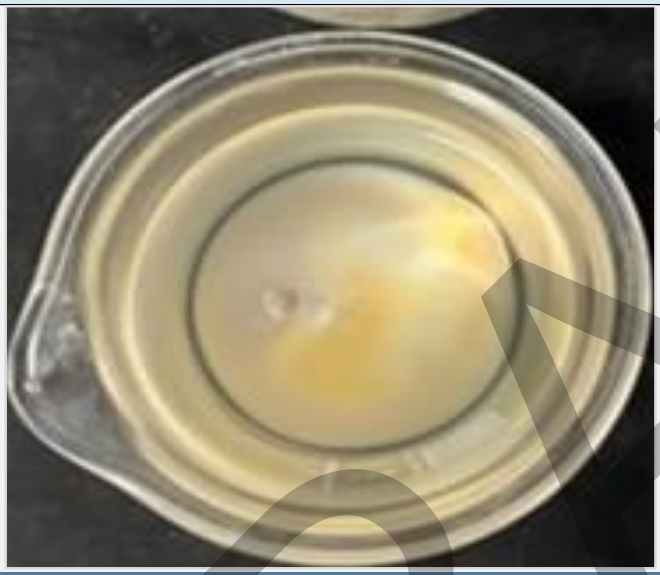
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL202303219**
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH06**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**Sample depth (m):**	3.00 - 3.45
		Client sample ref:	BH06-003
Project reference:		**Loc. ref.:**	-

Specimen description: (CH) CLAY, high plasticity, yellow-grey, with fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.8°
Type of water used:	DISTILLED

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.: PS200634_TRM23-0182_Emerson_LMEL202303219_R094815

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041727**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH07**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH07-001 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Tap

Observations / Notes

Only 1 of 6 particles dispersed

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.:	**PS200634_TRM23-0274_Emerson_LMEL2023041727_R095142**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Aaron Stevenson - Senior Technician**

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

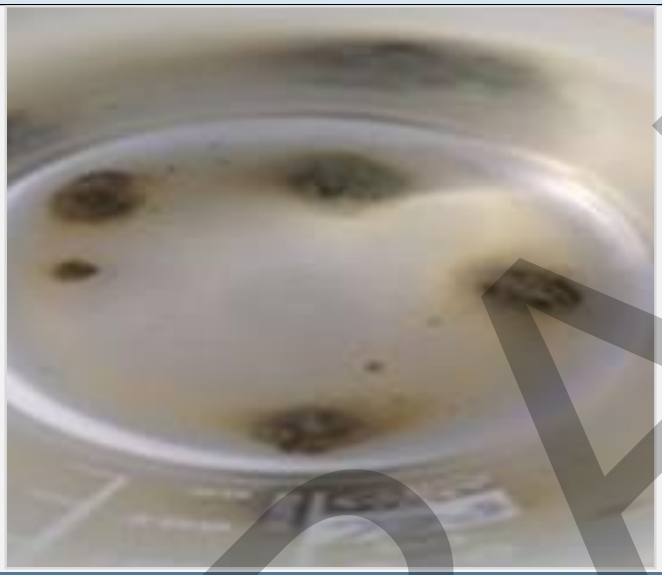
Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041728**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH07**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH07-001
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041728_R095141

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

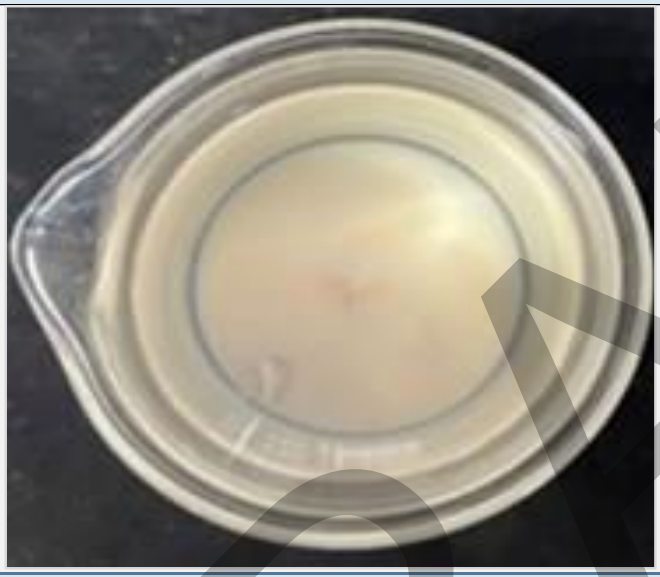
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL2023032111**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH07**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH07-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) CLAY, high plasticity, brown-grey

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.9°
Type of water used:	DISTILLED

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.:	**PS200634_TRM23-0182_Emerson_LMEL2023032111_R094816**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Nick Lobb - Senior Technician**

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

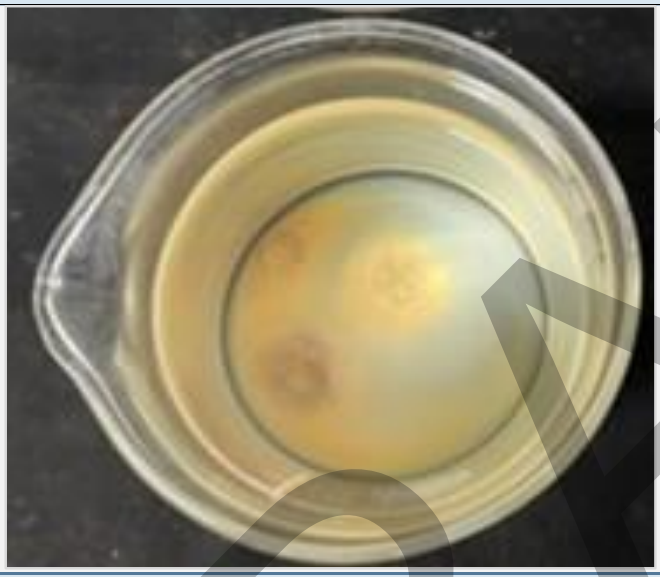
Test request ID:	**TRM23-0182**	**Specimen ID:**	LMEL2023032114	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH08**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH08-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown-grey, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.8°
Type of water used:	DISTILLED

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.: PS200634_TRM23-0182_Emerson_LMEL2023032114_R094817

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041729**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH08**		**Sample depth (m):**	3.00 - 3.45
				Client sample ref:	BH08-003 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, pale orange pale brown, trace fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.:	**PS200634_TRM23-0274_Emerson_LMEL2023041729_R095144**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Aaron Stevenson - Senior Technician**

Phone: +61 (03) 8862 3500 **Fax:** +61 (03) 8862 3501 **E-mail:** melgeolab@wsp.com **Web:** www.wsp.com

DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

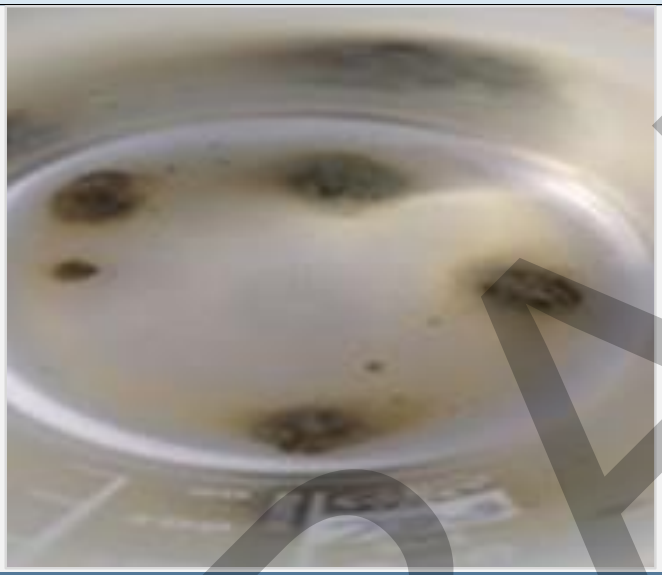
Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041730**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH08**		**Sample depth (m):**	3.00 - 3.45
				Client sample ref:	BH08-003
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, pale orange pale brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by:

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041730_R095143

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041731**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH09**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH09-001 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown orange, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 4

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.:	**PS200634_TRM23-0274_Emerson_LMEL2023041731_R095146**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Aaron Stevenson - Senior Technician**

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041732**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH09**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH09-001
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown orange, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 4

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041732_R095145

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

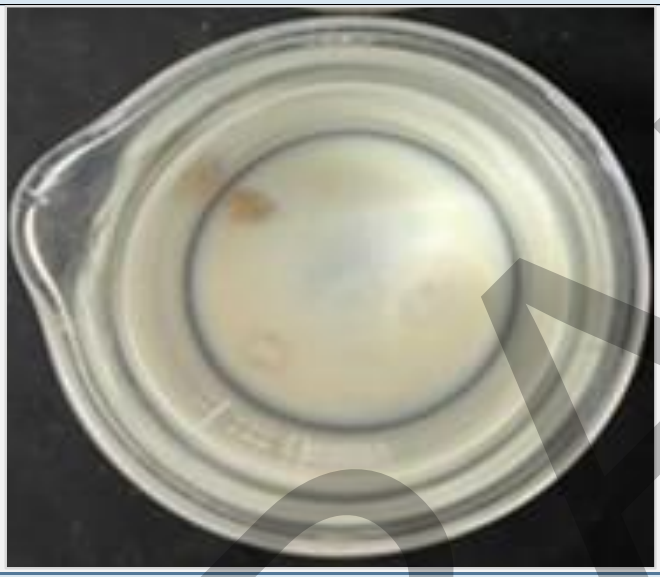
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL2023032116**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH09**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH09-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) CLAY, high plasticity, grey-brown

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.9°
Type of water used:	DISTILLED

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.:	**PS200634_TRM23-0182_Emerson_LMEL2023032116_R094818**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
	THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL	**Nick Lobb - Senior Technician**

Phone: +61 (03) 8862 3500 **Fax:** +61 (03) 8862 3501 **E-mail:** melgeolab@wsp.com **Web:** www.wsp.com

This test was carried out in accordance with AS 1289.3.8.1-2017. Test results relate only to the specimens tested.

DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041733**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH10**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH10-001 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041733_R095148

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0274**	**Specimen ID:**	**LMEL2023041734**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH10**		**Sample depth (m):**	1.00 - 1.45
				Client sample ref:	BH10-001
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH), CLAY, high plasticity, brown, trace fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	19/04/23
Temperature (°C):	21.1°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: AStevenson

Date reported: 02/05/2023

Cert. ref.: PS200634_TRM23-0274_Emerson_LMEL2023041734_R095147

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

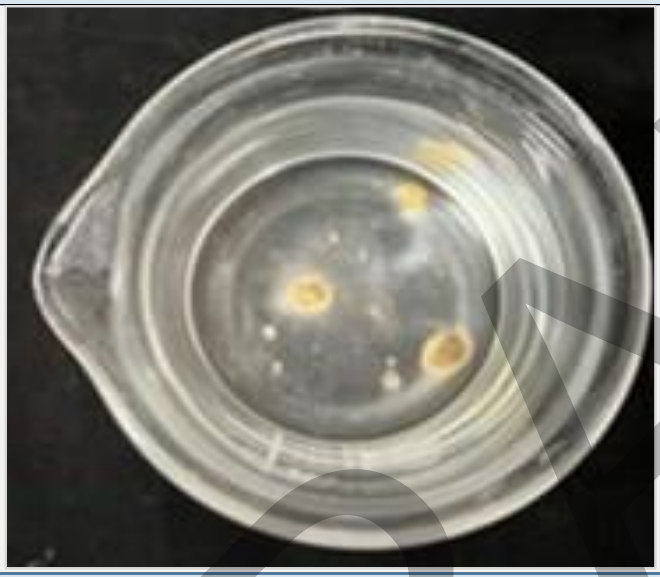
Test request ID:	**TRM23-0182**	**Specimen ID:**	**LMEL2023032118**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH10**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH10-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) CLAY, high plasticity, yellow-grey

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	27/03/23
Temperature (°C):	20.8°
Type of water used:	DISTILLED

Observations / Notes

Only slight dispersion observed

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: MCC

Result reviewed by: NLobb

Date reported: 24/04/2023

Cert. ref.: PS200634_TRM23-0182_Emerson_LMEL2023032118_R094819

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

THIS DOCUMENT SHALL ONLY BE REPRODUCED IN FULL

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

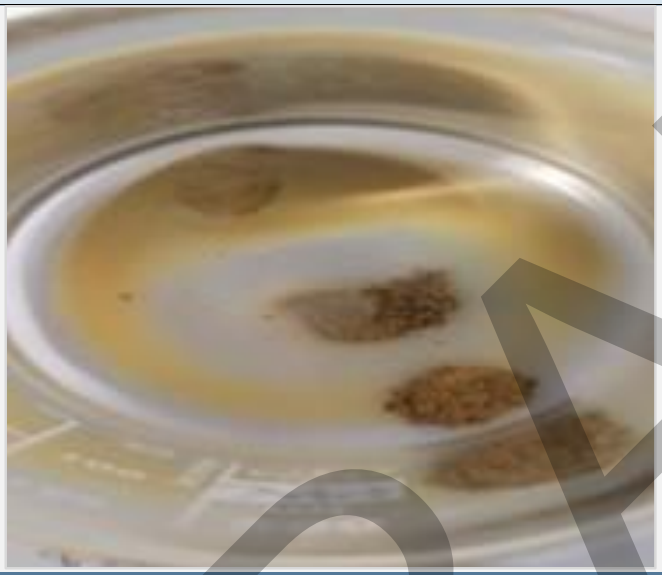
Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304214**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**		**Sample depth (m):**	2.00 - 2.45
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH12**		**Client sample ref:**	BH12-002 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304214_R097058

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304215**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**		**Sample depth (m):**	2.00 - 2.45
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH12**		**Client sample ref:**	BH12-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304215_R097057

Approved signatory:

NATA

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

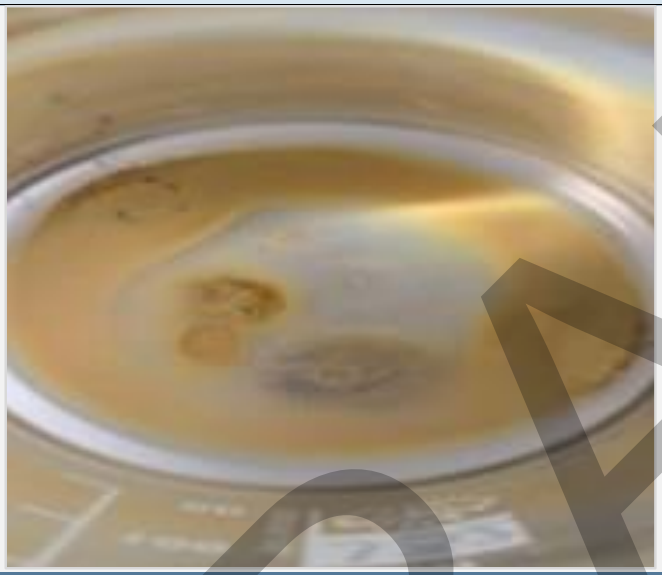
Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304217**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH14**		**Sample depth (m):**	3.00 - 3.45
				Client sample ref:	BH14-003 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304217_R097060

Approved signatory:

NATA

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304218**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH14**		**Sample depth (m):**	3.00 - 3.45
				Client sample ref:	BH14-003
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304218_R097059

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304219**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH15**		**Sample depth (m):**	1.50 - 1.95
				Client sample ref:	BH15-001 tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tao

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL202304219_R097062

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042110**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH15**		**Sample depth (m):**	1.50 - 1.95
				Client sample ref:	BH15-001
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042110_R097061

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

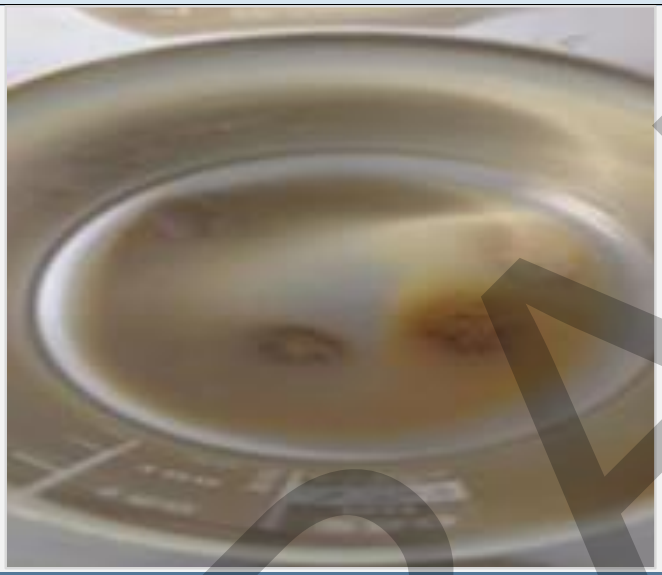
Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042113**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH17**		**Sample depth (m):**	1.50 - 1.95
				Client sample ref:	BH17-002 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042113_R097064

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042114**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH17**		**Sample depth (m):**	1.50 - 1.95
				Client sample ref:	BH17-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates **Easting (m)** **Northing (m)** **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042114_R097063

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

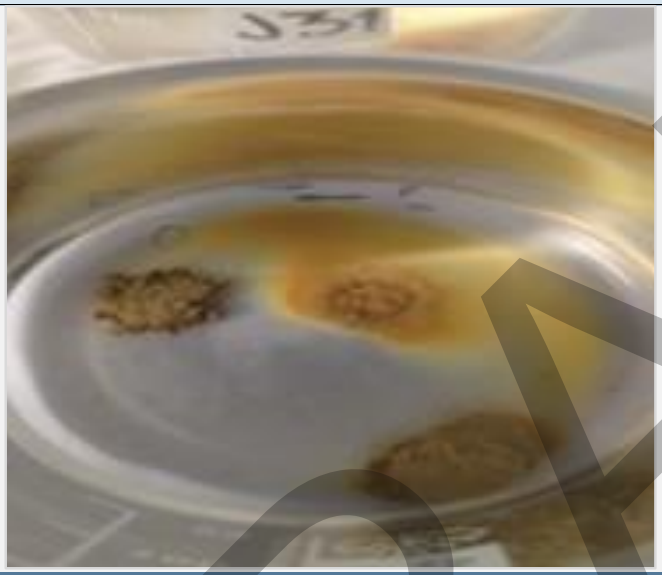
Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042117**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH18**		**Sample depth (m):**	2.00 - 2.40
				Client sample ref:	BH18-002 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042117_R097066

Approved signatory:

NATA

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042118**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH18**		**Sample depth (m):**	2.00 - 2.40
				Client sample ref:	BH18-002
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042118_R097065

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042120**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH20**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH20-003 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042120_R097068

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042121**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH20**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH20-003
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042121_R097067

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

Accredited for compliance with ISO/IEC 17025 - Testing

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

AS 1289.3.8.1-2017

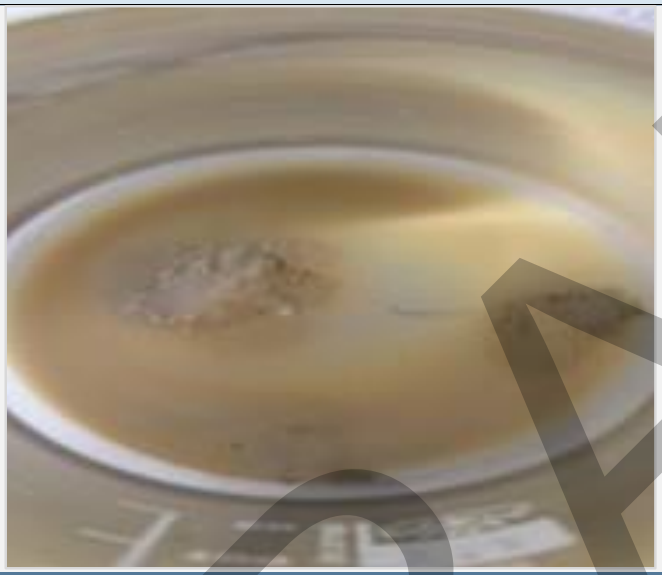
Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042125**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH22**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH22-003 Tap
Project reference:		**Loc. ref.:**		-	

Specimen description: (CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand

Sampling co-ordinates — **Easting (m)** | **Northing (m)** | **Reduced Level**

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Tap

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.: PS200634_TRM23-0291_Emerson_LMEL2023042125_R097070

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne

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DRAFT

Soils testing - Report of Emerson class number

Soil classification

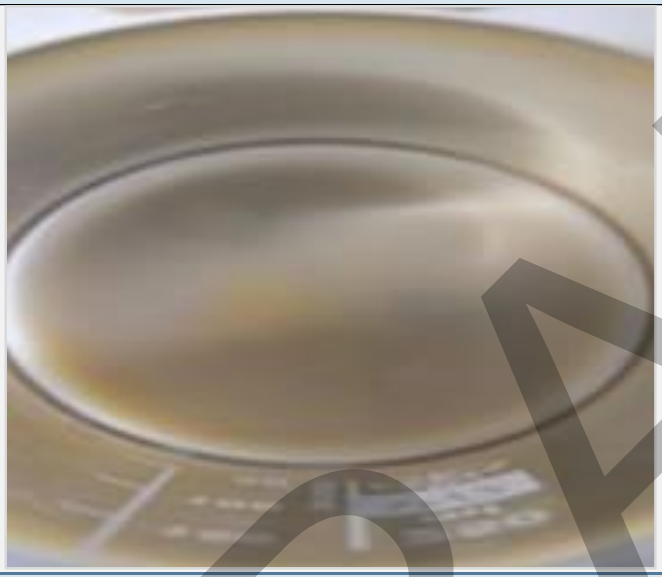
AS 1289.3.8.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042126**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Exploratory Hole**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH22**		**Sample depth (m):**	2.00 - 2.45
				Client sample ref:	BH22-003
Project reference:		**Loc. ref.:**		-	

Specimen description:	**Sampling co-ordinates**		**Reduced Level**
	Easting (m)	**Northing (m)**	
(CH) Sandy CLAY, high plasticity, brown- grey, fine to coarse grained sand			

TEST REPORT - SUMMARY OF ANALYSIS

Visual reference



Date sampled:	**Unknown - tested as rcvd.**
Date tested:	01/05/23
Temperature (°C):	19.6°
Type of water used:	Distilled

Observations / Notes

Emerson class number

Class 2

Emerson Class	Definition / Notes
Class 1	*Air-dried crumbs of soil show a strong dispersing reaction, i.e., a colloidal cloud covers nearly the whole of the bottom of the beaker, usually in a very thin layer. The reaction should be evident within 10 minutes. In extreme cases all the water in the beaker becomes cloudy, leaving only a coarse residue in a cloud of clay.*
Class 2	*Air-dried crumbs of soil show a moderate to slight reaction. A moderate reaction consists of an easily recognizable cloud of colloids in suspension, usually spreading in thin streaks on the bottom of the beaker. A slight reaction consists of the bare hint of cloud in water at the surface of the crumbs.*
Class 3	*The soil remoulded at the plastic limit disperses in water.*
Class 4	*The remoulded soil does not disperse in water. Calcium carbonate (calcite) or calcium sulfate (gypsum) is present.*
Class 5	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension remains dispersed after 10 minutes.*
Class 6	*The remoulded soil does not disperse in water and the 1:5 soil/water suspension begins to floculate within 10 minutes.*
Class 7	*The air-dried crumbs of soil remain coherent in water and swell.*
Class 8	*The air-dried crumbs of soil remain coherent in water and do not swell.*

Definitions:

ND = Not determined

Test performed by: NMD

Result reviewed by: NLobb

Date reported: 05/06/2023

Cert. ref.:	**PS200634_TRM23-0291_Emerson_LMEL2023042126_R097069**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
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This test was carried out in accordance with AS 1289.3.8.1-2017. Test results relate only to the specimens tested.

DRAFT

Soils testing - Determination of the dry density moisture relationship

Standard compaction method

AS 1289.5.1.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL202304210**
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH02**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	0

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 1.00 - 1.80
Client sample ref: BH02-001

Specimen description: (CH) CLAY, high plasticity, yellow-brown, with fine to coarse grained sand

Sampling co-ordinates Easting (m) Northing (m) **Reduced Level**

SPECIMEN PREPARATION & CURING COMPLIANCE

Material type	Liquid Limit				Moisture content:	29.4% Field	*AS 1289 2.1.1-2005*
Cohesive	Measured:	Assumed: 60%	Adopted: 60%				
	Curing times are compliant		Cure: 168 hrs		Portion test performed on:	-19 mm	

TEST REPORT - COMPACTION RESULTS

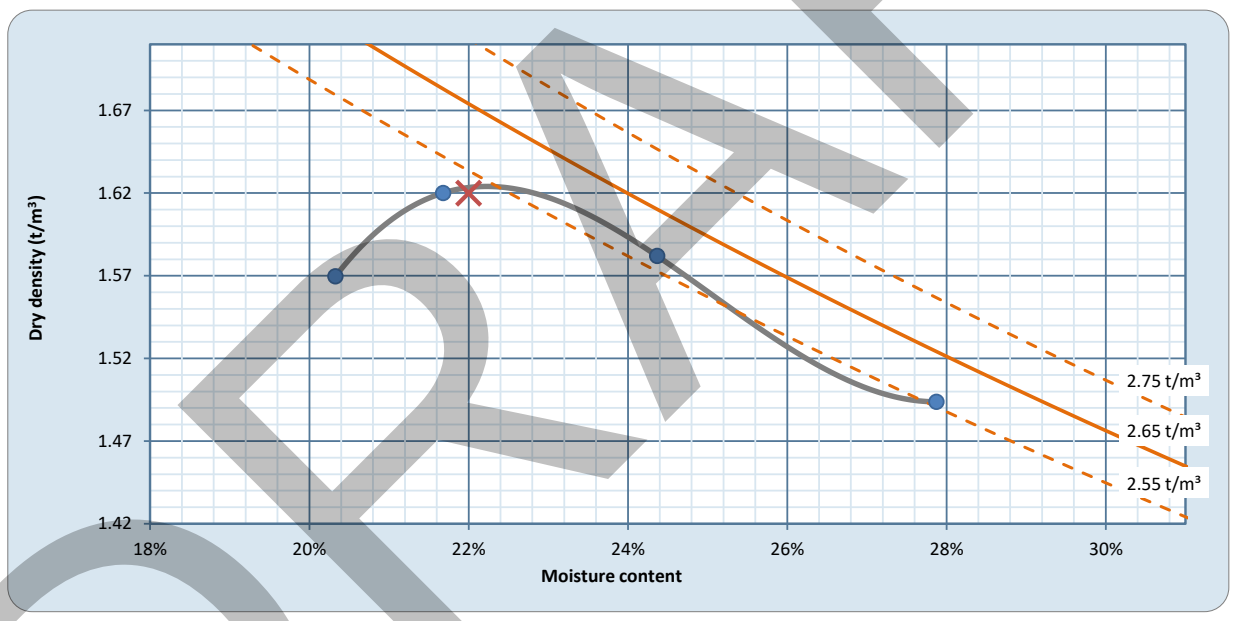
	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Dry density (t/m³):	1.57	1.62	1.58	1.49		
Moisture content:	20.3%	21.7%	24.4%	27.9%		

Oversize material - (by wet mass)

No oversize correction required

+19 mm: 0%
+37.5 mm:

No oversize material present



Notes:

	Result	Adjusted for oversize
Standard maximum dry density (t/m³):	1.62	
Standard optimum moisture content:	22.0%	

Specimens prepared by: YHL **Tests performed by:** PDA **Date tested:** 04/05/2023

Definition: ND = Not Determined **Results reviewed by:** AStevenson **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH02_TRM23-0291_StndComp_s2304210_Rep23097075 **Approved signatory:**

NATA accreditation number: 1961 - Site:1250 - Melbourne
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This test was carried out in accordance with AS 1289.5.1.1-2017.

DRAFT

Soils testing - Determination of the dry density moisture relationship

Standard compaction method

AS 1289.5.1.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042112**
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH17**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 1.00 - 2.00
Client sample ref: BH17-001

Specimen description: (CH) Sandy CLAY, high plasticity, yellow-brown, fine to coarse grained sand

Sampling co-ordinates Easting (m) Northing (m) **Reduced Level**

SPECIMEN PREPARATION & CURING COMPLIANCE

Material type	Liquid Limit				Moisture content:	24.0% Field	*AS 1289 2.1.1-2005*
Cohesive	Measured:	Assumed:	Adopted:	50%			
	Curing times are compliant		Cure:	192 hrs	Portion test performed on:	-19 mm	

TEST REPORT - COMPACTION RESULTS

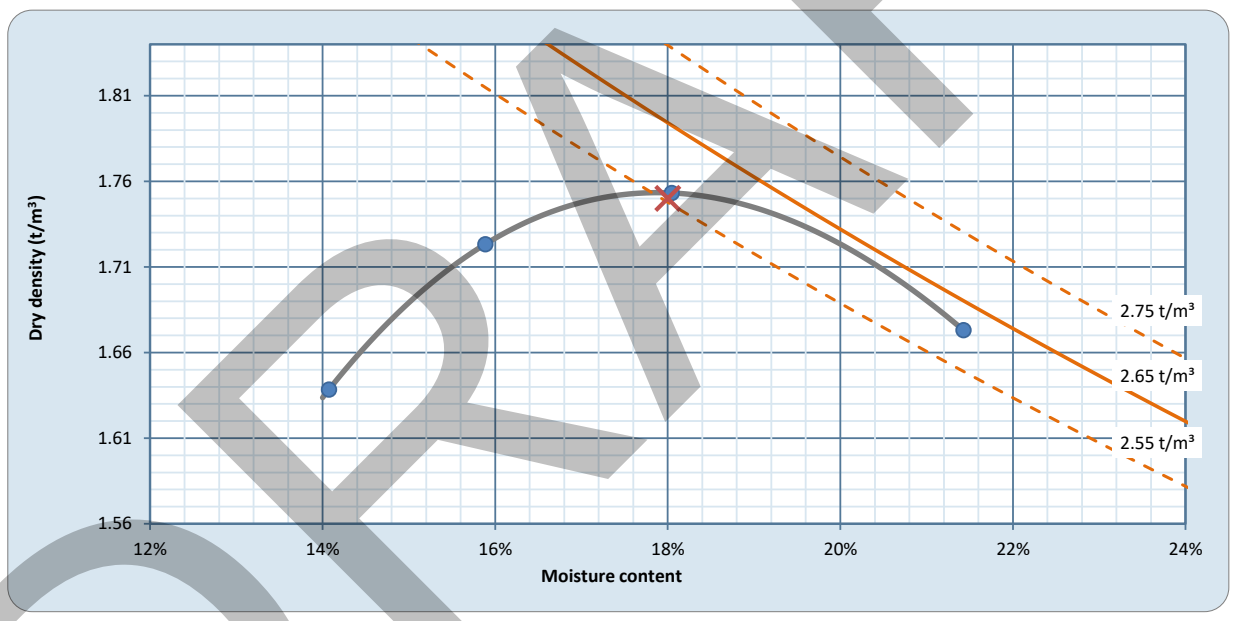
	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Dry density (t/m³):	1.64	1.72	1.75	1.67		
Moisture content:	14.1%	15.9%	18.0%	21.4%		

Oversize material - (by wet mass)

No oversize correction required

+19 mm: 0%
+37.5 mm:

No oversize material present



Notes:

	Result	Adjusted for oversize
Standard maximum dry density (t/m³):	1.75	
Standard optimum moisture content:	18.0%	

Specimens prepared by: PL **Tests performed by:** PDA **Date tested:** 04/05/2023

Definition: ND = Not Determined **Results reviewed by:** AStevenson **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH17_TRM23-0291_StndComp_s23042112_Rep23097076 **Approved signatory:**

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This test was carried out in accordance with AS 1289.5.1.1-2017.

DRAFT

Soils testing - Determination of the dry density moisture relationship

Standard compaction method

AS 1289.5.1.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042119**
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**		
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:			

Exploratory Hole: BH20

Loc. ref.:

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 1.00 - 2.50

Client sample ref: BH20-001

Specimen description: (CH) CLAY, high plasticity, yellow-brown , with fine to coarse grained sand

Sampling co-ordinates Easting (m) Northing (m) **Reduced Level**

SPECIMEN PREPARATION & CURING COMPLIANCE

Material type	Liquid Limit				Moisture content:	23.8% Field	AS 1289 2.1.1-2005
Cohesive	Measured:	Assumed: 70%	Adopted: 70%				
	Curing times are compliant		Cure: 168 hrs		Portion test performed on:	-19 mm	

TEST REPORT - COMPACTION RESULTS

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Dry density (t/m³):	1.55	1.59	1.67	1.67	1.61	
Moisture content:	13.4%	15.7%	18.0%	21.4%	23.4%	

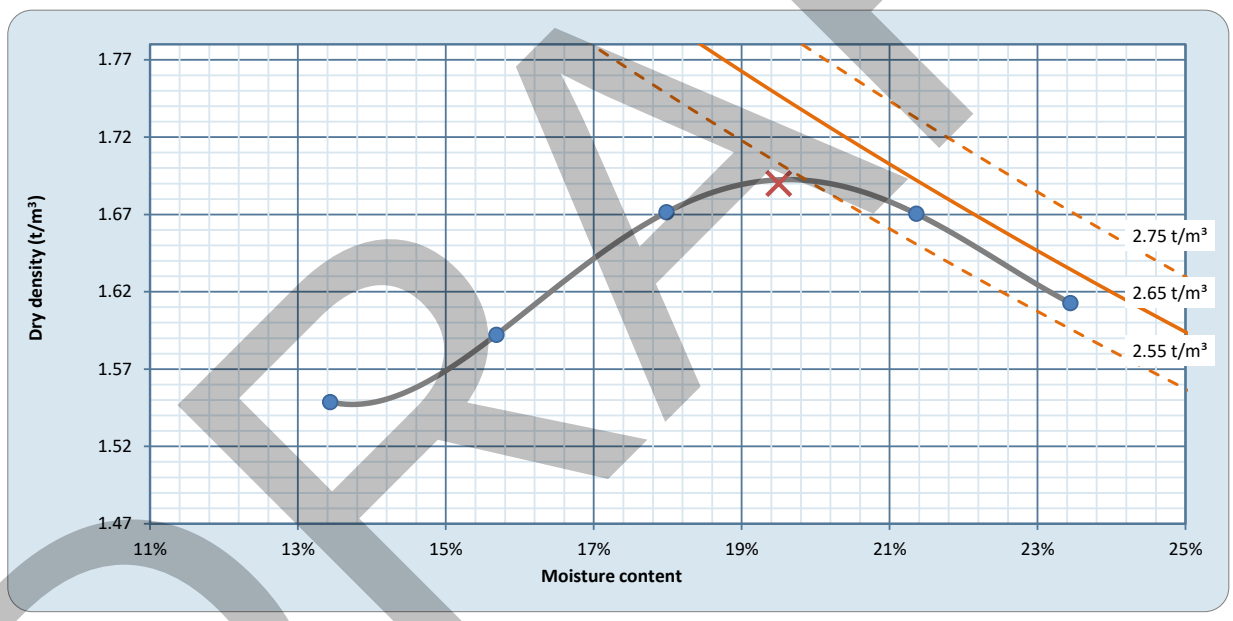
Oversize material - (by wet mass)

No oversize correction required

+19 mm: 0%

+37.5 mm:

No oversize material present



Notes:

	Result	Adjusted for oversize
Standard maximum dry density (t/m³):	1.69	
Standard optimum moisture content:	19.5%	

Specimens prepared by:

Definition: ND = Not Determined

Tests performed by: PDA

Results reviewed by: AStevenson

Date tested: 04/05/2023

Date reported: 05/06/2023

Cert. ref.: PS200634_BH20_TRM23-0291_StndComp_s23042119_Rep23097077

Approved signatory:

NATA accreditation number: 1961 - Site:1250 - Melbourne
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This test was carried out in accordance with AS 1289.5.1.1-2017.

DRAFT

Soils testing - Determination of the dry density moisture relationship

Standard compaction method

AS 1289.5.1.1-2017

Test request ID:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042123**
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH22**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC		
Project reference:		**Loc. ref.:**	

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Sample depth (m): 1.00 - 2.20
Client sample ref: BH22-001

Specimen description: (CI) Sandy CLAY, medium plasticity, yellow-brown, fine to coarse grained sand

Sampling co-ordinates Easting (m) Northing (m) **Reduced Level**

SPECIMEN PREPARATION & CURING COMPLIANCE

Material type	Liquid Limit				Moisture content:	27.1% Field	*AS 1289 2.1.1-2005*
Cohesive	Measured:	Assumed:	Adopted:	50%			
	Curing times are compliant		Cure:	192 hrs	Portion test performed on:	-19 mm	

TEST REPORT - COMPACTION RESULTS

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6
Dry density (t/m³):	1.66	1.68	1.65	1.62		
Moisture content:	17.4%	19.8%	22.2%	24.0%		

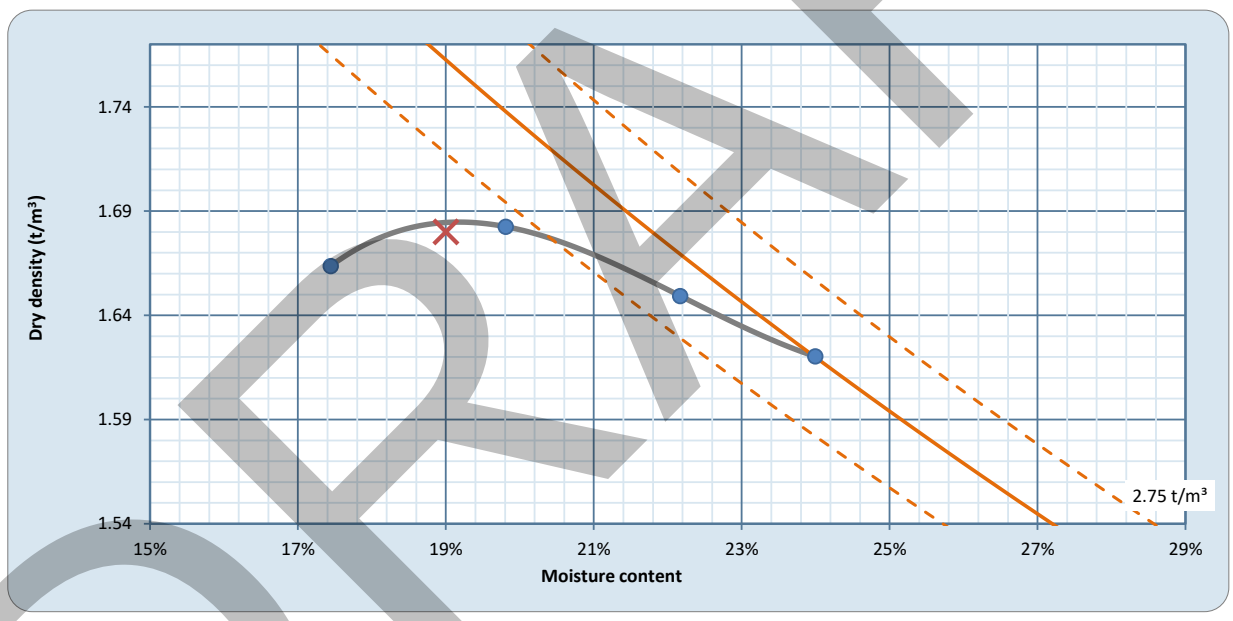
Oversize material - (by wet mass)

No oversize correction required

+19 mm: 0%

+37.5 mm:

No oversize material present



Notes:

	Result	Adjusted for oversize
Standard maximum dry density (t/m³):	1.68	
Standard optimum moisture content:	19.0%	

Specimens prepared by: PL **Tests performed by:** PDA **Date tested:** 04/05/2023

Definition: ND = Not Determined **Results reviewed by:** AStevenson **Date reported:** 05/06/2023

Cert. ref.: PS200634_BH22_TRM23-0291_StndComp_s23042123_Rep23097078 **Approved signatory:**

NATA accreditation number: 1961 - Site:1250 - Melbourne
Accredited for compliance with ISO/IEC 17025 - Testing

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This test was carried out in accordance with AS 1289.5.1.1-2017.

DRAFT

Soils test - Determination of pinhole dispersion classification of a soil

Standard laboratory method

AS 1289.3.8.3-2014

Test request #:	**TRM23-0291**	LMEL202304210	**WSP Australia Pty Ltd**
Client:	Melbourne Water		**MELBOURNE GEOTECHNICAL LABORATORY**
Client address:	990 La Trobe Street, Docklands VIC 3008		Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121
Project ID:	**PS200634**	**Exploratory Hole**	
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH02**	**Sample depth (m):** 1.00 - 1.80
Project reference:		**Loc. ref.:**	**Client sample ref:** BH02-001
			-

Specimen description:	(CH) CLAY, high plasticity, yellow-brown, with fine to coares grained sand	**Sampling:**	WSP Engineer

Preparation of specimen and testing performed on samples supplied to the laboratory

Sample type:	Remoulded
Curing time:	>48 hours
Date prepared:	5/05/2023
Date Tested:	15/05/2023
Target dry density (t/m^3):	1.54
Initial moisure content:	29.4% *As received*
Remoulded moisture content:	21.7% *[Remoulded moisture content is determined to be OMC]*
Remoulded density (t/m^3):	1.87
Remoulded dry density (t/m^3):	1.54

Moisture content calculation is performed in accordance with AS AS 1289.2.1.1 - 2005

Specimen history /Notes:	Sample remoulded to target of 95% of SMDD at 100% OMC. Compaction data; SMDD = 1.62 t/m3, OMC = 22 %.

Photo post test - Final cylinder



TEST RESULTS SUMMARY

Pinhole classification	**Designation:**	**D2**	**Description:**	**Dispersive**
Final flow through specimen (ml/s):		**0.04**	**Source of water:**	**Potable water**
Hole reformed at 50mm head:		-		
Other observations:	1:1.3 hole diameter ratio at completion of test			

PINHOLE DISPERSION CLASSIFICATION [Ref: TABLE 2: AS 1289.3.8.3;2014]

Designation	Description	Head at termination of test (mm)	Test time of head (min)	Visibility of colour of flow at end of test	Final flow through specimen (ml/s)
D1	*Highly dispersive*	*50*	*10*	*Very distinct*	-
D2	*Dispersive*	*50*	*10*	*Distinct to slight*	-
PD1	*Potentially dispersive*	*175*	*5*	*Slight to easily visible*	-
PD2	*Potentially dispersive (intermediate)*	*350*	*5*	*Slight*	*> 3.5*
ND1	*Non-dispersive*	*1000*	*5*	*Slight to barely visible*	*< 5.0*
ND2	*Completely erosion resistent*	*1000*	*5*	*Clear*	*< 5.0*

Definitions:

ND = Not determined

Specimen prepared by:	AHS	**Tests performed by:**	AHS
Result reviewed by:	NLobb	**Date reported:**	05/06/23

Cert. ref.:	**PS200634_BH02_2304210_TRM23-0291_PDC_R23097071**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
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DRAFT

Soils test - Determination of pinhole dispersion classification of a soil

Standard laboratory method

AS 1289.3.8.3-2014

Test request #:	**TRM23-0291**	LMEL2023042112	**WSP Australia Pty Ltd**
Client:	Melbourne Water		**MELBOURNE GEOTECHNICAL LABORATORY**
Client address:	990 La Trobe Street, Docklands VIC 3008		Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121
Project ID:	**PS200634**	**Exploratory Hole**	
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH17**	**Sample depth (m):** 1.00 - 2.00
Project reference:		**Loc. ref.:**	**Client sample ref:** BH17-001 -

Specimen description:	(CH) Sandy CLAY, high plasticity, yellow-brown, fine to coarse grained sand	**Sampling:**	WSP Engineer

Preparation of specimen and testing performed on samples supplied to the laboratory

Sample type:	Remoulded
Curing time:	>48 hours
Date prepared:	5/05/2023
Date Tested:	15/05/2023
Target dry density (t/m^3):	1.66
Initial moisure content:	24.0% *As received*
Remoulded moisture content:	18.1% *[Remoulded moisture content is determined to be OMC]*
Remoulded density (t/m^3):	1.96
Remoulded dry density (t/m^3):	1.66

Moisture content calculation is performed in accordance with AS AS 1289.2.1.1 - 2005

Specimen history /Notes:	Sample remoulded to target of 95% of SMDD at 100% OMC. Compaction data; SMDD = 1.75 t/m3, OMC = 18 %.

Photo post test - Final cylinder



TEST RESULTS SUMMARY

Pinhole classification	**Designation:**	**D2**		**Description:**	**Dispersive**
Final flow through specimen (ml/s):		**0.05**		**Source of water:**	**Potable water**
Hole reformed at 50mm head:		Hole reformed at 50mm head			
Other observations:	1:1.3 hole diameter ratio at completion of test				

PINHOLE DISPERSION CLASSIFICATION [Ref: TABLE 2: AS 1289.3.8.3;2014]

Designation	Description	Head at termination of test (mm)	Test time of head (min)	Visibility of colour of flow at end of test	Final flow through specimen (ml/s)
D1	*Highly dispersive*	*50*	*10*	*Very distinct*	-
D2	*Dispersive*	*50*	*10*	*Distinct to slight*	-
PD1	*Potentially dispersive*	*175*	*5*	*Slight to easily visible*	-
PD2	*Potentially dispersive (intermediate)*	*350*	*5*	*Slight*	*> 3.5*
ND1	*Non-dispersive*	*1000*	*5*	*Slight to barely visible*	*< 5.0*
ND2	*Completely erosion resistent*	*1000*	*5*	*Clear*	*< 5.0*

Definitions:

ND = Not determined

Specimen prepared by:	AHS	**Tests performed by:**	AHS
Result reviewed by:	NLobb	**Date reported:**	05/06/23

Cert. ref.:	**PS200634_BH17_23042112_TRM23-0291_PDC_R23097072**	**Approved signatory:**
NATA	**NATA accreditation number: 1961 - Site:1250 - Melbourne** Accredited for compliance with ISO/IEC 17025 - Testing	
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DRAFT

Soils test - Determination of pinhole dispersion classification of a soil

Standard laboratory method

AS 1289.3.8.3-2014

Test request #:	**TRM23-0291**	LMEL2023042119	**WSP Australia Pty Ltd**
Client:	Melbourne Water		**MELBOURNE GEOTECHNICAL LABORATORY**
Client address:	990 La Trobe Street, Docklands VIC 3008		Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121
Project ID:	**PS200634**	**Exploratory Hole**	
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH20**	**Sample depth (m):** 1.00 - 2.50
Project reference:		**Loc. ref.:**	**Client sample ref:** BH20-001
			-

Specimen description: (CH) CLAY, high plasticity, yellow-brown, with fine to coarse grained sand

Sampling: WSP Engineer

Preparation of specimen and testing performed on samples supplied to the laboratory

Sample type:	Remoulded
Curing time:	>48 hours
Date prepared:	5/05/2023
Date Tested:	15/05/2023
Target dry density (t/m^3):	1.61
Initial moisure content:	23.7% *As received*
Remoulded moisture content:	19.1% *[Remoulded moisture content is determined to be OMC]*
Remoulded density (t/m^3):	1.92
Remoulded dry density (t/m^3):	1.61

Moisture content calculation is performed in accordance with AS AS 1289.2.1.1 - 2005

Specimen history /Notes: Sample remoulded to target of 95% of SMDD at 100% OMC. Compaction data; SMDD = 1.69 t/m3, OMC = 19.5 %.

Photo post test - Final cylinder



TEST RESULTS SUMMARY

Pinhole classification **Designation:** **PD1** **Description:** **Potentially dispersive**

Final flow through specimen (ml/s): **2.00** **Source of water:** **Potable water**

Hole reformed at 50mm head: -

Other observations: 1:1.5 hole diameter ratio at completion of test

PINHOLE DISPERSION CLASSIFICATION [Ref: TABLE 2: AS 1289.3.8.3;2014]

Designation	Description	Head at termination of test (mm)	Test time of head (min)	Visibility of colour of flow at end of test	Final flow through specimen (ml/s)
D1	*Highly dispersive*	*50*	*10*	*Very distinct*	-
D2	*Dispersive*	*50*	*10*	*Distinct to slight*	-
PD1	*Potentially dispersive*	*175*	*5*	*Slight to easily visible*	-
PD2	*Potentially dispersive (intermediate)*	*350*	*5*	*Slight*	*> 3.5*
ND1	*Non-dispersive*	*1000*	*5*	*Slight to barely visible*	*< 5.0*
ND2	*Completely erosion resistent*	*1000*	*5*	*Clear*	*< 5.0*

Definitions:
ND = Not determined

Specimen prepared by: AHS **Tests performed by:** AHS

Result reviewed by: NLobb **Date reported:** 05/06/23

Cert. ref.: PS200634_BH20_23042119_TRM23-0291_PDC_R23097073 **Approved signatory:**

NATA **NATA accreditation number: 1961 - Site:1250 - Melbourne**
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DRAFT

Soils test - Determination of pinhole dispersion classification of a soil

Standard laboratory method

AS 1289.3.8.3-2014

WSP Australia Pty Ltd
MELBOURNE GEOTECHNICAL LABORATORY
Building 7, Botanicca Corporate Park
570 - 588 Swan Street
Richmond, Victoria 3121

Test request #:	**TRM23-0291**	**LMEL2023042123**	
Client:	Melbourne Water		
Client address:	990 La Trobe Street, Docklands VIC 3008		
Project ID:	**PS200634**	**Exploratory Hole**	**BH22**
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**Sample depth (m):**	1.00 - 2.20
Project reference:		**Client sample ref:**	BH22-001
		Loc. ref.:	-

Specimen description: (CI) Sandy CLAY, medium plasticity, yellow-brown, fine to coarse grained sand

Sampling: WSP Engineer

Preparation of specimen and testing performed on samples supplied to the laboratory

Sample type:	Remoulded
Curing time:	>48 hours
Date prepared:	5/05/2023
Date Tested:	15/05/2023
Target dry density (t/m^3):	1.60
Initial moisure content:	27.0% *As received*
Remoulded moisture content:	18.8% *[Remoulded moisture content is determined to be OMC]*
Remoulded density (t/m^3):	**1.90**
Remoulded dry density (t/m^3):	**1.60**

Moisture content calculation is performed in accordance with AS AS 1289.2.1.1 - 2005

Specimen history /Notes: Sample remoulded to target of 95% of SMDD at 100% OMC. Compaction data; SMDD = 1.68 t/m3, OMC = 19 %.

Photo post test - Final cylinder



TEST RESULTS SUMMARY

Pinhole classification **Designation:** **PD1** **Description:** **Potentially dispersive**

Final flow through specimen (ml/s): **0.83** **Source of water:** **Potable water**

Hole reformed at 50mm head: -

Other observations: 1:1.3 hole diameter ratio at completion of test

PINHOLE DISPERSION CLASSIFICATION [Ref: TABLE 2: AS 1289.3.8.3;2014]

Designation	Description	Head at termination of test (mm)	Test time of head (min)	Visibility of colour of flow at end of test	Final flow through specimen (ml/s)
D1	*Highly dispersive*	*50*	*10*	*Very distinct*	-
D2	*Dispersive*	*50*	*10*	*Distinct to slight*	-
PD1	*Potentially dispersive*	*175*	*5*	*Slight to easily visible*	-
PD2	*Potentially dispersive (intermediate)*	*350*	*5*	*Slight*	*> 3.5*
ND1	*Non-dispersive*	*1000*	*5*	*Slight to barely visible*	*< 5.0*
ND2	*Completely erosion resistent*	*1000*	*5*	*Clear*	*< 5.0*

Definitions:
ND = Not determined

Specimen prepared by: AHS
Result reviewed by: NLobb
Tests performed by: AHS
Date reported: 05/06/23

Cert. ref.: PS200634_BH22_23042123_TRM23-0291_PDC_R23097074

Approved signatory:

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DRAFT

Soil testing - Determination of permeability of a saturated specimen

Constant head method using a flexible wall permeameter

AS 1289.6.7.3-2016

Test request #:	**TRM23-0291**	**Specimen ID:**	**LMEL202304210**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park	
Project ID:	**PS200634**	**Location ID**		570 - 588 Swan Street	
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH02**		Richmond, Victoria 3121	
Project reference:		**Loc. ref.:**	**47**	**Sample depth (m):**	**1.00 - 1.80**
				Client sample ref:	**BH02-001**

Specimen description:	(CH) CLAY, high plasticity, brown-grey, with fine to coarse grained sand, trace fine gravel	**Phase / Locale:**	-
		Sample type:	Undisturbed

Specimen before testing

Height [H] (mm)	63.1
Diameter [D] (mm)	63.1
[D]:[H]	1:1
Mass (g)	376.2
Moisture Content:	24.6%
Dry Density (t/m^3):	1.53
Assumed Porosity (%)	42.3%
Assumed Pore Volume (mL)	83.7

Compaction Details

Method:	Standard
Material retained on 19mm sieve (g):	-
Optimum Moisture Content:	22.0%
Maximum Dry Density (t/m^3):	1.62
Target moisture content to OMC:	0.23
Target dry density relative to MDD:	1.54
Laboratory Moisture Ratio:	111.7%
Laboratory Density Ratio:	94.3%

Pre-test photo

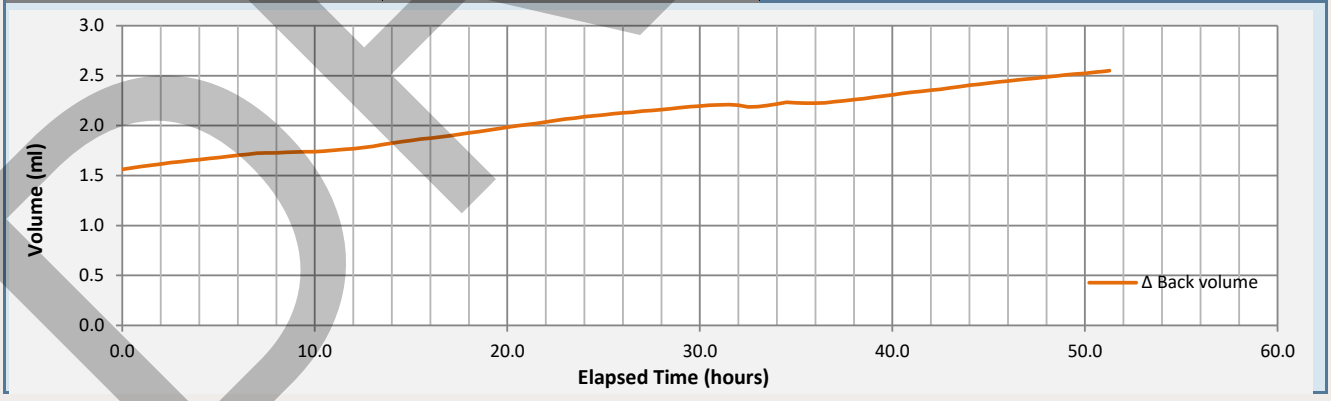


Post-test photo



Permeability test details

Permeant used:	Distilled water
Method of saturation:	Back pressure saturation
Estimate of initial saturation:	88.7%
Saturation B value:	100%
Confining Pressure (kPa):	1050
Inlet Pressure (kPa):	1010
Outlet Pressure (kPa):	990
Mean effective stress (kPa):	50
Hydraulic Head (kPa):	20
Moisture content after test:	29.8%
Permeability: (m/s)	**5E-11**



Notes: Specimen remoulded to a target of 95% SMDD @ 0 to + 3% of OMC. Standard Compaction to AS 1289 5.1.1.

Definitions:
ND = Not Determined

Specimen Prepared by: LM
Results Reviewed by: NLobb
Test Performed by: LM
Date Reported: **8/06/23**

Cert. Ref.: PS200634_BH02_2304210_TRM23-0291_PERM_R23097159

Approved signatory

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DRAFT

Soil testing - Determination of permeability of a saturated specimen

Constant head method using a flexible wall permeameter

AS 1289.6.7.3-2016

Test request #:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042112**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Location ID**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH17**		**Sample depth (m):**	**1.00 - 2.00**
				Client sample ref:	**BH17-001**
Project reference:		**Loc. ref.:**		**47.5**	

Specimen description:	(CH) CLAY, high plasticity, brown, trace fine to coarse grained sand	**Phase / Locale:**	-
		Sample type:	Disturbed

Specimen before testing

Height [H] (mm)	75.2
Diameter [D] (mm)	75.0
[D]:[H]	1:1
Mass (g)	659.0
Moisture Content:	18.3%
Dry Density (t/m^3):	1.68
Assumed Porosity (%)	36.8%
Assumed Pore Volume (mL)	122.4

Compaction Details

Method:	Standard
Material retained on 19mm sieve (g):	-
Optimum Moisture Content:	18.0%
Maximum Dry Density (t/m^3):	1.75
Target moisture content to OMC:	0.18
Target dry density relative to MDD:	1.66
Laboratory Moisture Ratio:	101.6%
Laboratory Density Ratio:	95.7%

Pre-test photo

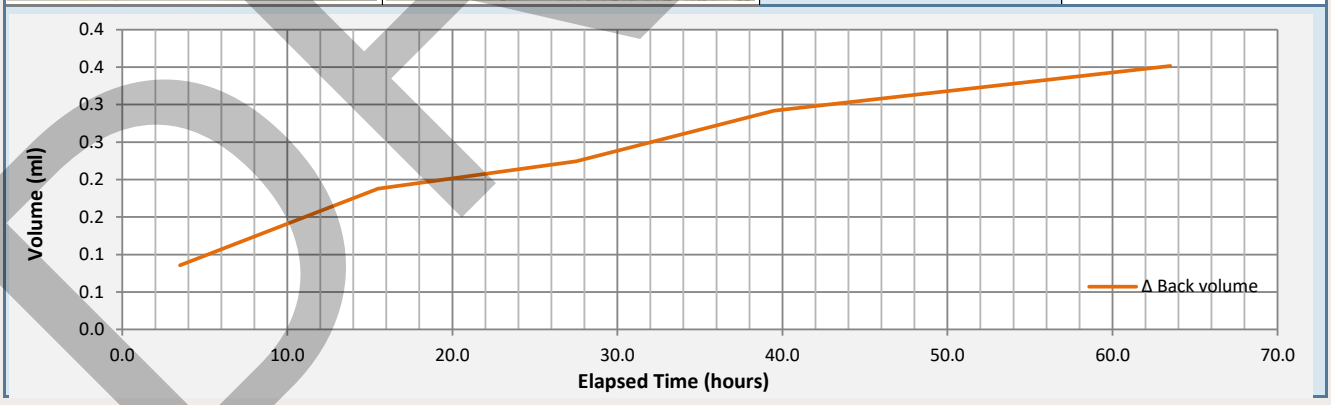


Post-test photo



Permeability test details

Permeant used:	Distilled water
Method of saturation:	Back pressure saturation
Estimate of initial saturation:	83.3%
Saturation B value:	97%
Confining Pressure (kPa):	1050
Inlet Pressure (kPa):	1010
Outlet Pressure (kPa):	990
Mean effective stress (kPa):	50
Hydraulic Head (kPa):	20
Moisture content after test:	22.5%
Permeability: (m/s)	**3E-12**



Notes: Specimen remoulded to a target of 95% SMDD @ 0 to + 3% of OMC. Standard Compaction to AS 1289 5.1.1.

Definitions:
ND = Not Determined

Specimen Prepared by: LM
Results Reviewed by: NLobb
Test Performed by: LM
Date Reported: **8/06/23**

Cert. Ref.: PS200634_BH17_23042112_TRM23-0291_PERM_R23097160

Approved signatory

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DRAFT

Soil testing - Determination of permeability of a saturated specimen

Constant head method using a flexible wall permeameter

AS 1289.6.7.3-2016

Test request #:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042119**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Location ID**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH20**		**Sample depth (m):**	**1.00 - 2.50**
				Client sample ref:	**BH20-001**
Project reference:		**Loc. ref.:**		**24**	

Specimen description:	(CH) CLAY, high plasticity, pale brown, trace fine to coarse grained sand	**Phase / Locale:**	-
		Sample type:	Disturbed

Specimen before testing

Height [H] (mm)	75.1
Diameter [D] (mm)	74.9
[D]:[H]	0.042
Mass (g)	642.3
Moisture Content:	19.6%
Dry Density (t/m3):	1.62
Assumed Porosity (%)	38.8%
Assumed Pore Volume (mL)	128.7

Compaction Details

Method:	Standard
Material retained on 19mm sieve (g):	-
Optimum Moisture Content:	19.5%
Maximum Dry Density (t/m3):	1.69
Target moisture content to OMC:	0.20
Target dry density relative to MDD:	1.61
Laboratory Moisture Ratio:	100.4%
Laboratory Density Ratio:	95.9%

Pre-test photo

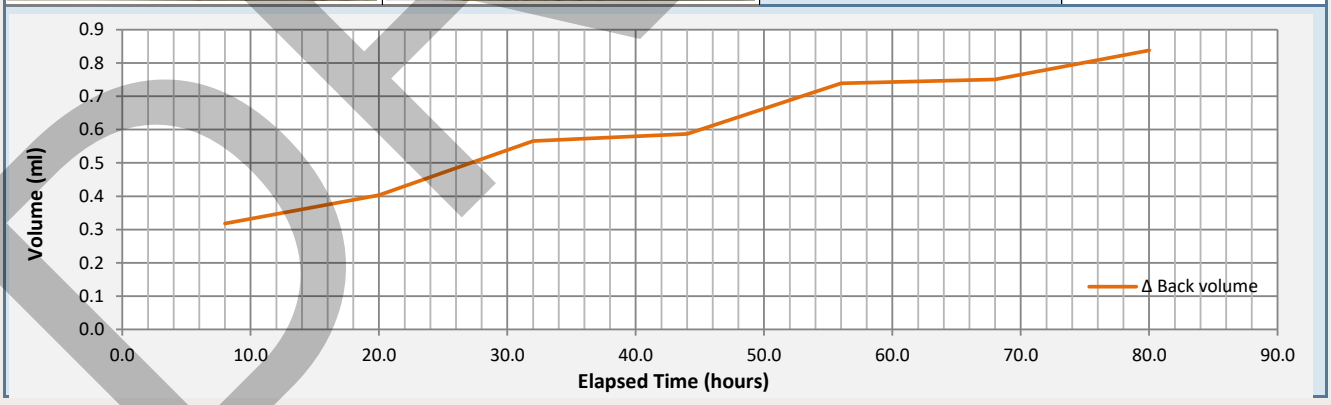


Post-test photo



Permeability test details

Permeant used:	Distilled water
Method of saturation:	Back pressure saturation
Estimate of initial saturation:	81.8%
Saturation B value:	99%
Confining Pressure (kPa):	1050
Inlet Pressure (kPa):	1010
Outlet Pressure (kPa):	990
Mean effective stress (kPa):	50
Hydraulic Head (kPa):	20
Moisture content after test:	24.4%
Permeability: (m/s)	**2E-11**



Notes: Specimen remoulded to a target of 95% SMDD @ 0 to + 3% of OMC. Standard Compaction to AS 1289 5.1.1.

Definitions:
ND = Not Determined

Specimen Prepared by: LM
Results Reviewed by: NLobb
Test Performed by: LM
Date Reported: **8/06/23**

Cert. Ref.: PS200634_BH20_23042119_TRM23-0291_PERM_R23097161

Approved signatory

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DRAFT

Soil testing - Determination of permeability of a saturated specimen

Constant head method using a flexible wall permeameter

AS 1289.6.7.3-2016

Test request #:	**TRM23-0291**	**Specimen ID:**	**LMEL2023042123**	**WSP Australia Pty Ltd**	
Client:	Melbourne Water			**MELBOURNE GEOTECHNICAL LABORATORY**	
Client address:	990 La Trobe Street, Docklands VIC 3008			Building 7, Botanicca Corporate Park 570 - 588 Swan Street Richmond, Victoria 3121	
Project ID:	**PS200634**	**Location ID**			
Project name:	Croskell PSP Drainage Strategy Cranbourne VIC	**BH22**		**Sample depth (m):**	**1.00 - 2.20**
				Client sample ref:	**BH22-001**
Project reference:		**Loc. ref.:**		**0**	

Specimen description:	(CH) CLAY, high plasticity, pale brown, trace fine to coarse sand	**Phase / Locale:**	-
		Sample type:	Disturbed

Specimen before testing

Height [H] (mm)	75.1
Diameter [D] (mm)	75.0
[D]:[H]	1:1
Mass (g)	635.2
Moisture Content:	19.7%
Dry Density (t/m^3):	1.60
Assumed Porosity (%)	39.6%
Assumed Pore Volume (mL)	131.3

Compaction Details

Method:	Standard
Material retained on 19mm sieve (g):	-
Optimum Moisture Content:	19.0%
Maximum Dry Density (t/m^3):	1.68
Target moisture content to OMC:	0.19
Target dry density relative to MDD:	1.60
Laboratory Moisture Ratio:	103.7%
Laboratory Density Ratio:	95.3%

Pre-test photo

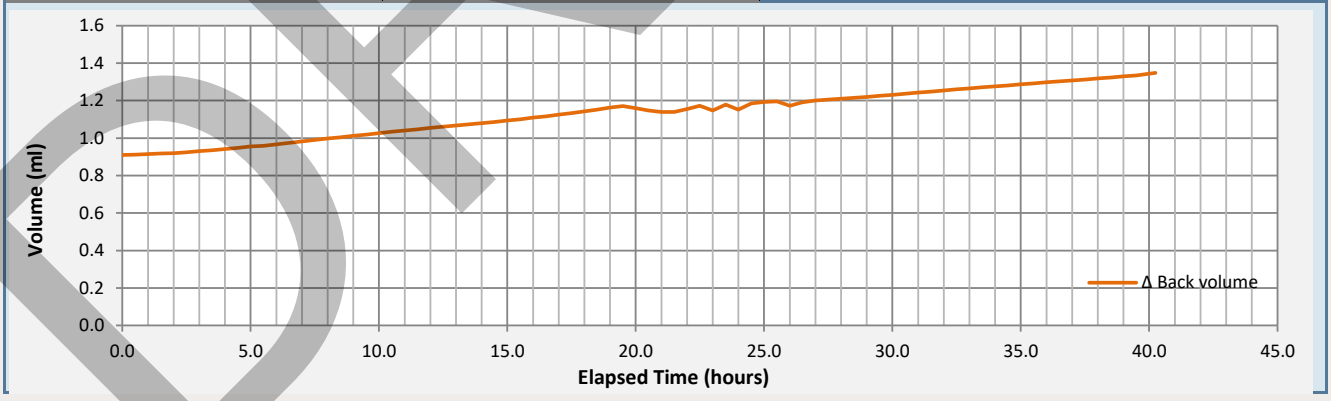


Post-test photo



Permeability test details

Permeant used:	Distilled water
Method of saturation:	Back pressure saturation
Estimate of initial saturation:	79.6%
Saturation B value:	95%
Confining Pressure (kPa):	1050
Inlet Pressure (kPa):	1010
Outlet Pressure (kPa):	990
Mean effective stress (kPa):	50
Hydraulic Head (kPa):	20
Moisture content after test:	23.7%
Permeability: (m/s)	**2E-11**



Notes: Specimen remoulded to a target of 95% SMDD @ 0 to + 3% of OMC. Standard Compaction to AS 1289 5.1.1.

Definitions:
ND = Not Determined

Specimen Prepared by: LM
Results Reviewed by: NLobb
Test Performed by: LM
Date Reported: **8/06/23**

Cert. Ref.: PS200634_BH22_23042123_TRM23-0291_PERM_R23097162

Approved signatory

NATA accreditation number: 1961 - Site:1250 - Melbourne
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DRAFT

APPENDIX D - Analytical Results of Laboratory Testing

Table 1: Tabulated Soil Analytical Results

PS200634

					Halogenated Benzenes								Heavy Metals													Herbicides	MAH																				
					1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	4-Chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	Arsenic	Cadmium	Chromium	Chromium (hexavalent)	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc	Dinoseb	1,2,4-trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Toluene	Isopropylbenzene	Styrene	Ethylbenzene	Xylenes (m & p)	Xylene (o)	Xylenes (Sum of total) (Lab Reported)	Total MAHs (Lab Reported)	Total BTEX	p,p-DDE	a-BHC	Aldrin	Aldrin & Dieldrin (Sum of total) (Lab Reported)	b-BHC
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.01	0.02	0.5	0.02	0.5	0.5	0.02	0.03	5	1	2	0.5	5	5	0.1	2	2	5	2	5	5	5	0.5	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2	0.05	0.03	0.03	0.05	0.03
VIC EPA 1828.2 ASLP1 20x rule													20	4		100	4000	20	2	100	40	20	200		6000				2													0.6	
VIC EPA 1828.2 Cat B Upper Limit						24000		640			4800		2000	400		2000	20000	6000	300	4000	12000	40000	720		140000				16	12800		480	4800			9600						4.8	
VIC EPA 1828.2 Cat C Upper Limit						6000		160			1200		500	100		500	5000	1500	75	1000	3000	10000	180		35000				4	3200		120	1200			2400						1.2	
VIC EPA 1828.2 Cat D Upper Limit						6000		160			1200		500	100		500	5000	1500	75	1000	3000	10000	180		35000				4	3200		120	1200			2400						1.2	
VIC EPA 1828.2 Fill Material Upper Limit													20	3		1	100	300	1	40	60	10	10	50	200				1							7										
Field_ID	**Sample Depth Range**	**Sample Date**	**Lab Report Number**	**Sample Type**																																												
BH01/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	13	7	<0.1	<2	19	<5	<2	<5	20	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH01/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	<5	<1	29	-	14	<5	<0.1	-	17	-	-	-	9	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH03/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	16	11	<0.1	<2	24	<5	<2	<5	38	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH03/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	<5	<1	34	-	18	6	<0.1	-	30	-	-	-	12	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH04/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	17	8	<0.1	<2	21	<5	<2	<5	12	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH04/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	<5	<1	45	-	19	6	<0.1	-	30	-	-	-	12	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH05/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	10	6	<0.1	<2	15	<5	<2	<5	8	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH05/2003	1-1.1	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	<5	<1	31	-	12	<5	<0.1	-	18	-	-	-	8	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH06/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	15	11	<0.1	<2	22	<5	<2	<5	16	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH06/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	5	<1	42	-	15	6	<0.1	-	26	-	-	-	9	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH07/2001	0.1-0.2	28/02/2023	EM2303586	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	13	6	<0.1	<2	20	<5	<2	<5	9	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH07/2003	1-1.1	28/02/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	<5	<1	34	-	13	5	<0.1	-	22	-	-	-	8	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH08/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	19	6	<0.1	<2	36	<5	<2	<5	18	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH08/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	<5	<1	34	-	16	<5	<0.1	-	28	-	-	-	11	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH10/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	9	7	<0.1	<2	7	<5	<2	<5	15	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH10/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	<5	<1	23	-	6	<5	<0.1	-	7	-	-	-	<5	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH12/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	14	7	<0.1	<2	23	<5	<2	<5	9	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH12/0.5-0.6	0.5-0.6	5/04/2023	EM2306073	Normal	-	-	-	-	-	-	-	-	<5	<1	34	-	13	5	<0.1	-	24	-	-	-	9	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH13/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	17	7	<0.1	<2	28	<5	<2	<5	11	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH14/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	12	<5	<0.1	<2	21	<5	<2	<5	8	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH15/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	10	<5	<0.1	<2	17	<5	<2	<5	<5	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH15/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	<5	<1	29	-	12	5	<0.1	-	22	-	-	-	6	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH16/0.1	-	3/04/2023	977852	Interlab_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	5	<0.4	31	<1	8.4	6.5	<0.1	<5	17	<2	<2	<10	6	<20	<0.5	<0.5	<0.1	<0.1	<0.5	<0.5	<0.1	<0.2	<0.1	<0.3	<0.5	-	<0.05	<0.05	<0.05	<0.05	<0.05
BH16/0.1-0.2	0.1-0.2	3/04/2023	EM2305854	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	6	<5	<0.1	<2	11	<5	<2	<5	<5	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH16/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	<5	<1	24	-	8	<5	<0.1	-	13	-	-	-	<5	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH17/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	10	7	<0.1	<2	20	<5	<2	<5	7	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH17/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	<5	<1	23	-	10	5	<0.1	-	18	-	-	-	5	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH18/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	<5	<1	33	-	10	7	<0.1	-	19	-	-	-	7	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH19/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	18	8	<0.1	<2	35	<5	<2	<5	11	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH19/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	<5	<1	40	-	16	7	<0.1	-	33	-	-	-	10	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH19/QC1	-	4/04/2023	EM2305942	Field_D	-	-	-	-	-	-	-	-	<5	<1	50	-	18	8	<0.1	-	36	-	-	-	12	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH21/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	<5	6	<0.1	<2	7	<5	<2	<5	<5	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH21/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	<5	<1	20	-	<5	6	<0.1	-	13	-	-	-	<5	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
BH22/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	<0.01	<0.02	-	<0.02	-	-	<0.02	<0.03	<5	<1	-	<0.5	7	10	<0.1	<2	6	<5	<2	<5	7	<5	-	-	<0.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	-	<0.05	<0.03	<0.03	-	<0.03
BH22/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	<5	<1	30	-	5	8	<0.1	-	17	-	-	-	<5	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
QC4	-	6/04/2023	EM2306162	Field_D	-	-	-	-	-	-	-	-	<5	<1	43	-	5	10	<0.1	-	14	-	-	-	<5	-	-	-	<0.2	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	-	<0.2	-	-	-	-	-
QC6	-	6/04/2023	979231	Interlab_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<2	<0.4	57	<1	8	9.6	<0.1	<5	19	<2	<2	<10	5.8	<20	<0.5	<0.5	<0.1	<0.1	<0.5	<0.5	<0.1	<0.2	<0.1	<0.3	<0.5	-	<0.05	<0.05	<0.05	<0.05	<0.05

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Table 1: Tabulated Soil Analytical Results

PS200634

					Organochlorine Pesticides																			PAH																					
					Chlordane (Sum of total)	cis-Chlordane	trans-Chlordane	d-BHC	DDD	DDT	DDT+DDE+DDD (Sum of total) (Lab Reported)	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC	Heptachlor	Heptachlor epoxide	Methoxychlor	Organochlorine Pesticides (Lab Reported)	Toxaphene	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(b)&(j)fluoranthene	Benzo(b+j) & Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAH (Sum of Common 16 PAHs - Lab Reported)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
VIC EPA 1828.2 ASLP1 20x rule					2						40									0.6									0.02															
VIC EPA 1828.2 Cat B Upper Limit					16						50																		160															400
VIC EPA 1828.2 Cat C Upper Limit					4						50																		40															100
VIC EPA 1828.2 Cat D Upper Limit					4						50																		20															50
VIC EPA 1828.2 Fill Material Upper Limit																							1						1															20
Field_ID	**Sample Depth Range**	**Sample Date**	**Lab Report Number**	**Sample Type**																																									
BH01/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH01/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH03/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH03/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH04/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH04/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH05/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05/2003	1-1.1	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH06/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH06/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH07/2001	0.1-0.2	28/02/2023	EM2303586	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH07/2003	1-1.1	28/02/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH08/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH08/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH10/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH10/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH12/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH12/0.5-0.6	0.5-0.6	5/04/2023	EM2306073	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH13/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH14/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH15/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH15/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH16/0.1	-	3/04/2023	977852	Interlab_D	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<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	<0.5	<0.5	<0.5	<0.5
BH16/0.1-0.2	0.1-0.2	3/04/2023	EM2305854	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH16/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH17/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH17/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH18/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH19/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH19/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH19/QC1	-	4/04/2023	EM2305942	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH21/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH21/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
BH22/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.03	<0.03	<0.03	<0.03	<0.03	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH22/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
QC4	-	6/04/2023	EM2306162	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<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	<0.5	<0.5	<0.5	<0.5
QC6	-	6/04/2023	979231	Interlab_D	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<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	<0.5	<0.5	<0.5	<0.5

DRAFT

Table 1: Tabulated Soil Analytical Results

PS200634

					Phenolics										Phenolics-Halogenated												Sample Quality Parameters					Total Petroleum Hydrocarbons											
					2,4-Dimethylphenol	2,4-Dinitrophenol	2-Methylphenol	2-Nitrophenol	3- & 4- Methylphenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-Nitrophenol	Cresols (Sum of total)	Phenol	Non-Halogenated Phenols (Sum of total)	2,3,5,6-Tetrachlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,6-Dichlorophenol	2,3,4,5 & 2,3,4,6-Tetrachlorophenol	2-Chlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	Tetrachlorophenols (Sum of total)	Halogenated Phenols (Sum of total)	PCB (Sum of Total-Lab Reported)	pH_CaCl2	Cyanide (total)	Fluoride	Moisture	pH (aqueous extract)	TRH C6 - C9 Fraction	TRH C10 - C14 Fraction	TRH C15 - C28 Fraction	TRH C29 - C36 Fraction	TRH+C10 - C36 (Sum of total) (Lab Reported)	TRH+C10 - C40 (Sum of total) (Lab Reported)	TRH C6 - C10 Fraction F1	TRH C6 - C10 Fraction Less BTEX F1	TRH >C10 - C16 Fraction F2	TRH >C10 - C16 Fraction Less Naphthalene F2	TRH >C16 - C34 Fraction F3	TRH >C34 - C40 Fraction F4	Methyl Ethyl Ketone
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Unit	mg/kg	mg/kg	%	pH_Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					1	5	1	1	1	5	5	5	0.5	1	1	0.03	0.05	0.05	0.03	0.03	0.05	0.03	0.03	0.2	10	0.03	0.1	0.1	1	40	0.1	-	10	50	100	100	50	50	10	10	50	50	100	100	0.5
VIC EPA 1828.2 ASLP1 20x rule															280											40																		
VIC EPA 1828.2 Cat B Upper Limit													32000		2200		64000	320	3200			4800						2-12.5	10000	40000			2600				40000							32000
VIC EPA 1828.2 Cat C Upper Limit													8000		560		16000	80	800			1200					50		2500	10000			650				10000							8000
VIC EPA 1828.2 Cat D Upper Limit													8000		560		16000	80	800			1200					2	4-10	2500	10000			325				5000							8000
VIC EPA 1828.2 Fill Material Upper Limit															60											1	2		50	450			100				1000							
Field_ID	**Sample Depth Range**	**Sample Date**	**Lab Report Number**	**Sample Type**																																								
BH01/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	4.7	<1	90	10.8	-	<10	<50	<100	150	150	170	<10	<10	<50	<50	170	<100	-
BH01/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.2	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH03/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.3	<1	80	18.8	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH03/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.9	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH04/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	4.4	<1	140	10.2	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH04/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.5	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH05/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	4.5	<1	120	9.1	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH05/2003	1-1.1	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH06/2001	0.1-0.2	1/03/2023	EM2303586	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	4.4	<1	130	13.4	-	<10	<50	<100	100	100	120	<10	<10	<50	<50	120	<100	-
BH06/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.7	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH07/2001	0.1-0.2	28/02/2023	EM2303586	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	4.3	<1	80	15.4	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH07/2003	1-1.1	28/02/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.8	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH08/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.2	1	80	16	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH08/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.3	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH10/2001	0.1-0.2	2/03/2023	EM2303757	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5	<1	70	7.3	-	<10	<50	<100	120	120	130	<10	<10	<50	<50	130	<100	-
BH10/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH12/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.3	<1	80	17.9	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH12/0.5-0.6	0.5-0.6	5/04/2023	EM2306073	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.3	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH13/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5	<1	130	20	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH14/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	6.5	<1	50	16.5	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH15/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.6	<1	120	15	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH15/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.1	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH16/0.1	-	3/04/2023	977852	Interlab_D	<0.5	<5	<0.2	<1	<0.4	<5	<20	<5	<0.5	<0.5	<20	-	<1	<1	<0.5	<0.5	-	<0.5	<1	<1	<10	<1	<0.1	-	<5	<100	10	8.4	<20	<20	<50	<50	<50	<100	<20	<20	<50	<50	<100	<100	<0.5
BH16/0.1-0.2	0.1-0.2	3/04/2023	EM2305854	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	6	<1	110	9	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH16/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.2	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH17/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.2	<1	150	18.7	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH17/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.3	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH18/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH19/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.6	<1	140	16.8	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH19/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.8	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH19/QC1	-	4/04/2023	EM2305942	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.5	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH21/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	5.5	<1	90	9.9	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH21/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
BH22/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	<1	<5	<1	<1	<1	<5	<5	<5	-	<1	<1	<0.03	<0.05	<0.05	<0.03	<0.03	<0.05	<0.03	<0.03	<0.2	-	<0.03	<0.1	4.4	<1	70	26.5	-	<10	<50	<100	130	130	160	<10	<10	<50	<50	160	<100	-
BH22/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.7	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
QC4	-	6/04/2023	EM2306162	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.2	-	<10	<50	<100	<100	<50	<50	<10	<10	<50	<50	<100	<100	-
QC6	-	6/04/2023	979231	Interlab_D	<0.5	<5	<0.2	<1	<0.4	<5	<20	<5	<0.5	<0.5	<20	-	<1	<1	<0.5	<0.5	-	<0.5	<1	<1	<10	<1	<0.1	-	<5	<100	16	8.9	<20	<20	<50	<50	<50	<100	<20	<20	<50	<50	<100	<100	<0.5

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Table 1: Tabulated Soil Analytical Results

PS200634

	Solvents		Volatile Organic Compounds																																							
	Methyl iso-butyl ketone	Acetone	Total Chlorinated Hydrocarbons VIC EPA	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,3-Trichloropropane	1,2-Dibromoethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-dichloroethene	1,2-Dichloropropane	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-dichloropropene	Allyl chloride	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Hexachlorobutadiene	Iodomethane	Total Other Chlorinated Hydrocarbons VIC EPA	Trichloroethene	Tetrachloroethene	Trichlorofluoromethane	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.01	0.01	0.02	0.01	0.04	0.5	0.5	0.5	0.02	0.01	0.01	0.02	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.5	0.02	0.5	0.5	0.5	0.4	0.02	0.5	0.5	0.02	0.02	0.5	0.02
VIC EPA 1828.2 ASLP1 20x rule																																	1.4							0.6
VIC EPA 1828.2 Cat B Upper Limit				1600	210	4800	190				48	480													48			960				64	11			80	800		4.8
VIC EPA 1828.2 Cat C Upper Limit				400	52	1200	48				12	120													12			240				16	2.8			20	200		1.2
VIC EPA 1828.2 Cat D Upper Limit				400	52	1200	48				12	120													12			240				16	2.8			20	200		1.2
VIC EPA 1828.2 Fill Material Upper Limit																																									
Field_ID	**Sample Depth Range**	**Sample Date**	**Lab Report Number**	**Sample Type**																																							
BH01/2001	0.1-0.2	2/03/2023	EM2303757	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH01/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03/2001	0.1-0.2	2/03/2023	EM2303757	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH03/2003	1-1.1	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04/2001	0.1-0.2	1/03/2023	EM2303586	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH04/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05/2001	0.1-0.2	1/03/2023	EM2303586	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH05/2003	1-1.1	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06/2001	0.1-0.2	1/03/2023	EM2303586	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH06/2002	0.5-0.6	1/03/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH07/2001	0.1-0.2	28/02/2023	EM2303586	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH07/2003	1-1.1	28/02/2023	EM2303586	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08/2001	0.1-0.2	2/03/2023	EM2303757	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH08/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10/2001	0.1-0.2	2/03/2023	EM2303757	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH10/2002	0.5-0.6	2/03/2023	EM2303757	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH12/0.5-0.6	0.5-0.6	5/04/2023	EM2306073	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13/0.1-0.2	0.1-0.2	5/04/2023	EM2306073	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH14/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH15/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH15/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16/0.1	-	3/04/2023	977852	Interlab_D	<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	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH16/0.1-0.2	0.1-0.2	3/04/2023	EM2305854	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH16/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17/0.5-0.6	0.5-0.6	3/04/2023	EM2305854	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH17/1.0-1.1	1-1.1	3/04/2023	EM2305854	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19/0.1-0.2	0.1-0.2	4/04/2023	EM2305942	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH19/0.5-0.6	0.5-0.6	4/04/2023	EM2305942	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19/QC1	-	4/04/2023	EM2305942	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH21/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22/0.1-0.2	0.1-0.2	6/04/2023	EM2306162	Normal	-	-	<0.01	<0.01	<0.02	<0.01	<0.04	-	-	-	<0.02	<0.01	<0.01	<0.02	-	-	-	-	-	-	-	-	-	<0.01	-	-	<0.02	-	-	-	<0.4	<0.02	-	-	<0.02	<0.02	-	<0.02
BH22/0.5-0.6	0.5-0.6	6/04/2023	EM2306162	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC4	-	6/04/2023	EM2306162	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC6	-	6/04/2023	979231	Interlab_D	<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	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

DRAFT

Table 2: Tabulated Acid Sulfate Soil results

PS200634

			Sample ID:	BH04/2002	BH04/2004	BH04/2005	BH06/2002	BH06/2004	BH06/2005	BH10/2002	BH10/2004	BH10/2005	BH13/1.0-1.1	BH13/2.0-2.1	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH22/0.5-0.6	BH22/2.0-2.1	BH22/3.0-3.1
			ALS Sample number:	EM2303586017	EM2303586019	EM2303586020	EM2303586012	EM2303586014	EM2303586015	EM2303757002	EM2303757004	EM2303757005	EM2306073008	EM2306073009	EM2305854003	EM2305854005	EM2305854006	EM2306162009	EM2306162011	EM2306162012
			Sample date:	1/03/2023	1/03/2023	1/03/2023	1/03/2023	1/03/2023	1/03/2023	2/03/2023	2/03/2023	2/03/2023	5/04/2023	5/04/2023	3/04/2023	3/04/2023	3/04/2023	6/04/2023	6/04/2023	6/04/2023
			Depth interval	0.5-0.6	2.0-2.1	2.9-3.0	0.5-0.6	2.0-2.1	2.9-3.0	0.5-0.6	2.0-2.1	2.9-3.0	1.0-1.1	2.0-2.1	0.5-0.6	2.0-2.1	4.0-4.1	0.5-0.6	2.0-2.1	3.0-3.1
			Lithology	silty clay, pale or.br	silty clay, pale or.br	silty clay, pale gr.	clayey silt, pale gr.or.br	sandy clay, pale or.gr.br	silty clay, pale or.gr.br	silty clay, pale or.gr.br	silty clay, pale or.gr.br	silty clay, or./ybr.	silty clay, pale-dk br.	silty clay, pale br./gr.	silty clay, pale br.gr.	silty clay, pale br.gr.	silty clay, pale br.gr.			
Analyte	**Units**	**LOR**	**Screening Criteria**																	
EA033-A: Actual Acidity																				
pH KCl (23A)	pH Unit	0.1		4.9	4.9	5.6	5.2	4.9	5.1	6	5.5	5.5	5.2	6.3	5.8	5.3	5.1	5.8	5.1	5.7
Titratable Actual Acidity (23F)	mole H+ / t	2	18	30	36	19	28	33	22	8	12	13	21	8	11	18	16	9	33	14
sulfidic - Titratable Actual Acidity (s-23F)	% pyrite S	0.02	0.03	0.05	0.06	0.03	0.04	0.05	0.04	<0.02	<0.02	0.02	0.03	<0.02	<0.02	0.03	0.03	<0.02	0.05	0.02
EA033-B: Potential Acidity																				
acidity - Chromium Reducible Sulfur (a-22B)	mole H+ / t	10	18	<10	<10	12	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chromium Reducible Sulfur (22B)	% S	0.005	0.03	0.014	0.011	0.019	0.006	0.014	0.01	0.006	0.012	0.011	0.01	0.005	<0.005	0.006	0.009	0.007	0.01	0.014
EA033-E: Acid Base Accounting																				
Net Acidity excluding ANC (acidity units)	mole H+ / t	10	18	39	43	31	32	41	28	11	20	20	27	11	11	21	22	14	40	22
Net Acidity excluding ANC (sulfur units)	% S	0.02	0.03	0.06	0.07	0.05	0.05	0.07	0.04	<0.02	0.03	0.03	0.04	<0.02	<0.02	0.03	0.04	0.02	0.06	0.04
Liming Rate excluding ANC	kg CaCO3/t	1		3	3	2	2	3	2	<1	1	1	2	<1	<1	2	2	1	3	2

DRAFT

Filter: ALL		Laboratory	ALS	ALS		ALS	ALS		ALS	Eurofins		ALS	Eurofins	
		Field ID	BH19/0.1-0.2	BH19/QC1	RPD	BH22/0.5-0.6	QC4	RPD	BH16/0.1-0.2	BH16/0.1	RPD	BH22/0.5-0.6	QC6	RPD
		Sampled Date/Time	4/04/2023	4/04/2023		6/04/2023	6/04/2023		3/04/2023	3/04/2023		6/04/2023	6/04/2023	
ChemName	**Units**	**EQL**												
1,2,4-Trichlorobenzene	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
1,2-Dichlorobenzene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
1,4-Dichlorobenzene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Chlorobenzene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Hexachlorobenzene	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Arsenic	mg/kg	5 : 2 (Interlab)	<5	<5	0	<5	<5	0	<5	5	0	<5	<2	0
Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0	<1	<1	0	<1	<0.4	0	<1	<0.4	0
Chromium	mg/kg	2 : 5 (Interlab)				30	43	36				**30**	**57**	**62**
Chromium (hexavalent)	mg/kg	0.5 : 1 (Interlab)							<0.5	<1	0			
Copper	mg/kg	5	18	18	0	5	5	0	6	8.4	33	5	8	46
Lead	mg/kg	5	8	8	0	8	10	22	<5	6.5	26	8	9.6	18
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Molybdenum	mg/kg	2 : 5 (Interlab)							<2	<5	0			
Nickel	mg/kg	2 : 5 (Interlab)	35	36	3	17	14	19	11	17	43	17	19	11
Selenium	mg/kg	5 : 2 (Interlab)							<5	<2	0			
Silver	mg/kg	2							<2	<2	0			
Tin	mg/kg	5 : 10 (Interlab)							<5	<10	0			
Zinc	mg/kg	5	11	12	9	<5	<5	0	<5	6	18	<5	5.8	15
Dinoseb	mg/kg	5 : 20 (Interlab)							<5	<20	0			
Benzene	mg/kg	0.2 : 0.1 (Interlab)				<0.2	<0.2	0	<0.2	<0.1	0	<0.2	<0.1	0
Toluene	mg/kg	0.5 : 0.1 (Interlab)				<0.5	<0.5	0	<0.5	<0.1	0	<0.5	<0.1	0
Styrene	mg/kg	0.5							<0.5	<0.5	0			
Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)				<0.5	<0.5	0	<0.5	<0.1	0	<0.5	<0.1	0
Xylenes (m & p)	mg/kg	0.5 : 0.2 (Interlab)				<0.5	<0.5	0	<0.5	<0.2	0	<0.5	<0.2	0
Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)				<0.5	<0.5	0	<0.5	<0.1	0	<0.5	<0.1	0
Xylenes (Sum of total) (Lab Reported)	mg/kg	0.5 : 0.3 (Interlab)				<0.5	<0.5	0	<0.5	<0.3	0	<0.5	<0.3	0
Total MAHs (Lab Reported)	mg/kg	0.2 : 0.5 (Interlab)							<0.2	<0.5	0			
Total BTEX	mg/kg	0.2				<0.2	<0.2	0				<0.2		
p,p-DDE	mg/kg	0.05							<0.05	<0.05	0			
a-BHC	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Aldrin	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
b-BHC	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Chlordane (Sum of total)	mg/kg	0.03 : 0.1 (Interlab)							<0.03	<0.1	0			
d-BHC	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
DDD	mg/kg	0.05							<0.05	<0.05	0			
DDT	mg/kg	0.05							<0.05	<0.05	0			
Dieldrin	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Endosulfan I	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Endosulfan II	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Endosulfan sulphate	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Endrin	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Endrin aldehyde	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
g-BHC	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Heptachlor	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Heptachlor epoxide	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Methoxychlor	mg/kg	0.03 : 0.05 (Interlab)							<0.03	<0.05	0			
Organochlorine Pesticides (Lab Reported)	mg/kg	0.03 : 0.1 (Interlab)							<0.03	<0.1	0			
Acenaphthene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Acenaphthylene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Anthracene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benz(a)anthracene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5				0.6	0.6	0	0.6	0.6	0	0.6	0.6	0
Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5				1.2	1.2	0	1.2	1.2	0	1.2	1.2	0
Benzo(b&(j)fluoranthene	mg/kg	0.5				<0.5	<0.5	0				<0.5	<0.5	0
Benzo(g,h,i)perylene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(k)fluoranthene	mg/kg	0.5				<0.5	<0.5	0				<0.5	<0.5	0
Chrysene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Dibenz(a,h)anthracene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Fluoranthene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Fluorene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene	mg/kg	1 : 0.5 (Interlab)				<1	<1	0	<1	<0.5	0	<1	<0.5	0
Naphthalene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Phenanthrene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Pyrene	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
PAH (Sum of Common 16 PAHs - Lab Reporte	mg/kg	0.5				<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
2,4-Dimethylphenol	mg/kg	1 : 0.5 (Interlab)							<1	<0.5	0			
2,4-Dinitrophenol	mg/kg	5							<5	<5	0			
2-Methylphenol	mg/kg	1 : 0.2 (Interlab)							<1	<0.2	0			
2-Nitrophenol	mg/kg	1							<1	<1	0			
3- & 4- Methylphenol	mg/kg	1 : 0.4 (Interlab)							<1	<0.4	0			
4,6-Dinitro-2-methylphenol	mg/kg	5							<5	<5	0			
4,6-Dinitro-o-cyclohexylphenol	mg/kg	5 : 20 (Interlab)							<5	<20	0			
4-Nitrophenol	mg/kg	5							<5	<5	0			
Phenol	mg/kg	1 : 0.5 (Interlab)							<1	<0.5	0			
Non-Halogenated Phenols (Sum of total)	mg/kg	1 : 20 (Interlab)							<1	<20	0			
2,4,5-Trichlorophenol	mg/kg	0.05 : 1 (Interlab)							<0.05	<1	0			
2,4,6-Trichlorophenol	mg/kg	0.05 : 1 (Interlab)							<0.05	<1	0			
2,4-Dichlorophenol	mg/kg	0.03 : 0.5 (Interlab)							<0.03	<0.5	0			
2,6-Dichlorophenol	mg/kg	0.03 : 0.5 (Interlab)							<0.03	<0.5	0			
2-Chlorophenol	mg/kg	0.03 : 0.5 (Interlab)							<0.03	<0.5	0			
4-Chloro-3-methylphenol	mg/kg	0.03 : 1 (Interlab)							<0.03	<1	0			
Pentachlorophenol	mg/kg	0.2 : 1 (Interlab)							<0.2	<1	0			
Halogenated Phenols (Sum of total)	mg/kg	0.03 : 1 (Interlab)							<0.03	<1	0			
PCB (Sum of Total-Lab Reported)	mg/kg	0.1							<0.1	<0.1	0			
Cyanide (total)	mg/kg	1 : 5 (Interlab)							<1	<5	0			
Fluoride	mg/kg	40 : 100 (Interlab)							110	<100	10			
Moisture	%	1	16.8	23.5	33	18.7	17.2	8	9	10	11	18.7	16	16
TRH C6 - C9 Fraction	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<10	0	<10	<20	0	<10	<20	0
TRH C10 - C14 Fraction	mg/kg	50 : 20 (Interlab)	<50	<50	0	<50	<50	0	<50	<20	0	<50	<20	0
TRH C15 - C28 Fraction	mg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<100	0	<100	<50	0	<100	<50	0
TRH C29 - C36 Fraction	mg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<100	0	<100	<50	0	<100	<50	0
TRH+C10 - C36 (Sum of total) (Lab Reported)	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
TRH+C10 - C40 (Sum of total) (Lab Reported)	mg/kg	50 : 100 (Interlab)	<50	<50	0	<50	<50	0	<50	<100	0	<50	<100	0
TRH C6 - C10 Fraction F1	mg/kg	10 : 20 (Interlab)				<10	<10	0	<10	<20	0	<10	<20	0
TRH C6 - C10 Fraction Less BTEX F1	mg/kg	10 : 20 (Interlab)	<10	<10	0	<10	<10	0	<10	<20	0	<10	<20	0
TRH >C10 - C16 Fraction F2	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
TRH >C10 - C16 Fraction Less Naphthalene F2	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
TRH >C16 - C34 Fraction F3	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
TRH >C34 - C40 Fraction F4	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
Total Chlorinated Hydrocarbons VIC EPA	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
1,1,1,2-Tetrachloroethane	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
1,1,2,2-Tetrachloroethane	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
1,1,1-Trichloroethane	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
1,1,2-Trichloroethane	mg/kg	0.04 : 0.5 (Interlab)							<0.04	<0.5	0			
1,2-Dichloroethane	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
1,1-Dichloroethene	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
cis-1,2-Dichloroethene	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
trans-1,2-dichloroethene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Carbon tetrachloride	mg/kg	0.01 : 0.5 (Interlab)							<0.01	<0.5	0			
Chloroform	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Dichloromethane	mg/kg	0.4 : 0.5 (Interlab)							<0.4	<0.5	0			
Hexachlorobutadiene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Trichloroethene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Tetrachloroethene	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			
Vinyl chloride	mg/kg	0.02 : 0.5 (Interlab)							<0.02	<0.5	0			

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 201 (1-5 x EQL); 50 (5-30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

APPENDIX E – Analytical certificates for laboratory tests

Sheet..... of.....

GA-BQ-035 SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL/ROCK

Project & Task Number: PS200634 | Quote/Order No.:

Site Location: Bales Road, Cranbourne East | Lab Name: ALS

Sampled By: ML | Mobile No.: 0424601017

Turnaround (Days): standard | BY:

Report Format: ~~HARD~~ ☐ ~~FAX~~ ☐ EMAIL ☐ ELECTRONIC DATA FORMAT ☐

GOLDER ASSOCIATES PTY LTD | Phone: 0418504912 | Fax

Invoice to be sent to au_accountspayable@golder.com.au

Project Manager: Alana Dubowik | Email: msheppard@golder.com.au

Contact Phone: 0431 185 144

Results To: alana.dubowik@wsp.com. | Email: msheppard@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: No

Samples taken from a known Weed and or Pest Area: No

SAMPLE ID	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	No. Containers	PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	EPA 1828.2 Table 2 - Basic	PAH	1828.2 Metals Suite	Asbestos: Absence /Presence	PFAS (Full Suite)	ON HOLD
BH09/2001	0.1-0.2	Topsoil	28.02.23		1		✓							
BH09/2002	0.5-0.6		"		2		✓							
BH09/2003	1.0-1.1		"		2									
BH09/2004	2.0-2.1		"		2									
BH09/2005	2.9-3.0	Natural	"		2									
BH07/2001	0.1-0.2	Topsoil	28.02.23		1									
BH07/2002	0.5-0.6		"		2									
BH07/2003	1.0-1.1		"		2									
BH07/2004	2.0-2.1		"		2									
BH07/2005	2.9-3.0	Natural	"		2									
BH06/2001	0.1-0.2	Topsoil	01.03.23		1									
BH06/2002	0.5-0.6		"		2									
BH06/2003	1.0-1.1		"		2									
BH06/2004	2.0-2.1		"		2									
BH06/2005	2.9-3.0	Natural	"		2									
BH04/2001	0.1-0.2	Topsoil	01.03.23		1									
BH04/2002	0.5-0.6		"		2									
BH04/2003	1.0-1.1		"		2									
BH04/2004	2.0-2.1		"		2									
BH04/2005	2.9-3.0	Natural	"		2									

Environmental Division
Melbourne
Work Order Reference
EM2303586

Telephone : +61-3-8549 9600

SAMPLE MATRIX = Soil/Sediment/Fill/Rock/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	01.03.23	16:30
RECEIVED BY		ALS	1/3/23	16:30
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal ☐ Chilled ☐ Bill to:

Suitable Containers ☐ Frozen ☐ Address

Cool Box ☐ Ambient ☐

DRAFT

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

GA-BQ-035 SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL/ROCK

Project & Task Number:	PS 200634	Quote/Order No.:	
Site Location:	Bales Road, Cranbourne East	Lab Name:	ALS
Sampled By:	ML	Mobile No.:	0424601017
Turnaround (Days)	standard	BY:	
Report Format:	HARD ☐ FAX ☐ EMAIL ☐ ELECTRONIC DATA FORMAT ☐		

GOLDER ASSOCIATES PTY LTD
Phone: 0418504912
Fax
Invoice to be sent to au_accountspayable@golder.com.au
Project Manager: Alana Dubowik
Email: msheppard@golder.com.au
Contact Phone: 0431 188 144
Results To: alana.dubowik@wsp.com.
Email: msheppard@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: No
Samples taken from a known Weed and or Pest Area: No

SAMPLE ID	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	No. Containers	PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	EPA 1828.2 Table 2 - Basic	PAH	1828.2 Metals Suite	Asbestos: Absence /Presence	PFAS (Full Suite)	ANALYSIS REQUIRED: HOLD
BH05/2001	0.1-0.2	Topsoil	01.03.23	*	1		1							HOLD
BH05/2002	0.5-0.6	"	"		2		1							
BH05/2003	1.0-1.1	"	"		2									
BH05/2004	2.0-2.1	"	"		2									
BH05/2005	2.9-3.0	Natural	"		2									

SAMPLE MATRIX = Soil/Sediment/Fill/Rock/Other
SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR)
HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	01.03.23	16:30
RECEIVED BY		ALS	1/3/23	16:30
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

DRAFT

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

GA-BQ-035 SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL/ROCK

Sheet..... of.....

Project & Task Number:	PS200634	Quote/Order No.:	
Site Location:	Bales Road, Cranbourne East	Lab Name:	ALS
Sampled By:	ML	Mobile No.:	0424601017
Turnaround (Days)	standard	BY:	
Report Format:	HARD ☐ FAX ☐ EMAIL ☐ ELECTRONIC DATA FORMAT ☐		

GOLDER ASSOCIATES PTY LTD — Phone: 0418504912 — Fax

Invoice to be sent to au_accountspayable@golder.com.au

Project Manager: Alana Dubowik. — Email: msheppard@golder.com.au

Contact Phone: 0431 185 144

Results To: alana.dubowik@wsp.com. — Email: msheppard@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: No

Samples taken from a known Weed and or Pest Area: No

ANALYSIS REQUIRED

	SAMPLE ID	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	No. Containers	PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	P30-4	S-26	CRS	HOLD
1	BH09/2001	0.1-0.2	Topsoil	28.02.23		1		1					
2	BH09/2002	0.5-0.6		"		2		1					
3	BH09/2003	1.0-1.1		"		2							
4	BH09/2004	2.0-2.1		"		2							
5	BH09/2005	2.9-3.0	Natural	"		2							
6	BH07/2001	0.1-0.2	Topsoil	28.02.23		1				X			
7	BH07/2002	0.5-0.6		"		2							
8	BH07/2003	1.0-1.1		"		2					X		
9	BH07/2004	2.0-2.1		"		2							
10	BH07/2005	2.9-3.0	Natural	"		2							
11	BH06/2001	0.1-0.2	Topsoil	01.03.23		1				X			
12	BH06/2002	0.5-0.6		"		2					X	X	
13	BH06/2003	1.0-1.1		"		2							
14	BH06/2004	2.0-2.1		"		2						X	
15	BH06/2005	2.9-3.0	Natural	"		2						X	
16	BH04/2001	0.1-0.2	Topsoil	01.03.23		1				X			
17	BH04/2002	0.5-0.6		"		2					X	X	
18	BH04/2003	1.0-1.1		"		2							X
19	BH04/2004	2.0-2.1		"		2						X	
20	BH04/2005	2.9-3.0	Natural	"		2						X	

SAMPLE MATRIX = Soil/Sediment/Fill/Rock/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	01.03.23	16:30
RECEIVED BY		ALS	1/3/23	16:30
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal	☐	Chilled	☐	Bill to:	
Suitable Containers	☐	Frozen	☐	Address	
Cool Box	☐	Ambient	☐		

DRAFT

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

GA-BQ-035 SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL/ROCK

Project & Task Number: PS 200634 | Quote/Order No.:

Site Location: Bales Road, Cranbourne East | Lab Name: ALS

Sampled By: ML | Mobile No.: 0424601017

Turnaround (Days): standard | BY:

Report Format: HARD ☐ FAX ☐ EMAIL ☐ ELECTRONIC DATA FORMAT ☐

GOLDER ASSOCIATES PTY LTD | Phone: 0418504912

Invoice to be sent to au_accountspayable@golder.com.au | Fax

Project Manager: Alana Dubowik | Email: msheppard@golder.com.au

Contact Phone: 0431 188 146

Results To: alana.dubowik@wsp.com. | Email: msheppard@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: No

Samples taken from a known Weed and or Pest Area: No

	SAMPLE ID	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	No. Containers	PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	P30-4	S-26	CRS	ANALYSIS REQUIRED: FIELD HOLD
21	BH05/2001	0.1 - 0.2	Topsoil	01.03.23	*	1		1		X			
22	BH05/2002	0.5 - 0.6		"		2		1					
23	BH05/2003	1.0 - 1.1		"		2					X		
24	BH05/2004	2.0 - 2.1		"		2							
25	BH05/2005	2.9 - 3.0	Natural	"		2							

SAMPLE MATRIX = Soil/Sediment/Fill/Rock/Other

SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR)

HIGH CONCENTRATION: Tick box and circle expected parameters in analysis list

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER	01.03.23	16:30
RECEIVED BY		ALS	1/3/23	16:30
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:	
Suitable Containers		Frozen		Address	
Cool Box		Ambient			

DRAFT

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2303586**

Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: alana.dubowik@wsp.com	E-mail	: Josh.Alexander@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: PS200634	Page	: 1 of 3
Order number	: PS200634	Quote number	: ES2021PARBRIVIC0001 (EN/008/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bales Road, Cranbourne		
Sampler	: ML		

Dates

Date Samples Received	: 01-Mar-2023 16:30	Issue Date	: 03-Mar-2023
Client Requested Due Date	: 15-Mar-2023	Scheduled Reporting Date	: **15-Mar-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 12.2°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 27 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale and ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

DRAFT

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - P-30/4 EPA 1828.2 Table 3 Suite EPA 1828.2 Table 3 Fill Material Suite	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EM2303586-001	28-Feb-2023 00:00	BH09/2001 0.1-0.2	✓				
EM2303586-002	28-Feb-2023 00:00	BH09/2002 0.5-0.6	✓				
EM2303586-003	28-Feb-2023 00:00	BH09/2003 1.0-1.1	✓				
EM2303586-004	28-Feb-2023 00:00	BH09/2004 2.0-2.1	✓				
EM2303586-005	28-Feb-2023 00:00	BH09/2005 2.9-3.0	✓				
EM2303586-006	28-Feb-2023 00:00	BH07/2001 0.1-0.2			✓	✓	
EM2303586-007	28-Feb-2023 00:00	BH07/2002 0.5-0.6	✓				
EM2303586-008	28-Feb-2023 00:00	BH07/2003 1.0-1.1			✓		✓
EM2303586-009	28-Feb-2023 00:00	BH07/2004 2.0-2.1	✓				
EM2303586-010	28-Feb-2023 00:00	BH07/2005 2.9-3.0	✓				
EM2303586-011	01-Mar-2023 00:00	BH06/2001 0.1-0.2			✓	✓	
EM2303586-012	01-Mar-2023 00:00	BH06/2002 0.5-0.6		✓	✓		✓
EM2303586-013	01-Mar-2023 00:00	BH06/2003 1.0-1.1	✓				
EM2303586-014	01-Mar-2023 00:00	BH06/2004 2.0-2.1		✓			
EM2303586-015	01-Mar-2023 00:00	BH06/2005 2.9-3.0		✓			
EM2303586-016	01-Mar-2023 00:00	BH04/2001 0.1-0.2			✓	✓	
EM2303586-017	01-Mar-2023 00:00	BH04/2002 0.5-0.6		✓	✓		✓
EM2303586-018	01-Mar-2023 00:00	BH04/2003 1.0-1.1	✓				
EM2303586-019	01-Mar-2023 00:00	BH04/2004 2.0-2.1		✓			
EM2303586-020	01-Mar-2023 00:00	BH04/2005 2.9-3.0		✓			
EM2303586-021	01-Mar-2023 00:00	BH05/2001 0.1-0.2			✓	✓	
EM2303586-022	01-Mar-2023 00:00	BH05/2002 0.5-0.6	✓				
EM2303586-023	01-Mar-2023 00:00	BH05/2003 1.0-1.1			✓		✓
EM2303586-024	01-Mar-2023 00:00	BH05/2004 2.0-2.1	✓				
EM2303586-025	01-Mar-2023 00:00	BH05/2005 2.9-3.0	✓				
EM2303586-026	01-Mar-2023 00:00	Unnamed sample 1	✓				
EM2303586-027	01-Mar-2023 00:00	Unnamed sample 2	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

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Requested Deliverables

ALANA DUBOWIK

- *AU Certificate of Analysis - NATA (COA)	Email	alana.dubowik@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alana.dubowik@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alana.dubowik@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alana.dubowik@wsp.com
- Chain of Custody (CoC) (COC)	Email	alana.dubowik@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	alana.dubowik@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	alana.dubowik@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alana.dubowik@wsp.com

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

TIM VASS

- *AU Certificate of Analysis - NATA (COA)	Email	Tim.Vass@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Tim.Vass@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Tim.Vass@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Tim.Vass@wsp.com
- Chain of Custody (CoC) (COC)	Email	Tim.Vass@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	Tim.Vass@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	Tim.Vass@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	Tim.Vass@wsp.com

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2303586**	Page	: 1 of 24
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 01-Mar-2023 16:30
Order number	: PS200634	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 15-Mar-2023 16:18
Sampler	: ML		
Site	: Bales Road, Cranbourne		
Quote number	: EN/008/21		
No. of samples received	: 27		
No. of samples analysed	: 12		

ilac-MRA NATA
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, unless the sampling was conducted by ALS. 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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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 Contract 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.

- EG048G: EM2303586 #11 Poor matrix spike recovery for Hexavalent Chromium due to sample matrix. Confirmed by re-analysis.
- Frozen Sample not received.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP074-WF: Where reported, Sum of trichlorobenzenes is the sum of the reported concentrations of 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene, and 1,3,5-Trichlorobenzene at or above the LOR.
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
			Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit	EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.3	----	4.4	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	5.2	4.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	28	33
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	0.04	0.05
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	----	----	0.006	0.014
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	----	----	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	0.05	0.07
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	32	41
Liming Rate	----	1	kg CaCO3/t	----	----	----	2	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	0.05	0.07
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	32	41
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	2	3
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	15.4	16.8	13.4	15.7	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg	13	13	15	15	----
Lead	7439-92-1	5	mg/kg	6	5	11	6	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	<2	----	----
Nickel	7440-02-0	2	mg/kg	20	22	22	26	----
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	9	8	16	9	----
Chromium	7440-47-3	2	mg/kg	----	34	----	42	----
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)								

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
				Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
					Result	Result	Result	Result	Result
EG048: Hexavalent Chromium (Alkaline Digest) - Continued									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		**80**	----	**130**	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	----	----
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	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
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	----	----
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	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
				Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
					Result	Result	Result	Result	Result
EP074I: Volatile Halogenated Compounds - Continued									
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	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	<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	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	0.6	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	1.2	----	1.2	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
				Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	<0.03	----	----
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	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	<1.0	----	----
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	----	----

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
				Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
					EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	<10	----
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	<50	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	<100	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
				Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	**100**	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	**100**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	<50	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	<100	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	**120**	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	**120**	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	<1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**99.4**	----	**83.6**	----	----

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH07/2001 0.1-0.2	BH07/2003 1.0-1.1	BH06/2001 0.1-0.2	BH06/2002 0.5-0.6	BH06/2004 2.0-2.1
				Sampling date / time	28-Feb-2023 00:00	28-Feb-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
					EM2303586-006	EM2303586-008	EM2303586-011	EM2303586-012	EM2303586-014
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		81.4	----	85.2	----	----
Toluene-D8	2037-26-5	0.1	%		81.2	----	81.4	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		83.0	----	83.7	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	95.3	----	84.5	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	95.7	----	85.4	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	89.4	----	80.0	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	100	----	91.9	----
Anthracene-d10	1719-06-8	0.5	%		----	115	----	107	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	96.3	----	90.1	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		92.1	----	75.4	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		89.7	----	74.4	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		99.6	----	86.0	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		89.1	----	74.4	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		82.6	----	71.2	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		89.7	----	76.6	----	----
Anthracene-d10	1719-06-8	0.025	%		96.8	----	80.9	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		96.5	----	82.0	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	97.4	----	87.7	----
Toluene-D8	2037-26-5	0.2	%		----	84.6	----	81.9	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	92.9	----	88.6	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
			Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit	EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	4.4	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.1	----	4.9	4.9	5.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	22	----	30	36	19
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	----	0.05	0.06	0.03
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.010	----	0.014	0.011	0.019
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	<10	<10	12
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	----	0.06	0.07	0.05
Net Acidity (acidity units)	----	10	mole H+ / t	28	----	39	43	31
Liming Rate	----	1	kg CaCO3/t	2	----	3	3	2
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	----	0.06	0.07	0.05
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	28	----	39	43	31
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	----	3	3	2
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	10.2	17.5	----	----
EG005(ED093)T: 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	----	17	19	----	----
Lead	7439-92-1	5	mg/kg	----	8	6	----	----
Molybdenum	7439-98-7	2	mg/kg	----	<2	----	----	----
Nickel	7440-02-0	2	mg/kg	----	21	30	----	----
Selenium	7782-49-2	5	mg/kg	----	<5	----	----	----
Silver	7440-22-4	2	mg/kg	----	<2	----	----	----
Tin	7440-31-5	5	mg/kg	----	<5	----	----	----
Zinc	7440-66-6	5	mg/kg	----	12	12	----	----
Chromium	7440-47-3	2	mg/kg	----	----	45	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
					Result	Result	Result	Result	Result
EG048: Hexavalent Chromium (Alkaline Digest) - Continued									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	<1	----	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	**140**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	----	----
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	----	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	<1	----	----	----
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	----	----	----
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	----	----	----

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Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
					EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
					Result	Result	Result	Result	Result
EP074I: Volatile Halogenated Compounds - Continued									
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	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	0.6	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	1.2	----	----
EP075A: Phenolic Compounds (Halogenated)									
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	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
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+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		----	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
					EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	1.2	----	----	----
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	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		----	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	----	----
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	<100	----	----

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
					EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		----	----	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	<10	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		----	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	----	<50	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	<100	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		----	----	<50	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		----	----	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		----	----	<0.2	----	----
^ **Total Xylenes**	----	0.5	mg/kg		----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**96.8**	----	----	----

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH06/2005 2.9-3.0	BH04/2001 0.1-0.2	BH04/2002 0.5-0.6	BH04/2004 2.0-2.1	BH04/2005 2.9-3.0
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00	01-Mar-2023 00:00
					EM2303586-015	EM2303586-016	EM2303586-017	EM2303586-019	EM2303586-020
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	88.0	----	----	----
Toluene-D8	2037-26-5	0.1	%		----	87.6	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	88.2	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	89.9	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	90.8	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	85.6	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	96.6	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	110	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	93.3	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		----	84.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		----	82.8	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		----	96.5	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		----	87.7	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	78.6	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		----	85.8	----	----	----
Anthracene-d10	1719-06-8	0.025	%		----	89.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		----	92.6	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	86.9	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	79.8	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	88.8	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
			Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2303586-021	EM2303586-023	--------	--------	--------
				Result	Result	----	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	4.5	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.1	12.0	----	----	----
EG005(ED093)T: 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	10	12	----	----	----
Lead	7439-92-1	5	mg/kg	6	<5	----	----	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	----
Nickel	7440-02-0	2	mg/kg	15	18	----	----	----
Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Tin	7440-31-5	5	mg/kg	<5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	8	8	----	----	----
Chromium	7440-47-3	2	mg/kg	----	31	----	----	----
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	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	120	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
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	----	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2303586-021	EM2303586-023	--------	--------	--------
					Result	Result	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
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	----	----	----	----
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	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2303586-021	EM2303586-023	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
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	----	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2303586-021	EM2303586-023	--------	--------	--------
					Result	Result	----	----	----
EP075A: Phenolic Compounds (Non-halogenated) - Continued									
^ 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+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
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	----	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2303586-021	EM2303586-023	--------	--------	--------
					Result	Result	----	----	----
EP075l: Organochlorine Pesticides - Continued									
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	----	----	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	----	----
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2303586-021	EM2303586-023	--------	--------	--------
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**95.0**	----	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**88.5**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**89.5**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**89.4**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	**93.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	**95.6**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	**87.3**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	**99.5**	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	**113**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	**98.2**	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		**85.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		**82.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		**94.9**	----	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH05/2001 0.1-0.2	BH05/2003 1.0-1.1	----	----	----
				Sampling date / time	01-Mar-2023 00:00	01-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2303586-021	EM2303586-023	--------	--------	--------
					Result	Result	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		**82.2**	----	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**80.0**	----	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		**84.3**	----	----	----	----
Anthracene-d10	1719-06-8	0.025	%		**89.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		**90.5**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	**68.0**	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	**60.0**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	**67.4**	----	----	----

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Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	63	134
2-Chlorophenol-D4	93951-73-6	60	125
2.4.6-Tribromophenol	118-79-6	54	129
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	63	131
1.2-Dichlorobenzene-D4	2199-69-1	61	124
2-Fluorobiphenyl	321-60-8	69	131
Anthracene-d10	1719-06-8	70	133
4-Terphenyl-d14	1718-51-0	59	141
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

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA033-B: Potential Acidity

(SOIL) EA033-C: Acid Neutralising Capacity

(SOIL) EA033-D: Retained Acidity

(SOIL) EA033-A: Actual Acidity

(SOIL) EA033-E: Acid Base Accounting

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ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2303586**	Page	: 1 of 15
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 01-Mar-2023
Order number	: PS200634	Date Analysis Commenced	: 06-Mar-2023
C-O-C number	: ----	Issue Date	: 15-Mar-2023
Sampler	: ML		
Site	: Bales Road, Cranbourne		
Quote number	: EN/008/21		
No. of samples received	: 27		
No. of samples analysed	: 12		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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.

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	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4919646)									
EM2303586-006	BH07/2001 0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	27	26	3.8	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	20	19	6.0	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	5	18.1	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	9	9	0.0	No Limit
EM2303603-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	52	56	8.9	0% - 20%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	4	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	27	30	8.5	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	29	31	7.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	163	175	7.2	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	89	95	7.0	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	10	11	10.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	1210	1300	7.2	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4912486)									
EM2303484-026	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.9	0.0	0% - 20%

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4912486) - continued									
EM2303484-037	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	8.4	8.4	0.0	0% - 20%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4915389)									
EM2303586-011	BH06/2001 0.1-0.2	EA001: pH (CaCl2)	----	0.1	pH Unit	4.4	4.4	0.0	0% - 20%
EM2303793-002	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.4	7.2	3.3	0% - 20%
EA033-A: Actual Acidity (QC Lot: 4927693)									
EB2306883-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.12	0.12	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	72	74	3.2	0% - 20%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.2	4.2	0.0	0% - 20%
EB2306908-010	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.05	0.04	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	29	27	6.2	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 4927694)									
EM2303586-015	BH06/2005 2.9-3.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.04	0.03	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	22	19	16.0	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.1	5.1	0.0	0% - 20%
EM2303901-011	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.1	8.1	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 4927693)									
EB2306883-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.014	0.014	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EB2306908-010	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.013	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-B: Potential Acidity (QC Lot: 4927694)									
EM2303586-015	BH06/2005 2.9-3.0	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.010	0.009	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EM2303901-011	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.007	0.010	28.8	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4919700)									
EM2303586-006	BH07/2001 0.1-0.2	EA055: Moisture Content	----	0.1	%	15.4	15.3	0.9	0% - 50%
EM2304023-003	Anonymous	EA055: Moisture Content	----	0.1	%	9.3	5.3	55.3	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4919645)									
EM2303586-006	BH07/2001 0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2303603-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4919667)									

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4919667) - continued									
EM2303586-006	BH07/2001 0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2303900-039	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4921352)									
EM2303718-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM2303601-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 4919671)									
EM2303586-006	BH07/2001 0.1-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	80	130	49.3	No Limit
EM2303900-039	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	90	80	13.7	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4919603)									
EM2303586-011	BH06/2001 0.1-0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4911644)									
EM2303586-006	BH07/2001 0.1-0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		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
EP074H: Naphthalene (QC Lot: 4911644)									
EM2303586-006	BH07/2001 0.1-0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 4911644)									
EM2303586-006	BH07/2001 0.1-0.2	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 4911644) - continued									
EM2303586-006	BH07/2001 0.1-0.2	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: 4919609)									
EM2303901-001	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+j)fluoranthene	205-99-2 205-82-3	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
EM2304075-001	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+j)fluoranthene	205-99-2 205-82-3	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: 4919601)									
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 4919601) - continued									
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.05	<0.05	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: 4919601)									
EM2303586-011	BH06/2001 0.1-0.2	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: 4919601)									
EM2303586-011	BH06/2001 0.1-0.2	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2/207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 4919601)									
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075I: Organochlorine Pesticides (QC Lot: 4919601) - continued									
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4911644)									
EM2303586-006	BH07/2001 0.1-0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4918109)									
EM2303586-008	BH07/2003 1.0-1.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2304023-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4919602)									
EM2303586-011	BH06/2001 0.1-0.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	100	100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4919608)									
EM2303901-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EM2304075-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4911644)									
EM2303586-006	BH07/2001 0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4918109)									
EM2303586-008	BH07/2003 1.0-1.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2304023-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4919602)									

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4919602) - continued									
EM2303586-011	BH06/2001 0.1-0.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	120	120	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4919608)									
EM2303901-001	Anonymous	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
EM2304075-001	Anonymous	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
EP080: BTEXN (QC Lot: 4918109)									
EM2303586-008	BH07/2003 1.0-1.1	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM2304023-004	Anonymous	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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Method Blank (MB) and Laboratory Control Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4919646)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	94.8	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	61.4	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	93.0	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	86.7	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	89.7	70.0	130
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.19 mg/kg	75.0	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	93.3	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	79.9	70.0	130
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.33 mg/kg	78.8	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	73.7	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4912486)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.3	101
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4915389)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	99.3	101
EA033-A: Actual Acidity (QCLot: 4927693)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	98.4	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	16 mole H+ / t	112	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 4927694)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	98.0	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	16 mole H+ / t	104	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 4927693)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.246 % S	87.2	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 4927694)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.246 % S	88.9	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4919645)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	85.9	70.0	130

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4919667)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	88.5	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4921352)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	88.1	70.0	130
EK040T: Fluoride Total (QCLot: 4919671)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	96.0	93.1	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4919603)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	100	67.4	136
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4911644)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	90.4	69.2	116
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	90.9	67.7	116
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	88.3	66.6	115
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	91.4	65.2	112
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	89.9	69.4	111
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	90.2	68.4	110
EP074H: Naphthalene (QCLot: 4911644)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	73.1	72.3	114
EP074I: Volatile Halogenated Compounds (QCLot: 4911644)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	90.4	47.0	138
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	99.0	57.6	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	84.0	72.3	115
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	90.8	60.5	122
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	89.3	70.3	112
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	87.6	66.6	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	90.5	64.4	122
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	89.8	58.4	127
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.7	72.9	114
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	90.2	64.7	115
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	84.8	72.6	116
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	93.0	60.0	119
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	87.0	71.8	116
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	85.3	66.1	116
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	86.3	39.8	128
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.2	70.3	113
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	86.4	62.6	113
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	83.8	70.8	110
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	79.4	48.4	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4919609)								

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4919609) - continued								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	109	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	108	81.0	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	110	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	107	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	111	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	109	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	110	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	111	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	114	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	102	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	115	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	105	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	112	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	111	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	113	65.8	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4919601)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	105	74.5	126
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	97.7	72.7	126
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	98.2	73.5	132
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	102	72.8	128
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	98.4	73.3	134
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	97.7	72.4	128
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	97.5	69.4	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	98.0	71.9	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	96.3	54.4	135
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4919601)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	114	71.5	130
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	93.4	73.4	129
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	93.3	74.3	129
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	96.6	70.9	133
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	98.0	71.8	132
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	10 mg/kg	66.8	41.0	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	10 mg/kg	99.3	65.3	134
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	10 mg/kg	95.9	43.6	128
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	10 mg/kg	97.5	62.0	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	92.0	34.5	137

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4919601)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.8	73.0	131
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	98.0	76.3	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	98.4	72.0	135
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	98.5	74.4	131
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	98.6	73.3	130
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	100.0	78.4	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	101	75.3	132
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	101	75.4	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	101	69.6	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	102	75.0	133
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	4 mg/kg	103	75.8	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	101	65.1	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	72.1	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	103	72.9	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	102	71.3	134
EP075I: Organochlorine Pesticides (QCLot: 4919601)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	102	71.0	129
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	102	74.8	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	99.0	75.7	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.8	70.8	130
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	101	76.5	134
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	101	75.5	131
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	102	76.8	130
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	102	73.6	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	101	75.0	133
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	104	75.3	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	111	69.4	134
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	104	71.0	132
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	102	78.0	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	87.2	69.0	143
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	100	55.7	145
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	104	71.4	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	103	74.8	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	103	70.2	135
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	102	77.7	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	106	63.6	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4911644)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	68.6	61.1	119

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4918109)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	91.3	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4919602)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	100	74.4	129
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	98.5	81.0	123
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	102	81.8	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4919608)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	103	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	95.6	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	98.5	82.4	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4911644)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	66.7	59.9	119
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4918109)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	90.1	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4919602)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	104	75.4	132
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	96.8	80.8	120
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	116	73.3	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4919608)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	96.3	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	94.5	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	95.6	73.3	137
EP080: BTEXN (QCLot: 4918109)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	89.1	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	89.7	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	89.4	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	94.4	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	95.6	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	84.3	61.8	123

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	SpikeRecovery(%)	Acceptable Limits (%)

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4919646)							
EM2303586-008	BH07/2003 1.0-1.1	EG005T: Arsenic	7440-38-2	50 mg/kg	90.3	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.7	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	97.7	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	101	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	95.8	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	95.4	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	93.2	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4919645)							
EM2303586-008	BH07/2003 1.0-1.1	EG035T: Mercury	7439-97-6	0.5 mg/kg	99.0	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4919667)							
EM2303586-011	BH06/2001 0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 17.5	58.0	114
EM2303586-011	BH06/2001 0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 22.6	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4921352)							
EM2303586-011	BH06/2001 0.1-0.2	EK026SF: Total Cyanide	57-12-5	20 mg/kg	122	70.0	130
EK040T: Fluoride Total (QCLot: 4919671)							
EM2303586-011	BH06/2001 0.1-0.2	EK040T: Fluoride	16984-48-8	400 mg/kg	77.1	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4919603)							
EM2303586-021	BH05/2001 0.1-0.2	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	115	59.6	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4911644)							
EM2303586-011	BH06/2001 0.1-0.2	EP074-UT: Benzene	71-43-2	2 mg/kg	93.2	53.7	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	94.6	55.1	124
EP074I: Volatile Halogenated Compounds (QCLot: 4911644)							
EM2303586-011	BH06/2001 0.1-0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	83.6	38.4	145
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	85.5	48.1	128
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	86.2	55.5	122
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4919609)							
EM2303586-012	BH06/2002 0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	101	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	102	65.5	136
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4919601)							
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	3 mg/kg	84.4	44.0	143
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	86.5	41.5	139
		EP075-EM: Pentachlorophenol	87-86-5	3 mg/kg	87.8	10.0	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4919601)							
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: Phenol	108-95-2	3 mg/kg	82.1	44.2	134
		EP075-EM: 2-Nitrophenol	88-75-5	3 mg/kg	81.3	34.2	129

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4919601)							
EM2303586-011	BH06/2001 0.1-0.2	EP075-EM: Acenaphthene	83-32-9	3 mg/kg	81.2	42.6	138
		EP075-EM: Pyrene	129-00-0	3 mg/kg	87.8	37.8	152
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4911644)							
EM2303586-011	BH06/2001 0.1-0.2	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	60.6	42.3	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4918109)							
EM2303586-012	BH06/2002 0.5-0.6	EP080: C6 - C9 Fraction	----	28 mg/kg	69.2	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4919602)							
EM2303586-016	BH04/2001 0.1-0.2	EP071-EM: C10 - C14 Fraction	----	770 mg/kg	103	71.3	126
		EP071-EM: C15 - C28 Fraction	----	2860 mg/kg	101	75.1	123
		EP071-EM: C29 - C36 Fraction	----	1540 mg/kg	105	78.1	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4919608)							
EM2303586-008	BH07/2003 1.0-1.1	EP071: C10 - C14 Fraction	----	770 mg/kg	108	71.2	125
		EP071: C15 - C28 Fraction	----	2860 mg/kg	98.4	75.6	122
		EP071: C29 - C36 Fraction	----	1540 mg/kg	101	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4911644)							
EM2303586-011	BH06/2001 0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	54.4	39.9	109
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4918109)							
EM2303586-012	BH06/2002 0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	68.0	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4919602)							
EM2303586-016	BH04/2001 0.1-0.2	EP071-EM: >C10 - C16 Fraction	----	1170 mg/kg	107	71.5	130
		EP071-EM: >C16 - C34 Fraction	----	3830 mg/kg	99.6	76.9	119
		EP071-EM: >C34 - C40 Fraction	----	290 mg/kg	117	65.3	139
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4919608)							
EM2303586-008	BH07/2003 1.0-1.1	EP071: >C10 - C16 Fraction	----	1170 mg/kg	99.8	72.2	128
		EP071: >C16 - C34 Fraction	----	3830 mg/kg	97.0	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	98.6	66.8	138
EP080: BTEXN (QCLot: 4918109)							
EM2303586-012	BH06/2002 0.5-0.6	EP080: Benzene	71-43-2	2 mg/kg	89.0	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	88.3	57.1	131

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ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2303586**	Page	: 1 of 11
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 01-Mar-2023
Site	: Bales Road, Cranbourne	Issue Date	: 15-Mar-2023
Sampler	: ML	No. of samples received	: 27
Order number	: PS200634	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM2303586--011	BH06/2001 0.1-0.2	**Hexavalent Chromium**	18540-29-9	17.5 %	58.0-114%	**Recovery less than lower data quality objective**
EG048: Hexavalent Chromium (Alkaline Digest)	EM2303586--011	BH06/2001 0.1-0.2	**Hexavalent Chromium**	18540-29-9	22.6 %	58.0-114%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**08-Mar-2023**	08-Mar-2023	✓	**08-Mar-2023**	08-Mar-2023	✓
Soil Glass Jar - Unpreserved (EA001)							
BH07/2001 - 0.1-0.2	**28-Feb-2023**	**07-Mar-2023**	07-Mar-2023	✓	**07-Mar-2023**	07-Mar-2023	✓
EA033-A: Actual Acidity							
Snap Lock Bag - frozen (EA033)							
BH06/2002 - 0.5-0.6, BH06/2004 - 2.0-2.1, BH06/2005 - 2.9-3.0, BH04/2002 - 0.5-0.6, BH04/2004 - 2.0-2.1, BH04/2005 - 2.9-3.0	**01-Mar-2023**	**15-Mar-2023**	29-Feb-2024	✓	**15-Mar-2023**	13-Jun-2023	✓
EA033-B: Potential Acidity							
Snap Lock Bag - frozen (EA033)							
BH06/2002 - 0.5-0.6, BH06/2004 - 2.0-2.1, BH06/2005 - 2.9-3.0, BH04/2002 - 0.5-0.6, BH04/2004 - 2.0-2.1, BH04/2005 - 2.9-3.0	**01-Mar-2023**	**15-Mar-2023**	29-Feb-2024	✓	**15-Mar-2023**	13-Jun-2023	✓
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen (EA033)							
BH06/2002 - 0.5-0.6, BH06/2004 - 2.0-2.1, BH06/2005 - 2.9-3.0, BH04/2002 - 0.5-0.6, BH04/2004 - 2.0-2.1, BH04/2005 - 2.9-3.0	**01-Mar-2023**	**15-Mar-2023**	29-Feb-2024	✓	**15-Mar-2023**	13-Jun-2023	✓

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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
EA033-D: Retained Acidity							
Snap Lock Bag - frozen (EA033)							
BH06/2002 - 0.5-0.6, BH06/2004 - 2.0-2.1, BH06/2005 - 2.9-3.0, BH04/2002 - 0.5-0.6, BH04/2004 - 2.0-2.1, BH04/2005 - 2.9-3.0	**01-Mar-2023**	**15-Mar-2023**	29-Feb-2024	✓	**15-Mar-2023**	13-Jun-2023	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen (EA033)							
BH06/2002 - 0.5-0.6, BH06/2004 - 2.0-2.1, BH06/2005 - 2.9-3.0, BH04/2002 - 0.5-0.6, BH04/2004 - 2.0-2.1, BH04/2005 - 2.9-3.0	**01-Mar-2023**	**15-Mar-2023**	29-Feb-2024	✓	**15-Mar-2023**	13-Jun-2023	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH06/2001 - 0.1-0.2, BH06/2002 - 0.5-0.6, BH04/2001 - 0.1-0.2, BH04/2002 - 0.5-0.6, BH05/2001 - 0.1-0.2, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**----**	----	----	**09-Mar-2023**	15-Mar-2023	✓
Soil Glass Jar - Unpreserved (EA055)							
BH07/2001 - 0.1-0.2, BH07/2003 - 1.0-1.1	**28-Feb-2023**	**----**	----	----	**09-Mar-2023**	14-Mar-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH06/2001 - 0.1-0.2, BH06/2002 - 0.5-0.6, BH04/2001 - 0.1-0.2, BH04/2002 - 0.5-0.6, BH05/2001 - 0.1-0.2, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**10-Mar-2023**	28-Aug-2023	✓	**11-Mar-2023**	28-Aug-2023	✓
Soil Glass Jar - Unpreserved (EG005T)							
BH07/2001 - 0.1-0.2, BH07/2003 - 1.0-1.1	**28-Feb-2023**	**10-Mar-2023**	27-Aug-2023	✓	**11-Mar-2023**	27-Aug-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH06/2001 - 0.1-0.2, BH06/2002 - 0.5-0.6, BH04/2001 - 0.1-0.2, BH04/2002 - 0.5-0.6, BH05/2001 - 0.1-0.2, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**10-Mar-2023**	29-Mar-2023	✓	**14-Mar-2023**	29-Mar-2023	✓
Soil Glass Jar - Unpreserved (EG035T)							
BH07/2001 - 0.1-0.2, BH07/2003 - 1.0-1.1	**28-Feb-2023**	**10-Mar-2023**	28-Mar-2023	✓	**14-Mar-2023**	28-Mar-2023	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G)							
BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	29-Mar-2023	✓	**14-Mar-2023**	17-Mar-2023	✓
Soil Glass Jar - Unpreserved (EG048G)							
BH07/2001 - 0.1-0.2	**28-Feb-2023**	**10-Mar-2023**	28-Mar-2023	✓	**14-Mar-2023**	17-Mar-2023	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**15-Mar-2023**	24-Mar-2023	✓
Soil Glass Jar - Unpreserved (EK026SF)							
BH07/2001 - 0.1-0.2	**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**15-Mar-2023**	24-Mar-2023	✓

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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 (EK040T) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	29-Mar-2023	✓	**14-Mar-2023**	29-Mar-2023	✓
Soil Glass Jar - Unpreserved (EK040T) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**10-Mar-2023**	28-Mar-2023	✓	**14-Mar-2023**	28-Mar-2023	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM) BH06/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP066-EM) BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP066-EM) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**06-Mar-2023**	08-Mar-2023	✓	**07-Mar-2023**	08-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP074-UT) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**06-Mar-2023**	07-Mar-2023	✓	**07-Mar-2023**	07-Mar-2023	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**06-Mar-2023**	08-Mar-2023	✓	**07-Mar-2023**	08-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP074-UT) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**06-Mar-2023**	07-Mar-2023	✓	**07-Mar-2023**	07-Mar-2023	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**06-Mar-2023**	08-Mar-2023	✓	**07-Mar-2023**	08-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP074-UT) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**06-Mar-2023**	07-Mar-2023	✓	**07-Mar-2023**	07-Mar-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) BH06/2002 - 0.5-0.6, BH04/2002 - 0.5-0.6, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) BH07/2003 - 1.0-1.1	**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓

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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 (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM) BH06/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	BH04/2001 - 0.1-0.2,	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM) BH07/2001 - 0.1-0.2		**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM) BH06/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	BH04/2001 - 0.1-0.2,	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM) BH07/2001 - 0.1-0.2		**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM) BH06/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	BH04/2001 - 0.1-0.2,	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM) BH07/2001 - 0.1-0.2		**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT) BH06/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	BH04/2001 - 0.1-0.2,	**01-Mar-2023**	**06-Mar-2023**	08-Mar-2023	✓	**07-Mar-2023**	08-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH06/2002 - 0.5-0.6, BH05/2003 - 1.0-1.1	BH04/2002 - 0.5-0.6,	**01-Mar-2023**	**09-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	15-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP071-EM) BH06/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	BH04/2001 - 0.1-0.2,	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH06/2002 - 0.5-0.6, BH05/2003 - 1.0-1.1	BH04/2002 - 0.5-0.6,	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP074-UT) BH07/2001 - 0.1-0.2		**28-Feb-2023**	**06-Mar-2023**	07-Mar-2023	✓	**07-Mar-2023**	07-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH07/2003 - 1.0-1.1		**28-Feb-2023**	**09-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	14-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH07/2001 - 0.1-0.2,	BH07/2003 - 1.0-1.1	**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓

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Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**06-Mar-2023**	08-Mar-2023	✓	**07-Mar-2023**	08-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH06/2002 - 0.5-0.6, BH04/2002 - 0.5-0.6, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**09-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	15-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP071-EM) BH06/2001 - 0.1-0.2, BH04/2001 - 0.1-0.2, BH05/2001 - 0.1-0.2	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH06/2002 - 0.5-0.6, BH04/2002 - 0.5-0.6, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**10-Mar-2023**	15-Mar-2023	✓	**11-Mar-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP074-UT) BH07/2001 - 0.1-0.2	**28-Feb-2023**	**06-Mar-2023**	07-Mar-2023	✓	**07-Mar-2023**	07-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH07/2003 - 1.0-1.1	**28-Feb-2023**	**09-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	14-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH07/2001 - 0.1-0.2, BH07/2003 - 1.0-1.1	**28-Feb-2023**	**10-Mar-2023**	14-Mar-2023	✓	**10-Mar-2023**	19-Apr-2023	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BH06/2002 - 0.5-0.6, BH04/2002 - 0.5-0.6, BH05/2003 - 1.0-1.1	**01-Mar-2023**	**09-Mar-2023**	15-Mar-2023	✓	**10-Mar-2023**	15-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH07/2003 - 1.0-1.1	**28-Feb-2023**	**09-Mar-2023**	14-Mar-2023	✓	**11-Mar-2023**	14-Mar-2023	✓

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Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	4	38	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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*	
Method Blanks (MB) - Continued							
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 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 Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
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	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).

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Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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GA-BQ-035 SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL/ROCK

Sheet ..... of .....

Project & Task Number:	PS200634	Quote/Order No.:	
Site Location:	Bales Road, Cranbourne East	Lab Name:	ALS
Sampled By:	ML	Mobile No.:	0424601017
Turnaround (Days)	standard	BY:	
Report Format:	HARD ☐ FAX ☐	EMAIL ☐	ELECTRONIC DATA FORMAT ☐

GOLDER ASSOCIATES PTY LTD — Phone: 0418504912 — GOLDER MEMBER OF WSP

Invoice to be sent to au_accountspayable@golder.com.au — Fax

Project Manager: Alana Dubowik — Email: msheppard@golder.com.au

Contact Phone: 0431 185 140

Results To: alana.dubowik@wsp.com — Email: msheppard@golder.com.au

Comments/Special Instructions:

Samples from a declared Fire Ant Area: No

Samples taken from a known Weed and or Pest Area: No

SAMPLE ID	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	No. Containers	PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	EPA 1828.2 Table 2 - Basic	PAH	1828.2 Metals Suite	Asbestos: Absence /Presence	PFAS (Full Suite)	HOLD															
BH10/2001	0.1-0.2	Topsoil	02.03.23		1		1							✓															
BH10/2002	0.5-0.6		"		2		1							✓															
BH10/2003	1.0-1.1		"		2									✓															
BH10/2004	2.0-2.1		"		2									✓															
BH10/2005	2.9-3.0	Natural	"		2									✓															
BH08/2001	0.1-0.2	Topsoil	02.03.23		1									✓															
BH08/2002	0.5-0.6		"		2									✓															
BH08/2003	1.0-1.1		"		2									✓															
BH08/2004	2.0-2.1		"		2									✓															
BH08/2005	2.9-3.0	Natural	"		2									✓															
BH03/2001	0.1-0.2	Topsoil	02.03.23		1									✓															
BH03/2002	0.5-0.6		"		2									✓															
BH03/2003	1.0-1.1		"		2									✓															
BH03/2004	2.0-2.1		"		2									✓															
BH03/2005	2.9-3.0	Natural	"		2									✓															
BH01/2001	0.1-0.2	Topsoil	02.03.23		1									✓															
BH01/2002	0.5-0.6		"		2									✓															
BH01/2003	1.0-1.1		"		2									✓															
BH01/2004	2.0-2.1		"		2									✓															
BH01/2005	2.9-3.0	Natural	"		2									✓															

Environmental Division
Melbourne
Work Order Reference
EM2303757

Telephone : + 61-3-8549 9600

SAMPLE MATRIX = Soil/Sediment/Fill/Rock/Other — **SAMPLE TYPE** = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR) — **HIGH CONCENTRATION:** Tick box and circle expected parameters

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER		
RECEIVED BY			03.03.23	12:30
RELEASED BY				
RECEIVED BY			3/3	12:30
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory — LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:
Suitable Containers		Frozen		Address
Cool Box		Ambient		

DRAFT

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

GA-BQ-035 SAMPLE CHAIN OF CUSTODY DOCUMENTATION - SOIL/ROCK

Sheet..... of.....

Project & Task Number: PS200634 | Quote/Order No.:

Site Location: Bales Road, Cranbourne East | Lab Name: ALS

Sampled By: ML | Mobile No.: 0424601017

Turnaround (Days): standard | BY:

Report Format: HARD ☐ FAX ☐ EMAIL ☐ ELECTRONIC DATA FORMAT ☐

GOLDER ASSOCIATES PTY LTD | Phone: 0418504912

Invoice to be sent to au_accountspayable@golder.com.au | Fax

Project Manager: Alana Dubowik | Email:

Contact Phone: 0431 185 140

Results To: alana.dubowik@wsp.com | Email:

Comments/Special Instructions:

Samples from a declared Fire Ant Area: No

Samples taken from a known Weed and or Pest Area: No

	SAMPLE ID	Depth	SAMPLE MATRIX	SAMPLE DATE	SAMPLE TIME	No. Containers	PRESERVATIVE	No CONTAINERS	POSSIBLE HIGH CONCENTRATION	P30-4	S-26	CRS suite	HOLD
1	BH10/2001	0.1-0.2	Topsoil	02.03.23		1		1		X			✓
2	BH10/2002	0.5-0.6		"		2		1			X	X	✓
3	BH10/2003	1.0-1.1		"		2							✓
4	BH10/2004	2.0-2.1		"		2						X	✓
5	BH10/2005	2.9-3.0	Natural	"		2						X	✓
6	BH08/2001	0.1-0.2	Topsoil	02.03.23		1				X			✓
7	BH08/2002	0.5-0.6		"		2					X		✓
8	BH08/2003	1.0-1.1		"		2							✓
9	BH08/2004	2.0-2.1		"		2							✓
10	BH08/2005	2.9-3.0	Natural	"		2							✓
11	BH03/2001	0.1-0.2	Topsoil	02.03.23		1				X			✓
12	BH03/2002	0.5-0.6		"		2							✓
13	BH03/2003	1.0-1.1		"		2					X		✓
14	BH03/2004	2.0-2.1		"		2							✓
15	BH03/2005	2.9-3.0	Natural	"		2							✓
16	BH01/2001	0.1-0.2	Topsoil	02.03.23		1				X			✓
17	BH01/2002	0.5-0.6		"		2							✓
18	BH01/2003	1.0-1.1		"		2					X		✓
19	BH01/2004	2.0-2.1		"		2							✓
20	BH01/2005	2.9-3.0	Natural	"		2							✓

ANALYSIS REQUIRED

SAMPLE MATRIX = Soil/Sediment/Fill/Rock/Other | SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR) | HIGH CONCENTRATION: Tick box and circle expected paramete

Container Type and Preservative Codes: P = Natural Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Preserved Vial; VS = Sulphuric Acid

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY		GOLDER		
RECEIVED BY			03.03.23	12:30
RELEASED BY				
RECEIVED BY			3/3	12:30
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

LAB. BATCH NUMBER

Security Seal		Chilled		Bill to:
Suitable Containers		Frozen		Address
Cool Box		Ambient		

DRAFT

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Josh Alexander

From: Vass, Tim <Tim.Vass@wsp.com>
Sent: Tuesday, 7 March 2023 9:10 AM
To: Josh Alexander
Cc: Dubowik, Alana
Subject: RE: [EXTERNAL] - RE: PS200634 - Bales Rd ON HOLD - EM2303757 analytical request

Noted. Please proceed anyway Josh, and we'll take the sample preservation condition into consideration when reviewing the results.

(if anymore come in like that, they will be for acid sulfate analysis. I know sample receipt won't necessarily be on the lookout for that, but in the meantime I'll speak with field staff about alternately labelled bags)

Thanks
tim

Tim Vass
M: +61 407 306 607
wsp.com/au

From: Josh Alexander <josh.alexander@ALSGlobal.com>
Sent: Tuesday, 7 March 2023 9:04 AM
To: Vass, Tim <Tim.Vass@wsp.com>
Cc: Dubowik, Alana <alana.dubowik@wsp.com>
Subject: RE: [EXTERNAL] - RE: PS200634 - Bales Rd ON HOLD - EM2303757 analytical request

Thanks Tim,

The samples are being sorted and analysis booked in momentarily. However, we have found that the bags provided were 'asbestos' labelled bags. These would be ok for CRS but for the fact that they were not frozen on receipt. If acid sulphate labelled bags are provided they will be identified and frozen. However there was no comment, or indication that the bags would go on to be used for acid sulphate soils or that they should be frozen.

Acid sulphate soils have a 1 day holding time unfrozen. Given the breach, would you like for us to proceed with the CRS?

Regards,

right solutions.
right partner.

Joshua Alexander
Project Manager – Environmental
Springvale, Victoria

O: +61 3 8549 9600
D: +61 3 8549 9610
M: 0436 924 166
josh.alexander@alsglobal.com

2-4 Westall Road, Springvale VIC 3171

alsglobal.com

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2303757**

Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: alana.dubowik@wsp.com	E-mail	: Josh.Alexander@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: PS200634	Page	: 1 of 3
Order number	: PS200634	Quote number	: ES2021PARBRIVIC0001 (EN/008/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bales Road, Cranbourne		
Sampler	: ML		

Dates

Date Samples Received	: 03-Mar-2023 12:30	Issue Date	: 07-Mar-2023
Client Requested Due Date	: 16-Mar-2023	Scheduled Reporting Date	: **16-Mar-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 4.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 20 / 10

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale and ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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Sample Container(s)/Preservation Non-Compliances

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

Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
Chromium Suite for Acid Sulphate Soils : EA033		
BH10/2002 0.5-0.6	- Snap Lock Bag	- Snap Lock Bag - frozen
BH10/2005 2.9-3.0	- Snap Lock Bag	- Snap Lock Bag - frozen

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - P-30/4 EPA 1828.2 Table 3 Suite EPA 1828.2 Table 3 Fill Material Suite	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EM2303757-001	02-Mar-2023 00:00	BH10/2001 0.1-0.2			✓	✓	
EM2303757-002	02-Mar-2023 00:00	BH10/2002 0.5-0.6		✓	✓		✓
EM2303757-003	02-Mar-2023 00:00	BH10/2003 1.0-1.1	✓				
EM2303757-004	02-Mar-2023 00:00	BH10/2004 2.0-2.1		✓			
EM2303757-005	02-Mar-2023 00:00	BH10/2005 2.9-3.0		✓			
EM2303757-006	02-Mar-2023 00:00	BH08/2001 0.1-0.2			✓	✓	
EM2303757-007	02-Mar-2023 00:00	BH08/2002 0.5-0.6			✓		✓
EM2303757-008	02-Mar-2023 00:00	BH08/2003 1.0-1.1	✓				
EM2303757-009	02-Mar-2023 00:00	BH08/2004 2.0-2.1	✓				
EM2303757-010	02-Mar-2023 00:00	BH08/2005 2.9-3.0	✓				
EM2303757-011	02-Mar-2023 00:00	BH03/2001 0.1-0.2			✓	✓	
EM2303757-012	02-Mar-2023 00:00	BH03/2002 0.5-0.6	✓				
EM2303757-013	02-Mar-2023 00:00	BH03/2003 1.0-1.1			✓		✓
EM2303757-014	02-Mar-2023 00:00	BH03/2004 2.0-2.1	✓				
EM2303757-015	02-Mar-2023 00:00	BH03/2005 2.9-3.0	✓				
EM2303757-016	02-Mar-2023 00:00	BH01/2001 0.1-0.2			✓	✓	
EM2303757-017	02-Mar-2023 00:00	BH01/2002 0.5-0.6	✓				
EM2303757-018	02-Mar-2023 00:00	BH01/2003 1.0-1.1			✓		✓
EM2303757-019	02-Mar-2023 00:00	BH01/2004 2.0-2.1	✓				
EM2303757-020	02-Mar-2023 00:00	BH01/2005 2.9-3.0	✓				

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

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

Method Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received Date	Samples Received Evaluation	Instructions Received Date	Instructions Received Evaluation
EA033: Chromium Suite for Acid Sulphate Soils							
BH10/2002	Snap Lock Bag	03-Mar-2023	01-Jun-2023	03-Mar-2023	✓	06-Mar-2023	×
BH10/2004	Soil Glass Jar - Unpreserved	03-Mar-2023	01-Jun-2023	03-Mar-2023	✓	06-Mar-2023	×
BH10/2005	Snap Lock Bag	03-Mar-2023	01-Jun-2023	03-Mar-2023	✓	06-Mar-2023	×

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Requested Deliverables

ALANA DUBOWIK

- *AU Certificate of Analysis - NATA (COA)	Email	alana.dubowik@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alana.dubowik@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alana.dubowik@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alana.dubowik@wsp.com
- Chain of Custody (CoC) (COC)	Email	alana.dubowik@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	alana.dubowik@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	alana.dubowik@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alana.dubowik@wsp.com

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

TIM VASS

- *AU Certificate of Analysis - NATA (COA)	Email	Tim.Vass@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Tim.Vass@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Tim.Vass@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Tim.Vass@wsp.com
- Chain of Custody (CoC) (COC)	Email	Tim.Vass@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	Tim.Vass@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	Tim.Vass@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	Tim.Vass@wsp.com

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2303757**	Page	: 1 of 17
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 03-Mar-2023 12:30
Order number	: PS200634	Date Analysis Commenced	: 07-Mar-2023
C-O-C number	: ----	Issue Date	: 16-Mar-2023 18:31
Sampler	: ML		
Site	: Bales Road, Cranbourne		
Quote number	: EN/008/21		
No. of samples received	: 20		
No. of samples analysed	: 10		

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, unless the sampling was conducted by ALS. 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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Sanjay Parekh	LCMS Coordinator	Melbourne Organics, Springvale, VIC

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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 Contract 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.

- EG048G: EM2303757 #6 Poor matrix spike recovery for Hexavalent Chromium due to sample matrix. Confirmed by re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP074-WF: Where reported, Sum of trichlorobenzenes is the sum of the reported concentrations of 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene, and 1,3,5-Trichlorobenzene at or above the LOR.
- EG035T: EM2303890#3 Poor duplicate precision for total mercury due to sample matrix. Confirmed by re-extraction and re-analysis.
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- EG005T: EM2303890 #3, Poor duplicate precision for copper, lead and zinc due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
			Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit	EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.0	----	----	----	5.2
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	6.0	5.5	5.5	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	8	12	13	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	<0.02	0.02	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	0.006	0.012	0.011	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	<10	<10	<10	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	1.5	1.5	----
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	0.03	0.03	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	11	20	20	----
Liming Rate	----	1	kg CaCO3/t	----	<1	1	1	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	<0.02	0.03	0.03	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	11	20	20	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	<1	1	1	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	7.3	6.0	----	----	16.0
EG005(ED093)T: Total Metals by ICP-AES								
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	<2
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
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	<1
Chromium	7440-47-3	2	mg/kg	----	23	----	----	----
Copper	7440-50-8	5	mg/kg	9	6	----	----	19
Lead	7439-92-1	5	mg/kg	7	<5	----	----	6
Nickel	7440-02-0	2	mg/kg	7	7	----	----	36
Zinc	7440-66-6	5	mg/kg	15	<5	----	----	18
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
					Result	Result	Result	Result	Result
EG048: Hexavalent Chromium (Alkaline Digest) - Continued									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	----	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	----	1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		70	----	----	----	80
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	<0.1
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
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	<1
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
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

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
					Result	Result	Result	Result	Result
EP074I: Volatile Halogenated Compounds - Continued									
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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	1.2	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	<0.03
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	<0.03
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	<0.03
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	<0.05
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	<0.05

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
					EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	<0.03
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	<0.2
^ **Sum of Phenols (halogenated)**	----	0.03	mg/kg		<0.03	----	----	----	<0.03
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	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	----	----	<1.0
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

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	**1.2**
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	<0.03
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	<0.03
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	<0.03
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	<0.03
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	----	----
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	<10
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**120**	----	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**120**	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**130**	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**130**	----	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	<10
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**105**	----	----	----	**102**

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH10/2001 0.1-0.2	BH10/2002 0.5-0.6	BH10/2004 2.0-2.1	BH10/2005 2.9-3.0	BH08/2001 0.1-0.2
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
					EM2303757-001	EM2303757-002	EM2303757-004	EM2303757-005	EM2303757-006
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		86.6	----	----	----	95.5
Toluene-D8	2037-26-5	0.1	%		88.6	----	----	----	94.3
4-Bromofluorobenzene	460-00-4	0.1	%		92.8	----	----	----	92.6
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	95.4	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	112	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	105	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		78.9	----	----	----	79.3
2-Chlorophenol-D4	93951-73-6	0.025	%		80.7	----	----	----	79.6
2.4.6-Tribromophenol	118-79-6	0.025	%		93.3	----	----	----	89.9
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		88.8	----	----	----	90.7
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		84.5	----	----	----	83.6
2-Fluorobiphenyl	321-60-8	0.025	%		88.9	----	----	----	90.6
Anthracene-d10	1719-06-8	0.025	%		87.4	----	----	----	87.9
4-Terphenyl-d14	1718-51-0	0.025	%		86.0	----	----	----	85.3
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	79.1	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	82.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	79.0	----	----	----

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Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
					EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit		----	5.3	----	4.7	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.3	18.8	27.9	10.8	29.2
EG005(ED093)T: Total Metals by ICP-AES									
Molybdenum	7439-98-7	2	mg/kg		----	<2	----	<2	----
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	----
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		34	----	34	----	29
Copper	7440-50-8	5	mg/kg		16	16	18	13	14
Lead	7439-92-1	5	mg/kg		<5	11	6	7	<5
Nickel	7440-02-0	2	mg/kg		28	24	30	19	17
Zinc	7440-66-6	5	mg/kg		11	38	12	20	9
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	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	<1	----	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		----	80	----	90	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	<0.1	----
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	----

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Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
					EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		----	<1	----	<1	----
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	----
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	----
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

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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+j)fluoranthene	205-99-2 205-82-3	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
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	**1.2**
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		----	<0.03	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		----	<0.03	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		----	<0.03	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		----	<0.03	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		----	<0.05	----	<0.05	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		----	<0.05	----	<0.05	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		----	<0.03	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		----	<0.05	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		----	<0.03	----	<0.03	----
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	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Non-halogenated) - Continued									
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	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		----	<1.0	----	<1.0	----
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	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		----	<0.03	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		----	<0.03	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		----	<0.03	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		----	<0.03	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		----	<0.03	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		----	<0.03	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		----	<0.03	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		----	<0.03	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		----	<0.03	----	<0.03	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
trans-Chlordane	5103-74-2	0.03	mg/kg		----	<0.03	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		----	<0.03	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		----	<0.03	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		----	<0.03	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		----	<0.03	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		----	<0.03	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		----	<0.03	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		----	<0.03	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		----	<0.03	----	<0.03	----
^ Chlordane	57-74-9	0.03	mg/kg		----	<0.03	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	<10
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	<50
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	<10	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	<100
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	**150**	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	<50
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	----	**150**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	<50
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	<100
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	**170**	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	<100

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
Compound	CAS Number	LOR	Unit		EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	<50
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	170	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	<10	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	<0.2	----	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	----	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	113	----	118	----
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	93.2	----	89.1	----
Toluene-D8	2037-26-5	0.1	%		----	94.2	----	88.3	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	90.5	----	91.3	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		86.9	----	93.5	----	93.7
Anthracene-d10	1719-06-8	0.5	%		102	----	113	----	108
4-Terphenyl-d14	1718-51-0	0.5	%		96.4	----	103	----	102
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		----	83.9	----	84.9	----
2-Chlorophenol-D4	93951-73-6	0.025	%		----	85.2	----	90.4	----
2.4.6-Tribromophenol	118-79-6	0.025	%		----	97.4	----	109	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		----	95.7	----	97.2	----

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Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH08/2002 0.5-0.6	BH03/2001 0.1-0.2	BH03/2003 1.0-1.1	BH01/2001 0.1-0.2	BH01/2003 1.0-1.1
				Sampling date / time	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00	02-Mar-2023 00:00
					EM2303757-007	EM2303757-011	EM2303757-013	EM2303757-016	EM2303757-018
					Result	Result	Result	Result	Result
EP075T: Base/Neutral Extractable Surrogates (Waste Classification) - Continued									
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		**----**	**88.6**	**----**	**90.8**	**----**
2-Fluorobiphenyl	321-60-8	0.025	%		**----**	**96.8**	**----**	**104**	**----**
Anthracene-d10	1719-06-8	0.025	%		**----**	**93.8**	**----**	**99.2**	**----**
4-Terphenyl-d14	1718-51-0	0.025	%		**----**	**93.9**	**----**	**97.6**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**83.5**	**----**	**73.7**	**----**	**74.4**
Toluene-D8	2037-26-5	0.2	%		**79.2**	**----**	**70.3**	**----**	**77.1**
4-Bromofluorobenzene	460-00-4	0.2	%		**67.2**	**----**	**75.4**	**----**	**67.0**

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Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	63	134
2-Chlorophenol-D4	93951-73-6	60	125
2.4.6-Tribromophenol	118-79-6	54	129
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	63	131
1.2-Dichlorobenzene-D4	2199-69-1	61	124
2-Fluorobiphenyl	321-60-8	69	131
Anthracene-d10	1719-06-8	70	133
4-Terphenyl-d14	1718-51-0	59	141
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

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA033-B: Potential Acidity

(SOIL) EA033-C: Acid Neutralising Capacity

(SOIL) EA033-D: Retained Acidity

(SOIL) EA033-A: Actual Acidity

(SOIL) EA033-E: Acid Base Accounting

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QUALITY CONTROL REPORT

Work Order	: **EM2303757**	Page	: 1 of 16
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 03-Mar-2023
Order number	: PS200634	Date Analysis Commenced	: 07-Mar-2023
C-O-C number	: ----	Issue Date	: 16-Mar-2023
Sampler	: ML		
Site	: Bales Road, Cranbourne		
Quote number	: EN/008/21		
No. of samples received	: 20		
No. of samples analysed	: 10		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Sanjay Parekh	LCMS Coordinator	Melbourne Organics, Springvale, VIC

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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.

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	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4926335)									
EM2303890-003	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	14	16	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	32	24	26.7	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	227	# 92	84.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	498	# 324	42.4	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	310	# 179	53.6	0% - 20%
EM2303757-001	BH10/2001 0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	20	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	7	10	38.0	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	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	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	15	16	0.0	No Limit
EM2303890-003	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: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	9	38.7	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	43	41	5.3	No Limit
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4918085)									
EM2303656-022	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.3	7.4	0.0	0% - 20%

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4918085) - continued									
EM2303791-002	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.6	7.6	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 4930424)									
EM2303757-002	BH10/2002 0.5-0.6	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	8	8	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.0	6.0	0.0	0% - 20%
EM2304079-009	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	17	16	7.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.6	5.6	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 4930424)									
EM2303757-002	BH10/2002 0.5-0.6	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.006	<0.005	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EM2304079-009	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.011	0.009	24.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4922365)									
EM2303757-001	BH10/2001 0.1-0.2	EA055: Moisture Content	----	0.1	%	7.3	7.7	4.7	No Limit
EM2303890-005	Anonymous	EA055: Moisture Content	----	0.1	%	17.9	17.6	1.7	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4926334)									
EM2303890-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.0	# 3.4	110	0% - 20%
EM2303757-001	BH10/2001 0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4922243)									
EM2303757-001	BH10/2001 0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2304029-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4927276)									
EM2303601-004	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	2	1	0.0	No Limit
EM2303601-023	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4927278)									
EM2303757-006	BH08/2001 0.1-0.2	EK026SF: Total Cyanide	57-12-5	1	mg/kg	1	1	0.0	No Limit
EM2304030-002	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 4922241)									
EM2303757-001	BH10/2001 0.1-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	70	70	0.0	No Limit
EM2304029-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	260	270	4.7	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4922024)									
EM2303757-001	BH10/2001 0.1-0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2304030-003	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4914236)									
EM2303757-001	BH10/2001 0.1-0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4914236) - continued									
EM2303757-001	BH10/2001 0.1-0.2	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
EP074H: Naphthalene (QC Lot: 4914236)									
EM2303757-001	BH10/2001 0.1-0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 4914236)									
EM2303757-001	BH10/2001 0.1-0.2	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: 4926249)									
EM2303757-002	BH10/2002 0.5-0.6	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4926249) - continued									
EM2303757-002	BH10/2002 0.5-0.6	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	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
EM2304278-001	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+j)fluoranthene	205-99-2 205-82-3	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: 4922022)									
EM2303757-001	BH10/2001 0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.05	<0.05	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EM2304030-003	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 4922022) - continued									
EM2304030-003	Anonymous	EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.05	<0.05	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: 4922022)									
EM2303757-001	BH10/2001 0.1-0.2	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
EM2304030-003	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: 4922022)									
EM2303757-001	BH10/2001 0.1-0.2	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4922022) - continued									
EM2303757-001	BH10/2001 0.1-0.2	EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EM2304030-003	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 4922022)									
EM2303757-001	BH10/2001 0.1-0.2	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075I: Organochlorine Pesticides (QC Lot: 4922022) - continued									
EM2304030-003	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4914236)									
EM2303757-001	BH10/2001 0.1-0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4918112)									
EM2303757-002	BH10/2002 0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2303916-010	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4922023)									
EM2303757-001	BH10/2001 0.1-0.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	120	110	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2304030-003	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4926250)									
EM2303757-002	BH10/2002 0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EM2304278-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4914236)									
EM2303757-001	BH10/2001 0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4918112)									
EM2303757-002	BH10/2002 0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2303916-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4922023)									
EM2303757-001	BH10/2001 0.1-0.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	130	120	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2304030-003	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4926250)									
EM2303757-002	BH10/2002 0.5-0.6	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
EM2304278-001	Anonymous	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
EP080: BTEXN (QC Lot: 4918112)									
EM2303757-002	BH10/2002 0.5-0.6	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM2303916-010	Anonymous	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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Method Blank (MB) and Laboratory Control Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4926335)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	91.9	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	56.5	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	93.4	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	85.2	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	82.7	70.0	130
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.19 mg/kg	77.1	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	88.6	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	77.1	70.0	130
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.33 mg/kg	78.1	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	74.9	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4918085)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	99.3	101
EA033-A: Actual Acidity (QCLot: 4930424)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	98.1	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	16 mole H+ / t	115	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 4930424)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.246 % S	89.6	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4926334)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	104	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4922243)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	84.6	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4927276)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	112	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4927278)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	106	70.0	130
EK040T: Fluoride Total (QCLot: 4922241)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	106	93.1	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4922024)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	122	67.4	136

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4914236)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	94.2	69.2	116
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	92.7	67.7	116
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	93.9	66.6	115
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	96.5	65.2	112
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	95.0	69.4	111
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	96.5	68.4	110
EP074H: Naphthalene (QCLot: 4914236)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	88.9	72.3	114
EP074I: Volatile Halogenated Compounds (QCLot: 4914236)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	84.6	47.0	138
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	90.3	57.6	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	91.8	72.3	115
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	60.5	122
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	90.7	70.3	112
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	94.8	66.6	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	92.2	64.4	122
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	90.9	58.4	127
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.8	72.9	114
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	92.5	64.7	115
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	89.6	72.6	116
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	60.0	119
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	91.3	71.8	116
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.0	66.1	116
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	91.2	39.8	128
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.3	70.3	113
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	62.6	113
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	91.2	70.8	110
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	88.7	48.4	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4926249)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	122	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	112	81.0	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	110	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	108	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	122	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	115	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	121	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	118	79.9	128

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4926249) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	113	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	116	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	105	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	112	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	103	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	110	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	109	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	111	65.8	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4922022)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	90.7	74.5	126
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	98.3	72.7	126
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	97.3	73.5	132
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	100	72.8	128
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	101	73.3	134
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	97.2	72.4	128
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	93.5	69.4	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	103	71.9	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	83.4	54.4	135
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4922022)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	94.7	71.5	130
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	110	73.4	129
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	90.6	74.3	129
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	97.8	70.9	133
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	97.8	71.8	132
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	10 mg/kg	51.4	41.0	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	10 mg/kg	94.3	65.3	134
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	10 mg/kg	80.5	43.6	128
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	10 mg/kg	80.5	62.0	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	54.2	34.5	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4922022)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	102	73.0	131
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	95.0	76.3	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	97.8	72.0	135
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	98.3	74.4	131
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	98.3	73.3	130
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	97.7	78.4	127

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4922022) - continued								
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	93.0	75.3	132
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	89.7	75.4	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	98.2	69.6	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	96.3	75.0	133
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	4 mg/kg	99.0	75.8	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	99.1	65.1	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	98.1	72.1	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	99.0	72.9	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	98.7	71.3	134
EP075I: Organochlorine Pesticides (QCLot: 4922022)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	98.2	71.0	129
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	95.7	74.8	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	99.1	75.7	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	99.5	70.8	130
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	98.2	76.5	134
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	92.2	75.5	131
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	96.7	76.8	130
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	94.0	73.6	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	92.0	75.0	133
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	89.8	75.3	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	95.4	69.4	134
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	91.0	71.0	132
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	90.9	78.0	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	94.1	69.0	143
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	62.8	55.7	145
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	89.4	71.4	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	89.2	74.8	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	89.5	70.2	135
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	87.5	77.7	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	93.0	63.6	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4914236)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	77.3	61.1	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4918112)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	88.8	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4922023)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	122	74.4	129
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	112	81.0	123

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4922023) - continued								
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	110	81.8	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4926250)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	110	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	104	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	101	82.4	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4914236)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	80.4	59.9	119
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4918112)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	83.7	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4922023)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	110	75.4	132
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	110	80.8	120
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	124	73.3	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4926250)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	109	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	101	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	111	73.3	137
EP080: BTEXN (QCLot: 4918112)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	88.6	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	96.9	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	84.9	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	87.0	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	87.4	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	95.7	61.8	123

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4926335)							
EM2303757-002	BH10/2002 0.5-0.6	EG005T: Arsenic	7440-38-2	50 mg/kg	88.9	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.3	79.7	116

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4926335) - continued							
EM2303757-002	BH10/2002 0.5-0.6	EG005T: Chromium	7440-47-3	50 mg/kg	91.8	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	94.9	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	91.9	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	91.5	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	98.5	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4926334)							
EM2303757-002	BH10/2002 0.5-0.6	EG035T: Mercury	7439-97-6	0.5 mg/kg	106	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4922243)							
EM2303757-006	BH08/2001 0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 12.5	58.0	114
EM2303757-006	BH08/2001 0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 27.7	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4927276)							
EM2303601-006	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	127	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4927278)							
EM2303757-011	BH03/2001 0.1-0.2	EK026SF: Total Cyanide	57-12-5	20 mg/kg	121	70.0	130
EK040T: Fluoride Total (QCLot: 4922241)							
EM2303757-006	BH08/2001 0.1-0.2	EK040T: Fluoride	16984-48-8	400 mg/kg	80.3	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4922024)							
EM2303757-016	BH01/2001 0.1-0.2	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	132	59.6	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4914236)							
EM2303757-006	BH08/2001 0.1-0.2	EP074-UT: Benzene	71-43-2	2 mg/kg	96.4	53.7	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	96.0	55.1	124
EP074I: Volatile Halogenated Compounds (QCLot: 4914236)							
EM2303757-006	BH08/2001 0.1-0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	86.9	38.4	145
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	90.3	48.1	128
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	90.0	55.5	122
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4926249)							
EM2303757-007	BH08/2002 0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	94.4	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	106	65.5	136
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4922022)							
EM2303757-006	BH08/2001 0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	3 mg/kg	86.1	44.0	143
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	92.2	41.5	139
		EP075-EM: Pentachlorophenol	87-86-5	3 mg/kg	72.6	10.0	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4922022)							
EM2303757-006	BH08/2001 0.1-0.2	EP075-EM: Phenol	108-95-2	3 mg/kg	81.5	44.2	134
		EP075-EM: 2-Nitrophenol	88-75-5	3 mg/kg	86.5	34.2	129

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4922022)							
EM2303757-006	BH08/2001 0.1-0.2	EP075-EM: Acenaphthene	83-32-9	3 mg/kg	77.7	42.6	138
		EP075-EM: Pyrene	129-00-0	3 mg/kg	80.5	37.8	152
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4914236)							
EM2303757-006	BH08/2001 0.1-0.2	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	71.9	42.3	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4918112)							
EM2303757-007	BH08/2002 0.5-0.6	EP080: C6 - C9 Fraction	----	28 mg/kg	72.3	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4922023)							
EM2303757-011	BH03/2001 0.1-0.2	EP071-EM: C10 - C14 Fraction	----	770 mg/kg	120	71.3	126
		EP071-EM: C15 - C28 Fraction	----	2860 mg/kg	109	75.1	123
		EP071-EM: C29 - C36 Fraction	----	1540 mg/kg	108	78.1	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4926250)							
EM2303757-013	BH03/2003 1.0-1.1	EP071: C10 - C14 Fraction	----	770 mg/kg	111	71.2	125
		EP071: C15 - C28 Fraction	----	2860 mg/kg	105	75.6	122
		EP071: C29 - C36 Fraction	----	1540 mg/kg	102	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4914236)							
EM2303757-006	BH08/2001 0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	66.9	39.9	109
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4918112)							
EM2303757-007	BH08/2002 0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	63.5	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4922023)							
EM2303757-011	BH03/2001 0.1-0.2	EP071-EM: >C10 - C16 Fraction	----	1170 mg/kg	108	71.5	130
		EP071-EM: >C16 - C34 Fraction	----	3830 mg/kg	108	76.9	119
		EP071-EM: >C34 - C40 Fraction	----	290 mg/kg	120	65.3	139
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4926250)							
EM2303757-013	BH03/2003 1.0-1.1	EP071: >C10 - C16 Fraction	----	1170 mg/kg	110	72.2	128
		EP071: >C16 - C34 Fraction	----	3830 mg/kg	102	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	112	66.8	138
EP080: BTEXN (QCLot: 4918112)							
EM2303757-007	BH08/2002 0.5-0.6	EP080: Benzene	71-43-2	2 mg/kg	78.2	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	91.9	57.1	131

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ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2303757**	Page	: 1 of 11
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 03-Mar-2023
Site	: Bales Road, Cranbourne	Issue Date	: 16-Mar-2023
Sampler	: ML	No. of samples received	: 20
Order number	: PS200634	No. of samples analysed	: 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	EM2303890--003	Anonymous	**Copper**	7440-50-8	84.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	EM2303890--003	Anonymous	**Lead**	7439-92-1	42.4 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	EM2303890--003	Anonymous	**Zinc**	7440-66-6	53.6 %	0% - 20%	**RPD exceeds LOR based limits**
EG035T: Total Recoverable Mercury by FIMS	EM2303890--003	Anonymous	**Mercury**	7439-97-6	110 %	0% - 20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM2303757--006	BH08/2001 0.1-0.2	**Hexavalent Chromium**	18540-29-9	12.5 %	58.0-114%	**Recovery less than lower data quality objective**
EG048: Hexavalent Chromium (Alkaline Digest)	EM2303757--006	BH08/2001 0.1-0.2	**Hexavalent Chromium**	18540-29-9	27.7 %	58.0-114%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA033-A: Actual Acidity							
Snap Lock Bag							
BH10/2002 - 0.5-0.6,	BH10/2005 - 2.9-3.0	16-Mar-2023	03-Mar-2023	**13**	----	----	----
Soil Glass Jar - Unpreserved							
BH10/2004 - 2.0-2.1		16-Mar-2023	03-Mar-2023	**13**	----	----	----
EA033-B: Potential Acidity							
Snap Lock Bag							
BH10/2002 - 0.5-0.6,	BH10/2005 - 2.9-3.0	16-Mar-2023	03-Mar-2023	**13**	----	----	----
Soil Glass Jar - Unpreserved							
BH10/2004 - 2.0-2.1		16-Mar-2023	03-Mar-2023	**13**	----	----	----
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag							
BH10/2002 - 0.5-0.6,	BH10/2005 - 2.9-3.0	16-Mar-2023	03-Mar-2023	**13**	----	----	----
Soil Glass Jar - Unpreserved							
BH10/2004 - 2.0-2.1		16-Mar-2023	03-Mar-2023	**13**	----	----	----
EA033-D: Retained Acidity							
Snap Lock Bag							
BH10/2002 - 0.5-0.6,	BH10/2005 - 2.9-3.0	16-Mar-2023	03-Mar-2023	**13**	----	----	----
Soil Glass Jar - Unpreserved							
BH10/2004 - 2.0-2.1		16-Mar-2023	03-Mar-2023	**13**	----	----	----
EA033-E: Acid Base Accounting							
Snap Lock Bag							
BH10/2002 - 0.5-0.6,	BH10/2005 - 2.9-3.0	16-Mar-2023	03-Mar-2023	**13**	----	----	----

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Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA033-E: Acid Base Accounting - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved						
BH10/2004 - 2.0-2.1	16-Mar-2023	03-Mar-2023	**13**	----	----	----

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
BH10/2001 - 0.1-0.2, BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**09-Mar-2023**	09-Mar-2023	✓	**09-Mar-2023**	09-Mar-2023	✓
EA033-A: Actual Acidity							
Snap Lock Bag (EA033)							
BH10/2002 - 0.5-0.6, BH10/2005 - 2.9-3.0	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
Soil Glass Jar - Unpreserved (EA033)							
BH10/2004 - 2.0-2.1	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
EA033-B: Potential Acidity							
Snap Lock Bag (EA033)							
BH10/2002 - 0.5-0.6, BH10/2005 - 2.9-3.0	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
Soil Glass Jar - Unpreserved (EA033)							
BH10/2004 - 2.0-2.1	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag (EA033)							
BH10/2002 - 0.5-0.6, BH10/2005 - 2.9-3.0	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
Soil Glass Jar - Unpreserved (EA033)							
BH10/2004 - 2.0-2.1	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
EA033-D: Retained Acidity							
Snap Lock Bag (EA033)							
BH10/2002 - 0.5-0.6, BH10/2005 - 2.9-3.0	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
Soil Glass Jar - Unpreserved (EA033)							
BH10/2004 - 2.0-2.1	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓

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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
EA033-E: Acid Base Accounting								
Snap Lock Bag (EA033)								
BH10/2002 - 0.5-0.6,	BH10/2005 - 2.9-3.0	**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
Soil Glass Jar - Unpreserved (EA033)								
BH10/2004 - 2.0-2.1		**02-Mar-2023**	**16-Mar-2023**	03-Mar-2023	×	**16-Mar-2023**	14-Jun-2023	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
BH10/2001 - 0.1-0.2,	BH10/2002 - 0.5-0.6,	**02-Mar-2023**	**----**	----	----	**10-Mar-2023**	16-Mar-2023	✓
BH08/2001 - 0.1-0.2,	BH08/2002 - 0.5-0.6,							
BH03/2001 - 0.1-0.2,	BH03/2003 - 1.0-1.1,							
BH01/2001 - 0.1-0.2,	BH01/2003 - 1.0-1.1							
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH10/2001 - 0.1-0.2,	BH10/2002 - 0.5-0.6,	**02-Mar-2023**	**14-Mar-2023**	29-Aug-2023	✓	**14-Mar-2023**	29-Aug-2023	✓
BH08/2001 - 0.1-0.2,	BH08/2002 - 0.5-0.6,							
BH03/2001 - 0.1-0.2,	BH03/2003 - 1.0-1.1,							
BH01/2001 - 0.1-0.2,	BH01/2003 - 1.0-1.1							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH10/2001 - 0.1-0.2,	BH10/2002 - 0.5-0.6,	**02-Mar-2023**	**14-Mar-2023**	30-Mar-2023	✓	**15-Mar-2023**	30-Mar-2023	✓
BH08/2001 - 0.1-0.2,	BH08/2002 - 0.5-0.6,							
BH03/2001 - 0.1-0.2,	BH03/2003 - 1.0-1.1,							
BH01/2001 - 0.1-0.2,	BH01/2003 - 1.0-1.1							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
BH10/2001 - 0.1-0.2,	BH08/2001 - 0.1-0.2,	**02-Mar-2023**	**14-Mar-2023**	30-Mar-2023	✓	**15-Mar-2023**	21-Mar-2023	✓
BH03/2001 - 0.1-0.2,	BH01/2001 - 0.1-0.2							
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
BH10/2001 - 0.1-0.2,	BH08/2001 - 0.1-0.2,	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**16-Mar-2023**	28-Mar-2023	✓
BH03/2001 - 0.1-0.2,	BH01/2001 - 0.1-0.2							
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
BH10/2001 - 0.1-0.2,	BH08/2001 - 0.1-0.2,	**02-Mar-2023**	**14-Mar-2023**	30-Mar-2023	✓	**16-Mar-2023**	30-Mar-2023	✓
BH03/2001 - 0.1-0.2,	BH01/2001 - 0.1-0.2							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
BH10/2001 - 0.1-0.2,	BH08/2001 - 0.1-0.2,	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
BH03/2001 - 0.1-0.2,	BH01/2001 - 0.1-0.2							

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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
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH10/2001 - 0.1-0.2, BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**07-Mar-2023**	09-Mar-2023	✓	**08-Mar-2023**	09-Mar-2023	✓
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH10/2001 - 0.1-0.2, BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**07-Mar-2023**	09-Mar-2023	✓	**08-Mar-2023**	09-Mar-2023	✓
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH10/2001 - 0.1-0.2, BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**07-Mar-2023**	09-Mar-2023	✓	**08-Mar-2023**	09-Mar-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH10/2002 - 0.5-0.6, BH08/2002 - 0.5-0.6, BH03/2003 - 1.0-1.1, BH01/2003 - 1.0-1.1	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**15-Mar-2023**	23-Apr-2023	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH10/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)							
BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**15-Mar-2023**	23-Apr-2023	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH10/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)							
BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**15-Mar-2023**	23-Apr-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH10/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)							
BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**15-Mar-2023**	23-Apr-2023	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH10/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)							
BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**15-Mar-2023**	23-Apr-2023	✓

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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 Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH10/2001 - 0.1-0.2, BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**07-Mar-2023**	09-Mar-2023	✓	**08-Mar-2023**	09-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080)							
BH10/2002 - 0.5-0.6, BH08/2002 - 0.5-0.6, BH03/2003 - 1.0-1.1, BH01/2003 - 1.0-1.1	**02-Mar-2023**	**09-Mar-2023**	16-Mar-2023	✓	**10-Mar-2023**	16-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP071)							
BH10/2001 - 0.1-0.2, BH10/2002 - 0.5-0.6, BH08/2001 - 0.1-0.2, BH08/2002 - 0.5-0.6, BH03/2001 - 0.1-0.2, BH03/2003 - 1.0-1.1, BH01/2001 - 0.1-0.2, BH01/2003 - 1.0-1.1	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH10/2001 - 0.1-0.2, BH08/2001 - 0.1-0.2, BH03/2001 - 0.1-0.2, BH01/2001 - 0.1-0.2	**02-Mar-2023**	**07-Mar-2023**	09-Mar-2023	✓	**08-Mar-2023**	09-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP080)							
BH10/2002 - 0.5-0.6, BH08/2002 - 0.5-0.6, BH03/2003 - 1.0-1.1, BH01/2003 - 1.0-1.1	**02-Mar-2023**	**09-Mar-2023**	16-Mar-2023	✓	**10-Mar-2023**	16-Mar-2023	✓
Soil Glass Jar - Unpreserved (EP071)							
BH10/2001 - 0.1-0.2, BH10/2002 - 0.5-0.6, BH08/2001 - 0.1-0.2, BH08/2002 - 0.5-0.6, BH03/2001 - 0.1-0.2, BH03/2003 - 1.0-1.1, BH01/2001 - 0.1-0.2, BH01/2003 - 1.0-1.1	**02-Mar-2023**	**14-Mar-2023**	16-Mar-2023	✓	**14-Mar-2023**	23-Apr-2023	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH10/2002 - 0.5-0.6, BH08/2002 - 0.5-0.6, BH03/2003 - 1.0-1.1, BH01/2003 - 1.0-1.1	**02-Mar-2023**	**09-Mar-2023**	16-Mar-2023	✓	**10-Mar-2023**	16-Mar-2023	✓

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Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	20	**15.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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*	
Method Blanks (MB) - Continued							
Total Cyanide by Segmented Flow Analyser	EK026SF	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 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 Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
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	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).

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Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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PARBRINIC

CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

Page of

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: ALS (contact: Josh Alexander)
Order No.: QUOTE: ME/135/14 V4
Sampled By: Andrew Sutanto (AS)
Job Contact: Alana Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: Alana.dubowik@wsp.com; tim.vass@wsp.com

	OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite (EA033)	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)		HOLD
1	DA	03/04/23	BH16/0.1-0.2	Soil	1b,1J		X			
2			BH16/0.1		1J					
3			BH16/0.5-0.6		1b,1J	X		X		
4			BH16/1.0-1.1		1b,1J					X
5			BH16/2.0-2.1		1b,1J	X				
6			BH16/4.0-4.1		1b,1J	X				
7			BH17/0.1-0.2	Soil	1b					X
8			BH17/0.5-0.6		1b,1J		X			
9			BH17/1.0-1.1		1b,1J			X		
10			BH17/2.0-2.1		1b,1J					X
11			BH15/0.1-0.2	Soil	1b					X
12			BH15/0.5-0.6		1b,1J		X			
13			BH15/1.0-1.1		1b,1J			X		
14			BH15/2.0-2.1		1b,1J					X

Environmental Division
Melbourne
Work Order Reference
EM2305854

Telephone : +61-3-8549 9600

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

Relinquished by: AS
Organisation: WSP
Date: 03/04/23
Time:
SAMPLE RECEIPT
Received by: Richard Bacz
Organisation: ALS
— 03/04/23 - 16:45

DELIVERED BY: COURIER/LAE
Security Sealed

ANALYTICAL SCHEDULE

Relinquished by:
Organisation: WSP
Date:
Time:
Received by:
Organisation:

RECEIVED BY: Email / HAND
Chilled / Frozen / Ambient

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

Date:

Forms FC12-b RL5 Aug 05

Ranil Weerakkody

From: Josh Alexander
Sent: Tuesday, 4 April 2023 12:14 PM
To: COC Melbourne
Subject: EM2305854 GOLDER ASS PS200634
Attachments: EM2305854_COC_markup.pdf

Hi team,

See attached COC with analysis instructions for

WO	CLIENT	PROJECT NUMBER/NAME
EM2305854	GOLDER ASS	PS200634

Cheers,

right solutions. right partner.

Joshua Alexander
Project Manager – Environmental
Springvale, Victoria

O: +61 3 8549 9600
D: +61 3 8549 9610
M: 0436 924 166
josh.alexander@alsglobal.com

2-4 Westall Road, Springvale VIC 3171

alsglobal.com

Please note, we're closed the following public holidays in April: Good Friday 7th April, Easter Monday 10th April, and ANZAC Day Tuesday 25th April.
Please contact us if you have particular requirements during this period.

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2305854**

Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: alana.dubowik@wsp.com	E-mail	: Josh.Alexander@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: PS200634	Page	: 1 of 3
Order number	: PS200634	Quote number	: ES2021PARBRIVIC0001 (EN/008/21)
C-O-C number	:	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bales Road, Cranbourne South		
Sampler	: Andrew Sutanto		

Dates

Date Samples Received	: 03-Apr-2023 07:01	Issue Date	: 04-Apr-2023
Client Requested Due Date	: 18-Apr-2023	Scheduled Reporting Date	: **18-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 19.3°C
Receipt Detail	:	No. of samples received / analysed	: 14 / 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale and ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - P-30/4 EPA 1828.2 Table 3 Suite EPA 1828.2 Table 3 Fill Material Suite	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EM2305854-001	03-Apr-2023 00:00	BH16/0.1-0.2			✓	✓	
EM2305854-002	03-Apr-2023 00:00	BH16/0.1	✓				
EM2305854-003	03-Apr-2023 00:00	BH16/0.5-0.6		✓	✓		✓
EM2305854-004	03-Apr-2023 00:00	BH16/1.0-1.1	✓				
EM2305854-005	03-Apr-2023 00:00	BH16/2.0-2.1		✓			
EM2305854-006	03-Apr-2023 00:00	BH16/4.0-4.1		✓			
EM2305854-007	03-Apr-2023 00:00	BH17/0.1-0.2	✓				
EM2305854-008	03-Apr-2023 00:00	BH17/0.5-0.6			✓	✓	
EM2305854-009	03-Apr-2023 00:00	BH17/1.0-1.1			✓		✓
EM2305854-010	03-Apr-2023 00:00	BH17/2.0-2.1	✓				
EM2305854-011	03-Apr-2023 00:00	BH15/0.1-0.2	✓				
EM2305854-012	03-Apr-2023 00:00	BH15/0.5-0.6			✓	✓	
EM2305854-013	03-Apr-2023 00:00	BH15/1.0-1.1			✓		✓
EM2305854-014	03-Apr-2023 00:00	BH15/2.0-21	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

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Requested Deliverables

ACCOUNT

- *AU Certificate of Analysis - NATA (COA)	Email	gld._dbd4e@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gld._dbd4e@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gld._dbd4e@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gld._dbd4e@wsp.com
- Chain of Custody (CoC) (COC)	Email	gld._dbd4e@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	gld._dbd4e@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	gld._dbd4e@wsp.com

ALANA DUBOWIK

- *AU Certificate of Analysis - NATA (COA)	Email	alana.dubowik@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alana.dubowik@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alana.dubowik@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alana.dubowik@wsp.com
- Chain of Custody (CoC) (COC)	Email	alana.dubowik@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	alana.dubowik@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	alana.dubowik@wsp.com
- Purchase Order Request Letter (PO_Request)	Email	alana.dubowik@wsp.com

INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

TIM VASS

- *AU Certificate of Analysis - NATA (COA)	Email	Tim.Vass@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Tim.Vass@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Tim.Vass@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Tim.Vass@wsp.com
- Chain of Custody (CoC) (COC)	Email	Tim.Vass@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	Tim.Vass@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	Tim.Vass@wsp.com
- Purchase Order Request Letter (PO_Request)	Email	Tim.Vass@wsp.com

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CERTIFICATE OF ANALYSIS

Work Order	: **EM2305854**	Page	: 1 of 17
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 03-Apr-2023 07:01
Order number	: PS200634	Date Analysis Commenced	: 05-Apr-2023
C-O-C number	:	Issue Date	: 18-Apr-2023 17:44
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 14		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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 Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP074-UT: Where reported, Sum of trichlorobenzenes is the sum of the reported concentrations of 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene, and 1,3,5-Trichlorobenzene at or above the LOR.
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
			Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.0	----	----	----	5.2
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	5.8	5.3	5.1	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	11	18	16	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	0.03	0.03	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	<0.005	0.006	0.009	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	<10	<10	<10	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	1.5	1.5	----
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	0.03	0.04	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	11	21	22	----
Liming Rate	----	1	kg CaCO3/t	----	<1	2	2	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	<0.02	0.03	0.04	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	11	21	22	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	<1	2	2	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.0	12.2	----	----	18.7
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	<1
Copper	7440-50-8	5	mg/kg	6	8	----	----	10
Lead	7439-92-1	5	mg/kg	<5	<5	----	----	7
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	----	<2
Nickel	7440-02-0	2	mg/kg	11	13	----	----	20
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	<5	<5	----	----	7
Chromium	7440-47-3	2	mg/kg	----	24	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
					Result	Result	Result	Result	Result
EG048: Hexavalent Chromium (Alkaline Digest) - Continued									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	----	----	<0.5
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	----	<1
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		**110**	----	----	----	**150**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	<0.1
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
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	<0.5
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	<1
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
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

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
					Result	Result	Result	Result	Result
EP074I: Volatile Halogenated Compounds - Continued									
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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	----	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	----	<0.03
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	----	<0.03
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	----	<0.03
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	----	<0.03
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	----	<0.05
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	----	<0.05

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	----	<0.03
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	----	<0.2
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	----	<0.03
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	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	----	----	<1.0
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

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	**1.2**
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	----	<0.03
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	----	<0.03
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	----	<0.03
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	----	<0.03
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	----	<0.03
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	----	<0.03
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	----	<0.03
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	----	<0.03
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	----	<0.03
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	----	<0.03
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	----	<0.03
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	----	<0.03
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	----	<0.03
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	----	<0.03
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	----	<0.03
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	----	<0.03
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	----	<0.03
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	----	----
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	<50
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	<10
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		----	<50	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	<50
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	<10
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		----	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		----	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**100**	----	----	----	**105**

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH16/0.1-0.2	BH16/0.5-0.6	BH16/2.0-2.1	BH16/4.0-4.1	BH17/0.5-0.6
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305854-001	EM2305854-003	EM2305854-005	EM2305854-006	EM2305854-008
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		89.2	----	----	----	91.0
Toluene-D8	2037-26-5	0.1	%		88.4	----	----	----	91.0
4-Bromofluorobenzene	460-00-4	0.1	%		97.2	----	----	----	99.9
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	87.0	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	90.6	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	68.7	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	83.7	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	111	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	105	----	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		72.4	----	----	----	78.5
2-Chlorophenol-D4	93951-73-6	0.025	%		87.6	----	----	----	94.8
2.4.6-Tribromophenol	118-79-6	0.025	%		75.8	----	----	----	78.8
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		72.0	----	----	----	77.2
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		71.2	----	----	----	76.2
2-Fluorobiphenyl	321-60-8	0.025	%		75.7	----	----	----	82.8
Anthracene-d10	1719-06-8	0.025	%		74.7	----	----	----	80.9
4-Terphenyl-d14	1718-51-0	0.025	%		78.5	----	----	----	85.1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	90.2	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	83.4	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	96.0	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
			Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
				Result	Result	Result	----	----
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	----	5.6	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	17.3	15.0	18.1	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Copper	7440-50-8	5	mg/kg	10	10	12	----	----
Lead	7439-92-1	5	mg/kg	5	<5	5	----	----
Molybdenum	7439-98-7	2	mg/kg	----	<2	----	----	----
Nickel	7440-02-0	2	mg/kg	18	17	22	----	----
Selenium	7782-49-2	5	mg/kg	----	<5	----	----	----
Silver	7440-22-4	2	mg/kg	----	<2	----	----	----
Tin	7440-31-5	5	mg/kg	----	<5	----	----	----
Zinc	7440-66-6	5	mg/kg	5	<5	6	----	----
Chromium	7440-47-3	2	mg/kg	23	----	29	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	<1	----	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	120	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
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	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
			Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
				Result	Result	Result	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg	----	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
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	----	----	----
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	----	----	----
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	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
					Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	<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	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP075A: Phenolic Compounds (Halogenated)									
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	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
					Result	Result	Result	----	----
EP075A: Phenolic Compounds (Non-halogenated) - Continued									
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+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		----	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	----	----
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	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
					Result	Result	Result	----	----
EP075I: Organochlorine Pesticides - Continued									
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	----	----	----
^ **Chlordane**	57-74-9	0.03	mg/kg		----	<0.03	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
					Result	Result	Result	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	96.6	----	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		----	88.6	----	----	----
Toluene-D8	2037-26-5	0.1	%		----	87.3	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		----	97.2	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		93.1	----	90.7	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		90.1	----	89.5	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		58.8	----	60.6	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		84.1	----	82.4	----	----
Anthracene-d10	1719-06-8	0.5	%		104	----	99.9	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		110	----	102	----	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		----	74.0	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH17/1.0-1.1	BH15/0.5-0.6	BH15/1.0-1.1	----	----
				Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2305854-009	EM2305854-012	EM2305854-013	--------	--------
					Result	Result	Result	----	----
EP075S: Acid Extractable Surrogates (Waste Classification) - Continued									
2-Chlorophenol-D4	93951-73-6	0.025	%		----	87.7	----	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		----	79.0	----	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		----	71.0	----	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		----	70.3	----	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		----	75.0	----	----	----
Anthracene-d10	1719-06-8	0.025	%		----	78.0	----	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		----	80.4	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		84.8	----	89.7	----	----
Toluene-D8	2037-26-5	0.2	%		78.8	----	89.7	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		85.4	----	93.6	----	----

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	63	134
2-Chlorophenol-D4	93951-73-6	60	125
2.4.6-Tribromophenol	118-79-6	54	129
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	63	131
1.2-Dichlorobenzene-D4	2199-69-1	61	124
2-Fluorobiphenyl	321-60-8	69	131
Anthracene-d10	1719-06-8	70	133
4-Terphenyl-d14	1718-51-0	59	141
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

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA033-D: Retained Acidity

(SOIL) EA033-C: Acid Neutralising Capacity

(SOIL) EA033-A: Actual Acidity

(SOIL) EA033-E: Acid Base Accounting

(SOIL) EA033-B: Potential Acidity

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QUALITY CONTROL REPORT

Work Order	: **EM2305854**	Page	: 1 of 17
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 03-Apr-2023
Order number	: PS200634	Date Analysis Commenced	: 05-Apr-2023
C-O-C number	:	Issue Date	: 18-Apr-2023
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 14		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
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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.

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	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4985187)									
EM2305854-001	BH16/0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	23	26	9.8	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	12	10.8	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	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	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	<5	<5	0.0	No Limit
EM2305867-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	18	6.7	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	12	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	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	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	24	22	10.7	No Limit
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4977013)									
EM2305805-001	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	9.1	9.3	2.1	0% - 20%

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4977013) - continued									
EM2305854-012	BH15/0.5-0.6	EA001: pH (CaCl2)	----	0.1	pH Unit	5.6	5.6	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 4992073)									
EB2309797-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.3	8.3	0.0	0% - 20%
EB2310501-008	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.0	9.0	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 4992073)									
EB2309797-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.718	0.703	2.2	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	448	438	2.2	0% - 20%
EB2310501-008	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.009	0.011	15.2	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4985861)									
EM2305854-001	BH16/0.1-0.2	EA055: Moisture Content	----	0.1	%	9.0	10.5	14.7	0% - 50%
EM2306310-003	Anonymous	EA055: Moisture Content	----	0.1	%	11.8	14.5	20.4	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4985186)									
EM2305854-001	BH16/0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2305867-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4985151)									
EM2305854-001	BH16/0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2306161-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4991123)									
EM2305854-001	BH16/0.1-0.2	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM2306161-005	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 4985153)									
EM2305854-001	BH16/0.1-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	110	90	13.7	No Limit
EM2306161-005	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	220	200	6.2	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4986047)									
EM2305854-001	BH16/0.1-0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2306289-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4976150)									
EM2305854-001	BH16/0.1-0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4976150) - continued									
EM2305854-001	BH16/0.1-0.2	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
EP074H: Naphthalene (QC Lot: 4976150)									
EM2305854-001	BH16/0.1-0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 4976150)									
EM2305854-001	BH16/0.1-0.2	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: 4986813)									
EM2305854-003	BH16/0.5-0.6	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+j)fluoranthene	205-99-2 205-82-3	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4986813) - continued									
EM2305854-003	BH16/0.5-0.6	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: 4986045)									
EM2305854-001	BH16/0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.05	<0.05	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EM2306289-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.50	<0.50	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.50	<0.50	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.50	<0.50	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<1.00	<1.00	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<1.00	<1.00	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<1.00	<1.00	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	<0.05	<0.05	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<1.0	<1.0	0.0	No Limit
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 4986045)									
EM2305854-001	BH16/0.1-0.2	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
EM2306289-001	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075A: Phenolic Compounds (Non-halogenated) (QC Lot: 4986045) - continued									
EM2306289-001	Anonymous	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	<20	<20	0.0	No Limit
		EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<20	<20	0.0	No Limit
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4986045)									
EM2305854-001	BH16/0.1-0.2	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EM2306289-001	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 4986045)									

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075I: Organochlorine Pesticides (QC Lot: 4986045) - continued									
EM2305854-001	BH16/0.1-0.2	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EM2306289-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4976150)									
EM2305854-001	BH16/0.1-0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4985149)									
EM2305854-003	BH16/0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2306310-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4986046)									
EM2305854-001	BH16/0.1-0.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2306289-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4986814)									
EM2305854-003	BH16/0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4976150)									
EM2305854-001	BH16/0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4985149)									
EM2305854-003	BH16/0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2306310-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4986046)									
EM2305854-001	BH16/0.1-0.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2306289-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4986814)									
EM2305854-003	BH16/0.5-0.6	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
EP080: BTEXN (QC Lot: 4985149)									
EM2305854-003	BH16/0.5-0.6	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4985149) - continued									
EM2305854-003	BH16/0.5-0.6	EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM2306310-005	Anonymous	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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Method Blank (MB) and Laboratory Control Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4985187)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	103	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	69.5	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	94.1	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	92.3	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	89.1	70.0	130
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.19 mg/kg	72.2	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	91.5	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	72.5	70.0	130
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.33 mg/kg	88.9	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	75.2	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4977013)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	100	99.3	101
EA033-A: Actual Acidity (QCLot: 4992073)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	98.2	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	16 mole H+ / t	116	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 4992073)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.246 % S	101	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4985186)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	88.3	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4985151)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	83.4	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4991123)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	88.7	70.0	130
EK040T: Fluoride Total (QCLot: 4985153)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	101	93.1	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4986047)								

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4986047) - continued								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	67.4	136
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4976150)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	104	69.2	116
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	98.5	67.7	116
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	96.3	66.6	115
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	94.0	65.2	112
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	96.4	69.4	111
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	94.7	68.4	110
EP074H: Naphthalene (QCLot: 4976150)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	88.6	72.3	114
EP074I: Volatile Halogenated Compounds (QCLot: 4976150)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	117	47.0	138
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	112	57.6	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	105	72.3	115
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	113	60.5	122
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	102	70.3	112
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	102	66.6	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	104	64.4	122
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	109	58.4	127
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	108	72.9	114
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	103	64.7	115
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	102	72.6	116
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	102	60.0	119
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	99.5	71.8	116
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	102	66.1	116
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	76.0	39.8	128
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	100	70.3	113
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.0	62.6	113
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	70.8	110
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	84.4	48.4	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4986813)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	119	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	110	81.0	123

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4986813) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	116	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	105	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	104	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	116	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	113	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	117	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	105	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	120	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	108	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	115	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	110	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	98.4	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	98.2	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	103	65.8	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4986045)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	96.1	74.5	126
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	95.6	72.7	126
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	96.6	73.5	132
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	98.4	72.8	128
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	97.4	73.3	134
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	92.8	72.4	128
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	93.7	69.4	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	93.9	71.9	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	96.2	54.4	135
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4986045)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	97.8	71.5	130
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	96.1	73.4	129
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	96.2	74.3	129
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	96.0	70.9	133
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	86.6	71.8	132
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	10 mg/kg	79.2	41.0	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	10 mg/kg	98.7	65.3	134
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	10 mg/kg	90.5	43.6	128

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4986045) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	10 mg/kg	95.2	62.0	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	87.8	34.5	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4986045)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	96.3	73.0	131
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	95.3	76.3	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	97.4	72.0	135
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	96.3	74.4	131
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	99.5	73.3	130
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	99.6	78.4	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	100	75.3	132
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	99.5	75.4	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	97.8	69.6	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	103	75.0	133
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	4 mg/kg	101	75.8	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	100	65.1	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	98.7	72.1	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	98.5	72.9	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	98.9	71.3	134
EP075I: Organochlorine Pesticides (QCLot: 4986045)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	97.5	71.0	129
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	97.6	74.8	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	100	75.7	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	97.6	70.8	130
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	99.0	76.5	134
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	97.1	75.5	131
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	97.3	76.8	130
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	98.4	73.6	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	98.1	75.0	133
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	99.6	75.3	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	102	69.4	134
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	101	71.0	132
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	97.8	78.0	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	108	69.0	143

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(I): Organochlorine Pesticides (QCLot: 4986045) - continued								
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	98.1	55.7	145
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	101	71.4	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	99.5	74.8	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	99.7	70.2	135
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	97.2	77.7	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	99.2	63.6	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4976150)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	100	61.1	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4985149)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	60.1	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4986046)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	112	74.4	129
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	101	81.0	123
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	102	81.8	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4986814)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	118	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	104	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	109	82.4	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4976150)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	100	59.9	119
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4985149)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	67.8	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986046)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	105	75.4	132
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	99.9	80.8	120
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	97.0	73.3	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986814)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	99.8	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	106	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	118	73.3	137
EP080: BTEXN (QCLot: 4985149)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	63.3	61.6	117

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 4985149) - continued								
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	71.9	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	69.8	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	72.8	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	79.7	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	92.4	61.8	123

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4985187)							
EM2305854-003	BH16/0.5-0.6	EG005T: Arsenic	7440-38-2	50 mg/kg	82.0	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.4	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	89.2	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	94.4	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	91.2	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	87.9	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	88.8	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4985186)							
EM2305854-003	BH16/0.5-0.6	EG035T: Mercury	7439-97-6	0.5 mg/kg	94.2	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4985151)							
EM2305854-008	BH17/0.5-0.6	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	77.9	58.0	114
EM2305854-008	BH17/0.5-0.6	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	87.8	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4991123)							
EM2305854-008	BH17/0.5-0.6	EK026SF: Total Cyanide	57-12-5	20 mg/kg	101	70.0	130
EK040T: Fluoride Total (QCLot: 4985153)							
EM2305854-008	BH17/0.5-0.6	EK040T: Fluoride	16984-48-8	400 mg/kg	79.8	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4986047)							
EM2306161-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	110	59.6	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4976150)							
EM2305854-008	BH17/0.5-0.6	EP074-UT: Benzene	71-43-2	2 mg/kg	91.3	53.7	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	88.8	55.1	124

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 4976150)							
EM2305854-008	BH17/0.5-0.6	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	79.2	38.4	145
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	79.8	48.1	128
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	81.8	55.5	122
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4986813)							
EM2305854-009	BH17/1.0-1.1	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	92.7	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	110	65.5	136
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4986045)							
EM2305854-008	BH17/0.5-0.6	EP075-EM: 2-Chlorophenol	95-57-8	3 mg/kg	77.8	44.0	143
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	72.8	41.5	139
		EP075-EM: Pentachlorophenol	87-86-5	3 mg/kg	70.1	10.0	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4986045)							
EM2305854-008	BH17/0.5-0.6	EP075-EM: Phenol	108-95-2	3 mg/kg	76.8	44.2	134
		EP075-EM: 2-Nitrophenol	88-75-5	3 mg/kg	70.8	34.2	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4986045)							
EM2305854-008	BH17/0.5-0.6	EP075-EM: Acenaphthene	83-32-9	3 mg/kg	78.2	42.6	138
		EP075-EM: Pyrene	129-00-0	3 mg/kg	84.4	37.8	152
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4976150)							
EM2305854-008	BH17/0.5-0.6	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	75.3	42.3	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4985149)							
EM2305854-009	BH17/1.0-1.1	EP080: C6 - C9 Fraction	----	28 mg/kg	68.7	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4986046)							
EM2305854-012	BH15/0.5-0.6	EP071-EM: C10 - C14 Fraction	----	770 mg/kg	104	71.3	126
		EP071-EM: C15 - C28 Fraction	----	2860 mg/kg	97.4	75.1	123
		EP071-EM: C29 - C36 Fraction	----	1540 mg/kg	98.0	78.1	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4986814)							
EM2305854-013	BH15/1.0-1.1	EP071: C10 - C14 Fraction	----	770 mg/kg	117	71.2	125
		EP071: C15 - C28 Fraction	----	2860 mg/kg	103	75.6	122
		EP071: C29 - C36 Fraction	----	1540 mg/kg	107	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4976150)							
EM2305854-008	BH17/0.5-0.6	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	71.8	39.9	109
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4985149)							
EM2305854-009	BH17/1.0-1.1	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	63.6	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986046)							
EM2305854-012	BH15/0.5-0.6	EP071-EM: >C10 - C16 Fraction	----	1170 mg/kg	99.2	71.5	130
		EP071-EM: >C16 - C34 Fraction	----	3830 mg/kg	96.4	76.9	119

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986046) - continued							
EM2305854-012	BH15/0.5-0.6	EP071-EM: >C34 - C40 Fraction	----	290 mg/kg	91.8	65.3	139
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986814)							
EM2305854-013	BH15/1.0-1.1	EP071: >C10 - C16 Fraction	----	1170 mg/kg	98.9	72.2	128
		EP071: >C16 - C34 Fraction	----	3830 mg/kg	104	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	115	66.8	138
EP080: BTEXN (QCLot: 4985149)							
EM2305854-009	BH17/1.0-1.1	EP080: Benzene	71-43-2	2 mg/kg	81.7	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	90.6	57.1	131

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QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2305854**	Page	: 1 of 10
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 03-Apr-2023
Site	: Bales Road, Cranbourne South	Issue Date	: 18-Apr-2023
Sampler	: Andrew Sutanto	No. of samples received	: 14
Order number	: PS200634	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

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Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001) BH16/0.1-0.2, BH17/0.5-0.6, BH15/0.5-0.6	**03-Apr-2023**	**06-Apr-2023**	10-Apr-2023	✓	**06-Apr-2023**	06-Apr-2023	✓
EA033-A: Actual Acidity							
Snap Lock Bag - frozen (EA033) BH16/0.5-0.6, BH16/2.0-2.1, BH16/4.0-4.1	**03-Apr-2023**	**17-Apr-2023**	02-Apr-2024	✓	**17-Apr-2023**	16-Jul-2023	✓
EA033-B: Potential Acidity							
Snap Lock Bag - frozen (EA033) BH16/0.5-0.6, BH16/2.0-2.1, BH16/4.0-4.1	**03-Apr-2023**	**17-Apr-2023**	02-Apr-2024	✓	**17-Apr-2023**	16-Jul-2023	✓
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen (EA033) BH16/0.5-0.6, BH16/2.0-2.1, BH16/4.0-4.1	**03-Apr-2023**	**17-Apr-2023**	02-Apr-2024	✓	**17-Apr-2023**	16-Jul-2023	✓
EA033-D: Retained Acidity							
Snap Lock Bag - frozen (EA033) BH16/0.5-0.6, BH16/2.0-2.1, BH16/4.0-4.1	**03-Apr-2023**	**17-Apr-2023**	02-Apr-2024	✓	**17-Apr-2023**	16-Jul-2023	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen (EA033) BH16/0.5-0.6, BH16/2.0-2.1, BH16/4.0-4.1	**03-Apr-2023**	**17-Apr-2023**	02-Apr-2024	✓	**17-Apr-2023**	16-Jul-2023	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) BH16/0.1-0.2, BH16/0.5-0.6, BH17/0.5-0.6, BH17/1.0-1.1, BH15/0.5-0.6, BH15/1.0-1.1	**03-Apr-2023**	**----**	----	----	**12-Apr-2023**	17-Apr-2023	✓

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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
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH16/0.1-0.2,	BH16/0.5-0.6,	**03-Apr-2023**	**12-Apr-2023**	30-Sep-2023	✓	**12-Apr-2023**	30-Sep-2023	✓
BH17/0.5-0.6,	BH17/1.0-1.1,							
BH15/0.5-0.6,	BH15/1.0-1.1							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH16/0.1-0.2,	BH16/0.5-0.6,	**03-Apr-2023**	**12-Apr-2023**	01-May-2023	✓	**13-Apr-2023**	01-May-2023	✓
BH17/0.5-0.6,	BH17/1.0-1.1,							
BH15/0.5-0.6,	BH15/1.0-1.1							
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**12-Apr-2023**	01-May-2023	✓	**13-Apr-2023**	19-Apr-2023	✓
BH15/0.5-0.6								
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**17-Apr-2023**	17-Apr-2023	✓	**18-Apr-2023**	01-May-2023	✓
BH15/0.5-0.6								
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**12-Apr-2023**	01-May-2023	✓	**18-Apr-2023**	01-May-2023	✓
BH15/0.5-0.6								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
BH15/0.5-0.6								
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**05-Apr-2023**	10-Apr-2023	✓	**06-Apr-2023**	10-Apr-2023	✓
BH15/0.5-0.6								
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**05-Apr-2023**	10-Apr-2023	✓	**06-Apr-2023**	10-Apr-2023	✓
BH15/0.5-0.6								
EP074I: Volatile Halogenated Compounds								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH16/0.1-0.2,	BH17/0.5-0.6,	**03-Apr-2023**	**05-Apr-2023**	10-Apr-2023	✓	**06-Apr-2023**	10-Apr-2023	✓
BH15/0.5-0.6								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH16/0.5-0.6,	BH17/1.0-1.1,	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
BH15/1.0-1.1								

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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 (EP075-EM)								
BH16/0.1-0.2		**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)								
BH17/0.5-0.6,	BH15/0.5-0.6	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	23-May-2023	✓
EP075A: Phenolic Compounds (Non-halogenated)								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH16/0.1-0.2		**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)								
BH17/0.5-0.6,	BH15/0.5-0.6	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	23-May-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH16/0.1-0.2		**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)								
BH17/0.5-0.6,	BH15/0.5-0.6	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	23-May-2023	✓
EP075I: Organochlorine Pesticides								
Soil Glass Jar - Unpreserved (EP075-EM)								
BH16/0.1-0.2		**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
Soil Glass Jar - Unpreserved (EP075-EM)								
BH17/0.5-0.6,	BH15/0.5-0.6	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	23-May-2023	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH16/0.1-0.2, BH15/0.5-0.6	BH17/0.5-0.6,	**03-Apr-2023**	**05-Apr-2023**	10-Apr-2023	✓	**06-Apr-2023**	10-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP080)								
BH16/0.5-0.6, BH15/1.0-1.1	BH17/1.0-1.1,	**03-Apr-2023**	**12-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	17-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071)								
BH16/0.1-0.2, BH17/0.5-0.6, BH15/0.5-0.6,	BH16/0.5-0.6, BH17/1.0-1.1, BH15/1.0-1.1	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH16/0.1-0.2, BH15/0.5-0.6	BH17/0.5-0.6,	**03-Apr-2023**	**05-Apr-2023**	10-Apr-2023	✓	**06-Apr-2023**	10-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP080)								
BH16/0.5-0.6, BH15/1.0-1.1	BH17/1.0-1.1,	**03-Apr-2023**	**12-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	17-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071)								
BH16/0.1-0.2, BH17/0.5-0.6, BH15/0.5-0.6,	BH16/0.5-0.6, BH17/1.0-1.1, BH15/1.0-1.1	**03-Apr-2023**	**13-Apr-2023**	17-Apr-2023	✓	**13-Apr-2023**	23-May-2023	✓

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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: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH16/0.5-0.6, BH17/1.0-1.1, BH15/1.0-1.1	**03-Apr-2023**	**12-Apr-2023**	17-Apr-2023	✓	**14-Apr-2023**	17-Apr-2023	✓

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Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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*	
Method Blanks (MB) - Continued							
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 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 Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
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	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).

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Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

DRAFT

CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

Page of

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: ALS (contact: Josh Alexander)
Order No.: QUOTE: ME/135/14 V4
Sampled By: Andrew Sutanto (AS)
Job Contact: Alana Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: Alana.dubowik@wsp.com; tim.vass@wsp.com

OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)		HOLD
OB	04/04/23	BH14/0.1-0.2	Soil	1b					
		BH14/0.5-0.6		1b, 1J					
		BH14/1.0-1.1		1b, 1J					
		BH14/2.0-2.1		1b, 1J					
		BH14/3.0-3.1		1b, 1J					
		BH18/0.1-0.2		1J					
		BH18/0.5-0.6		1b, 1J					
		BH18/1.0-1.1		1b, 1J					
		BH18/2.0-2.1		1b, 1J					
		BH18/3.0-3.1		1b, 1J					
		BH19/0.1-0.2		1J					
		BH19/QC1		1J					
		BH19/0.5-0.6		1b, 1J					
		BH19/QC2		1J					
		BH19/1.0-1.1		1b, 1J					
		BH19/2.0-2.1		1b, 1J					
		BH19/3.0-3.1		1b, 1J					

Environmental Division
Melbourne
Work Order Reference
EM2305942

Telephone : +61-3-8549 9600

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

Relinquished by: AS
Organisation: WSP

SAMPLE RECEIPT
Date: 04/04/23
Time: 15:20
Received by: BL
Organisation: ALS
4/4/23 16:20

DELIVERED BY:
COURIER/LAB ☐ Security Sealed

ANALYTICAL SCHEDULE
Relinquished by:
Organisation: WSP
Date:
Time:
Received by:
Organisation:

RECEIVED BY:
Email ☐ Chilled
HAND ☐ Frozen
☐ Ambient

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

Date: _____

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

DRAFT

Ranil Weerakkody

From: Josh Alexander
Sent: Wednesday, 5 April 2023 11:50 AM
To: COC Melbourne
Subject: PARBRIVIC - PS200634, Bales Rd - EM2305942 - COC
Attachments: EM2305942_COC_markup.pdf

Hi team,

See attached analytical COC for EM2305942. Note this is to be logged under PARBRIVIC and just the blanket quote.

Thanks,

right solutions. right partner.

Joshua Alexander
Project Manager – Environmental
Springvale, Victoria

O: +61 3 8549 9600
D: +61 3 8549 9610
M: 0436 924 166
josh.alexander@alsglobal.com

2-4 Westall Road, Springvale VIC 3171

alsglobal.com

Please note, we're closed the following public holidays in April: Good Friday 7th April, Easter Monday 10th April, and ANZAC Day Tuesday 25th April.
Please contact us if you have particular requirements during this period.

DRAFT

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2305942**

Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: alana.dubowik@wsp.com	E-mail	: Josh.Alexander@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: PS200634	Page	: 1 of 3
Order number	: PS200634	Quote number	: ES2021PARBRIVIC0001 (EN/008/21)
C-O-C number	: PS200634	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bales Road, Cranbourne South		
Sampler	: Andrew Sutanto		

Dates

Date Samples Received	: 04-Apr-2023 16:20	Issue Date	: 06-Apr-2023
Client Requested Due Date	: 14-Apr-2023	Scheduled Reporting Date	: **14-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 12.9°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 17 / 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - P-30/4 EPA 1828.2 Table 3 Suite EPA 1828.2 Table 3 Fill Material Suite	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EM2305942-001	04-Apr-2023 00:00	BH14/0.1-0.2	✓			
EM2305942-002	04-Apr-2023 00:00	BH14/0.5-0.6		✓	✓	
EM2305942-003	04-Apr-2023 00:00	BH14/1.0-1.1	✓			
EM2305942-004	04-Apr-2023 00:00	BH14/2.0-2.1	✓			
EM2305942-005	04-Apr-2023 00:00	BH14/3.0-3.1	✓			
EM2305942-006	04-Apr-2023 00:00	BH18/0.1-0.2		✓		✓
EM2305942-007	04-Apr-2023 00:00	BH18/0.5-0.6	✓			
EM2305942-008	04-Apr-2023 00:00	BH18/1.0-1.1	✓			
EM2305942-009	04-Apr-2023 00:00	BH18/2.0-2.1	✓			
EM2305942-010	04-Apr-2023 00:00	BH18/3.0-3.1	✓			
EM2305942-011	04-Apr-2023 00:00	BH19/0.1-0.2		✓	✓	
EM2305942-012	04-Apr-2023 00:00	BH19/QC1		✓		✓
EM2305942-013	04-Apr-2023 00:00	BH19/0.5-0.6		✓		✓
EM2305942-014	04-Apr-2023 00:00	BH19/QC2	✓			
EM2305942-015	04-Apr-2023 00:00	BH19/1.0-1.1	✓			
EM2305942-016	04-Apr-2023 00:00	BH19/2.0-2.1	✓			
EM2305942-017	04-Apr-2023 00:00	BH19/3.0-3.1	✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

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Requested Deliverables

ACCOUNT

- *AU Certificate of Analysis - NATA (COA)	Email	gld._dbd4e@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gld._dbd4e@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gld._dbd4e@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gld._dbd4e@wsp.com
- Chain of Custody (CoC) (COC)	Email	gld._dbd4e@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	gld._dbd4e@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	gld._dbd4e@wsp.com

ALANA DUBOWIK

- *AU Certificate of Analysis - NATA (COA)	Email	alana.dubowik@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alana.dubowik@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alana.dubowik@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alana.dubowik@wsp.com
- Chain of Custody (CoC) (COC)	Email	alana.dubowik@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	alana.dubowik@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	alana.dubowik@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alana.dubowik@wsp.com

INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

TIM VASS

- *AU Certificate of Analysis - NATA (COA)	Email	Tim.Vass@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Tim.Vass@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Tim.Vass@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Tim.Vass@wsp.com
- Chain of Custody (CoC) (COC)	Email	Tim.Vass@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	Tim.Vass@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	Tim.Vass@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	Tim.Vass@wsp.com

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CERTIFICATE OF ANALYSIS

Work Order	: **EM2305942**	Page	: 1 of 10
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 04-Apr-2023 16:20
Order number	: PS200634	Date Analysis Commenced	: 06-Apr-2023
C-O-C number	: PS200634	Issue Date	: 14-Apr-2023 17:15
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 17		
No. of samples analysed	: 5		

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, unless the sampling was conducted by ALS. 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*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
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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 Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP074-UT: Where reported, Sum of trichlorobenzenes is the sum of the reported concentrations of 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene, and 1,3,5-Trichlorobenzene at or above the LOR.
- EG005-T : EM2305650 #3 Poor spike recovery for total Nickel due to sample matrix. Confirmed by re-digestion and re-analysis.
- EK040t: EM2305726-002 Poor matrix spike recovery for Total Fluorides due to sample matrix. Confirmed by re-extraction and re-analysis.

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	6.5	----	5.6	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	16.5	8.1	16.8	23.5	17.8
EG005(ED093)T: 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	12	10	18	18	16
Lead	7439-92-1	5	mg/kg	<5	7	8	8	7
Molybdenum	7439-98-7	2	mg/kg	<2	----	<2	----	----
Nickel	7440-02-0	2	mg/kg	21	19	35	36	33
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	8	7	11	12	10
Chromium	7440-47-3	2	mg/kg	----	33	----	50	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	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	<1	----	<1	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	50	----	140	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	----
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	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
				Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
^ Sum of monocyclic aromatic hydrocarbons	----	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
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	----	----
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	----	----
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

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
				Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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+j)fluoranthene	205-99-2 205-82-3	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
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		----	**0.6**	----	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		----	**1.2**	----	**1.2**	**1.2**
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	----	----
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ **Sum of Phenols (halogenated)**	----	0.03	mg/kg		<0.03	----	<0.03	----	----
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	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
				Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Non-halogenated) - Continued									
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	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	<1.0	----	----
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	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
				Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
					Result	Result	Result	Result	Result
EP075I: Organochlorine Pesticides - Continued									
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	----	----
^ **Sum of organochlorine pesticides**	----	0.03	mg/kg		<0.03	----	<0.03	----	----
^ **Chlordane**	57-74-9	0.03	mg/kg		<0.03	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	<10	<10
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	<50	<50
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	<100	<100
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		----	<50	----	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		----	<10	----	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	<50	<50
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	<100	<100
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	<100	<100

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
				Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	<50
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	<50	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		----	<1	----	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**99.4**	----	**103**	----	----
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**87.5**	----	**85.4**	----	----
Toluene-D8	2037-26-5	0.1	%		**91.2**	----	**88.6**	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**103**	----	**97.9**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	**92.4**	----	**92.9**	**92.4**
2-Chlorophenol-D4	93951-73-6	0.5	%		----	**91.8**	----	**91.2**	**92.7**
2.4.6-Tribromophenol	118-79-6	0.5	%		----	**68.5**	----	**66.3**	**69.0**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	**86.5**	----	**88.6**	**92.0**
Anthracene-d10	1719-06-8	0.5	%		----	**101**	----	**110**	**110**
4-Terphenyl-d14	1718-51-0	0.5	%		----	**100**	----	**98.7**	**104**
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		**77.5**	----	**80.0**	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH14/0.5-0.6	BH18/0.1-0.2	BH19/0.1-0.2	BH19/QC1	BH19/0.5-0.6
				Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2305942-002	EM2305942-006	EM2305942-011	EM2305942-012	EM2305942-013
					Result	Result	Result	Result	Result
EP075S: Acid Extractable Surrogates (Waste Classification) - Continued									
2-Chlorophenol-D4	93951-73-6	0.025	%		93.1	----	95.3	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		78.5	----	80.2	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		76.6	----	63.9	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		74.0	----	76.0	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		82.5	----	85.1	----	----
Anthracene-d10	1719-06-8	0.025	%		73.6	----	75.8	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		85.4	----	93.7	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	76.0	----	72.4	72.3
Toluene-D8	2037-26-5	0.2	%		----	69.8	----	66.7	75.6
4-Bromofluorobenzene	460-00-4	0.2	%		----	90.3	----	89.8	96.6

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	63	134
2-Chlorophenol-D4	93951-73-6	60	125
2.4.6-Tribromophenol	118-79-6	54	129
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	63	131
1.2-Dichlorobenzene-D4	2199-69-1	61	124
2-Fluorobiphenyl	321-60-8	69	131
Anthracene-d10	1719-06-8	70	133
4-Terphenyl-d14	1718-51-0	59	141
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

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QUALITY CONTROL REPORT

Work Order	: **EM2305942**	Page	: 1 of 14
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 04-Apr-2023
Order number	: PS200634	Date Analysis Commenced	: 06-Apr-2023
C-O-C number	: PS200634	Issue Date	: 14-Apr-2023
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 17		
No. of samples analysed	: 5		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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.

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	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4980821)									
EM2305650-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	53	48	10.2	0% - 20%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	80	81	0.0	0% - 20%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	28	15.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	9	29.7	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	27	28	0.0	No Limit
EM2305942-011	BH19/0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	48	41	16.6	0% - 20%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	35	30	16.7	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	18	16	11.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	6	15.3	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	11	10	18.4	No Limit
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4981301)									
EM2305866-002	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	6.0	6.0	0.0	0% - 20%

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4981301) - continued									
EM2306013-011	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	5.4	5.4	0.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4979145)									
EM2305942-002	BH14/0.5-0.6	EA055: Moisture Content	----	0.1	%	16.5	16.8	1.7	0% - 50%
EM2306094-078	Anonymous	EA055: Moisture Content	----	0.1	%	8.6	8.2	4.7	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4980822)									
EM2305650-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2305942-011	BH19/0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4982467)									
EM2305726-001	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2306053-008	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4985694)									
EM2306223-012	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM2305726-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 4983768)									
EM2305726-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	460	340	30.2	0% - 50%
EM2306120-001	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	250	320	23.4	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4979116)									
EM2305726-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4979111)									
EM2305942-002	BH14/0.5-0.6	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		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
EP074H: Naphthalene (QC Lot: 4979111)									
EM2305942-002	BH14/0.5-0.6	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 4979111)									
EM2305942-002	BH14/0.5-0.6	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074I: Volatile Halogenated Compounds (QC Lot: 4979111) - continued									
EM2305942-002	BH14/0.5-0.6	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: 4980674)									
EM2305942-006	BH18/0.1-0.2	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+j)fluoranthene	205-99-2 205-82-3	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
EM2306002-011	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+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4980674) - continued									
EM2306002-011	Anonymous	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: 4979118)									
EM2305726-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.06	<0.06	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: 4979118)									
EM2305726-001	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: 4979118)									
EM2305726-001	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4979118) - continued									
EM2305726-001	Anonymous	EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 4979118)									
EM2305726-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4979111)									
EM2305942-002	BH14/0.5-0.6	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4979117)									
EM2305726-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4979120)									
EM2305942-006	BH18/0.1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2306094-087	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4980675)									
EM2305942-006	BH18/0.1-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EM2306002-011	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4980675) - continued									
EM2306002-011	Anonymous	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4979111)									
EM2305942-002	BH14/0.5-0.6	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4979117)									
EM2305726-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4979120)									
EM2305942-006	BH18/0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2306094-087	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4980675)									
EM2305942-006	BH18/0.1-0.2	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
EM2306002-011	Anonymous	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
EP080: BTEXN (QC Lot: 4979120)									
EM2305942-006	BH18/0.1-0.2	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM2306094-087	Anonymous	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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Method Blank (MB) and Laboratory Control Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4980821)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	99.4	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	65.4	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	100	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	95.4	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	101	70.0	130
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.19 mg/kg	73.0	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	98.0	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	74.9	70.0	130
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.33 mg/kg	96.7	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	75.2	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4981301)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	99.3	101
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4980822)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	96.1	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4982467)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	76.2	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4985694)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	95.5	70.0	130
EK040T: Fluoride Total (QCLot: 4983768)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	101	93.1	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4979116)								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	110	67.4	136
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4979111)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	79.3	69.2	116
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	81.0	67.7	116
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	80.8	66.6	115
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	79.6	65.2	112
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	82.4	69.4	111

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4979111) - continued								
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	79.9	68.4	110
EP074H: Naphthalene (QCLot: 4979111)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	85.0	72.3	114
EP074I: Volatile Halogenated Compounds (QCLot: 4979111)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	53.2	47.0	138
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	73.0	57.6	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	83.0	72.3	115
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	76.8	60.5	122
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	84.3	70.3	112
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	66.6	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	78.7	64.4	122
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	75.6	58.4	127
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	89.8	72.9	114
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	79.6	64.7	115
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	89.2	72.6	116
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	76.7	60.0	119
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.0	71.8	116
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	85.2	66.1	116
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	61.4	39.8	128
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	84.6	70.3	113
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	81.2	62.6	113
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	84.2	70.8	110
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	72.2	48.4	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4980674)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	91.8	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	95.1	81.0	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	92.4	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	93.6	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	88.8	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	103	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	91.2	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	94.3	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	89.0	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	100	80.9	130

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4980674) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	96.0	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	88.8	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	85.1	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	79.6	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	92.0	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	98.7	65.8	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4979118)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	86.4	74.5	126
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	92.8	72.7	126
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	86.8	73.5	132
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	86.7	72.8	128
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	84.9	73.3	134
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	86.4	72.4	128
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	78.1	69.4	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	81.6	71.9	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	58.1	54.4	135
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4979118)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	87.4	71.5	130
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	85.5	73.4	129
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	85.4	74.3	129
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	89.4	70.9	133
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	78.1	71.8	132
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	10 mg/kg	43.9	41.0	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	10 mg/kg	86.0	65.3	134
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	10 mg/kg	74.9	43.6	128
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	10 mg/kg	79.6	62.0	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	77.8	34.5	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4979118)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	87.5	73.0	131
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	87.1	76.3	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	86.4	72.0	135
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	87.2	74.4	131
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	87.7	73.3	130

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4979118) - continued								
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	87.6	78.4	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	90.0	75.3	132
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	89.4	75.4	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	88.9	69.6	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	90.6	75.0	133
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	4 mg/kg	88.0	75.8	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	90.4	65.1	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	87.3	72.1	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	87.5	72.9	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	91.1	71.3	134
EP075I: Organochlorine Pesticides (QCLot: 4979118)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	88.7	71.0	129
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	89.2	74.8	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	88.2	75.7	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	87.0	70.8	130
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	87.5	76.5	134
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	87.4	75.5	131
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	89.6	76.8	130
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	90.7	73.6	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	89.8	75.0	133
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	92.0	75.3	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	88.5	69.4	134
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	92.9	71.0	132
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	91.7	78.0	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	97.0	69.0	143
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	90.1	55.7	145
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	89.2	71.4	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	89.4	74.8	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	87.2	70.2	135
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	82.9	77.7	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	88.3	63.6	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4979111)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	80.2	61.1	119

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4979117)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	119	74.4	129
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	106	81.0	123
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	105	81.8	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4979120)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	70.7	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4980675)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	88.2	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	93.2	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	95.7	82.4	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4979111)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	81.2	59.9	119
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4979117)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	108	75.4	132
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	104	80.8	120
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	110	73.3	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4979120)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	70.2	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4980675)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	86.5	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	94.0	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	78.2	73.3	137
EP080: BTEXN (QCLot: 4979120)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	72.5	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	77.8	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	77.9	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	82.6	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	87.1	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	82.7	61.8	123

Matrix Spike (MS) Report

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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	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4980821)							
EM2305650-003	Anonymous	EG005T: Nickel	7440-02-0	50 mg/kg	# 49.3	78.0	120
EM2305650-003	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.1	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	91.0	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	106	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	97.2	80.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	92.6	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4980822)							
EM2305650-003	Anonymous	EG035T: Mercury	7439-97-6	0.5 mg/kg	112	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4982467)							
EM2305726-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	63.7	58.0	114
EM2305726-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	76.5	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4985694)							
EM2305726-002	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	109	70.0	130
EK040T: Fluoride Total (QCLot: 4983768)							
EM2305726-002	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	# 69.5	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4979116)							
EM2305726-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	114	59.6	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4979111)							
EM2305942-011	BH19/0.1-0.2	EP074-UT: Benzene	71-43-2	2 mg/kg	91.0	53.7	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	88.5	55.1	124
EP074I: Volatile Halogenated Compounds (QCLot: 4979111)							
EM2305942-011	BH19/0.1-0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	84.7	38.4	145
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	80.7	48.1	128
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	79.7	55.5	122
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4980674)							
EM2305942-012	BH19/QC1	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	89.7	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	103	65.5	136
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4979118)							
EM2305942-002	BH14/0.5-0.6	EP075-EM: 2-Chlorophenol	95-57-8	3 mg/kg	81.3	44.0	143
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	80.0	41.5	139
		EP075-EM: Pentachlorophenol	87-86-5	3 mg/kg	57.0	10.0	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4979118)							
EM2305942-002	BH14/0.5-0.6	EP075-EM: Phenol	108-95-2	3 mg/kg	78.8	44.2	134

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4979118) - continued							
EM2305942-002	BH14/0.5-0.6	EP075-EM: 2-Nitrophenol	88-75-5	3 mg/kg	81.1	34.2	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4979118)							
EM2305942-002	BH14/0.5-0.6	EP075-EM: Acenaphthene	83-32-9	3 mg/kg	82.0	42.6	138
		EP075-EM: Pyrene	129-00-0	3 mg/kg	89.8	37.8	152
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4979111)							
EM2305942-011	BH19/0.1-0.2	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	81.8	42.3	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4979117)							
EM2305726-003	Anonymous	EP071-EM: C10 - C14 Fraction	----	770 mg/kg	117	71.3	126
		EP071-EM: C15 - C28 Fraction	----	2860 mg/kg	104	75.1	123
		EP071-EM: C29 - C36 Fraction	----	1540 mg/kg	103	78.1	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4979120)							
EM2305942-006	BH18/0.1-0.2	EP080: C6 - C9 Fraction	----	28 mg/kg	74.6	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4980675)							
EM2305942-013	BH19/0.5-0.6	EP071: C10 - C14 Fraction	----	770 mg/kg	87.2	71.2	125
		EP071: C15 - C28 Fraction	----	2860 mg/kg	91.1	75.6	122
		EP071: C29 - C36 Fraction	----	1540 mg/kg	93.4	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4979111)							
EM2305942-011	BH19/0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	79.0	39.9	109
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4979117)							
EM2305726-003	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1170 mg/kg	106	71.5	130
		EP071-EM: >C16 - C34 Fraction	----	3830 mg/kg	102	76.9	119
		EP071-EM: >C34 - C40 Fraction	----	290 mg/kg	107	65.3	139
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4979120)							
EM2305942-006	BH18/0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	68.2	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4980675)							
EM2305942-013	BH19/0.5-0.6	EP071: >C10 - C16 Fraction	----	1170 mg/kg	84.8	72.2	128
		EP071: >C16 - C34 Fraction	----	3830 mg/kg	91.8	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	76.7	66.8	138
EP080: BTEXN (QCLot: 4979120)							
EM2305942-006	BH18/0.1-0.2	EP080: Benzene	71-43-2	2 mg/kg	90.6	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	92.3	57.1	131

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QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2305942**	Page	: 1 of 8
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 04-Apr-2023
Site	: Bales Road, Cranbourne South	Issue Date	: 14-Apr-2023
Sampler	: Andrew Sutanto	No. of samples received	: 17
Order number	: PS200634	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	EM2305650--003	Anonymous	**Nickel**	7440-02-0	49.3 %	78.0-120%	**Recovery less than lower data quality objective**
EK040T: Fluoride Total	EM2305726--002	Anonymous	**Fluoride**	16984-48-8	69.5 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH14/0.5-0.6,	BH19/0.1-0.2	----	----	----	12-Apr-2023	11-Apr-2023	**1**
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved							
BH14/0.5-0.6,	BH19/0.1-0.2	----	----	----	12-Apr-2023	11-Apr-2023	**1**
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved							
BH14/0.5-0.6,	BH19/0.1-0.2	----	----	----	12-Apr-2023	11-Apr-2023	**1**
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH14/0.5-0.6,	BH19/0.1-0.2	----	----	----	12-Apr-2023	11-Apr-2023	**1**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved							
BH14/0.5-0.6,	BH19/0.1-0.2	----	----	----	12-Apr-2023	11-Apr-2023	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

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Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract							
Soil Glass Jar - Unpreserved (EA001)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**11-Apr-2023**	11-Apr-2023	✓	**11-Apr-2023**	11-Apr-2023	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH14/0.5-0.6, BH18/0.1-0.2, BH19/0.1-0.2, BH19/QC1, BH19/0.5-0.6	**04-Apr-2023**	**----**	----	----	**06-Apr-2023**	18-Apr-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH14/0.5-0.6, BH18/0.1-0.2, BH19/0.1-0.2, BH19/QC1, BH19/0.5-0.6	**04-Apr-2023**	**12-Apr-2023**	01-Oct-2023	✓	**12-Apr-2023**	01-Oct-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH14/0.5-0.6, BH18/0.1-0.2, BH19/0.1-0.2, BH19/QC1, BH19/0.5-0.6	**04-Apr-2023**	**12-Apr-2023**	02-May-2023	✓	**12-Apr-2023**	02-May-2023	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**11-Apr-2023**	02-May-2023	✓	**12-Apr-2023**	18-Apr-2023	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**12-Apr-2023**	18-Apr-2023	✓	**14-Apr-2023**	26-Apr-2023	✓
EK040T: Fluoride Total							
Soil Glass Jar - Unpreserved (EK040T)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**13-Apr-2023**	02-May-2023	✓	**14-Apr-2023**	02-May-2023	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066-EM)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**10-Apr-2023**	18-Apr-2023	✓	**13-Apr-2023**	20-May-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**06-Apr-2023**	11-Apr-2023	✓	**12-Apr-2023**	11-Apr-2023	×
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**06-Apr-2023**	11-Apr-2023	✓	**12-Apr-2023**	11-Apr-2023	×
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH14/0.5-0.6, BH19/0.1-0.2	**04-Apr-2023**	**06-Apr-2023**	11-Apr-2023	✓	**12-Apr-2023**	11-Apr-2023	×

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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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) BH18/0.1-0.2, BH19/QC1	04-Apr-2023	11-Apr-2023	18-Apr-2023	✓	11-Apr-2023	21-May-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) BH19/0.5-0.6	04-Apr-2023	11-Apr-2023	18-Apr-2023	✓	12-Apr-2023	21-May-2023	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	10-Apr-2023	18-Apr-2023	✓	13-Apr-2023	20-May-2023	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	10-Apr-2023	18-Apr-2023	✓	13-Apr-2023	20-May-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	10-Apr-2023	18-Apr-2023	✓	13-Apr-2023	20-May-2023	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	10-Apr-2023	18-Apr-2023	✓	13-Apr-2023	20-May-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	06-Apr-2023	11-Apr-2023	✓	12-Apr-2023	11-Apr-2023	×
Soil Glass Jar - Unpreserved (EP080) BH18/0.1-0.2, BH19/QC1, BH19/0.5-0.6	04-Apr-2023	06-Apr-2023	18-Apr-2023	✓	12-Apr-2023	18-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071-EM) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	10-Apr-2023	18-Apr-2023	✓	12-Apr-2023	20-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH18/0.1-0.2, BH19/QC1, BH19/0.5-0.6	04-Apr-2023	11-Apr-2023	18-Apr-2023	✓	11-Apr-2023	21-May-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	06-Apr-2023	11-Apr-2023	✓	12-Apr-2023	11-Apr-2023	×
Soil Glass Jar - Unpreserved (EP080) BH18/0.1-0.2, BH19/QC1, BH19/0.5-0.6	04-Apr-2023	06-Apr-2023	18-Apr-2023	✓	12-Apr-2023	18-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071-EM) BH14/0.5-0.6, BH19/0.1-0.2	04-Apr-2023	10-Apr-2023	18-Apr-2023	✓	12-Apr-2023	20-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH18/0.1-0.2, BH19/QC1, BH19/0.5-0.6	04-Apr-2023	11-Apr-2023	18-Apr-2023	✓	11-Apr-2023	21-May-2023	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BH18/0.1-0.2, BH19/QC1, BH19/0.5-0.6	04-Apr-2023	06-Apr-2023	18-Apr-2023	✓	12-Apr-2023	18-Apr-2023	✓

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Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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*	
Method Blanks (MB) - Continued							
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 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 Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
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	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.

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Analytical Methods	Method	Matrix	Method Descriptions
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
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	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: ALS (contact: Josh Alexander)
Order No.: QUOTE: ME/135/14 V4
Sampled By: Andrew Sutanto (AS)
Job Contact: Alana Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: Alana.dubowik@wsp.com; tim.vass@wsp.com

Environmental Division Melbourne
Work Order Reference
EM2306073

Telephone : +61-3-8549 9600

	OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)	HOLD
1	OA	05/04/23	BH20 / 0.1 - 0.2	Soil	1J				X
2			BH20 / 0.5 - 0.6		1b, 1J				X
3			BH20 / 1.0 - 1.1		1b, 1J				X
4			BH20 / 2.0 - 2.1		1b, 1J				X
5			BH20 / 3.0 - 3.1		1b, 1J				X
6			BH13 / 0.1 - 0.2		1J		X		
7			BH13 / 0.5 - 0.6		1b, 1J				X
8			BH13 / 1.0 - 1.1		1b, 1J	X			
9			BH13 / 2.0 - 2.1		1b, 1J	X			
10			BH13 / 3.0 - 3.1		1b, 1J				X
11			BH12 / 0.1 - 0.2		1J		X		
12			BH12 / 0.5 - 0.6		1b, 1J			X	
13			BH12 / 1.0 - 1.1		1b, 1J				X
14			BH12 / 2.0 - 2.1		1b, 1J				X
15			BH12 / 3.0 - 3.1		1b, 1J				X
16			BH02 / 0.1 - 0.2		1J				X
17			BH02 / 0.5 - 0.6		1b, 1J				X

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Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

Relinquished by: AS
Organisation: WSP

SAMPLE RECEIPT
Date: 05/04/23
Time: 15:36
Recieved by:
Organisation:

DELIVERED BY: COURIER/LAE ☐ Security Sealed

ANALYTICAL SCHEDULE

Relinquished by:
Organisation: WSP
Date:
Time:
Received by:
Organisation:

RECEIVED BY: Email ☐ Chilled ☐ Frozen ☐ Ambient ☐ HAND

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

Date:

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

Received by NC 05/04 16:45

Forms F012-b RL5 Aug 05

DRAFT

CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: ALS (contact: Josh Alexander)
Order No.: QUOTE: ME/135/14 V4
Sampled By:
Job Contact: Alana Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: Alana.dubowik@wsp.com; tim.vass@wsp.com

	OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S28 (TPH, PAH, BTEX, 8 metals)			HOLD
18	OA	05/04/23	BH02/1.0-1.1	Soil	1b.1J						X

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

Relinquished by: AS
Organisation: WSP

SAMPLE RECEIPT
Date: 05/04/23
Time: AS 3b
Recieved by:
Organisation:

DELIVERED BY:
COURIER/LAB
Security Sealed

Relinquished by:
Organisation: WSP

ANALYTICAL SCHEDULE
Date:
Time:
Received by:
Organisation:

RECEIVED BY:
Email
HAND
Chilled
Frozen
Ambient

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

Date: _____

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

DRAFT

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2306073**

Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: alana.dubowik@wsp.com	E-mail	: Josh.Alexander@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: PS200634	Page	: 1 of 3
Order number	: QUOTE: ME/135/14 V4	Quote number	: ES2021PARBRIVIC0001 (EN/008/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bales Road, Cranbourne South		
Sampler	: Andrew Sutanto		

Dates

Date Samples Received	: 05-Apr-2023 16:45	Issue Date	: 07-Apr-2023
Client Requested Due Date	: 21-Apr-2023	Scheduled Reporting Date	: **17-Apr-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 15.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 18 / 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale and ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Preliminary results will be available on the scheduled reporting date listed in this report. However the final report with chromium suite analysis will be complete on 21/04/23.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - P-30/4 EPA 1828.2 Table 3 Suite EPA 1828.2 Table 3 Fill Material Suite	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EM2306073-001	05-Apr-2023 00:00	BH20/0.1-0.2	✓				
EM2306073-002	05-Apr-2023 00:00	BH20/0.5-0.6	✓				
EM2306073-003	05-Apr-2023 00:00	BH20/1.0-1.1	✓				
EM2306073-004	05-Apr-2023 00:00	BH20/2.0-2.1	✓				
EM2306073-005	05-Apr-2023 00:00	BH20/3.0-3.1	✓				
EM2306073-006	05-Apr-2023 00:00	BH13/0.1-0.2			✓	✓	
EM2306073-007	05-Apr-2023 00:00	BH13/0.5-0.6	✓				
EM2306073-008	05-Apr-2023 00:00	BH13/1.0-1.1		✓			
EM2306073-009	05-Apr-2023 00:00	BH13/2.0-2.1		✓			
EM2306073-010	05-Apr-2023 00:00	BH13/3.0-3.1	✓				
EM2306073-011	05-Apr-2023 00:00	BH12/0.1-0.2			✓	✓	
EM2306073-012	05-Apr-2023 00:00	BH12/0.5-0.6			✓		✓
EM2306073-013	05-Apr-2023 00:00	BH12/1.0-1.1	✓				
EM2306073-014	05-Apr-2023 00:00	BH12/2.0-2.1	✓				
EM2306073-015	05-Apr-2023 00:00	BH12/3.0-3.1	✓				
EM2306073-016	05-Apr-2023 00:00	BH02/0.1-0.2	✓				
EM2306073-017	05-Apr-2023 00:00	BH02/0.5-0.6	✓				
EM2306073-018	05-Apr-2023 00:00	BH02/1.0-1.1	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

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Requested Deliverables

ACCOUNT

- *AU Certificate of Analysis - NATA (COA)	Email	gld._dbd4e@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gld._dbd4e@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gld._dbd4e@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gld._dbd4e@wsp.com
- Chain of Custody (CoC) (COC)	Email	gld._dbd4e@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	gld._dbd4e@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	gld._dbd4e@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	gld._dbd4e@wsp.com

ALANA DUBOWIK

- *AU Certificate of Analysis - NATA (COA)	Email	alana.dubowik@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alana.dubowik@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alana.dubowik@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alana.dubowik@wsp.com
- Chain of Custody (CoC) (COC)	Email	alana.dubowik@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	alana.dubowik@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	alana.dubowik@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alana.dubowik@wsp.com

INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

TIM VASS

- *AU Certificate of Analysis - NATA (COA)	Email	Tim.Vass@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Tim.Vass@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Tim.Vass@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Tim.Vass@wsp.com
- Chain of Custody (CoC) (COC)	Email	Tim.Vass@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	Tim.Vass@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	Tim.Vass@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	Tim.Vass@wsp.com

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CERTIFICATE OF ANALYSIS

Work Order	: **EM2306073**	Page	: 1 of 10
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 05-Apr-2023 16:45
Order number	: QUOTE: ME/135/14 V4	Date Analysis Commenced	: 11-Apr-2023
C-O-C number	: ----	Issue Date	: 17-Apr-2023 17:12
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 18		
No. of samples analysed	: 5		

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, unless the sampling was conducted by ALS. 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*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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 Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP074-UT: Where reported, Sum of trichlorobenzenes is the sum of the reported concentrations of 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene, and 1,3,5-Trichlorobenzene at or above the LOR.
- EG005-T : EM2305866 #3 Poor duplicate precision for total Chromium due to sample matrix. Confirmed by re-digestion and re-analysis.
- EK040T: EM2305709-050 Poor matrix spike recovery for Total Fluorides due to sample matrix. Confirmed by re-extraction and re-analysis.
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	**5.0**	----	----	**5.3**	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	**5.2**	**6.3**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	**21**	**8**	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	**0.03**	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	**0.010**	**0.005**	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	<10	<10	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	**0.04**	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	**27**	**11**	----	----
Liming Rate	----	1	kg CaCO3/t	----	**2**	<1	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	**0.04**	<0.02	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	**27**	**11**	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	**2**	<1	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**20.0**	----	----	**17.9**	**16.3**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	----	<1	<1
Copper	7440-50-8	5	mg/kg	**17**	----	----	**14**	**13**
Lead	7439-92-1	5	mg/kg	**7**	----	----	**7**	**5**
Molybdenum	7439-98-7	2	mg/kg	<2	----	----	<2	----
Nickel	7440-02-0	2	mg/kg	**28**	----	----	**23**	**24**
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	**11**	----	----	**9**	**9**
Chromium	7440-47-3	2	mg/kg	----	----	----	----	**34**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)								

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
				Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
					Result	Result	Result	Result	Result
EG048: Hexavalent Chromium (Alkaline Digest) - Continued									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	<1	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		**130**	----	----	**80**	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	<0.1	----
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	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	<0.5	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	<1	----
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	----
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	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
				Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
					Result	Result	Result	Result	Result
EP074I: Volatile Halogenated Compounds - Continued									
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	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	----	**1.2**
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	----	<0.03	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	----	<0.03	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	----	<0.03	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	----	<0.03	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	----	<0.05	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	----	<0.05	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
				Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	----	<0.03	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	----	<0.05	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	----	<0.2	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	----	<0.03	----
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	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	----	<1.0	----
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	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
				Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	**1.2**	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	----	<0.03	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	----	<0.03	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	----	<0.03	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	----	<0.03	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	----	<0.03	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	----	<0.03	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	----	<0.03	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	----	<0.03	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	----	<0.03	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	----	<0.03	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	----	<0.03	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	<0.05	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	----	<0.03	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	----	<0.03	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	----	<0.03	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	----	<0.03	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	----	<0.03	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	----	<0.05	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	----	<0.03	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	----	<0.03	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	----	<0.03	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	----	<10
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		----	----	----	----	<50
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	<50	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	<10	----
C15 - C28 Fraction	----	100	mg/kg		----	----	----	----	<100

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
				Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		----	----	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	----	<50
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	----	<100
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	----	<50
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	----	<50
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	<50	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	<10	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	----	<0.2
^ Total Xylenes	----	0.5	mg/kg		----	----	----	----	<0.5
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**106**	----	----	**110**	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13/0.1-0.2	BH13/1.0-1.1	BH13/2.0-2.1	BH12/0.1-0.2	BH12/0.5-0.6
				Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306073-006	EM2306073-008	EM2306073-009	EM2306073-011	EM2306073-012
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		85.3	----	----	91.3	----
Toluene-D8	2037-26-5	0.1	%		84.7	----	----	94.6	----
4-Bromofluorobenzene	460-00-4	0.1	%		102	----	----	106	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	----	91.8
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	----	102
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	----	93.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	----	92.2
Anthracene-d10	1719-06-8	0.5	%		----	----	----	----	86.9
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	----	95.4
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		81.9	----	----	84.4	----
2-Chlorophenol-D4	93951-73-6	0.025	%		95.7	----	----	98.9	----
2.4.6-Tribromophenol	118-79-6	0.025	%		85.4	----	----	89.8	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		63.9	----	----	64.7	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		75.8	----	----	78.6	----
2-Fluorobiphenyl	321-60-8	0.025	%		86.8	----	----	89.2	----
Anthracene-d10	1719-06-8	0.025	%		77.9	----	----	79.4	----
4-Terphenyl-d14	1718-51-0	0.025	%		89.2	----	----	91.3	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	87.4
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	81.6
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	93.5

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Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	63	134
2-Chlorophenol-D4	93951-73-6	60	125
2.4.6-Tribromophenol	118-79-6	54	129
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	63	131
1.2-Dichlorobenzene-D4	2199-69-1	61	124
2-Fluorobiphenyl	321-60-8	69	131
Anthracene-d10	1719-06-8	70	133
4-Terphenyl-d14	1718-51-0	59	141
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

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA033-B: Potential Acidity

(SOIL) EA033-C: Acid Neutralising Capacity

(SOIL) EA033-D: Retained Acidity

(SOIL) EA033-A: Actual Acidity

(SOIL) EA033-E: Acid Base Accounting

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QUALITY CONTROL REPORT

Work Order	: **EM2306073**	Page	: 1 of 16
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 05-Apr-2023
Order number	: QUOTE: ME/135/14 V4	Date Analysis Commenced	: 11-Apr-2023
C-O-C number	: ----	Issue Date	: 17-Apr-2023
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 18		
No. of samples analysed	: 5		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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.

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	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4984373)									
EM2305866-003	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	126	# 51	84.7	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	18	26	35.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	120	144	18.2	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	71	81	13.0	0% - 50%
EM2305857-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	19	34.2	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	24	13.1	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	33	86.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	16	44.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	14	58.1	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	22	31	34.5	No Limit
EM2305866-003	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	10	6	44.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	6	37.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Tin	7440-31-5	5	mg/kg	6	<5	0.0	No Limit
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4984348)									
EM2306073-006	BH13/0.1-0.2	EA001: pH (CaCl2)	----	0.1	pH Unit	5.0	5.0	0.0	0% - 20%

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4984348) - continued									
EM2306257-002	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	7.8	7.8	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 4989035)									
EM2305677-004	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.5	6.5	0.0	0% - 20%
EM2305977-006	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	7.4	7.4	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 4989035)									
EM2305677-004	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.011	13.1	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EM2305977-006	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.009	0.009	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4983438)									
EM2305857-001	Anonymous	EA055: Moisture Content	----	0.1	%	10.9	10.3	5.0	0% - 50%
EM2305857-012	Anonymous	EA055: Moisture Content	----	0.1	%	17.7	16.0	9.7	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4984374)									
EM2305857-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2305866-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4983106)									
EM2306073-006	BH13/0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4986001)									
EM2305709-005	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	2	2	0.0	No Limit
EM2306013-011	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 4983102)									
EM2305709-049	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	270	280	0.0	No Limit
EM2306073-011	BH12/0.1-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	80	80	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4985144)									
EM2305857-001	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4983445)									
EM2306073-006	BH13/0.1-0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4983445) - continued									
EM2306073-006	BH13/0.1-0.2	EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP074H: Naphthalene (QC Lot: 4983445)									
EM2306073-006	BH13/0.1-0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 4983445)									
EM2306073-006	BH13/0.1-0.2	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: 4982892)									
EM2306073-012	BH12/0.5-0.6	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+j)fluoranthene	205-99-2 205-82-3	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4982892) - continued									
EM2306073-012	BH12/0.5-0.6	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2306195-045	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+j)fluoranthene	205-99-2 205-82-3	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: 4985142)									
EM2305857-001	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.05	<0.05	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: 4985142)									
EM2305857-001	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4985142)									
EM2305857-001	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 4985142)									
EM2305857-001	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4982234)									
EM2305709-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EM2305866-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4982893)									
EM2306073-012	BH12/0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EM2306195-045	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	270	160	52.1	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4983445)									
EM2306073-006	BH13/0.1-0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4985143)									
EM2305857-001	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4982234)									
EM2305709-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EM2305866-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4982893)									
EM2306073-012	BH12/0.5-0.6	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
EM2306195-045	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	260	160	45.2	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	260	150	51.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4983445)									
EM2306073-006	BH13/0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
		EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4985143)									
EM2305857-001	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 4982234)									
EM2305709-005	Anonymous	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EM2305866-004	Anonymous	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4982234) - continued									
EM2305866-004	Anonymous	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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Method Blank (MB) and Laboratory Control Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4984373)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	98.2	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	71.8	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	96.3	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	99.0	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	89.6	70.0	130
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.19 mg/kg	72.5	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	94.1	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	75.7	70.0	130
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.33 mg/kg	86.0	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	73.4	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4984348)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	99.3	101
EA033-A: Actual Acidity (QCLot: 4989035)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	97.0	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	16 mole H+ / t	107	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 4989035)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.246 % S	100	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4984374)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	85.9	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4983106)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	77.5	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4986001)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	110	70.0	130
EK040T: Fluoride Total (QCLot: 4983102)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	101	93.1	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4985144)								

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4985144) - continued								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	119	67.4	136
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4983445)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	81.1	69.2	116
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	76.7	67.7	116
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	76.2	66.6	115
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	74.3	65.2	112
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	75.4	69.4	111
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	74.3	68.4	110
EP074H: Naphthalene (QCLot: 4983445)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	75.5	72.3	114
EP074I: Volatile Halogenated Compounds (QCLot: 4983445)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	76.4	47.0	138
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	83.1	57.6	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	79.8	72.3	115
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	81.4	60.5	122
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	76.6	70.3	112
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	79.6	66.6	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	83.0	64.4	122
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	84.8	58.4	127
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	80.6	72.9	114
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	78.8	64.7	115
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	78.5	72.6	116
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	74.8	60.0	119
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	76.9	71.8	116
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	73.0	66.1	116
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	53.7	39.8	128
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	75.0	70.3	113
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	78.8	62.6	113
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	78.6	70.8	110
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	66.6	48.4	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4982892)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	120	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	118	81.0	123

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4982892) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	117	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	109	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	118	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	113	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	118	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	118	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	114	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	116	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	113	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	111	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	112	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	114	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	117	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	119	65.8	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4985142)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	101	74.5	126
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	99.8	72.7	126
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	100	73.5	132
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	99.9	72.8	128
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	99.4	73.3	134
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	99.3	72.4	128
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	101	69.4	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	96.5	71.9	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	81.2	54.4	135
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4985142)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	102	71.5	130
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	100	73.4	129
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	100	74.3	129
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	98.4	70.9	133
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	99.8	71.8	132
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	10 mg/kg	83.6	41.0	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	10 mg/kg	114	65.3	134
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	10 mg/kg	95.6	43.6	128

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4985142) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	10 mg/kg	97.1	62.0	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	100	34.5	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4985142)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	102	73.0	131
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	103	76.3	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	103	72.0	135
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	104	74.4	131
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	104	73.3	130
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	103	78.4	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	104	75.3	132
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	103	75.4	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	106	69.6	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	108	75.0	133
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	4 mg/kg	110	75.8	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	109	65.1	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	111	72.1	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	111	72.9	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	111	71.3	134
EP075I: Organochlorine Pesticides (QCLot: 4985142)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	104	71.0	129
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	104	74.8	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	102	75.7	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	101	70.8	130
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	101	76.5	134
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	105	75.5	131
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	102	76.8	130
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	100	73.6	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	103	75.0	133
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	104	75.3	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	99.5	69.4	134
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	109	71.0	132
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	104	78.0	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	116	69.0	143

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075I: Organochlorine Pesticides (QCLot: 4985142) - continued								
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	115	55.7	145
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	108	71.4	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	106	74.8	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	108	70.2	135
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	119	77.7	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	110	63.6	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4982234)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	63.8	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4982893)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	106	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	98.6	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	103	82.4	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4983445)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	77.8	61.1	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4985143)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	119	74.4	129
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	107	81.0	123
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	106	81.8	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4982234)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	61.6	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4982893)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	89.6	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	101	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	87.5	73.3	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4983445)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	78.3	59.9	119
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4985143)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	106	75.4	132
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	106	80.8	120
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	92.6	73.3	136
EP080: BTEXN (QCLot: 4982234)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	69.7	61.6	117

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 4982234) - continued								
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	69.7	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	68.3	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	68.7	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	77.7	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	97.0	61.8	123

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4984373)							
EM2305857-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	81.5	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.9	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	88.4	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	98.1	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	91.2	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	109	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	90.7	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4984374)							
EM2305857-002	Anonymous	EG035T: Mercury	7439-97-6	0.5 mg/kg	96.8	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4983106)							
EM2306073-011	BH12/0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	59.8	58.0	114
EM2306073-011	BH12/0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	73.7	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4986001)							
EM2305709-015	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	116	70.0	130
EK040T: Fluoride Total (QCLot: 4983102)							
EM2305709-050	Anonymous	EK040T: Fluoride	16984-48-8	400 mg/kg	# 67.9	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4985144)							
EM2305866-002	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	124	59.6	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4983445)							
EM2306073-011	BH12/0.1-0.2	EP074-UT: Benzene	71-43-2	2 mg/kg	69.3	53.7	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	73.8	55.1	124

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 4983445)							
EM2306073-011	BH12/0.1-0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	48.0	38.4	145
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	62.2	48.1	128
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	71.2	55.5	122
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4982892)							
EM2305709-046	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	90.2	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	106	65.5	136
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4985142)							
EM2305857-007	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	3 mg/kg	88.9	44.0	143
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	84.5	41.5	139
		EP075-EM: Pentachlorophenol	87-86-5	3 mg/kg	71.3	10.0	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4985142)							
EM2305857-007	Anonymous	EP075-EM: Phenol	108-95-2	3 mg/kg	87.2	44.2	134
		EP075-EM: 2-Nitrophenol	88-75-5	3 mg/kg	84.3	34.2	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4985142)							
EM2305857-007	Anonymous	EP075-EM: Acenaphthene	83-32-9	3 mg/kg	88.6	42.6	138
		EP075-EM: Pyrene	129-00-0	3 mg/kg	93.0	37.8	152
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4982234)							
EM2305709-015	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	74.0	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4982893)							
EM2306195-001	Anonymous	EP071: C10 - C14 Fraction	----	770 mg/kg	103	71.2	125
		EP071: C15 - C28 Fraction	----	2860 mg/kg	96.5	75.6	122
		EP071: C29 - C36 Fraction	----	1540 mg/kg	102	78.0	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4983445)							
EM2306073-011	BH12/0.1-0.2	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	64.1	42.3	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4985143)							
EM2305857-011	Anonymous	EP071-EM: C10 - C14 Fraction	----	770 mg/kg	116	71.3	126
		EP071-EM: C15 - C28 Fraction	----	2860 mg/kg	106	75.1	123
		EP071-EM: C29 - C36 Fraction	----	1540 mg/kg	107	78.1	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4982234)							
EM2305709-015	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	69.0	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4982893)							
EM2306195-001	Anonymous	EP071: >C10 - C16 Fraction	----	1170 mg/kg	87.0	72.2	128
		EP071: >C16 - C34 Fraction	----	3830 mg/kg	99.1	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	87.5	66.8	138
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4983445)							

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4983445) - continued							
EM2306073-011	BH12/0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	62.6	39.9	109
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4985143)							
EM2305857-011	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1170 mg/kg	103	71.5	130
		EP071-EM: >C16 - C34 Fraction	----	3830 mg/kg	106	76.9	119
		EP071-EM: >C34 - C40 Fraction	----	290 mg/kg	98.5	65.3	139
EP080: BTEXN (QCLot: 4982234)							
EM2305709-015	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	104	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	99.9	57.1	131

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QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2306073**	Page	: 1 of 10
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 05-Apr-2023
Site	: Bales Road, Cranbourne South	Issue Date	: 17-Apr-2023
Sampler	: Andrew Sutanto	No. of samples received	: 18
Order number	: QUOTE: ME/135/14 V4	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	EM2305866--003	Anonymous	**Chromium**	7440-47-3	84.7 %	0% - 20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EK040T: Fluoride Total	EM2305709--050	Anonymous	**Fluoride**	16984-48-8	67.9 %	70.0-130%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH13/0.1-0.2,	BH12/0.1-0.2	----	----	----	13-Apr-2023	12-Apr-2023	1
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved							
BH13/0.1-0.2,	BH12/0.1-0.2	----	----	----	13-Apr-2023	12-Apr-2023	1
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved							
BH13/0.1-0.2,	BH12/0.1-0.2	----	----	----	13-Apr-2023	12-Apr-2023	1
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH13/0.1-0.2,	BH12/0.1-0.2	----	----	----	13-Apr-2023	12-Apr-2023	1
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved							
BH13/0.1-0.2,	BH12/0.1-0.2	----	----	----	13-Apr-2023	12-Apr-2023	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

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Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
BH13/0.1-0.2,	BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	12-Apr-2023	✓	**12-Apr-2023**	12-Apr-2023	✓
EA033-A: Actual Acidity								
Snap Lock Bag - frozen on receipt at ALS (EA033)								
BH13/1.0-1.1,	BH13/2.0-2.1	**05-Apr-2023**	**14-Apr-2023**	04-Apr-2024	✓	**14-Apr-2023**	13-Jul-2023	✓
EA033-B: Potential Acidity								
Snap Lock Bag - frozen on receipt at ALS (EA033)								
BH13/1.0-1.1,	BH13/2.0-2.1	**05-Apr-2023**	**14-Apr-2023**	04-Apr-2024	✓	**14-Apr-2023**	13-Jul-2023	✓
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen on receipt at ALS (EA033)								
BH13/1.0-1.1,	BH13/2.0-2.1	**05-Apr-2023**	**14-Apr-2023**	04-Apr-2024	✓	**14-Apr-2023**	13-Jul-2023	✓
EA033-D: Retained Acidity								
Snap Lock Bag - frozen on receipt at ALS (EA033)								
BH13/1.0-1.1,	BH13/2.0-2.1	**05-Apr-2023**	**14-Apr-2023**	04-Apr-2024	✓	**14-Apr-2023**	13-Jul-2023	✓
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen on receipt at ALS (EA033)								
BH13/1.0-1.1,	BH13/2.0-2.1	**05-Apr-2023**	**14-Apr-2023**	04-Apr-2024	✓	**14-Apr-2023**	13-Jul-2023	✓
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
BH13/0.1-0.2, BH12/0.5-0.6	BH12/0.1-0.2,	**05-Apr-2023**	**----**	----	----	**11-Apr-2023**	19-Apr-2023	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH13/0.1-0.2, BH12/0.5-0.6	BH12/0.1-0.2,	**05-Apr-2023**	**12-Apr-2023**	02-Oct-2023	✓	**12-Apr-2023**	02-Oct-2023	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH13/0.1-0.2, BH12/0.5-0.6	BH12/0.1-0.2,	**05-Apr-2023**	**12-Apr-2023**	03-May-2023	✓	**13-Apr-2023**	03-May-2023	✓
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
BH13/0.1-0.2,	BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	03-May-2023	✓	**14-Apr-2023**	18-Apr-2023	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
BH13/0.1-0.2,	BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**14-Apr-2023**	26-Apr-2023	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
BH13/0.1-0.2,	BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	03-May-2023	✓	**17-Apr-2023**	03-May-2023	✓

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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 (EP066-EM)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	12-Apr-2023	✓	**13-Apr-2023**	12-Apr-2023	×
EP074H: Naphthalene							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	12-Apr-2023	✓	**13-Apr-2023**	12-Apr-2023	×
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	12-Apr-2023	✓	**13-Apr-2023**	12-Apr-2023	×
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH12/0.5-0.6	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**12-Apr-2023**	22-May-2023	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	12-Apr-2023	✓	**13-Apr-2023**	12-Apr-2023	×
Soil Glass Jar - Unpreserved (EP080)							
BH12/0.5-0.6	**05-Apr-2023**	**11-Apr-2023**	19-Apr-2023	✓	**14-Apr-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071)							
BH13/0.1-0.2, BH12/0.1-0.2, BH12/0.5-0.6	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓

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Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT) BH13/0.1-0.2, BH12/0.1-0.2	**05-Apr-2023**	**11-Apr-2023**	12-Apr-2023	✓	**13-Apr-2023**	12-Apr-2023	×
Soil Glass Jar - Unpreserved (EP080) BH12/0.5-0.6	**05-Apr-2023**	**11-Apr-2023**	19-Apr-2023	✓	**14-Apr-2023**	19-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071) BH13/0.1-0.2, BH12/0.1-0.2, BH12/0.5-0.6	**05-Apr-2023**	**12-Apr-2023**	19-Apr-2023	✓	**13-Apr-2023**	22-May-2023	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BH12/0.5-0.6	**05-Apr-2023**	**11-Apr-2023**	19-Apr-2023	✓	**14-Apr-2023**	19-Apr-2023	✓

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Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	18	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	3	**66.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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*	
Method Blanks (MB) - Continued							
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	3	**66.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 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 Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
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	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).

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Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9822 9700

Page of

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: ALS (contact: Josh Alexander)
Order No.: QUOTE: ME/135/14 V4
Sampled By: Andrew Sutanto (AS)
Job Contact: Alana Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: Alana.dubowik@wsp.com; tim.vass@wsp.com

	OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)		HOLD
1	OA	05/04/23	BH02/2.0-2.1	Soil	lb, J					X
2	"		BH02/3.0-3.1		lb, J					X
3		06/04/22	BH21/0.1-0.2		J		X			
4			BH21/0.5-0.6		lb, J			X		
5			BH21/1.0-1.1		lb, J					X
6			BH21/2.0-2.1		lb, J					X
7			BH21/3.0-3.1		lb, J					X
8			BH22/0.1-0.2		J		X			
9			BH22/0.5-0.6		lb, J	X		X		
10			BH22/1.0-1.1		lb, J					X
11			BH22/2.0-2.1		lb, J	X				
12			BH22/3.0-3.1		lb, J	X				
13			QC4		J			X		
14			QC5		J					X
			~~QC6~~							

Environmental Division
Melbourne
Work Order Reference
EM2306162

Telephone : +61-3-8549 9600

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

Relinquished by: AS
Organisation: WSP
Date: 06/04/23 Time: 13:30

SAMPLE RECEIPT
Recieved by: Scott
Organisation: ALS
6/4/23 1448

DELIVERED BY:
COURIER/LAB Security Sealed

ANALYTICAL SCHEDULE
Relinquished by:
Organisation: WSP
Date: Time:
Received by:
Organisation:

RECEIVED BY: Chilled
Email Frozen
HAND Ambient

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

Date:

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

Forms FB12-b RL5 Aug 05

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SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EM2306162**

Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: alana.dubowik@wsp.com	E-mail	: Josh.Alexander@alsglobal.com
Telephone	: ----	Telephone	: +61-3-8549 9600
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: PS200634	Page	: 1 of 3
Order number	: PS200634	Quote number	: ES2021PARBRIVIC0001 (EN/008/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Bales Road, Cranbourne South		
Sampler	: Andrew Sutanto		

Dates

Date Samples Received	: 06-Apr-2023 14:48	Issue Date	: 13-Apr-2023
Client Requested Due Date	: 21-Apr-2023	Scheduled Reporting Date	: **21-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 8.6°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 14 / 7

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please direct any queries related to sample condition / numbering / breakages to Client Services.**
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Analytical work for this work order will be conducted at ALS Springvale & ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - P-30/4 EPA 1828.2 Table 3 Suite EPA 1828.2 Table 3 Fill Material Suite	SOIL - S-26 8 metals/TRH/BTEXN/PAH
EM2306162-001	05-Apr-2023 00:00	BH02/2.0-2.1	✓				
EM2306162-002	05-Apr-2023 00:00	BH02/3.0-3.1	✓				
EM2306162-003	06-Apr-2023 00:00	BH21/0.1-0.2			✓	✓	
EM2306162-004	06-Apr-2023 00:00	BH21/0.5-0.6			✓		✓
EM2306162-005	06-Apr-2023 00:00	BH21/1.0-1.1	✓				
EM2306162-006	06-Apr-2023 00:00	BH21/2.0-2.1	✓				
EM2306162-007	06-Apr-2023 00:00	BH21/3.0-3.1	✓				
EM2306162-008	06-Apr-2023 00:00	BH22/0.1-0.2			✓	✓	
EM2306162-009	06-Apr-2023 00:00	BH22/0.5-0.6		✓	✓		✓
EM2306162-010	06-Apr-2023 00:00	BH22/1.0-1.1	✓				
EM2306162-011	06-Apr-2023 00:00	BH22/2.0-2.1		✓			
EM2306162-012	06-Apr-2023 00:00	BH22/3.0-3.1		✓			
EM2306162-013	06-Apr-2023 00:00	QC4			✓		✓
EM2306162-014	06-Apr-2023 00:00	QC5	✓				

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

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Requested Deliverables

ACCOUNT

- *AU Certificate of Analysis - NATA (COA)	Email	gld._dbd4e@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	gld._dbd4e@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	gld._dbd4e@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	gld._dbd4e@wsp.com
- Chain of Custody (CoC) (COC)	Email	gld._dbd4e@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	gld._dbd4e@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	gld._dbd4e@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	gld._dbd4e@wsp.com

ALANA DUBOWIK

- *AU Certificate of Analysis - NATA (COA)	Email	alana.dubowik@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	alana.dubowik@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	alana.dubowik@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	alana.dubowik@wsp.com
- A4 - AU Tax Invoice (INV)	Email	alana.dubowik@wsp.com
- Chain of Custody (CoC) (COC)	Email	alana.dubowik@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	alana.dubowik@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	alana.dubowik@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	alana.dubowik@wsp.com

INVOICES

- A4 - AU Tax Invoice (INV)	Email	au.accountspayable@wsp.com

TIM VASS

- *AU Certificate of Analysis - NATA (COA)	Email	Tim.Vass@wsp.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	Tim.Vass@wsp.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	Tim.Vass@wsp.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	Tim.Vass@wsp.com
- A4 - AU Tax Invoice (INV)	Email	Tim.Vass@wsp.com
- Chain of Custody (CoC) (COC)	Email	Tim.Vass@wsp.com
- EDI Format - ENMRG (ENMRG)	Email	Tim.Vass@wsp.com
- EDI Format - ESDAT (ESDAT)	Email	Tim.Vass@wsp.com
- EPA Waste Classification & Categorisation Guideline Report (COA_GL_EPA_WASTE)	Email	Tim.Vass@wsp.com

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CERTIFICATE OF ANALYSIS

Work Order	: **EM2306162**	Page	: 1 of 13
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 06-Apr-2023 14:48
Order number	: PS200634	Date Analysis Commenced	: 12-Apr-2023
C-O-C number	: ----	Issue Date	: 21-Apr-2023 17:30
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 14		
No. of samples analysed	: 7		

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, unless the sampling was conducted by ALS. 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*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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 Contract 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.

- EG048G: EM2306162 #8 Poor matrix spike recovery for Hexavalent Chromium due to sample matrix. Confirmed by re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074-UT: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP074-UT: Where reported, Sum of trichlorobenzenes is the sum of the reported concentrations of 1,2,3-Trichlorobenzene and 1,2,4-Trichlorobenzene, and 1,3,5-Trichlorobenzene at or above the LOR.
- ASS: EA033 (CRS Suite):Retained Acidity not required because pH KCl greater than or equal to 4.5
- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
			Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
				Result	Result	Result	Result	Result
EA001: pH in soil using 0.01M CaCl extract								
pH (CaCl2)	----	0.1	pH Unit	5.5	----	4.4	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	5.8	5.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	9	33
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	<0.02	0.05
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	----	----	0.007	0.010
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	----	----	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	0.02	0.06
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	14	40
Liming Rate	----	1	kg CaCO3/t	----	----	----	1	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	0.02	0.06
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	14	40
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	1	3
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.9	10.5	26.5	18.7	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Copper	7440-50-8	5	mg/kg	<5	<5	7	5	----
Lead	7439-92-1	5	mg/kg	6	6	10	8	----
Molybdenum	7439-98-7	2	mg/kg	<2	----	<2	----	----
Nickel	7440-02-0	2	mg/kg	7	13	6	17	----
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	<5	<5	7	<5	----
Chromium	7440-47-3	2	mg/kg	----	20	----	30	----
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)								

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
					Result	Result	Result	Result	Result
EG048: Hexavalent Chromium (Alkaline Digest) - Continued									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	<1	----	----
EK040T: Fluoride Total									
Fluoride	16984-48-8	40	mg/kg		**90**	----	**70**	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	----	----
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	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	----	----
EP074H: Naphthalene									
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
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	----	----
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	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
					Result	Result	Result	Result	Result
EP074I: Volatile Halogenated Compounds - Continued									
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	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	<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	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	**1.2**	----
EP075A: Phenolic Compounds (Halogenated)									
2-Chlorophenol	95-57-8	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4-Dichlorophenol	120-83-2	0.03	mg/kg		<0.03	----	<0.03	----	----
2.6-Dichlorophenol	87-65-0	0.03	mg/kg		<0.03	----	<0.03	----	----
4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg		<0.03	----	<0.03	----	----
2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg		<0.05	----	<0.05	----	----
2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg		<0.05	----	<0.05	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
					Result	Result	Result	Result	Result
EP075A: Phenolic Compounds (Halogenated) - Continued									
2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg		<0.03	----	<0.03	----	----
2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Pentachlorophenol	87-86-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Sum of Phenols (halogenated)	----	0.03	mg/kg		<0.03	----	<0.03	----	----
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	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1.0	mg/kg		<1.0	----	<1.0	----	----
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	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
					Result	Result	Result	Result	Result
EP075B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP075I: Organochlorine Pesticides									
alpha-BHC	319-84-6	0.03	mg/kg		<0.03	----	<0.03	----	----
Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg		<0.03	----	<0.03	----	----
beta-BHC	319-85-7	0.03	mg/kg		<0.03	----	<0.03	----	----
gamma-BHC	58-89-9	0.03	mg/kg		<0.03	----	<0.03	----	----
delta-BHC	319-86-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor	76-44-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Aldrin	309-00-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Heptachlor epoxide	1024-57-3	0.03	mg/kg		<0.03	----	<0.03	----	----
cis-Chlordane	5103-71-9	0.03	mg/kg		<0.03	----	<0.03	----	----
trans-Chlordane	5103-74-2	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 1	959-98-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin aldehyde	7421-93-4	0.03	mg/kg		<0.03	----	<0.03	----	----
Endrin	72-20-8	0.03	mg/kg		<0.03	----	<0.03	----	----
Endosulfan 2	33213-65-9	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.03	mg/kg		<0.03	----	<0.03	----	----
4.4`-DDT	50-29-3	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Sum of organochlorine pesticides	----	0.03	mg/kg		<0.03	----	<0.03	----	----
^ Chlordane	57-74-9	0.03	mg/kg		<0.03	----	<0.03	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	<10	----
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	<50	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	<100	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	**130**	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	**130**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	<50	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	<100	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	**160**	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	**160**	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	<50	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	<1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**120**	----	**118**	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH21/0.1-0.2	BH21/0.5-0.6	BH22/0.1-0.2	BH22/0.5-0.6	BH22/2.0-2.1
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00	06-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		EM2306162-003	EM2306162-004	EM2306162-008	EM2306162-009	EM2306162-011
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates (Ultra-Trace)									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		84.4	----	83.8	----	----
Toluene-D8	2037-26-5	0.1	%		85.1	----	82.1	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		98.5	----	97.7	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	92.5	----	83.1	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	106	----	107	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	72.7	----	73.3	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	93.5	----	101	----
Anthracene-d10	1719-06-8	0.5	%		----	98.6	----	98.3	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	98.6	----	95.2	----
EP075S: Acid Extractable Surrogates (Waste Classification)									
Phenol-d6	13127-88-3	0.025	%		101	----	105	----	----
2-Chlorophenol-D4	93951-73-6	0.025	%		114	----	117	----	----
2.4.6-Tribromophenol	118-79-6	0.025	%		108	----	116	----	----
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)									
Nitrobenzene-D5	4165-60-0	0.025	%		77.8	----	83.7	----	----
1.2-Dichlorobenzene-D4	2199-69-1	0.025	%		97.8	----	99.5	----	----
2-Fluorobiphenyl	321-60-8	0.025	%		101	----	105	----	----
Anthracene-d10	1719-06-8	0.025	%		103	----	101	----	----
4-Terphenyl-d14	1718-51-0	0.025	%		114	----	116	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	80.3	----	67.4	----
Toluene-D8	2037-26-5	0.2	%		----	77.8	----	62.8	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	95.5	----	82.2	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH22/3.0-3.1	QC4	----	----	----
			Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EM2306162-012	EM2306162-013	--------	--------	--------
				Result	Result	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.7**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**14**	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.02**	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.014**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	**0.04**	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	**22**	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	**2**	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.04**	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**22**	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	**2**	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	**17.2**	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	----	----
Copper	7440-50-8	5	mg/kg	----	**5**	----	----	----
Lead	7439-92-1	5	mg/kg	----	**10**	----	----	----
Nickel	7440-02-0	2	mg/kg	----	**14**	----	----	----
Zinc	7440-66-6	5	mg/kg	----	<5	----	----	----
Chromium	7440-47-3	2	mg/kg	----	**43**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH22/3.0-3.1	QC4	----	----	----
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2306162-012	EM2306162-013	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		----	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		----	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		----	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		----	<50	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		----	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	----	----

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Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH22/3.0-3.1	QC4	----	----	----
				Sampling date / time	06-Apr-2023 00:00	06-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		EM2306162-012	EM2306162-013	--------	--------	--------
					Result	Result	----	----	----
EP080: BTEXN - Continued									
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	81.9	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	89.8	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	70.7	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	79.4	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	99.4	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	96.6	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	74.0	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	77.1	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	88.7	----	----	----

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	41	122
EP074S: VOC Surrogates (Ultra-Trace)			
1.2-Dichloroethane-D4	17060-07-0	59	119
Toluene-D8	2037-26-5	55	117
4-Bromofluorobenzene	460-00-4	59	123
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP075S: Acid Extractable Surrogates (Waste Classification)			
Phenol-d6	13127-88-3	63	134
2-Chlorophenol-D4	93951-73-6	60	125
2.4.6-Tribromophenol	118-79-6	54	129
EP075T: Base/Neutral Extractable Surrogates (Waste Classification)			
Nitrobenzene-D5	4165-60-0	63	131
1.2-Dichlorobenzene-D4	2199-69-1	61	124
2-Fluorobiphenyl	321-60-8	69	131
Anthracene-d10	1719-06-8	70	133
4-Terphenyl-d14	1718-51-0	59	141
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

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA033-B: Potential Acidity

(SOIL) EA033-C: Acid Neutralising Capacity

(SOIL) EA033-D: Retained Acidity

(SOIL) EA033-A: Actual Acidity

(SOIL) EA033-E: Acid Base Accounting

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QUALITY CONTROL REPORT

Work Order	: **EM2306162**	Page	: 1 of 17
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Contact	: Josh Alexander
Address	: Level 11 567 Collins Street Melbourne VIC, AUSTRALIA 3000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 06-Apr-2023
Order number	: PS200634	Date Analysis Commenced	: 12-Apr-2023
C-O-C number	: ----	Issue Date	: 21-Apr-2023
Sampler	: Andrew Sutanto		
Site	: Bales Road, Cranbourne South		
Quote number	: EN/008/21		
No. of samples received	: 14		
No. of samples analysed	: 7		

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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Inorganics, Springvale, VIC
Xing Lin	Senior Organic Chemist	Melbourne Organics, Springvale, VIC

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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.

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	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4993358)									
EM2306162-003	BH21/0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	15	26.4	No Limit
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	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	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	<5	19.8	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	<5	<5	0.0	No Limit
EM2306192-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	31	7.7	0% - 50%
		EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	29	28	4.1	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	19	20	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	64	62	3.1	0% - 50%
		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	53	55	4.5	0% - 50%
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4987422)									
EM2306162-003	BH21/0.1-0.2	EA001: pH (CaCl2)	----	0.1	pH Unit	5.5	5.5	0.0	0% - 20%

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 4987422) - continued									
EM2306289-002	Anonymous	EA001: pH (CaCl2)	----	0.1	pH Unit	9.4	9.4	0.0	0% - 20%
EA033-A: Actual Acidity (QC Lot: 5003004)									
EB2311699-009	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	7.9	8.0	1.6	0% - 20%
EM2306099-010	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	6	7	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.0	6.1	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 5003004)									
EB2311699-009	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	1.85	1.90	2.4	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	1160	1180	2.4	0% - 20%
EM2306099-010	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.011	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4990129)									
EM2306162-003	BH21/0.1-0.2	EA055: Moisture Content	----	0.1	%	9.9	10.9	9.6	0% - 50%
EM2306192-001	Anonymous	EA055: Moisture Content	----	0.1	%	10.7	11.0	2.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4993357)									
EM2306162-003	BH21/0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2306192-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 4992511)									
EM2306162-003	BH21/0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EM2306535-005	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<1.0	<1.0	0.0	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 4995054)									
EM2306571-018	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EM2306192-001	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.0	No Limit
EK040T: Fluoride Total (QC Lot: 4992512)									
EM2306162-003	BH21/0.1-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	90	80	0.0	No Limit
EM2306535-005	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	200	220	10.9	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4994937)									
EM2306162-003	BH21/0.1-0.2	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EM2306571-030	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4986357)									
EM2306162-003	BH21/0.1-0.2	EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 4986357) - continued									
EM2306162-003	BH21/0.1-0.2	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
EP074H: Naphthalene (QC Lot: 4986357)									
EM2306162-003	BH21/0.1-0.2	EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP074I: Volatile Halogenated Compounds (QC Lot: 4986357)									
EM2306162-003	BH21/0.1-0.2	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: 4994938)									
EM2306162-004	BH21/0.5-0.6	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+j)fluoranthene	205-99-2 205-82-3	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

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4994938) - continued									
EM2306162-004	BH21/0.5-0.6	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
EM2306574-022	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	0.8	<0.5	45.8	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.0	0.6	51.3	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.6	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.6	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.8	<0.5	50.2	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	0.8	<0.5	47.4	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	0.6	<0.5	22.5	No Limit
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 4994935)									
EM2306162-003	BH21/0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	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	<0.05	<0.05	0.0	No Limit
		EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EM2306571-030	Anonymous	EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075A: Phenolic Compounds (Halogenated) (QC Lot: 4994935) - continued									
EM2306571-030	Anonymous	EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/58-90-2	0.05	mg/kg	<0.05	<0.05	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: 4994935)									
EM2306162-003	BH21/0.1-0.2	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
EM2306571-030	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: 4994935)									
EM2306162-003	BH21/0.1-0.2	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4994935) - continued									
EM2306162-003	BH21/0.1-0.2	EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EM2306571-030	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
		EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	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	<0.5	<0.5	0.0	No Limit
		EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	<1.0	0.0	No Limit
EP075I: Organochlorine Pesticides (QC Lot: 4994935)									
EM2306162-003	BH21/0.1-0.2	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EM2306571-030	Anonymous	EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	<0.03	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075I: Organochlorine Pesticides (QC Lot: 4994935) - continued									
EM2306571-030	Anonymous	EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	<0.03	0.0	No Limit
		EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4986357)									
EM2306162-003	BH21/0.1-0.2	EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4991873)									
EM2306162-004	BH21/0.5-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4994936)									
EM2306162-003	BH21/0.1-0.2	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2306571-030	Anonymous	EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4994939)									
EM2306162-004	BH21/0.5-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EM2306574-022	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4986357)									
EM2306162-003	BH21/0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit

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Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4986357) - continued									
EM2306162-003	BH21/0.1-0.2	EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4991873)									
EM2306162-004	BH21/0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4994936)									
EM2306162-003	BH21/0.1-0.2	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EM2306571-030	Anonymous	EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4994939)									
EM2306162-004	BH21/0.5-0.6	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
EM2306574-022	Anonymous	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
EP080: BTEXN (QC Lot: 4991873)									
EM2306162-004	BH21/0.5-0.6	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
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

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Method Blank (MB) and Laboratory Control Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4993358)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	96.1	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	60.5	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	94.6	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	88.1	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	87.2	70.0	130
EG005T: Molybdenum	7439-98-7	2	mg/kg	<2	2.19 mg/kg	72.4	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	93.0	70.0	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	112	70.0	130
EG005T: Tin	7440-31-5	5	mg/kg	<5	5.33 mg/kg	130	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	74.6	70.0	130
EA001: pH in soil using 0.01M CaCl extract (QCLot: 4987422)								
EA001: pH (CaCl2)	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	101	99.3	101
EA033-A: Actual Acidity (QCLot: 5003004)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	99.2	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	16 mole H+ / t	116	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 5003004)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.246 % S	102	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4993357)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.5 mg/kg	86.3	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4992511)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	83.1	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4995054)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	96.0	70.0	130
EK040T: Fluoride Total (QCLot: 4992512)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	334 mg/kg	100	93.1	107
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4994937)								

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4994937) - continued								
EP066-EM: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	131	67.4	136
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4986357)								
EP074-UT: Benzene	71-43-2	0.2	mg/kg	<0.2	2.1 mg/kg	93.1	69.2	116
EP074-UT: Toluene	108-88-3	0.5	mg/kg	<0.5	2.1 mg/kg	90.0	67.7	116
EP074-UT: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2.1 mg/kg	89.7	66.6	115
EP074-UT: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4.2 mg/kg	87.7	65.2	112
EP074-UT: Styrene	100-42-5	0.5	mg/kg	<0.5	2.1 mg/kg	92.1	69.4	111
EP074-UT: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2.1 mg/kg	88.4	68.4	110
EP074H: Naphthalene (QCLot: 4986357)								
EP074-UT: Naphthalene	91-20-3	1	mg/kg	<1	0.6 mg/kg	92.4	72.3	114
EP074I: Volatile Halogenated Compounds (QCLot: 4986357)								
EP074-UT: Vinyl chloride	75-01-4	0.02	mg/kg	<0.02	0.1 mg/kg	91.7	47.0	138
EP074-UT: 1.1-Dichloroethene	75-35-4	0.01	mg/kg	<0.01	0.1 mg/kg	90.2	57.6	125
EP074-UT: Methylene chloride	75-09-2	0.4	mg/kg	<0.4	2.1 mg/kg	97.5	72.3	115
EP074-UT: trans-1.2-Dichloroethene	156-60-5	0.02	mg/kg	<0.02	0.1 mg/kg	94.2	60.5	122
EP074-UT: cis-1.2-Dichloroethene	156-59-2	0.01	mg/kg	<0.01	0.1 mg/kg	92.4	70.3	112
EP074-UT: Chloroform	67-66-3	0.02	mg/kg	<0.02	0.1 mg/kg	93.1	66.6	115
EP074-UT: 1.1.1-Trichloroethane	71-55-6	0.01	mg/kg	<0.01	0.1 mg/kg	90.6	64.4	122
EP074-UT: Carbon Tetrachloride	56-23-5	0.01	mg/kg	<0.01	0.1 mg/kg	90.0	58.4	127
EP074-UT: 1.2-Dichloroethane	107-06-2	0.02	mg/kg	<0.02	0.1 mg/kg	102	72.9	114
EP074-UT: Trichloroethene	79-01-6	0.02	mg/kg	<0.02	0.1 mg/kg	88.5	64.7	115
EP074-UT: 1.1.2-Trichloroethane	79-00-5	0.04	mg/kg	<0.04	0.1 mg/kg	96.7	72.6	116
EP074-UT: Tetrachloroethene	127-18-4	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	60.0	119
EP074-UT: 1.1.1.2-Tetrachloroethane	630-20-6	0.01	mg/kg	<0.01	0.1 mg/kg	97.2	71.8	116
EP074-UT: 1.1.2.2-Tetrachloroethane	79-34-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.1	66.1	116
EP074-UT: Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.02	0.1 mg/kg	73.8	39.8	128
EP074-UT: Chlorobenzene	108-90-7	0.02	mg/kg	<0.02	0.1 mg/kg	93.2	70.3	113
EP074-UT: 1.4-Dichlorobenzene	106-46-7	0.02	mg/kg	<0.02	0.1 mg/kg	90.8	62.6	113
EP074-UT: 1.2-Dichlorobenzene	95-50-1	0.02	mg/kg	<0.02	0.1 mg/kg	92.8	70.8	110
EP074-UT: 1.2.4-Trichlorobenzene	120-82-1	0.01	mg/kg	<0.01	0.1 mg/kg	82.7	48.4	120
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4994938)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	107	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	96.7	81.0	123

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4994938) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	106	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	102	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	109	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	110	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	111	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	114	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	109	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	118	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	97.4	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	104	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	96.2	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	89.5	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	89.4	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	89.2	65.8	127
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4994935)								
EP075-EM: 2-Chlorophenol	95-57-8	0.03	mg/kg	<0.03	2 mg/kg	102	74.5	126
EP075-EM: 2.4-Dichlorophenol	120-83-2	0.03	mg/kg	<0.03	2 mg/kg	95.4	72.7	126
EP075-EM: 2.6-Dichlorophenol	87-65-0	0.03	mg/kg	<0.03	2 mg/kg	97.4	73.5	132
EP075-EM: 4-Chloro-3-methylphenol	59-50-7	0.03	mg/kg	<0.03	2 mg/kg	97.3	72.8	128
EP075-EM: 2.4.5-Trichlorophenol	95-95-4	0.05	mg/kg	<0.05	2 mg/kg	101	73.3	134
EP075-EM: 2.4.6-Trichlorophenol	88-06-2	0.05	mg/kg	<0.05	2 mg/kg	99.2	72.4	128
EP075-EM: 2.3.5.6-Tetrachlorophenol	935-95-5	0.03	mg/kg	<0.03	2 mg/kg	97.2	69.4	126
EP075-EM: 2.3.4.5 & 2.3.4.6-Tetrachlorophenol	4901-51-3/5 8-90-2	0.05	mg/kg	<0.05	4 mg/kg	102	71.9	128
EP075-EM: Pentachlorophenol	87-86-5	0.2	mg/kg	<0.2	4 mg/kg	93.0	54.4	135
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4994935)								
EP075-EM: Phenol	108-95-2	1	mg/kg	<1	2 mg/kg	102	71.5	130
EP075-EM: 2-Methylphenol	95-48-7	1	mg/kg	<1	2 mg/kg	113	73.4	129
EP075-EM: 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	4 mg/kg	113	74.3	129
EP075-EM: 2-Nitrophenol	88-75-5	1	mg/kg	<1	2 mg/kg	94.0	70.9	133
EP075-EM: 2.4-Dimethylphenol	105-67-9	1	mg/kg	<1	2 mg/kg	93.4	71.8	132
EP075-EM: 2.4-Dinitrophenol	51-28-5	5	mg/kg	<5	10 mg/kg	92.7	41.0	156
EP075-EM: 4-Nitrophenol	100-02-7	5	mg/kg	<5	10 mg/kg	99.5	65.3	134
EP075-EM: 2-Methyl-4.6-dinitrophenol	8071-51-0	5	mg/kg	<5	10 mg/kg	96.9	43.6	128

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4994935) - continued								
EP075-EM: Dinoseb	88-85-7	5	mg/kg	<5	10 mg/kg	96.1	62.0	128
EP075-EM: 2-Cyclohexyl-4.6-Dinitrophenol	131-89-5	5	mg/kg	<5	10 mg/kg	99.7	34.5	137
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4994935)								
EP075-EM: Naphthalene	91-20-3	0.5	mg/kg	<0.5	2 mg/kg	95.7	73.0	131
EP075-EM: Acenaphthene	83-32-9	0.5	mg/kg	<0.5	2 mg/kg	95.2	76.3	130
EP075-EM: Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	2 mg/kg	95.5	72.0	135
EP075-EM: Fluorene	86-73-7	0.5	mg/kg	<0.5	2 mg/kg	97.4	74.4	131
EP075-EM: Phenanthrene	85-01-8	0.5	mg/kg	<0.5	2 mg/kg	97.7	73.3	130
EP075-EM: Anthracene	120-12-7	0.5	mg/kg	<0.5	2 mg/kg	97.6	78.4	127
EP075-EM: Fluoranthene	206-44-0	0.5	mg/kg	<0.5	2 mg/kg	97.7	75.3	132
EP075-EM: Pyrene	129-00-0	0.5	mg/kg	<0.5	2 mg/kg	98.1	75.4	130
EP075-EM: Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	2 mg/kg	99.9	69.6	133
EP075-EM: Chrysene	218-01-9	0.5	mg/kg	<0.5	2 mg/kg	101	75.0	133
EP075-EM: Benzo(b+j) & Benzo(k)fluoranthene	205-99-2 207-08-9	1	mg/kg	<1.0	4 mg/kg	102	75.8	133
EP075-EM: Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	2 mg/kg	102	65.1	130
EP075-EM: Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	2 mg/kg	103	72.1	134
EP075-EM: Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	2 mg/kg	103	72.9	135
EP075-EM: Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	2 mg/kg	104	71.3	134
EP075I: Organochlorine Pesticides (QCLot: 4994935)								
EP075-EM: alpha-BHC	319-84-6	0.03	mg/kg	<0.03	2 mg/kg	100	71.0	129
EP075-EM: Hexachlorobenzene (HCB)	118-74-1	0.03	mg/kg	<0.03	2 mg/kg	96.8	74.8	126
EP075-EM: beta-BHC	319-85-7	0.03	mg/kg	<0.03	2 mg/kg	99.2	75.7	130
EP075-EM: gamma-BHC	58-89-9	0.03	mg/kg	<0.03	2 mg/kg	97.7	70.8	130
EP075-EM: delta-BHC	319-86-8	0.03	mg/kg	<0.03	2 mg/kg	101	76.5	134
EP075-EM: Heptachlor	76-44-8	0.03	mg/kg	<0.03	2 mg/kg	96.8	75.5	131
EP075-EM: Aldrin	309-00-2	0.03	mg/kg	<0.03	2 mg/kg	97.2	76.8	130
EP075-EM: Heptachlor epoxide	1024-57-3	0.03	mg/kg	<0.03	2 mg/kg	96.4	73.6	130
EP075-EM: cis-Chlordane	5103-71-9	0.03	mg/kg	<0.03	2 mg/kg	95.0	75.0	133
EP075-EM: trans-Chlordane	5103-74-2	0.03	mg/kg	<0.03	2 mg/kg	96.6	75.3	131
EP075-EM: Endosulfan 1	959-98-8	0.03	mg/kg	<0.03	2 mg/kg	97.6	69.4	134
EP075-EM: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	2 mg/kg	101	71.0	132
EP075-EM: Dieldrin	60-57-1	0.03	mg/kg	<0.03	2 mg/kg	97.0	78.0	133
EP075-EM: Endrin aldehyde	7421-93-4	0.03	mg/kg	<0.03	2 mg/kg	97.5	69.0	143

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075I: Organochlorine Pesticides (QCLot: 4994935) - continued								
EP075-EM: Endrin	72-20-8	0.03	mg/kg	<0.03	2 mg/kg	101	55.7	145
EP075-EM: Endosulfan 2	33213-65-9	0.03	mg/kg	<0.03	2 mg/kg	102	71.4	135
EP075-EM: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	2 mg/kg	99.9	74.8	134
EP075-EM: Endosulfan sulfate	1031-07-8	0.03	mg/kg	<0.03	2 mg/kg	101	70.2	135
EP075-EM: 4.4`-DDT	50-29-3	0.05	mg/kg	<0.05	2 mg/kg	98.2	77.7	133
EP075-EM: Methoxychlor	72-43-5	0.03	mg/kg	<0.03	2 mg/kg	100.0	63.6	135
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4986357)								
EP074-UT: C6 - C9 Fraction	----	10	mg/kg	<10	39.6 mg/kg	97.6	61.1	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4991873)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	77.0	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4994936)								
EP071-EM: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	115	74.4	129
EP071-EM: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	104	81.0	123
EP071-EM: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	114	81.8	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4994939)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	770 mg/kg	116	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	2860 mg/kg	97.8	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1540 mg/kg	103	82.4	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986357)								
EP074-UT: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	48.9 mg/kg	96.1	59.9	119
EP074-UT: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4991873)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	77.3	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4994936)								
EP071-EM: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	97.1	75.4	132
EP071-EM: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	108	80.8	120
EP071-EM: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	106	73.3	136
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4994939)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1170 mg/kg	93.8	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3830 mg/kg	100.0	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	290 mg/kg	101	73.3	137
EP080: BTEXN (QCLot: 4991873)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	75.2	61.6	117

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Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 4991873) - continued								
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	77.9	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	75.3	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	80.2	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	85.7	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	92.9	61.8	123

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4993358)							
EM2306162-004	BH21/0.5-0.6	EG005T: Arsenic	7440-38-2	50 mg/kg	79.3	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.1	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	99.6	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	98.6	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	93.8	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	96.9	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	100	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4993357)							
EM2306162-004	BH21/0.5-0.6	EG035T: Mercury	7439-97-6	0.5 mg/kg	105	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 4992511)							
EM2306162-008	BH22/0.1-0.2	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	# 57.2	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 4995054)							
EM2306162-008	BH22/0.1-0.2	EK026SF: Total Cyanide	57-12-5	20 mg/kg	117	70.0	130
EK040T: Fluoride Total (QCLot: 4992512)							
EM2306162-008	BH22/0.1-0.2	EK040T: Fluoride	16984-48-8	400 mg/kg	87.5	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4994937)							
EM2306571-009	Anonymous	EP066-EM: Total Polychlorinated biphenyls	----	1 mg/kg	144	59.6	152
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 4986357)							
EM2306162-008	BH22/0.1-0.2	EP074-UT: Benzene	71-43-2	2 mg/kg	106	53.7	130
		EP074-UT: Toluene	108-88-3	2 mg/kg	105	55.1	124
EP074I: Volatile Halogenated Compounds (QCLot: 4986357)							

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074I: Volatile Halogenated Compounds (QCLot: 4986357) - continued							
EM2306162-008	BH22/0.1-0.2	EP074-UT: 1.1-Dichloroethene	75-35-4	2 mg/kg	94.9	38.4	145
		EP074-UT: Trichloroethene	79-01-6	2 mg/kg	90.7	48.1	128
		EP074-UT: Chlorobenzene	108-90-7	2 mg/kg	94.9	55.5	122
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4994938)							
EM2306162-009	BH22/0.5-0.6	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	88.0	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	98.1	65.5	136
EP075A: Phenolic Compounds (Halogenated) (QCLot: 4994935)							
EM2306162-008	BH22/0.1-0.2	EP075-EM: 2-Chlorophenol	95-57-8	3 mg/kg	115	44.0	143
		EP075-EM: 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	114	41.5	139
		EP075-EM: Pentachlorophenol	87-86-5	3 mg/kg	123	10.0	144
EP075A: Phenolic Compounds (Non-halogenated) (QCLot: 4994935)							
EM2306162-008	BH22/0.1-0.2	EP075-EM: Phenol	108-95-2	3 mg/kg	113	44.2	134
		EP075-EM: 2-Nitrophenol	88-75-5	3 mg/kg	110	34.2	129
EP075B: Polynuclear Aromatic Hydrocarbons (QCLot: 4994935)							
EM2306162-008	BH22/0.1-0.2	EP075-EM: Acenaphthene	83-32-9	3 mg/kg	109	42.6	138
		EP075-EM: Pyrene	129-00-0	3 mg/kg	121	37.8	152
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4986357)							
EM2306162-008	BH22/0.1-0.2	EP074-UT: C6 - C9 Fraction	----	28 mg/kg	102	42.3	111
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4991873)							
EM2306162-009	BH22/0.5-0.6	EP080: C6 - C9 Fraction	----	28 mg/kg	54.8	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4994936)							
EM2306571-001	Anonymous	EP071-EM: C10 - C14 Fraction	----	770 mg/kg	87.1	71.3	126
		EP071-EM: C15 - C28 Fraction	----	2860 mg/kg	95.2	75.1	123
		EP071-EM: C29 - C36 Fraction	----	1540 mg/kg	99.2	78.1	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4994939)							
EM2306162-013	QC4	EP071: C10 - C14 Fraction	----	770 mg/kg	111	71.2	125
		EP071: C15 - C28 Fraction	----	2860 mg/kg	91.9	75.6	122
		EP071: C29 - C36 Fraction	----	1540 mg/kg	95.8	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4986357)							
EM2306162-008	BH22/0.1-0.2	EP074-UT: C6 - C10 Fraction	C6_C10	33 mg/kg	95.2	39.9	109
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4991873)							
EM2306162-009	BH22/0.5-0.6	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	49.2	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4994936)							
EM2306571-001	Anonymous	EP071-EM: >C10 - C16 Fraction	----	1170 mg/kg	90.5	71.5	130
		EP071-EM: >C16 - C34 Fraction	----	3830 mg/kg	94.4	76.9	119

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Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4994936) - continued							
EM2306571-001	Anonymous	EP071-EM: >C34 - C40 Fraction	----	290 mg/kg	79.5	65.3	139
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4994939)							
EM2306162-013	QC4	EP071: >C10 - C16 Fraction	----	1170 mg/kg	89.2	72.2	128
		EP071: >C16 - C34 Fraction	----	3830 mg/kg	93.5	76.5	119
		EP071: >C34 - C40 Fraction	----	290 mg/kg	93.3	66.8	138
EP080: BTEXN (QCLot: 4991873)							
EM2306162-009	BH22/0.5-0.6	EP080: Benzene	71-43-2	2 mg/kg	63.6	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	70.2	57.1	131

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QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2306162**	Page	: 1 of 10
Client	: **WSP Australia Pty Ltd**	Laboratory	: Environmental Division Melbourne
Contact	: ALANA DUBOWIK	Telephone	: +61-3-8549 9600
Project	: PS200634	Date Samples Received	: 06-Apr-2023
Site	: Bales Road, Cranbourne South	Issue Date	: 21-Apr-2023
Sampler	: Andrew Sutanto	No. of samples received	: 14
Order number	: PS200634	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG048: Hexavalent Chromium (Alkaline Digest)	EM2306162--008	BH22/0.1-0.2	**Hexavalent Chromium**	18540-29-9	57.2 %	58.0-114%	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
	1				
Matrix Spikes (MS)					
Hexavalent Chromium by Alkaline Digestion and DA Finish	1	13	7.69	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / *Container* / Client Sample ID(s)		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**13-Apr-2023**	13-Apr-2023	✓	**13-Apr-2023**	13-Apr-2023	✓
EA033-A: Actual Acidity								
Snap Lock Bag - frozen (EA033)								
BH22/0.5-0.6, BH22/3.0-3.1	BH22/2.0-2.1,	**06-Apr-2023**	**21-Apr-2023**	05-Apr-2024	✓	**21-Apr-2023**	20-Jul-2023	✓
EA033-B: Potential Acidity								
Snap Lock Bag - frozen (EA033)								
BH22/0.5-0.6, BH22/3.0-3.1	BH22/2.0-2.1,	**06-Apr-2023**	**21-Apr-2023**	05-Apr-2024	✓	**21-Apr-2023**	20-Jul-2023	✓
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen (EA033)								
BH22/0.5-0.6, BH22/3.0-3.1	BH22/2.0-2.1,	**06-Apr-2023**	**21-Apr-2023**	05-Apr-2024	✓	**21-Apr-2023**	20-Jul-2023	✓

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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
EA033-D: Retained Acidity								
Snap Lock Bag - frozen (EA033)								
BH22/0.5-0.6,	BH22/2.0-2.1,	**06-Apr-2023**	**21-Apr-2023**	05-Apr-2024	✓	**21-Apr-2023**	20-Jul-2023	✓
BH22/3.0-3.1								
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen (EA033)								
BH22/0.5-0.6,	BH22/2.0-2.1,	**06-Apr-2023**	**21-Apr-2023**	05-Apr-2024	✓	**21-Apr-2023**	20-Jul-2023	✓
BH22/3.0-3.1								
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
BH21/0.1-0.2,	BH21/0.5-0.6,	**06-Apr-2023**	**----**	----	----	**14-Apr-2023**	20-Apr-2023	✓
BH22/0.1-0.2,	BH22/0.5-0.6,							
QC4								
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH21/0.1-0.2,	BH21/0.5-0.6,	**06-Apr-2023**	**17-Apr-2023**	03-Oct-2023	✓	**17-Apr-2023**	03-Oct-2023	✓
BH22/0.1-0.2,	BH22/0.5-0.6,							
QC4								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH21/0.1-0.2,	BH21/0.5-0.6,	**06-Apr-2023**	**17-Apr-2023**	04-May-2023	✓	**17-Apr-2023**	04-May-2023	✓
BH22/0.1-0.2,	BH22/0.5-0.6,							
QC4								
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	04-May-2023	✓	**18-Apr-2023**	24-Apr-2023	✓
EK026SF: Total CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK026SF)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**19-Apr-2023**	01-May-2023	✓
EK040T: Fluoride Total								
Soil Glass Jar - Unpreserved (EK040T)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	04-May-2023	✓	**20-Apr-2023**	04-May-2023	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066-EM)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**18-Apr-2023**	27-May-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**12-Apr-2023**	13-Apr-2023	✓	**13-Apr-2023**	13-Apr-2023	✓
EP074H: Naphthalene								
Soil Glass Jar - Unpreserved (EP074-UT)								
BH21/0.1-0.2,	BH22/0.1-0.2	**06-Apr-2023**	**12-Apr-2023**	13-Apr-2023	✓	**13-Apr-2023**	13-Apr-2023	✓

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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
EP074I: Volatile Halogenated Compounds							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**12-Apr-2023**	13-Apr-2023	✓	**13-Apr-2023**	13-Apr-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH21/0.5-0.6, BH22/0.5-0.6, QC4	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**18-Apr-2023**	27-May-2023	✓
EP075A: Phenolic Compounds (Halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**19-Apr-2023**	27-May-2023	✓
EP075A: Phenolic Compounds (Non-halogenated)							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**19-Apr-2023**	27-May-2023	✓
EP075B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**19-Apr-2023**	27-May-2023	✓
EP075I: Organochlorine Pesticides							
Soil Glass Jar - Unpreserved (EP075-EM)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**19-Apr-2023**	27-May-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**12-Apr-2023**	13-Apr-2023	✓	**13-Apr-2023**	13-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP080)							
BH21/0.5-0.6, BH22/0.5-0.6, QC4	**06-Apr-2023**	**14-Apr-2023**	20-Apr-2023	✓	**17-Apr-2023**	20-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071)							
BH21/0.1-0.2, BH21/0.5-0.6, BH22/0.1-0.2, BH22/0.5-0.6, QC4	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**18-Apr-2023**	27-May-2023	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP074-UT)							
BH21/0.1-0.2, BH22/0.1-0.2	**06-Apr-2023**	**12-Apr-2023**	13-Apr-2023	✓	**13-Apr-2023**	13-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP080)							
BH21/0.5-0.6, BH22/0.5-0.6, QC4	**06-Apr-2023**	**14-Apr-2023**	20-Apr-2023	✓	**17-Apr-2023**	20-Apr-2023	✓
Soil Glass Jar - Unpreserved (EP071)							
BH21/0.1-0.2, BH21/0.5-0.6, BH22/0.1-0.2, BH22/0.5-0.6, QC4	**06-Apr-2023**	**17-Apr-2023**	20-Apr-2023	✓	**18-Apr-2023**	27-May-2023	✓

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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: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH21/0.5-0.6, BH22/0.5-0.6, QC4	**06-Apr-2023**	**14-Apr-2023**	20-Apr-2023	✓	**17-Apr-2023**	20-Apr-2023	✓

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Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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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*	
Method Blanks (MB) - Continued							
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	13	**7.69**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB - VIC EPA 448.3 Screen	EP066-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Organic Compounds - Waste Classification	EP075-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071-EM	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds - Ultra-trace	EP074-UT	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl2 extract	EA001	SOIL	In house: Referenced to Rayment and Lyons 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 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 Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
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	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).

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Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071-EM	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
Volatile Organic Compounds - Ultra-trace	EP074-UT	SOIL	In house: Referenced to USEPA SW 846 - 8260 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 Schedule B(3).
Volatile Organic Compounds - Ultra-trace - Summations	EP074-UT-SUM	SOIL	Summation of MAHs and VHCs
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
Semivolatile Organic Compounds - Waste Classification	EP075-EM	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
SVOC - Waste Classification (Sums)	EP075-EM-SUM	SOIL	Summations for EP075 (EM variation)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl2 extract	EA001-PR	SOIL	In house: Referenced to Rayment and Lyons 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl2 and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM Schedule B(3).
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Methanolic Extraction of Soils - Ultra-trace.	ORG16-UT	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids - VIC EPA Screen	ORG17-EM	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

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CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

Page of

#977852
03/04/22

WSP W/O Number:	PS200634
Job Location:	Bales Road, Cranbourne South
Laboratory	Eurofins
Order No.:	QUOTE: ME/135/14 V4
Sampled By	Andrew Sykanto (AS)
Job Contact:	Alena Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email:	Alena.dubowik@wsp.com; tim.vass@wsp.com

OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)	HOLD
OH	03/04/22	BH16/0.1	Soil	1J				

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

SAMPLE RECEIPT

Relinquished by: AB
Organisation: WSP
Date: 03/04 Received by: Jake
Time: Organisation:
3/4 4:12 pm

DELIVERED BY: COURIER/LAE ☐ Security Sealed

ANALYTICAL SCHEDULE

Relinquished by:
Organisation: WSP
Date: Received by:
Time: Organisation:

RECEIVED BY: ☐ Chilled
Email ☐ Frozen
HAND ☐ Ambient

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

5.8° ICE

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

Date _____

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Tyrone Gowans

From: Vass, Tim <Tim.Vass@wsp.com>
Sent: Tuesday, 4 April 2023 12:09 PM
To: #AU_CAU001_EnviroSampleVic
Subject: RE: Eurofins Sample Receipt Advice - Report 977852 : Site BALES ROAD CRANBOURNE SOUTH (PS200634)

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.
Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Hi Emily,

Please analyse this sample for "EPA Publication 1828.2 Table 3" suite.

If any questions/issues, please let me know.

Thanks
Tim

Tim Vass
Technical Executive, Contaminated Land Management

T: +613 8327 8655
M: +61 407 306 607
Tim.Vass@wsp.com

WSP Australia Pty Limited
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Australia

wsp.com/au

WSP acknowledges that every project we work on takes place on First Peoples lands. We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

From: EnviroSampleVic@eurofins.com <EnviroSampleVic@eurofins.com>
Sent: Monday, 3 April 2023 10:05 PM
To: Dubowik, Alana <alana.dubowik@wsp.com>
Cc: Vass, Tim <Tim.Vass@wsp.com>
Subject: Eurofins Sample Receipt Advice - Report 977852 : Site BALES ROAD CRANBOURNE SOUTH (PS200634)

Dear Valued Client,

NO ANALYSIS. PLEASE ADVISE.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins Analytical Services Manager as soon as possible to make certain that they get changed.

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IANZ# 1327	IANZ# 1290

Sample Receipt Advice

Company name:	WSP Australia P/L MELB
Contact name:	Alana Dubowik
Project name:	BALES ROAD CRANBOURNE SOUTH
Project ID:	PS200634
Turnaround time:	5 Day
Date/Time received	Apr 4, 2023 12:09 PM
Eurofins reference	977852

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✗	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Harry Bacalis on phone : or by email: HarryBacalis@eurofins.com

Results will be delivered electronically via email to Alana Dubowik - alana.dubowik@wsp.com.

Note: A copy of these results will also be delivered to the general WSP Australia P/L MELB email address.

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WSP Australia P/L MELB
Level 11, 567 Collins Street
Melbourne
VIC 3000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Alana Dubowik**

Report **977852-S**
Project name BALES ROAD CRANBOURNE SOUTH
Project ID PS200634
Received Date Apr 04, 2023

Client Sample ID			**BH16/0.1**
Sample Matrix			**Soil**
Eurofins Sample No.			**M23-Ap0004106**
Date Sampled			**Apr 03, 2023**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	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

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Client Sample ID			BH16/0.1
Sample Matrix			**Soil**
Eurofins Sample No.			**M23-Ap0004106**
Date Sampled			**Apr 03, 2023**
Test/Reference	LOR	Unit	
Volatile Organics			
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	%	61
Toluene-d8 (surr.)	1	%	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5

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Client Sample ID			BH16/0.1
Sample Matrix			**Soil**
Eurofins Sample No.			**M23-Ap0004106**
Date Sampled			**Apr 03, 2023**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	84
p-Terphenyl-d14 (surr.)	1	%	85
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-HCH	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-HCH	0.05	mg/kg	< 0.05
d-HCH	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-HCH (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	0.5	mg/kg	< 0.5
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	%	132
Tetrachloro-m-xylene (surr.)	1	%	97
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

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Client Sample ID			BH16/0.1
Sample Matrix			Soil
Eurofins Sample No.			M23-Ap0004106
Date Sampled			Apr 03, 2023
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Aroclor-1260	0.1	mg/kg	< 0.1
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	132
Tetrachloro-m-xylene (surr.)	1	%	97
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-Nitrophenol	1.0	mg/kg	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
Total cresols*	0.5	mg/kg	< 0.5
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Phenol-d6 (surr.)	1	%	90
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	< 100
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	8.4
Heavy Metals			
Arsenic	2	mg/kg	5.0
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	31
Copper	5	mg/kg	8.4
Lead	5	mg/kg	6.5
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	17
Selenium	2	mg/kg	< 2
Silver	2	mg/kg	< 2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	6.0
Sample Properties			
% Moisture	1	%	10

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Sample History

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

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 1828.2 Table 3 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Volatile Organics	Melbourne	Apr 04, 2023	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	Apr 04, 2023	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Apr 04, 2023	28 Days
- Method: LTM-INO-4100 Hexavalent Chromium by Spectrometric detection			
Cyanide (total)	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Apr 05, 2023	28 Days
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25 °C as rec.)	Melbourne	Apr 04, 2023	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	Apr 04, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	Apr 04, 2023	14 Days
- Method: LTM-GEN-7080 Moisture			

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IANZ# 1290

Company Name: WSP Australia P/L MELB
Address: Level 11, 567 Collins Street
Melbourne
VIC 3000

Project Name: BALES ROAD CRANBOURNE SOUTH
Project ID: PS200634

Order No.:
Report #: 977852
Phone: 9861 1111
Fax: 9861 1144

Received: Apr 4, 2023 12:09 PM
Due: Apr 13, 2023
Priority: 5 Day
Contact Name: Alana Dubowik

Eurofins Analytical Services Manager : Harry Bacalis

Sample Detail						Moisture Set	Vic EPA 1828.2 Table 3 (Solids)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH16/0.1	Apr 03, 2023		Soil	M23-Ap0004106	X	X
Test Counts						1	1

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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.

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/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
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.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
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	
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							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	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	
Benzene	mg/kg	< 0.1			0.1	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	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	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	
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	
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							
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-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	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-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	< 0.5			0.5	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	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	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	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	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	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	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	< 2			2	Pass	
Tin	mg/kg	< 10			10	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	107			70-130	Pass	
TRH C10-C14	%	88			70-130	Pass	
TRH C6-C10	%	102			70-130	Pass	
TRH >C10-C16	%	89			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	114			70-130	Pass	
1.1.1-Trichloroethane	%	112			70-130	Pass	
1.2-Dichlorobenzene	%	115			70-130	Pass	
1.2-Dichloroethane	%	108			70-130	Pass	
Benzene	%	92			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
Toluene	%	100			70-130	Pass	
Trichloroethene	%	124			70-130	Pass	
Xylenes - Total*	%	98			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	93			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	127			70-130	Pass	
Acenaphthylene	%	107			70-130	Pass	
Anthracene	%	104			70-130	Pass	
Benz(a)anthracene	%	83			70-130	Pass	
Benzo(a)pyrene	%	97			70-130	Pass	
Benzo(b&j)fluoranthene	%	91			70-130	Pass	
Benzo(g.h.i)perylene	%	100			70-130	Pass	
Benzo(k)fluoranthene	%	90			70-130	Pass	
Chrysene	%	123			70-130	Pass	
Dibenz(a.h)anthracene	%	101			70-130	Pass	
Fluoranthene	%	95			70-130	Pass	
Fluorene	%	130			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	105			70-130	Pass	
Naphthalene	%	115			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	95			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	84			70-130	Pass	
4.4'-DDD	%	106			70-130	Pass	
4.4'-DDE	%	86			70-130	Pass	
4.4'-DDT	%	78			70-130	Pass	
a-HCH	%	90			70-130	Pass	
Aldrin	%	78			70-130	Pass	
b-HCH	%	89			70-130	Pass	
d-HCH	%	75			70-130	Pass	
Dieldrin	%	100			70-130	Pass	
Endosulfan I	%	74			70-130	Pass	
Endosulfan II	%	71			70-130	Pass	
Endosulfan sulphate	%	80			70-130	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin	%	88			70-130	Pass	
Endrin aldehyde	%	93			70-130	Pass	
Endrin ketone	%	92			70-130	Pass	
g-HCH (Lindane)	%	83			70-130	Pass	
Heptachlor	%	91			70-130	Pass	
Heptachlor epoxide	%	87			70-130	Pass	
Hexachlorobenzene	%	74			70-130	Pass	
Methoxychlor	%	77			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	103			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	106			25-140	Pass	
2.4-Dichlorophenol	%	86			25-140	Pass	
2.4.5-Trichlorophenol	%	37			25-140	Pass	
2.4.6-Trichlorophenol	%	120			25-140	Pass	
2.6-Dichlorophenol	%	38			25-140	Pass	
4-Chloro-3-methylphenol	%	84			25-140	Pass	
Pentachlorophenol	%	46			25-140	Pass	
Tetrachlorophenols - Total	%	32			25-140	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	69			25-140	Pass	
2-Methyl-4.6-dinitrophenol	%	117			25-140	Pass	
2-Nitrophenol	%	121			25-140	Pass	
2.4-Dimethylphenol	%	76			25-140	Pass	
2.4-Dinitrophenol	%	55			25-140	Pass	
2-Methylphenol (o-Cresol)	%	88			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	104			25-140	Pass	
4-Nitrophenol	%	123			25-140	Pass	
Dinoseb	%	34			25-140	Pass	
Phenol	%	128			25-140	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	96			70-130	Pass	
Cyanide (total)	%	99			70-130	Pass	
Fluoride	%	129			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	85			80-120	Pass	
Cadmium	%	92			80-120	Pass	
Chromium	%	96			80-120	Pass	
Copper	%	92			80-120	Pass	
Lead	%	96			80-120	Pass	
Mercury	%	108			80-120	Pass	
Molybdenum	%	87			80-120	Pass	
Nickel	%	85			80-120	Pass	
Selenium	%	85			80-120	Pass	
Silver	%	93			80-120	Pass	
Tin	%	85			80-120	Pass	
Zinc	%	86			80-120	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	M23-Ap0004112	NCP	%	91			70-130	Pass	
TRH C10-C14	M23-Ap0006659	NCP	%	119			70-130	Pass	
TRH C6-C10	M23-Ap0004112	NCP	%	89			70-130	Pass	
TRH >C10-C16	M23-Ap0006659	NCP	%	123			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	M23-Ap0004112	NCP	%	75			70-130	Pass	
1.1.1-Trichloroethane	M23-Ap0004112	NCP	%	91			70-130	Pass	
1.2-Dichlorobenzene	M23-Ap0004112	NCP	%	103			70-130	Pass	
1.2-Dichloroethane	M23-Ap0004112	NCP	%	104			70-130	Pass	
Benzene	M23-Ap0004112	NCP	%	76			70-130	Pass	
Ethylbenzene	M23-Ap0004112	NCP	%	83			70-130	Pass	
m&p-Xylenes	M23-Ap0004112	NCP	%	82			70-130	Pass	
o-Xylene	M23-Ap0004112	NCP	%	84			70-130	Pass	
Toluene	M23-Ap0004112	NCP	%	84			70-130	Pass	
Trichloroethene	M23-Ap0004112	NCP	%	97			70-130	Pass	
Xylenes - Total*	M23-Ap0004112	NCP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M23-Ap0004112	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M23-Ap0011007	NCP	%	117			70-130	Pass	
Acenaphthylene	M23-Ap0011007	NCP	%	128			70-130	Pass	
Anthracene	M23-Ap0011007	NCP	%	127			70-130	Pass	
Benz(a)anthracene	M23-Ap0011007	NCP	%	106			70-130	Pass	
Benzo(a)pyrene	M23-Ap0011007	NCP	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	M23-Ap0011007	NCP	%	85			70-130	Pass	
Benzo(g.h.i)perylene	M23-Ap0011007	NCP	%	95			70-130	Pass	
Benzo(k)fluoranthene	M23-Ap0011007	NCP	%	75			70-130	Pass	
Chrysene	M23-Ap0011007	NCP	%	104			70-130	Pass	
Dibenz(a.h)anthracene	M23-Ap0011007	NCP	%	83			70-130	Pass	
Fluoranthene	M23-Ap0011007	NCP	%	107			70-130	Pass	
Fluorene	M23-Ap0011007	NCP	%	124			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M23-Ap0011007	NCP	%	85			70-130	Pass	
Naphthalene	M23-Ap0011007	NCP	%	104			70-130	Pass	
Phenanthrene	M23-Ap0011007	NCP	%	128			70-130	Pass	
Pyrene	M23-Ap0011007	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	M23-Ap0006604	NCP	%	83			70-130	Pass	
4.4'-DDD	M23-Ap0006604	NCP	%	98			70-130	Pass	
4.4'-DDE	M23-Ap0006604	NCP	%	78			70-130	Pass	
4.4'-DDT	M23-Ap0006604	NCP	%	78			70-130	Pass	
a-HCH	M23-Ap0006604	NCP	%	96			70-130	Pass	
Aldrin	M23-Ap0006604	NCP	%	76			70-130	Pass	
b-HCH	M23-Ap0006604	NCP	%	86			70-130	Pass	
d-HCH	M23-Ap0006604	NCP	%	77			70-130	Pass	
Dieldrin	M23-Ap0006604	NCP	%	88			70-130	Pass	
Endosulfan I	M23-Ap0006604	NCP	%	99			70-130	Pass	
Endosulfan II	M23-Ap0006604	NCP	%	89			70-130	Pass	
Endosulfan sulphate	M23-Ap0006604	NCP	%	83			70-130	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin	M23-Ap0006604	NCP	%	76			70-130	Pass	
Endrin aldehyde	M23-Ap0006604	NCP	%	112			70-130	Pass	
Endrin ketone	M23-Ap0006604	NCP	%	112			70-130	Pass	
g-HCH (Lindane)	M23-Ap0006604	NCP	%	80			70-130	Pass	
Heptachlor	M23-Ap0006604	NCP	%	87			70-130	Pass	
Heptachlor epoxide	M23-Ap0006604	NCP	%	88			70-130	Pass	
Hexachlorobenzene	M23-Ap0006604	NCP	%	85			70-130	Pass	
Methoxychlor	M23-Ap0006604	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	M23-Ap0011007	NCP	%	101			30-130	Pass	
2.4-Dichlorophenol	M23-Ap0011007	NCP	%	47			30-130	Pass	
2.4.5-Trichlorophenol	M23-Ma0072676	NCP	%	83			30-130	Pass	
2.4.6-Trichlorophenol	M23-Ap0011007	NCP	%	64			30-130	Pass	
2.6-Dichlorophenol	M23-Ap0011007	NCP	%	56			30-130	Pass	
4-Chloro-3-methylphenol	M23-Ap0011007	NCP	%	57			30-130	Pass	
Pentachlorophenol	M23-Ap0011007	NCP	%	69			30-130	Pass	
Tetrachlorophenols - Total	M23-Ap0011007	NCP	%	105			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	M23-Ma0070353	NCP	%	81			30-130	Pass	
2-Methyl-4.6-dinitrophenol	M23-Ma0070353	NCP	%	98			30-130	Pass	
2-Nitrophenol	M23-Ap0011007	NCP	%	55			30-130	Pass	
2.4-Dimethylphenol	M23-Ap0011007	NCP	%	33			30-130	Pass	
2.4-Dinitrophenol	M23-Ap0011007	NCP	%	55			30-130	Pass	
2-Methylphenol (o-Cresol)	M23-Ap0011007	NCP	%	45			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M23-Ap0011007	NCP	%	55			30-130	Pass	
4-Nitrophenol	M23-Ma0070353	NCP	%	109			30-130	Pass	
Dinoseb	M23-Ma0072676	NCP	%	60			30-130	Pass	
Phenol	M23-Ap0011007	NCP	%	108			30-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	M23-Ap0002180	NCP	%	109			70-130	Pass	
Fluoride	M23-Ap0004106	CP	%	125			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M23-Ap0000079	NCP	%	78			75-125	Pass	
Cadmium	M23-Ap0000079	NCP	%	107			75-125	Pass	
Chromium	M23-Ap0011057	NCP	%	85			75-125	Pass	
Copper	M23-Ap0011057	NCP	%	87			75-125	Pass	
Lead	M23-Ap0000079	NCP	%	85			75-125	Pass	
Mercury	M23-Ap0000079	NCP	%	114			75-125	Pass	
Molybdenum	M23-Ap0000079	NCP	%	84			75-125	Pass	
Nickel	M23-Ap0011057	NCP	%	79			75-125	Pass	
Selenium	M23-Ap0000079	NCP	%	78			75-125	Pass	
Silver	M23-Ap0000079	NCP	%	109			75-125	Pass	
Tin	M23-Ap0000079	NCP	%	80			75-125	Pass	
Zinc	M23-Ap0011057	NCP	%	78			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M23-Ap0007312	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M23-Ap0006689	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M23-Ap0006689	NCP	mg/kg	< 50	< 50	<1	30%	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C29-C36	M23-Ap0006689	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	M23-Ap0007312	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M23-Ap0006689	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M23-Ap0006689	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M23-Ap0006689	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorotoluene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzene	M23-Ap0007312	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Bromobenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	M23-Ap0007312	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Iodomethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
m&p-Xylenes	M23-Ap0007312	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methylene Chloride	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

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Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
o-Xylene	M23-Ap0007312	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Styrene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	M23-Ap0007312	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
trans-1.2-Dichloroethene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Xylenes - Total*	M23-Ap0007312	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M23-Ap0007312	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M23-Ap0007482	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

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Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M23-Ap0007482	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	M23-Ap0007482	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	M23-Ap0007482	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	M23-Ap0007482	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	M23-Ap0007482	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	M23-Ap0007482	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	M23-Ap0007482	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	M23-Ap0007482	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Nitrophenol	M23-Ap0007482	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	M23-Ap0007482	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	M23-Ap0007482	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M23-Ap0007482	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	M23-Ap0007482	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	M23-Ap0007482	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	M23-Ap0007482	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chromium (hexavalent)	M23-Ap0006364	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Cyanide (total)	M23-Ap0002179	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	B23-Ma0077449	NCP	pH Units	12	12	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M23-Ap0007312	NCP	mg/kg	5.8	5.7	1.4	30%	Pass	
Cadmium	M23-Ap0007312	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M23-Ap0007312	NCP	mg/kg	22	19	14	30%	Pass	
Copper	M23-Ap0007312	NCP	mg/kg	23	20	15	30%	Pass	
Lead	M23-Ap0007312	NCP	mg/kg	42	11	120	30%	Fail	Q15
Mercury	M23-Ap0007312	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Molybdenum	M23-Ap0007312	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Nickel	M23-Ap0007312	NCP	mg/kg	39	39	1.2	30%	Pass	
Selenium	M23-Ap0007312	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M23-Ap0007312	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Tin	M23-Ap0007312	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	M23-Ap0007312	NCP	mg/kg	43	44	2.4	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	M23-Ap0004636	NCP	%	8.8	9.1	3.4	30%	Pass	

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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:

Catherine Wilson	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Edward Lee	Senior Analyst-Organic
Joseph Edouard	Senior Analyst-Organic
Joseph Edouard	Senior Analyst-Volatile
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Sample Properties



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.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

DRAFT

CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

Page of

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: Eurofins
Order No.: QUOTE: ME/135/14 V4
Sampled By:
Job Contact: Alana Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: [redacted].com; tim.vass@wsp.com

OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)	HOLD
OA	06/04/23	BC6	Soil	1J				X

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

SAMPLE RECEIPT

Relinquished by: AS Date: 06/04/23 Received by: Jake 6/4 Time: 13:30 Organisation: WSP Organisation: 1:40 8.2° ICE

ANALYTICAL SCHEDULE

Relinquished by: Date: Received by: SEALED Time: Organisation:

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

DELIVERED BY: COURIER/LAE Security Sealed
RECEIVED BY: Chilled
Email Frozen
HAND Ambient

Date: _____

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - hAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

#097231
ES
6/4/23

DRAFT

Tyrone Gowans

From: Vass, Tim <Tim.Vass@wsp.com>
Sent: Thursday, 6 April 2023 10:49 PM
To: #AU_CAU001_EnviroSampleVic; Dubowik, Alana
Subject: RE: Eurofins Sample Receipt Advice - Report 979231 : Site BALES ROAD CRANBOURNE SOUTH (PS200634)

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.
Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Hi Elaine,

Can we please get this sample, QC6, analysed for 'TPH, BTEX, PAH, 8 metals' suite (not sure of suite code).

Thanks

Tim Vass
Technical Executive, Contaminated Land Management

T: +613 8327 8655
M: +61 407 306 607
Tim.Vass@wsp.com

WSP Australia Pty Limited
Level 11, 567 Collins Street
Melbourne, 3000
Australia

wsp.com/au

WSP acknowledges that every project we work on takes place on First Peoples lands. We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

From: EnviroSampleVIC@eurofins.com <EnviroSampleVIC@eurofins.com>
Sent: Thursday, 6 April 2023 9:35 PM
To: Dubowik, Alana <alana.dubowik@wsp.com>
Cc: Vass, Tim <Tim.Vass@wsp.com>
Subject: Eurofins Sample Receipt Advice - Report 979231 : Site BALES ROAD CRANBOURNE SOUTH (PS200634)

Dear Valued Client,

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Elaine Guinto

DRAFT

Tyrone Gowans

From: Vass, Tim <Tim.Vass@wsp.com>
Sent: Sunday, 9 April 2023 9:10 AM
To: #AU_CAU001_EnviroSampleVic
Subject: RE: Eurofins Sample Receipt Advice - Report 979231 : Site BALES ROAD CRANBOURNE SOUTH (PS200634)

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.
Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Hi Elaine,

Please analyse this sample, QC6, for an 1828.2 Table 3 (fill material) screen.

Thanks
Tim

Tim Vass
M: +61 407 306 607
wsp.com/au

From: EnviroSampleVIC@eurofins.com <EnviroSampleVIC@eurofins.com>
Sent: Thursday, 6 April 2023 9:35 PM
To: Dubowik, Alana <alana.dubowik@wsp.com>
Cc: Vass, Tim <Tim.Vass@wsp.com>
Subject: Eurofins Sample Receipt Advice - Report 979231 : Site BALES ROAD CRANBOURNE SOUTH (PS200634)

Dear Valued Client,

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Elaine Guinto
Sample Receipt

Eurofins Environment Testing
6 Monterey Road Dandenong South VIC 3175
AUSTRALIA
Phone: 03 8564 5043
Email: Envirosamplevic@eurofins.com

DRAFT

eurofins | Environment Testing

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Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Sample Receipt Advice

Company name:	WSP Australia P/L MELB
Contact name:	Alana Dubowik
Project name:	BALES ROAD CRANBOURNE SOUTH
Project ID:	PS200634
Turnaround time:	5 Day
Date/Time received	Apr 11, 2023 10:49 AM
Eurofins reference	979231

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✗	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Harry Bacalis on phone : or by email: HarryBacalis@eurofins.com

Results will be delivered electronically via email to Alana Dubowik - alana.dubowik@wsp.com.

Note: A copy of these results will also be delivered to the general WSP Australia P/L MELB email address.

DRAFT

WSP Australia P/L MELB
Level 11, 567 Collins Street
Melbourne
VIC 3000

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Alana Dubowik**

Report **979231-S**
Project name BALES ROAD CRANBOURNE SOUTH
Project ID PS200634
Received Date Apr 11, 2023

Client Sample ID			**QC6**
Sample Matrix			**Soil**
Eurofins Sample No.			**M23-Ap0016099**
Date Sampled			**Apr 06, 2023**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.2.4-Trichlorobenzene	0.5	mg/kg	< 0.5
Hexachlorobutadiene	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

DRAFT

Client Sample ID			QC6
Sample Matrix			Soil
Eurofins Sample No.			M23-Ap0016099
Date Sampled			Apr 06, 2023
Test/Reference	LOR	Unit	
Volatile Organics			
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	%	51
Toluene-d8 (surr.)	1	%	51
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5

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Client Sample ID			QC6
Sample Matrix			Soil
Eurofins Sample No.			M23-Ap0016099
Date Sampled			Apr 06, 2023
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	84
p-Terphenyl-d14 (surr.)	1	%	84
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-HCH	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	< 0.05
b-HCH	0.05	mg/kg	< 0.05
d-HCH	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-HCH (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	0.5	mg/kg	< 0.5
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	%	83
Tetrachloro-m-xylene (surr.)	1	%	120
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

DRAFT

Client Sample ID			QC6
Sample Matrix			Soil
Eurofins Sample No.			M23-Ap0016099
Date Sampled			Apr 06, 2023
Test/Reference	LOR	Unit	
Polychlorinated Biphenyls			
Aroclor-1260	0.1	mg/kg	< 0.1
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	83
Tetrachloro-m-xylene (surr.)	1	%	120
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-Nitrophenol	1.0	mg/kg	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
Total cresols*	0.5	mg/kg	< 0.5
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Phenol-d6 (surr.)	1	%	68
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Chromium (hexavalent)	1	mg/kg	< 1
Cyanide (total)	5	mg/kg	< 5
Fluoride	100	mg/kg	< 100
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	8.9
Heavy Metals			
Arsenic	2	mg/kg	< 2
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	57
Copper	5	mg/kg	8.0
Lead	5	mg/kg	9.6
Mercury	0.1	mg/kg	< 0.1
Molybdenum	5	mg/kg	< 5
Nickel	5	mg/kg	19
Selenium	2	mg/kg	< 2
Silver	2	mg/kg	< 2
Tin	10	mg/kg	< 10
Zinc	5	mg/kg	5.8
Sample Properties			
% Moisture	1	%	16

DRAFT

Sample History

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

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 1828.2 Table 3 (Solids)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Volatile Organics	Melbourne	Apr 12, 2023	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	Apr 12, 2023	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Apr 12, 2023	28 Days
- Method: LTM-INO-4100 Hexavalent Chromium by Spectrometric detection			
Cyanide (total)	Melbourne	Apr 12, 2023	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride	Melbourne	Apr 13, 2023	28 Days
- Method: LTM-INO-4150 Determination of Total Fluoride PART A – CIC			
pH (1:5 Aqueous extract at 25 °C as rec.)	Melbourne	Apr 12, 2023	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals IWRG 621 : Metals M12	Melbourne	Apr 12, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Melbourne	Apr 11, 2023	14 Days
- Method: LTM-GEN-7080 Moisture			

DRAFT

eurofins

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email: EnviroSales@eurofins.com

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ABN: 50 005 085 521

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Project Name: BALES ROAD CRANBOURNE SOUTH
Project ID: PS200634

Order No.:
Report #: 979231
Phone: 9861 1111
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Received: Apr 11, 2023 10:49 AM
Due: Apr 18, 2023
Priority: 5 Day
Contact Name: Alana Dubowik

Eurofins Analytical Services Manager : Harry Bacalis

Sample Detail						Moisture Set	Vic EPA 1828.2 Table 3 (Solids)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QC6	Apr 06, 2023		Soil	M23-Ap0016099	X	X
Test Counts						1	1

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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.

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/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - 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.
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.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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. 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.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
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	
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							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	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	
Benzene	mg/kg	< 0.1			0.1	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	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Toluene	mg/kg	< 0.1			0.1	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	
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	
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							
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-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	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-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	< 0.5			0.5	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	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	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	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	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	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Fluoride	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	< 2			2	Pass	
Tin	mg/kg	< 10			10	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	88			70-130	Pass	
TRH C10-C14	%	86			70-130	Pass	
TRH C6-C10	%	78			70-130	Pass	
TRH >C10-C16	%	88			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	80			70-130	Pass	
1.1.1-Trichloroethane	%	92			70-130	Pass	
1.2-Dichlorobenzene	%	81			70-130	Pass	
1.2-Dichloroethane	%	94			70-130	Pass	
Benzene	%	86			70-130	Pass	
Ethylbenzene	%	76			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
Toluene	%	82			70-130	Pass	
Trichloroethene	%	97			70-130	Pass	
Xylenes - Total*	%	88			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	77			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	96			70-130	Pass	
Acenaphthylene	%	100			70-130	Pass	
Anthracene	%	88			70-130	Pass	
Benz(a)anthracene	%	76			70-130	Pass	
Benzo(a)pyrene	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	%	108			70-130	Pass	
Benzo(g.h.i)perylene	%	83			70-130	Pass	
Benzo(k)fluoranthene	%	87			70-130	Pass	
Chrysene	%	120			70-130	Pass	
Dibenz(a.h)anthracene	%	74			70-130	Pass	
Fluoranthene	%	83			70-130	Pass	
Fluorene	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	104			70-130	Pass	
Naphthalene	%	88			70-130	Pass	
Phenanthrene	%	78			70-130	Pass	
Pyrene	%	88			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	83			70-130	Pass	
4.4'-DDD	%	80			70-130	Pass	
4.4'-DDE	%	71			70-130	Pass	
4.4'-DDT	%	95			70-130	Pass	
a-HCH	%	91			70-130	Pass	
Aldrin	%	72			70-130	Pass	
b-HCH	%	94			70-130	Pass	
d-HCH	%	95			70-130	Pass	
Dieldrin	%	102			70-130	Pass	
Endosulfan I	%	116			70-130	Pass	
Endosulfan II	%	117			70-130	Pass	
Endosulfan sulphate	%	105			70-130	Pass	

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Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin	%	85			70-130	Pass	
Endrin aldehyde	%	112			70-130	Pass	
Endrin ketone	%	83			70-130	Pass	
g-HCH (Lindane)	%	86			70-130	Pass	
Heptachlor	%	73			70-130	Pass	
Heptachlor epoxide	%	119			70-130	Pass	
Hexachlorobenzene	%	91			70-130	Pass	
Methoxychlor	%	82			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	106			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	73			25-140	Pass	
2.4-Dichlorophenol	%	69			25-140	Pass	
2.4.5-Trichlorophenol	%	48			25-140	Pass	
2.4.6-Trichlorophenol	%	76			25-140	Pass	
2.6-Dichlorophenol	%	35			25-140	Pass	
4-Chloro-3-methylphenol	%	54			25-140	Pass	
Pentachlorophenol	%	50			25-140	Pass	
Tetrachlorophenols - Total	%	68			25-140	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	80			25-140	Pass	
2-Methyl-4.6-dinitrophenol	%	68			25-140	Pass	
2-Nitrophenol	%	48			25-140	Pass	
2.4-Dimethylphenol	%	33			25-140	Pass	
2.4-Dinitrophenol	%	85			25-140	Pass	
2-Methylphenol (o-Cresol)	%	53			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	72			25-140	Pass	
4-Nitrophenol	%	87			25-140	Pass	
Dinoseb	%	74			25-140	Pass	
Phenol	%	50			25-140	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	96			70-130	Pass	
Cyanide (total)	%	98			70-130	Pass	
Fluoride	%	78			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	106			80-120	Pass	
Cadmium	%	108			80-120	Pass	
Chromium	%	109			80-120	Pass	
Copper	%	106			80-120	Pass	
Lead	%	112			80-120	Pass	
Mercury	%	103			80-120	Pass	
Molybdenum	%	104			80-120	Pass	
Nickel	%	104			80-120	Pass	
Selenium	%	106			80-120	Pass	
Silver	%	112			80-120	Pass	
Tin	%	105			80-120	Pass	
Zinc	%	116			80-120	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	M23-Ap0018794	NCP	%	78			70-130	Pass	
TRH C10-C14	M23-Ap0027500	NCP	%	101			70-130	Pass	
TRH C6-C10	M23-Ap0018794	NCP	%	72			70-130	Pass	
TRH >C10-C16	M23-Ap0027500	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	M23-Ap0018794	NCP	%	35			70-130	Fail	Q08
1.1.1-Trichloroethane	M23-Ap0018794	NCP	%	85			70-130	Pass	
1.2-Dichlorobenzene	M23-Ap0018794	NCP	%	75			70-130	Pass	
1.2-Dichloroethane	M23-Ap0018794	NCP	%	73			70-130	Pass	
Benzene	M23-Ap0018794	NCP	%	85			70-130	Pass	
Ethylbenzene	M23-Ap0018794	NCP	%	92			70-130	Pass	
m&p-Xylenes	M23-Ap0018794	NCP	%	87			70-130	Pass	
o-Xylene	M23-Ap0018794	NCP	%	73			70-130	Pass	
Toluene	M23-Ap0018794	NCP	%	88			70-130	Pass	
Trichloroethene	M23-Ap0018794	NCP	%	76			70-130	Pass	
Xylenes - Total*	M23-Ap0018794	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M23-Ap0018794	NCP	%	74			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M23-Ap0014971	NCP	%	93			70-130	Pass	
Acenaphthylene	M23-Ap0014971	NCP	%	87			70-130	Pass	
Anthracene	M23-Ap0014971	NCP	%	101			70-130	Pass	
Benz(a)anthracene	M23-Ap0014971	NCP	%	78			70-130	Pass	
Benzo(a)pyrene	M23-Ap0014971	NCP	%	124			70-130	Pass	
Benzo(b&j)fluoranthene	M23-Ap0014971	NCP	%	113			70-130	Pass	
Benzo(g.h.i)perylene	M23-Ap0014971	NCP	%	91			70-130	Pass	
Benzo(k)fluoranthene	M23-Ap0014971	NCP	%	112			70-130	Pass	
Chrysene	M23-Ap0014971	NCP	%	80			70-130	Pass	
Dibenz(a.h)anthracene	M23-Ap0014971	NCP	%	86			70-130	Pass	
Fluoranthene	M23-Ap0014971	NCP	%	72			70-130	Pass	
Fluorene	M23-Ap0014971	NCP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M23-Ap0014971	NCP	%	83			70-130	Pass	
Naphthalene	M23-Ap0014971	NCP	%	83			70-130	Pass	
Phenanthrene	M23-Ap0014971	NCP	%	74			70-130	Pass	
Pyrene	M23-Ap0014971	NCP	%	83			70-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	M23-Ap0018492	NCP	%	127			70-130	Pass	
Fluoride	M23-Ap0026960	NCP	%	121			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M23-Ap0017777	NCP	%	108			75-125	Pass	
Cadmium	M23-Ap0017777	NCP	%	102			75-125	Pass	
Chromium	M23-Ap0017777	NCP	%	130			75-125	Fail	Q15
Copper	M23-Ap0017777	NCP	%	93			75-125	Pass	
Lead	M23-Ap0017777	NCP	%	105			75-125	Pass	
Mercury	M23-Ap0017777	NCP	%	99			75-125	Pass	
Molybdenum	M23-Ap0017777	NCP	%	109			75-125	Pass	
Nickel	M23-Ap0017777	NCP	%	98			75-125	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Selenium	M23-Ap0017777	NCP	%	100			75-125	Pass	
Silver	M23-Ap0017777	NCP	%	103			75-125	Pass	
Tin	M23-Ap0017777	NCP	%	112			75-125	Pass	
Zinc	M23-Ap0018794	NCP	%	103			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M23-Ap0022402	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M23-Ap0016146	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M23-Ap0016146	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M23-Ap0016146	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	M23-Ap0022402	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M23-Ap0016146	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M23-Ap0016146	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M23-Ap0016146	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trichlorobenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Hexachlorobutadiene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3.5-Trimethylbenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.4-Dichlorobenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chlorotoluene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzene	M23-Ap0022402	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Bromobenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

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Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Dibromochloromethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Ethylbenzene	M23-Ap0022402	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Iodomethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
m&p-Xylenes	M23-Ap0022402	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methylene Chloride	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
o-Xylene	M23-Ap0022402	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Styrene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Toluene	M23-Ap0022402	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
trans-1.2-Dichloroethene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Xylenes - Total*	M23-Ap0022402	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M23-Ap0022402	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M23-Ap0019036	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

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Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Endrin aldehyde	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M23-Ap0015272	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M23-Ap0015272	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M23-Ap0015272	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	M23-Ap0015272	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	M23-Ap0015272	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	M23-Ap0015272	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	M23-Ap0015272	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	M23-Ap0015272	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	M23-Ap0015272	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	M23-Ap0015272	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	M23-Ap0015272	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	M23-Ap0015272	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	M23-Ap0015272	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Nitrophenol	M23-Ap0015272	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	M23-Ap0015272	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	M23-Ap0015272	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	M23-Ap0015272	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	M23-Ap0015272	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	M23-Ap0015272	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	M23-Ap0015272	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	M23-Ap0015272	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chromium (hexavalent)	M23-Ap0016099	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Cyanide (total)	M23-Ap0019956	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Fluoride	M23-Ap0020095	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	M23-Ap0018583	NCP	pH Units	9.9	9.9	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M23-Ap0016153	NCP	mg/kg	5.6	5.8	4.4	30%	Pass	
Cadmium	M23-Ap0016153	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M23-Ap0016153	NCP	mg/kg	22	22	3.0	30%	Pass	
Copper	M23-Ap0016153	NCP	mg/kg	29	29	2.9	30%	Pass	
Lead	M23-Ap0016153	NCP	mg/kg	19	19	3.1	30%	Pass	

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Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Mercury	M23-Ap0016153	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Molybdenum	M23-Ap0016153	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Nickel	M23-Ap0016153	NCP	mg/kg	11	11	<1	30%	Pass	
Selenium	M23-Ap0016153	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M23-Ap0016153	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Tin	M23-Ap0016153	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Zinc	M23-Ap0016153	NCP	mg/kg	48	51	4.8	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	M23-Ap0016134	NCP	%	5.4	5.2	5.3	30%	Pass	

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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:

Catherine Wilson	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Harry Bacalis	Senior Analyst-Volatile
Joseph Edouard	Senior Analyst-Organic
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Sample Properties



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.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

DRAFT

CHAIN OF CUSTODY - No.

WSP Australia Pty Ltd
Level 11, 567 Collins Street, Melbourne
Phone: (03) 9622 9700

Page of

WSP W/O Number: PS200634
Job Location: Bales Road, Cranbourne South
Laboratory: Eurofins
Order No.: [redacted]
Sampled By: Andrew Sutton (AS)
Job Contact: Alena Dubowik (0431 188 144) or Tim Vass (0407 306 607)
Contact Email: Alena.dubowik@wsp.com, tim.vass@wsp.com

OBSERVATIONS	SAMPLE DATE	SAMPLE NUMBER	SAMPLE TYPE	No. CONTAINERS	CRS Suite	P30/4 (1828.2 Table 3)	S26 (TPH, PAH, BTEX, 8 metals)	HOLD
Ø	04/04/23	BH19/003	Soil	1J				

Please see 'Specific Lab Requirements' in the Quote ME/135/14v3 regarding multiple backwards dilutions and No doubling of analysis under VOC/SVOC

TURN AROUND TIME REQUIRED

☐ 1 Working Day ☐ 2 Working Days ☐ 3 Working Days ☐ 4 Working Days ☒ 5 Working Days ☐ _____

SAMPLE RECEIPT

Relinquished by: AS
Organisation: WSP
Date: 04/04/23
Time: 15:30
Received by:
Organisation:

DELIVERED BY: COURIER/LAE / Security Sealed

ANALYTICAL SCHEDULE

Relinquished by:
Organisation: WSP
Date:
Time:
Received by:
Organisation:

RECEIVED BY: Email / HAND / Chilled / Frozen / Ambient

RECEIVING LABORATORY TO CONFIRM RECEIPT OF ANALYTICAL SCHEDULE

Date: _____

Observations to Assist Analysis and OH&S
C - Expected to be Highly Contaminated
N - NAPL Sample
HS - Expected High Salinity
HOC - Expected High Total Organic Carbon
S - Sheen
O - Odourous

#279265
6/4/23

DRAFT

eurofins | Environment Testing

www.eurofins.com.au EnviroSales@eurofins.com

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NATA# 1261 Site# 1254

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Tel: +61 3 8564 5000
NATA# 1261 Site# 25403

Sydney
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Girraween
NSW 2145
Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
Tel: +61 2 6113 8091
NATA# 1261 Site# 25466

Brisbane
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Murarrie
QLD 4172
Tel: +61 7 3902 4600
NATA# 1261 Site# 20794

Newcastle
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Mayfield West NSW 2304
Tel: +61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

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NATA# 2377 Site# 2370

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IANZ# 1327

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
Tel: 0800 856 450
IANZ# 1290

Sample Receipt Advice

Company name:	WSP Australia P/L MELB
Contact name:	- ALL INVOICES
Project name:	BALES ROAD CRANBOURNE SOUTH
Project ID:	PS200634
Turnaround time:	10 Day
Date/Time received	Apr 6, 2023 5:29 PM
Eurofins reference	979265

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

SAMPLE ON HOLD. PLEASE ADVISE FOR ANALYSIS

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Harry Bacalis on phone : or by email: HarryBacalis@eurofins.com

Results will be delivered electronically via email to - ALL INVOICES - AU.golderaccountspayable@wsp.com.

Note: A copy of these results will also be delivered to the general WSP Australia P/L MELB email address.

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eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West NSW 2304
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	Tel: +61 2 4968 8448
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	NATA# 1261
NATA# 1261 Site# 1254	NATA# 1261 Site# 25403	NATA# 1261 Site# 18217	NATA# 1261 Site# 25466	NATA# 1261 Site# 20794	Site# 25079 & 25289

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IANZ# 1327	IANZ# 1290

Company Name: WSP Australia P/L MELB
Address: Level 11, 567 Collins Street
Melbourne
VIC 3000

Project Name: BALES ROAD CRANBOURNE SOUTH
Project ID: PS200634

Order No.:
Report #: 979265
Phone: 9861 1111
Fax: 9861 1144

Received: Apr 6, 2023 5:29 PM
Due: Apr 24, 2023
Priority: 10 Day
Contact Name: - ALL INVOICES

Eurofins Analytical Services Manager : Harry Bacalis

Sample Detail						HOLD
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	BH19/QC3	Apr 04, 2023		Soil	M23-Ap0016301	X
Test Counts						1

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