



SDG: 160707-87
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 369841
Superseded Report:

Chromatogram

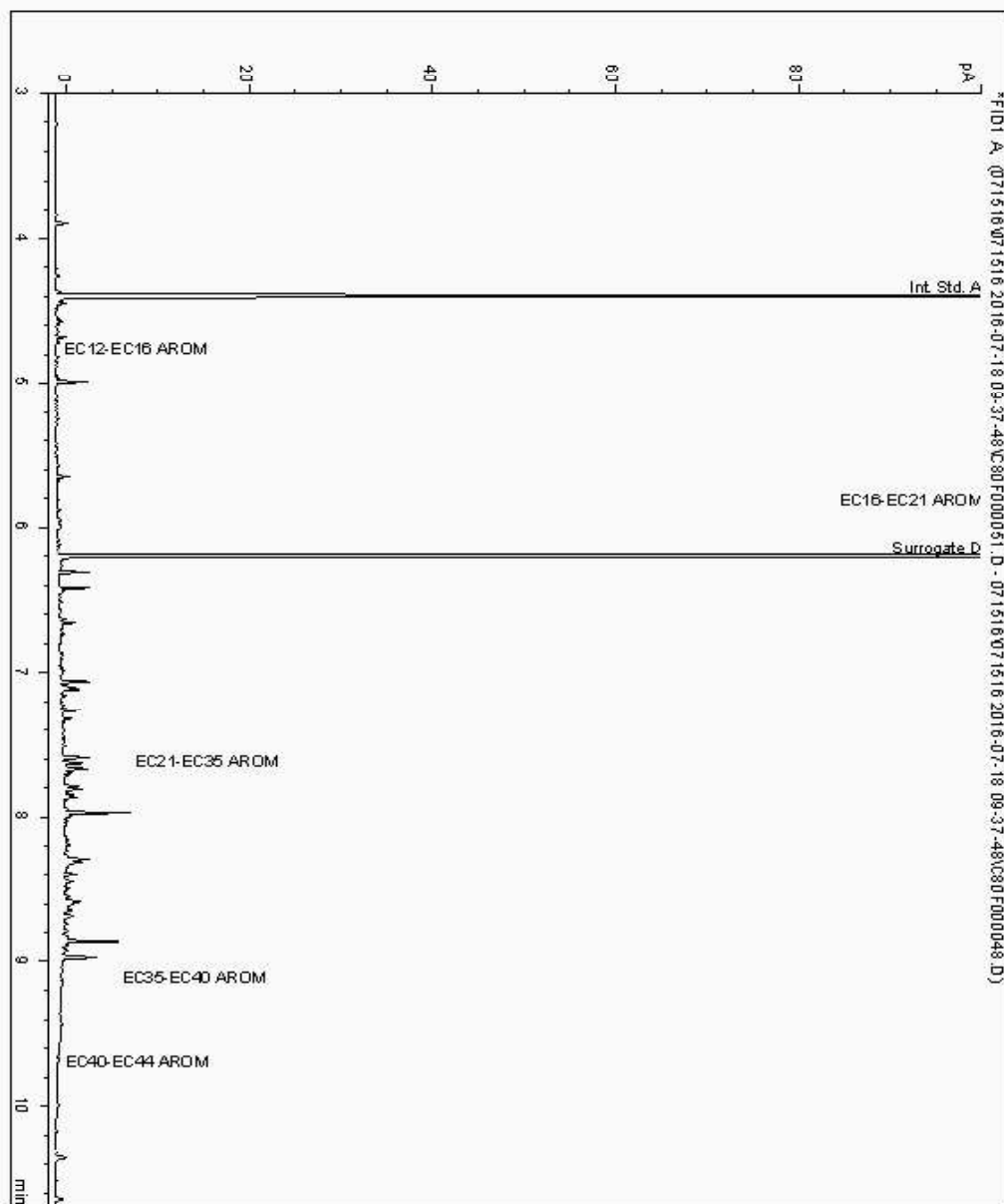
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13777288
Sample ID : BH02

Depth : 0.20 - 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 12915453-
Date Acquired : 18/07/16 10:00:53
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010





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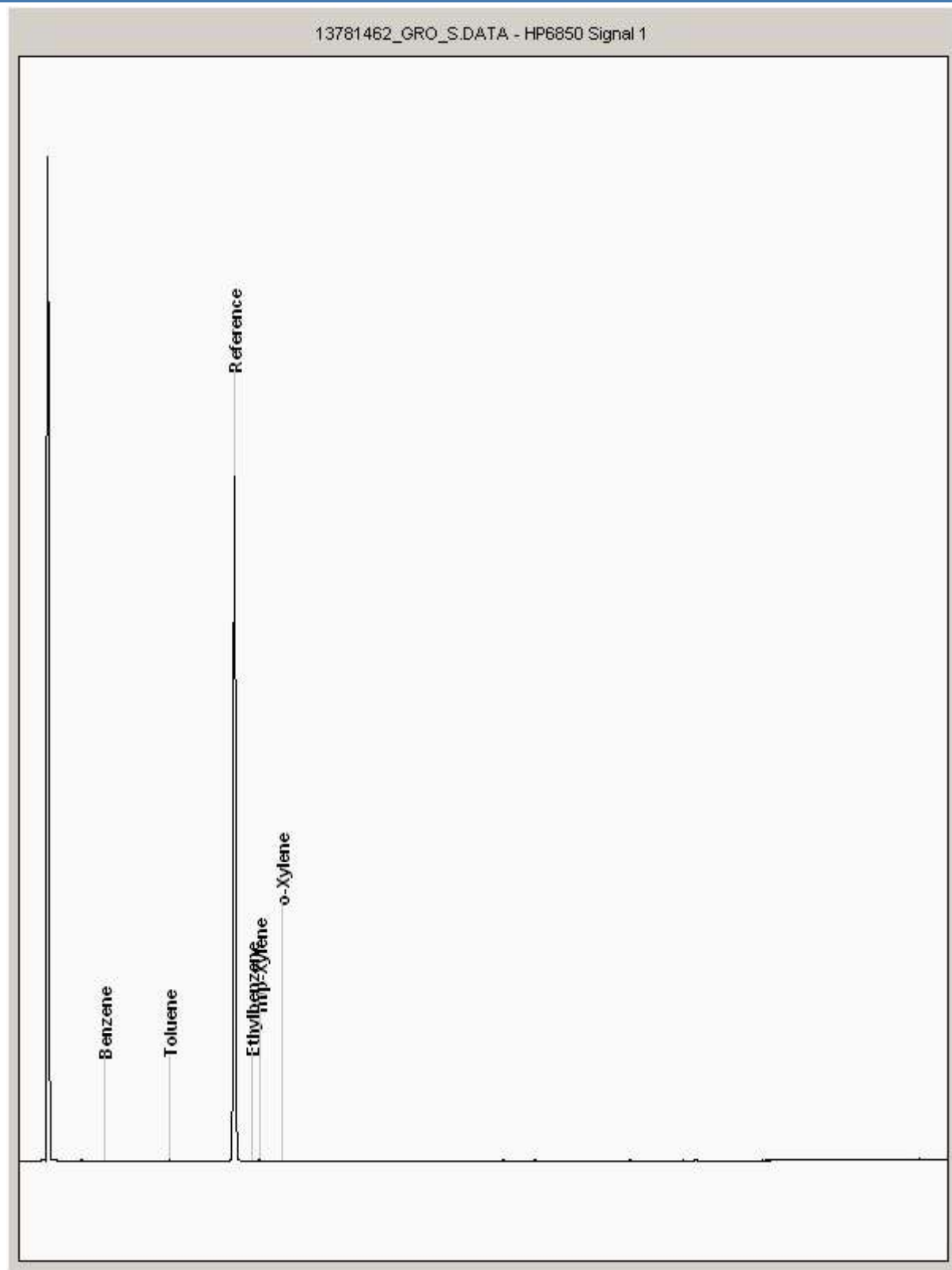
Order Number: 34529110
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Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 13781462
Sample ID : BH02

Depth : 0.20 - 0.50





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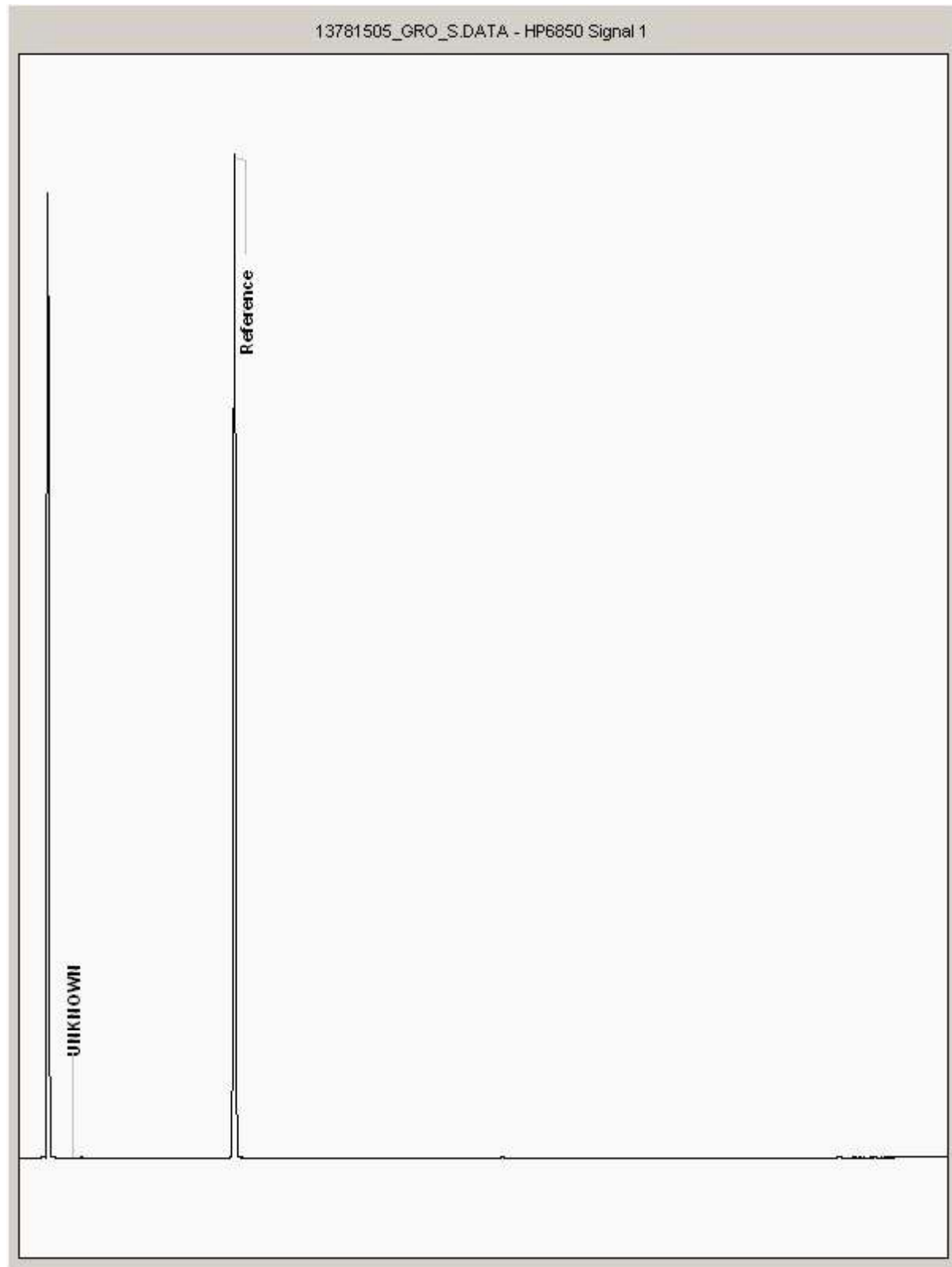
Order Number: 34529110
Report Number: 369841
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 13781505
Sample ID : BH01.

Depth : 0.40 - 0.80





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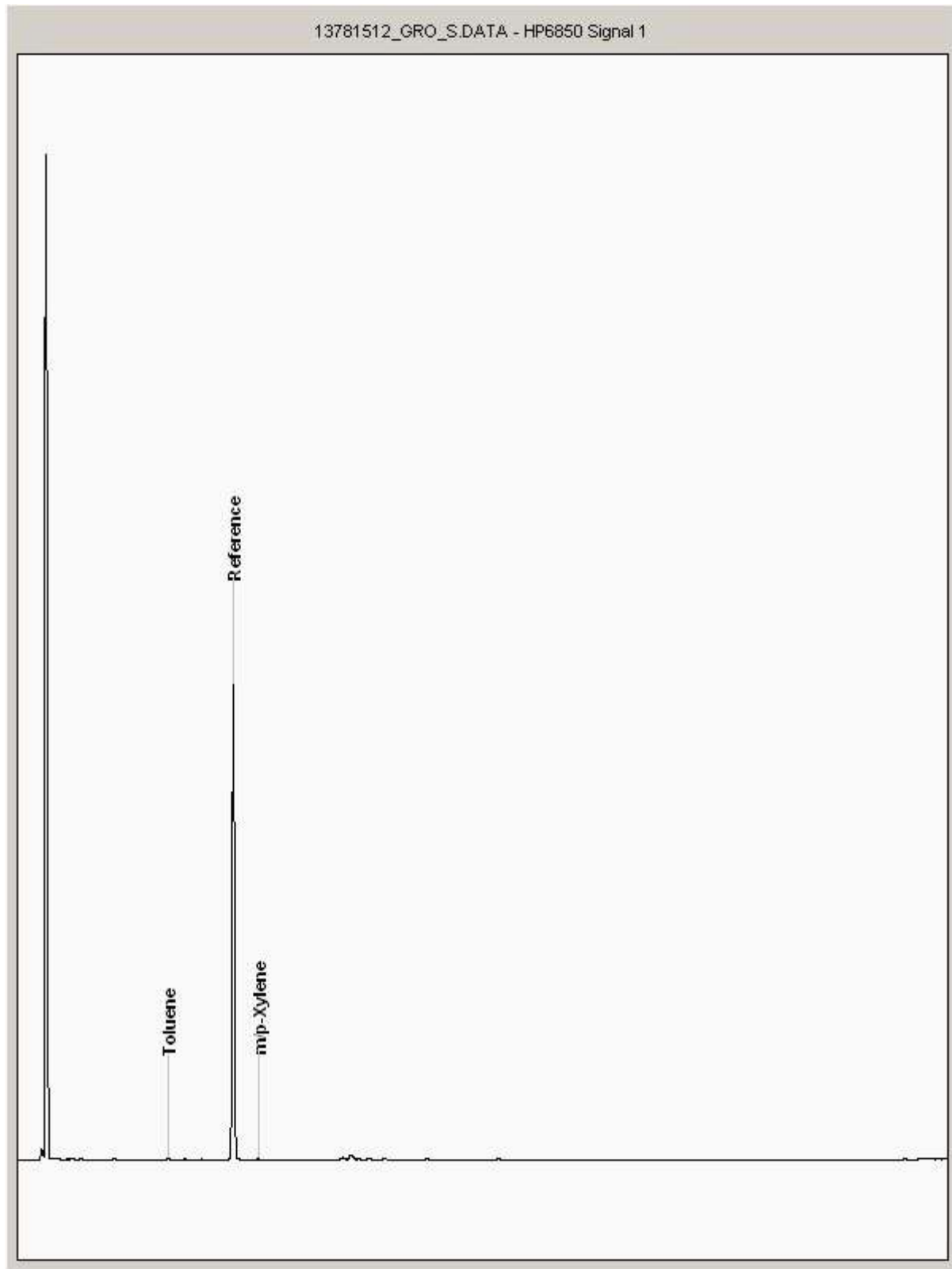
Order Number: 34529110
Report Number: 369841
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 13781512
Sample ID : BH04

Depth : 0.40 - 0.80





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Client Reference: 34529110

Location: Castlebrook High
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Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP - No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested.

12. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

General

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



ARCADIS UK Ltd
2 Craven Court
Willie Snaith Road
Newmarket
Suffolk
CB8 7FA

Attention: Jonathan Harris

CERTIFICATE OF ANALYSIS

Date: 22 July 2016
Customer: H_ARCADIS_NMK
Sample Delivery Group (SDG): 160709-23
Your Reference: 34529110
Location: Castlebrook High
Report No: 370220

We received 7 samples on Saturday July 09, 2016 and 5 of these samples were scheduled for analysis which was completed on Friday July 22, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager





SDG:	160709-23	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	370220
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13743248	BH02		1.20 - 1.80	06/07/2016
13743249	BH02		1.80 - 1.80	06/07/2016
13743250	BH02		4.50 - 4.50	06/07/2016
13743251	BH03		0.00 - 0.40	07/07/2016
13743252	BH03		3.50 - 3.50	07/07/2016
13743254	BH03		6.00 - 6.00	07/07/2016
13743253	BH03		6.00 - 6.50	07/07/2016

Only received samples which have had analysis scheduled will be shown on the following pages.



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container	
	13743250		BH02				1.80 - 1.80		250g Amber Jar (AL)	
	13743251		BH03				0.00 - 0.40		250g Amber Jar (AL)	
	13743252		BH03				3.50 - 3.50		250g Amber Jar (AL)	
	13743254		BH03				6.00 - 6.00		250g Amber Jar (AL)	
	13743249		BH02				4.50 - 4.50		250g Amber Jar (AL)	
Anions by Kone (soil)	All	NDPs: 0 Tests: 4	X	X					X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1		X						
Chromium III	All	NDPs: 0 Tests: 1		X						
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1			X					
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1			X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1				X				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 1			X					
pH	All	NDPs: 0 Tests: 1		X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X						
Sample description	All	NDPs: 0 Tests: 5	X	X	X	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 1			X					
TPH CWG GC (S)	All	NDPs: 0 Tests: 1			X					
VOC MS (S)	All	NDPs: 0 Tests: 1				X				



SDG:	160709-23	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	370220
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
13743249	BH02	1.80 - 1.80	Light Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation
13743250	BH02	4.50 - 4.50	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	Stones	Vegetation
13743251	BH03	0.00 - 0.40	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	Vegetation
13743252	BH03	3.50 - 3.50	Dark Brown	Silty Clay	0.002 - 0.063 mm	Stones	Vegetation
13743254	BH03	6.00 - 6.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Order Number: 34529110
Report Number: 370220
Superseded Report:

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CERTIFICATE OF ANALYSIS

SDG: 160709-23
Job: H_ARCADIS_NMK-1336
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Location: Castlebrook High
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Order Number: 34529110
Report Number: 370220
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R	BH03					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.40 Soil/Solid 07/07/2016 09/07/2016 160709-23 13743251					
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&#pound;	Sample deviation (see appendix)							
Component	LOD/Units							
GRO Surrogate % recovery**	%	TM089	22					
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089	<0.044	M				
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005	#				
Benzene	<0.01 mg/kg	TM089	<0.01	M				
Toluene	<0.002 mg/kg	TM089	<0.002	M				
Ethylbenzene	<0.003 mg/kg	TM089	<0.003	M				
m,p-Xylene	<0.006 mg/kg	TM089	<0.006	M				
o-Xylene	<0.003 mg/kg	TM089	<0.003	M				
sum of detected mpo xylene by GC	<0.009 mg/kg	TM089	<0.009					
sum of detected BTEX by GC	<0.024 mg/kg	TM089	<0.024					
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C12-C16	<0.1 mg/kg	TM173	<0.1					
Aliphatics >C16-C21	<0.1 mg/kg	TM173	0.561					
Aliphatics >C21-C35	<0.1 mg/kg	TM173	16.8					
Aliphatics >C35-C44	<0.1 mg/kg	TM173	1.48					
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	18.8					
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01					
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01					
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01					
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01					
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	0.554					
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	2.98					
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	52.1					
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	21					
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	5.35					
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	76.6					
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	95.4					



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VOC MS (S)

Results Legend		Customer Sample R	BH03				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.40 Soil/Solid 07/07/2016 . 09/07/2016 160709-23 13743251				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-5	@	Sample deviation (see appendix)						
Component	LOD/Units						
Dibromofluoromethane**	%	TM116	107				
Toluene-d8**	%	TM116	98.7				
4-Bromofluorobenzene**	%	TM116	81.3				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06 M				
Chloromethane	<0.007 mg/kg	TM116	<0.07 #				
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06 M				
Bromomethane	<0.01 mg/kg	TM116	<0.1 M				
Chloroethane	<0.01 mg/kg	TM116	<0.1 M				
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.06 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1 #				
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07 M				
Dichloromethane	<0.01 mg/kg	TM116	<0.1 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1 M				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1 M				
Chloroform	<0.008 mg/kg	TM116	<0.08 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1 M				
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05 M				
Benzene	<0.009 mg/kg	TM116	<0.09 M				
Trichloroethene	<0.009 mg/kg	TM116	<0.09 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1 M				
Dibromomethane	<0.009 mg/kg	TM116	<0.09 M				
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1 M				
Toluene	<0.007 mg/kg	TM116	<0.07 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1 M				



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VOC MS (S)

Results Legend		Customer Sample R		BH03			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.40 Soil/Solid 07/07/2016 . 09/07/2016 160709-23 13743251				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-5$	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.07	M			
Tetrachloroethene	<0.005 mg/kg	TM116	<0.05	M			
Dibromochloromethane	<0.01 mg/kg	TM116	<0.1	M			
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.1	M			
Chlorobenzene	<0.005 mg/kg	TM116	<0.05	M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1	M			
Ethylbenzene	<0.004 mg/kg	TM116	<0.04	M			
p/m-Xylene	<0.01 mg/kg	TM116	<0.1	#			
o-Xylene	<0.01 mg/kg	TM116	<0.1	M			
Styrene	<0.01 mg/kg	TM116	<0.1	#			
Bromoform	<0.01 mg/kg	TM116	<0.1	M			
Isopropylbenzene	<0.005 mg/kg	TM116	<0.05	#			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1	M			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.16	M			
Bromobenzene	<0.01 mg/kg	TM116	<0.1	M			
Propylbenzene	<0.01 mg/kg	TM116	<0.1	M			
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.09	M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.08	M			
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.1	M			
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.14	M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.09	#			
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.1	M			
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.1	M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.08	M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.05	M			
n-Butylbenzene	<0.011 mg/kg	TM116	<0.11				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.1	M			
1,2-Dibromo-3-chloroprop ane	<0.014 mg/kg	TM116	<0.14	M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1	#			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.2				
Naphthalene	<0.013 mg/kg	TM116	<0.13	M			

SDG:	160709-23
Job:	H_ARCADIS_NMK-1336
Client Reference:	34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

SDG:	160709-23	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	370220
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH03	22/07/16	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.00 - 0.40										
Sample Type	SOLID										
Date Sampled	07/07/2016										
Date Received	00:00:00										
SDG	15/07/2016										
Original Sample Method Number	12:02:20										
	160709-23										
	13743251										
	TM048										



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG:	160709-23	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	370220
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	13743249	13743250	13743251	13743252	13743254
Customer Sample Ref.	BH02	BH02	BH03	BH03	BH03
AGS Ref.					
Depth	1.80 - 1.80	4.50 - 4.50	0.00 - 0.40	3.50 - 3.50	6.00 - 6.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID

Anions by Kone (soil)	19-Jul-2016	19-Jul-2016		19-Jul-2016	19-Jul-2016
Asbestos ID in Solid Samples			22-Jul-2016		
Chromium III			20-Jul-2016		
EPH CWG (Aliphatic) GC (S)			18-Jul-2016		
EPH CWG (Aromatic) GC (S)			18-Jul-2016		
GRO by GC-FID (S)			19-Jul-2016		
Hexavalent Chromium (s)			19-Jul-2016		
Metals in solid samples by OES			20-Jul-2016		
pH			18-Jul-2016		
Phenols by HPLC (S)			20-Jul-2016		
Sample description	15-Jul-2016	15-Jul-2016	15-Jul-2016	15-Jul-2016	15-Jul-2016
Total Sulphate			20-Jul-2016		
TPH CWG GC (S)			19-Jul-2016		
VOC MS (S)			19-Jul-2016		



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

ASSOCIATED AQC DATA

Anions by Kone (soil)

Component	Method Code	QC 1392	QC 1358
Chloride (soluble)	TM243	89.13 : 109.51	99.05 89.13 : 109.51
Water Soluble Sulphate as SO4 2:1 Extract	TM243	91.99 : 109.79	98.06 91.99 : 109.79

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1381
Total Aliphatics >C12-C35	TM173	86.88 62.50 : 112.50

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1381
Total Aromatics >EC12-EC35	TM173	87.33 60.62 : 126.95

GRO by GC-FID (S)

Component	Method Code	QC 1312
Benzene by GC (Moisture Corrected)	TM089	94.5 76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	93.5 73.32 : 122.02
m & p Xylene by GC (Moisture Corrected)	TM089	93.25 72.90 : 122.64
MTBE GC-FID (Moisture Corrected)	TM089	94.5 72.17 : 124.81
o Xylene by GC (Moisture Corrected)	TM089	93.5 71.65 : 124.40
QC	TM089	77.34 68.82 : 125.04
Toluene by GC (Moisture Corrected)	TM089	94.5 74.60 : 120.38

Hexavalent Chromium (s)

Component	Method Code	QC 1308
Hexavalent Chromium	TM151	102.0 92.20 : 106.60



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

Metals in solid samples by OES

Component	Method Code	QC 1312
Aluminium	TM181	100.77 80.01 : 119.99
Antimony	TM181	92.83 77.50 : 122.50
Arsenic	TM181	337.17 82.63 : 117.37
Barium	TM181	92.48 79.45 : 120.55
Beryllium	TM181	446.51 82.93 : 117.07
Boron	TM181	255.73 69.98 : 130.02
Cadmium	TM181	317.65 81.95 : 118.05
Chromium	TM181	192.16 81.29 : 118.71
Cobalt	TM181	531.67 83.86 : 116.14
Copper	TM181	91.89 78.57 : 121.43
Iron	TM181	100.0 83.21 : 116.79
Lead	TM181	179.53 77.50 : 122.50
Manganese	TM181	93.0 82.91 : 117.09
Mercury	TM181	413.74 81.99 : 118.01
Molybdenum	TM181	396.5 81.45 : 118.55
Nickel	TM181	251.16 79.64 : 120.36
Phosphorus	TM181	93.29 81.03 : 118.97
Selenium	TM181	545.3 83.31 : 116.69
Strontium	TM181	180.46 83.64 : 116.36
Thallium	TM181	411.28 81.18 : 118.82
Tin	TM181	90.37 81.44 : 118.56
Titanium	TM181	98.44 71.02 : 128.98
Vanadium	TM181	94.71 86.61 : 113.39
Zinc	TM181	90.1 87.90 : 112.10

pH



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

pH

Component	Method Code	QC 1313
pH	TM133	100.63 98.11 : 101.89

Phenols by HPLC (S)

Component	Method Code	QC 1303
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	100.65 85.25 : 114.75
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	102.34 75.71 : 124.29
Catechol by HPLC (S)	TM062 (S)	81.9 64.10 : 135.90
Cresols by HPLC (S)	TM062 (S)	94.15 85.72 : 114.28
Napthol by HPLC (S)	TM062 (S)	98.57 75.62 : 124.38
Phenol by HPLC (S)	TM062 (S)	99.34 79.53 : 120.47
Resorcinol HPLC (S)	TM062 (S)	89.94 85.90 : 114.10
Xylenols by HPLC (S)	TM062 (S)	96.77 88.01 : 111.99

Total Sulphate

Component	Method Code	QC 1381
Total Sulphate	TM221	96.97 83.33 : 127.40

VOC MS (S)

Component	Method Code	QC 1335
1,1,1,2-tetrachloroethane	TM116	90.8 76.60 : 121.00
1,1,1-Trichloroethane	TM116	91.6 77.80 : 123.40
1,1,2-Trichloroethane	TM116	96.6 75.40 : 119.80
1,1-Dichloroethane	TM116	96.8 74.46 : 129.15
1,2-Dichloroethane	TM116	116.6 86.62 : 136.90
1,4-Dichlorobenzene	TM116	97.4 72.76 : 126.34
2-Chlorotoluene	TM116	85.0 74.00 : 117.20



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

VOC MS (S)

		QC 1335
4-Chlorotoluene	TM116	83.4 71.20 : 113.20
Benzene	TM116	93.8 79.60 : 125.20
Carbon Disulphide	TM116	79.4 74.91 : 122.14
Carbontetrachloride	TM116	107.8 87.07 : 120.37
Chlorobenzene	TM116	87.6 75.00 : 115.53
Chloroform	TM116	100.6 82.00 : 128.80
Chloromethane	TM116	86.0 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	85.8 57.23 : 143.96
Dibromomethane	TM116	100.8 73.40 : 116.60
Dichloromethane	TM116	96.6 86.60 : 137.00
Ethylbenzene	TM116	80.8 73.60 : 115.60
Hexachlorobutadiene	TM116	98.4 42.69 : 142.65
Isopropylbenzene	TM116	65.2 64.24 : 119.40
Naphthalene	TM116	102.4 79.04 : 135.59
o-Xylene	TM116	70.4 51.65 : 118.61
p/m-Xylene	TM116	75.8 71.30 : 112.70
Sec-Butylbenzene	TM116	70.0 54.99 : 144.98
Tetrachloroethene	TM116	90.6 85.92 : 127.92
Toluene	TM116	88.6 76.08 : 110.17
Trichloroethene	TM116	89.0 78.17 : 121.37
Trichlorofluoromethane	TM116	89.0 75.01 : 124.99
Vinyl Chloride	TM116	85.4 66.81 : 138.46

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

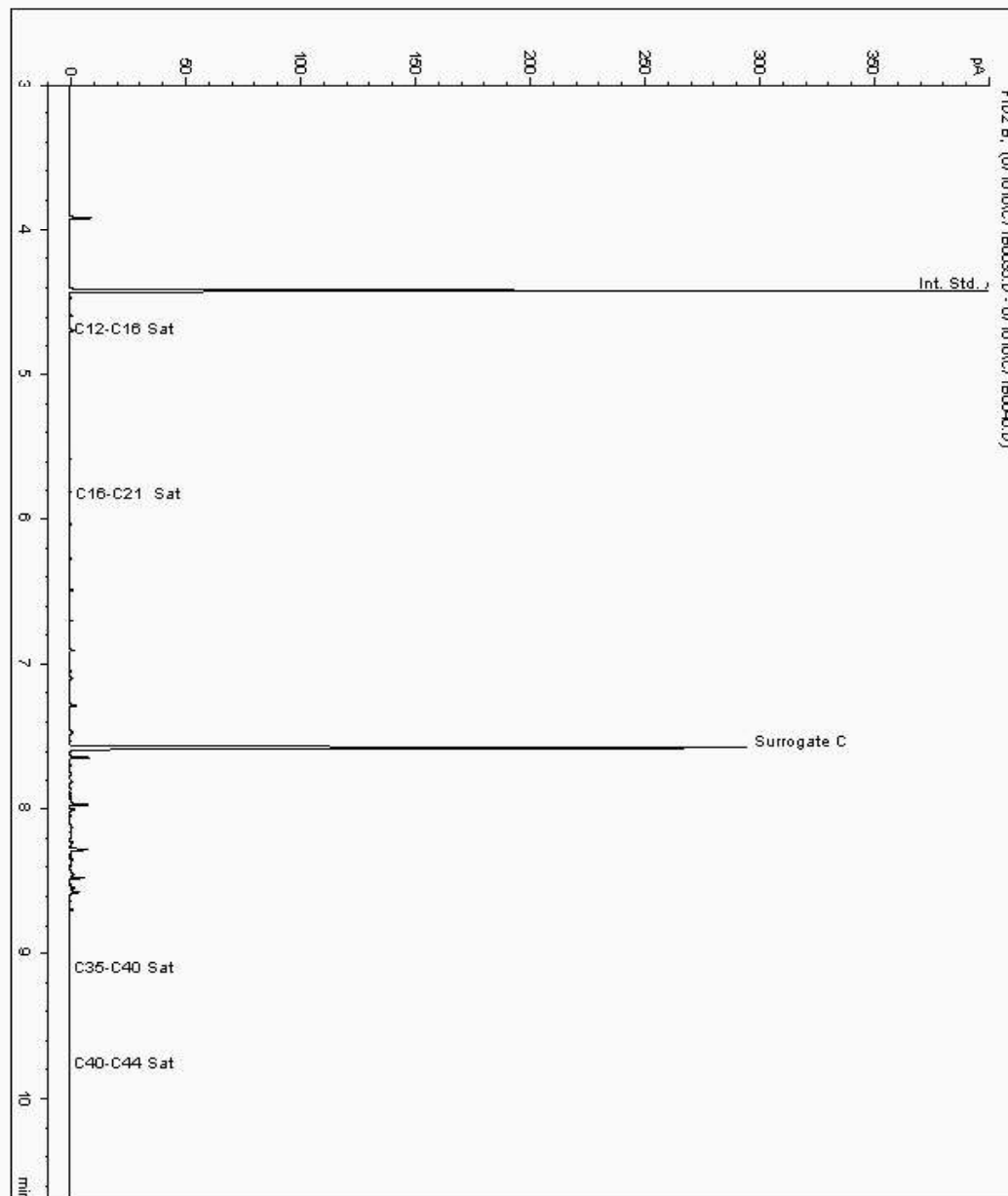
Sample No : 13781716
Sample ID : BH03

Depth : 0.00 - 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 12929402-
Date Acquired : 16/07/2016 20:14:19 PM
Units : ppb
Dilution: BH03[0.00 - 0.40]

->





SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 370220
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

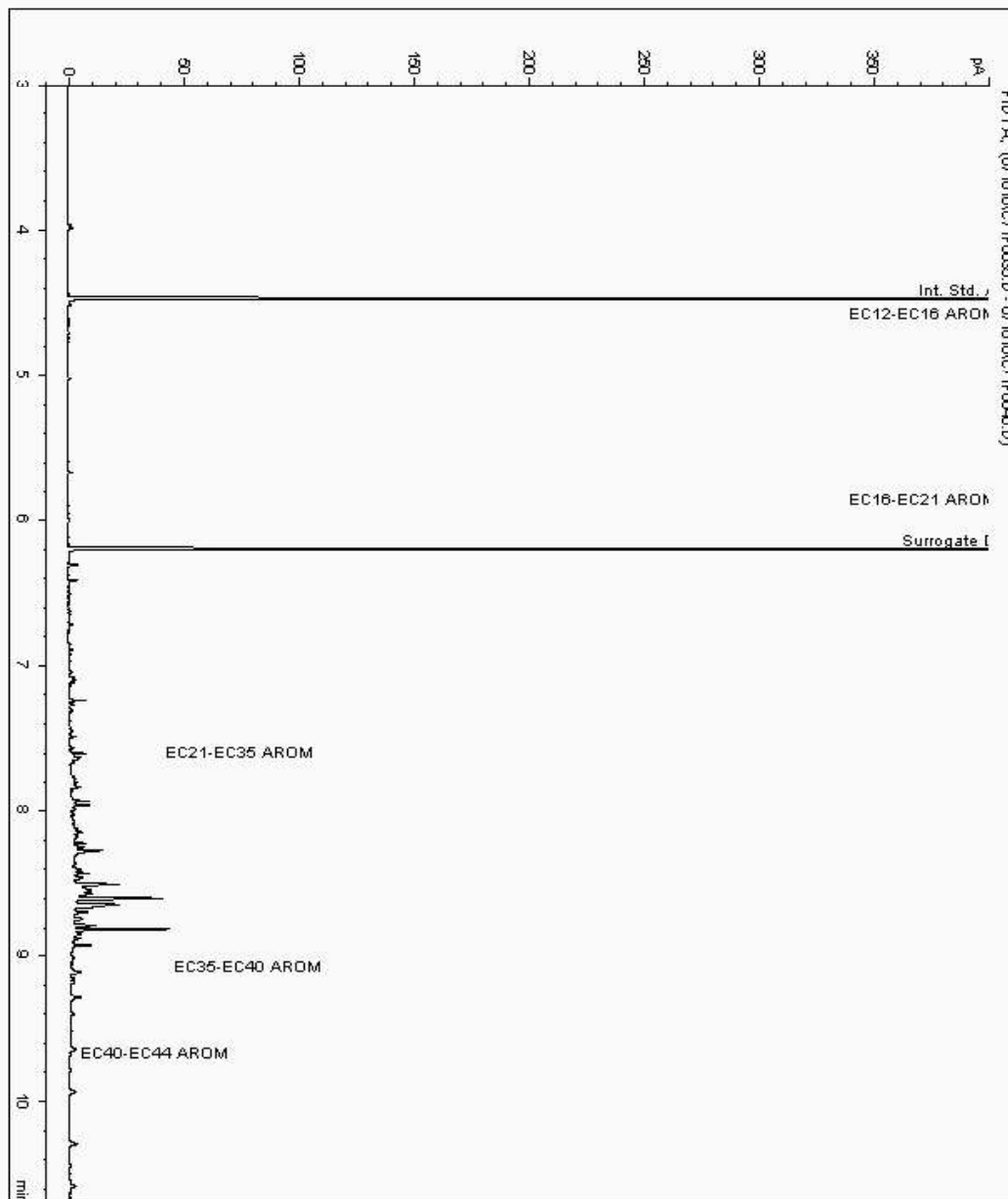
Sample No : 13781716
Sample ID : BH03

Depth : 0.00 - 0.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 12929403-
Date Acquired : 16/07/2016 20:14:19 PM
Units : ppb
Dilution: BH03[0.00 - 0.40]

->





SDG: 160709-23
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

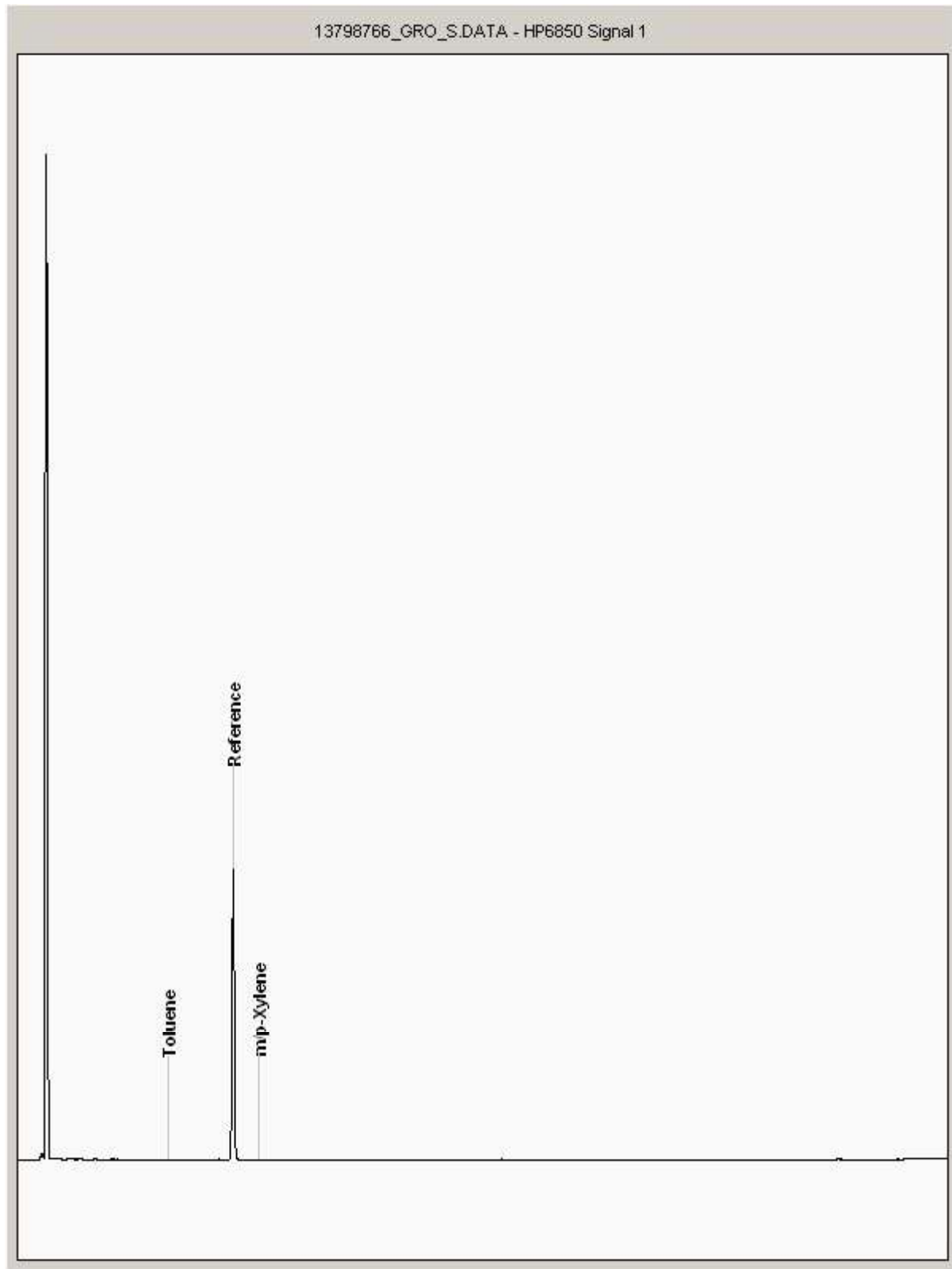
Order Number: 34529110
Report Number: 370220
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 13798766
Sample ID : BH03

Depth : 0.00 - 0.40





SDG:	160709-23	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	370220
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method VOC TICs and SVOC TICs.

2. Samples will be run in duplicate on request, but an additional charge may be incurred

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavor to meet client requirements where possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavor to use UKAS/MCE RTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilized.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO 17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be free of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as Not Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9 NDP - No determination possible due to insufficient/unsuitable sample

10. Metals in water are performed on a filtered sample and therefore represent dissolved metals - total metals must be requested separately.

11. Results relate only to the items tested

12. LODs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. Surrogate recoveries - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported. Results are not corrected for recovery measured. Typical recoveries for organic tests are 70-130%, they are generally wider for volatile analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix effects.

14. Product analyses - Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monitored by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenes (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 specified phenols by HPLC includes Phenol, 2,3,5-Trimethylphenol, 2,4-Dimethylphenol, 2,6-Dimethylphenol, 3,4-Dimethylphenol (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavor to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

General

20. For the BS EN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all test s. We therefore cannot carry out any unfiltered analysis. The tests affected include volatile GCFID/ GCMS and landfill subcontraction analysis.

21. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill /made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

24. Tentatively Identified Compounds (TICs) are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LOD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the detected internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not monitored or recorded.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmission polarised light microscopy and central stop dispersion staining based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALcontrol Laboratories (Hawarden) in-house method of transmission polarised light microscopy and central stop dispersion staining based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than:
- Trace - Where only one or two asbestos fibres were identified

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



ARCADIS UK Ltd
2 Craven Court
Willie Snaith Road
Newmarket
Suffolk
CB8 7FA

Attention: Jonathan Harris

CERTIFICATE OF ANALYSIS

Date: 01 September 2016
Customer: H_ARCADIS_NMK
Sample Delivery Group (SDG): 160714-104
Your Reference: 34529110
Location: Castlebrook High
Report No: 375845

This report has been revised and directly supersedes 370724 in its entirety.

We received 19 samples on Thursday July 14, 2016 and 16 of these samples were scheduled for analysis which was completed on Thursday September 01, 2016. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:

Sonia McWhan

Operations Manager





SDG:	160714-104	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	375845
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	370724

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13774530	SKIP			11/07/2016
13774512	WS01		0.10 - 0.60	12/07/2016
13774513	WS01		2.70 - 3.00	12/07/2016
13774514	WS02		0.00 - 0.50	11/07/2016
13774515	WS02		3.50 - 3.50	11/07/2016
13774516	WS03		0.05 - 0.40	12/07/2016
13774518	WS03		0.50	12/07/2016
13774519	WS04		0.10 - 0.30	12/07/2016
13774520	WS04		3.00	12/07/2016
13774521	WS05		0.30 - 1.00	12/07/2016
13774522	WS05		2.00	12/07/2016
13774524	WS06		0.20 - 0.60	12/07/2016
13774525	WS06		1.00	12/07/2016
13774526	WS07		0.00 - 0.40	11/07/2016
13774527	WS07		0.50	11/07/2016
13774528	WS08		0.00 - 0.40	11/07/2016
13774529	WS08		0.50	11/07/2016
13774531	WS01 TARMAC		0.00 - 0.10	12/07/2016
13774532	WS06 TARMAC		0.00 - 0.20	12/07/2016

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container	
	13774532	WS06 TARMAC					0.00 - 0.20		BAG	
	13774531	WS01 TARMAC					0.00 - 0.10		60g VOC (AL/E215)	
	13774528	WS08					0.00 - 0.40		250g Amber Jar (AL)	
	13774513	WS01					2.70 - 3.00		1kg TUB	
	13774512	WS01					0.10 - 0.60		250g Amber Jar (AL)	
	13774515	WS02					3.50 - 3.50		60g VOC (AL/E215)	
	13774514	WS02					0.00 - 0.50		250g Amber Jar (AL)	
	13774516	WS03					0.05 - 0.40		1kg TUB	
	13774518	WS03					0.50		250g Amber Jar (AL)	
	13774519	WS04					0.10 - 0.30		60g VOC (AL/E215)	
	13774520	WS04					3.00		250g Amber Jar (AL)	
	13774521	WS05					0.30 - 1.00		1kg TUB	
	13774522	WS05					2.00		250g Amber Jar (AL)	
	13774524	WS06					0.20 - 0.60		60g VOC (AL/E215)	
	13774525	WS06					1.00		250g Amber Jar (AL)	
	13774526	WS07					0.00 - 0.40		1kg TUB	
	13774527	WS07					0.00 - 0.40		250g Amber Jar (AL)	
	13774528	WS08					0.00 - 0.40		60g VOC (AL/E215)	
	13774529	WS08					0.00 - 0.40		250g Amber Jar (AL)	
	13774530	WS08					0.00 - 0.40		1kg TUB	
	13774531	WS01					0.00 - 0.10		60g VOC (AL/E215)	
	13774532	WS06 TARMAC					0.00 - 0.20		BAG	
Anions by Kone (soil)	All	NDPs: 0 Tests: 8								
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 8								
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 8								
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 8								
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8								
Metals in solid samples by OES	All	NDPs: 0 Tests: 8								
PAH by GCMS	All	NDPs: 0 Tests: 10								
pH	All	NDPs: 0 Tests: 8								
Phenols by HPLC (S)	All	NDPs: 0 Tests: 8								
Sample description	All	NDPs: 0 Tests: 14								
Total Sulphate	All	NDPs: 0 Tests: 8								
TPH CWG GC (S)	All	NDPs: 0 Tests: 8								
VOC MS (S)	All	NDPs: 0 Tests: 8								



CERTIFICATE OF ANALYSIS

SDG:	160714-104	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	375845
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	370724

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
13774512	WS01	0.10 - 0.60	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Stones	None
13774513	WS01	2.70 - 3.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	None	None
13774514	WS02	0.00 - 0.50	Dark Brown	Clay Loam	0.063 - 2.00 mm	Stones	None
13774515	WS02	3.50 - 3.50	Dark Brown	Clay Loam	0.002 - 0.063 mm	Vegetation	Stones
13774516	WS03	0.05 - 0.40	Black	Loamy Sand	0.063 - 2.00 mm	Stones	None
13774518	WS03	0.50	Dark Brown	Sandy Clay	0.063 - 2.00 mm	Stones	Vegetation
13774519	WS04	0.10 - 0.30	Dark Brown	Sandy Loam	0.063 - 2.00 mm	Brick	Stones
13774520	WS04	3.00	Dark Brown	Clay Loam	0.002 - 0.063 mm	Vegetation	Stones
13774521	WS05	0.30 - 1.00	Dark Brown	Sandy Clay Loam	0.063 - 2.00 mm	None	Vegetation
13774522	WS05	2.00	Dark Brown	Loamy Sand	0.063 - 2.00 mm	Stones	None
13774524	WS06	0.20 - 0.60	Light Brown	Sandy Loam	0.063 - 2.00 mm	Stones	None
13774525	WS06	1.00	Dark Brown	Clay Loam	0.002 - 0.063 mm	Stones	None
13774526	WS07	0.00 - 0.40	Dark Brown	Clay Loam	0.063 - 2.00 mm	Vegetation	None
13774528	WS08	0.00 - 0.40	Dark Brown	Clay Loam	0.063 - 2.00 mm	Vegetation	None
13774531	WS01 TARMAC	0.00 - 0.10	Black	N/A	> 60.00 mm	Stones	Tar
13774532	WS06 TARMAC	0.00 - 0.20	Black	N/A	> 60.00 mm	Tar	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

SDG:	160714-104	Location:	Castlebrook High	Order Number:	34529110
Job:	H_ARCADIS_NMK-1336	Customer:	ARCADIS UK Ltd	Report Number:	375845
Client Reference:	34529110	Attention:	Jonathan Harris	Superseded Report:	370724

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Order Number: 34529110
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CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

Results Legend		Customer Sample R Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	WS07	WS08	WS01 TARMAC	WS06 TARMAC		
#	ISO17025 accredited.		0.00 - 0.40	0.00 - 0.40	0.00 - 0.10	0.00 - 0.20		
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
aq	Aqueous / settled sample.		11/07/2016	11/07/2016	12/07/2016	12/07/2016		
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&+\$\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	26	34	2.7	0.28		
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M	<0.035 M				
pH	1 pH Units	TM133	6.9 M	6.88 M				
Antimony	<0.6 mg/kg	TM181	2.27 #	2.52 #				
Arsenic	<0.6 mg/kg	TM181	16.4 M	17.3 M				
Barium	<0.6 mg/kg	TM181	131 #	142 #				
Beryllium	<0.01 mg/kg	TM181	0.953 M	1.09 M				
Boron	<0.7 mg/kg	TM181	4.63 #	4.69 #				
Copper	<1.4 mg/kg	TM181	34.7 M	39.4 M				
Iron	<1000 mg/kg	TM181	17000 #	20200 #				
Lead	<0.7 mg/kg	TM181	87.5 M	88.4 M				
Molybdenum	<0.1 mg/kg	TM181	1.61 #	1.88 #				
Nickel	<0.2 mg/kg	TM181	20.6 M	20.7 M				
Selenium	<1 mg/kg	TM181	<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181	28.1 #	29.2 #				
Zinc	<1.9 mg/kg	TM181	82.4 M	92.9 M				
Sulphate, Total	<48 mg/kg	TM221	436 M	624 M				
Total Sulphur (ASB)	<0.0016 %	TM221	0.0145	0.0208				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.02 M	<0.004 M				
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Order Number: 34529110
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CERTIFICATE OF ANALYSIS

SDG:	160714-104
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Attention: Jonathan Harris

Order Number:	34529110
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PAH by GCMS

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CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
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TPH CWG (S)

Results Legend			Customer Sample R		WS01	WS02	WS03	WS04	WS05	WS06
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.10 - 0.60	0.00 - 0.50	0.05 - 0.40	0.10 - 0.30	0.30 - 1.00	0.20 - 0.60
M	mCERTS accredited.				Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.				12/07/2016	11/07/2016	12/07/2016	12/07/2016	12/07/2016	12/07/2016
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
(F)	Trigger breach confirmed				160714-104	160714-104	160714-104	160714-104	160714-104	160714-104
1-58*\$@	Sample deviation (see appendix)				13774512	13774514	13774516	13774519	13774521	13774524
Component	LOD/Units	Method								
GRO Surrogate % recovery**	%	TM089			26	65	10	33	64	64
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089		M	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089		#	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Benzene	<0.01 mg/kg	TM089		M	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Toluene	<0.002 mg/kg	TM089		M	<0.002	0.0039	0.0107	<0.002	<0.002	<0.002
Ethylbenzene	<0.003 mg/kg	TM089		M	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
m,p-Xylene	<0.006 mg/kg	TM089		M	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
o-Xylene	<0.003 mg/kg	TM089		M	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
sum of detected mpo xylene by GC	<0.009 mg/kg	TM089			<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
sum of detected BTEX by GC	<0.024 mg/kg	TM089			<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
Aliphatics >C5-C6	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	0.0128	<0.01
Aliphatics >C12-C16	<0.1 mg/kg	TM173			11	<0.1	<0.1	23.8	6.84	<0.1
Aliphatics >C16-C21	<0.1 mg/kg	TM173			13.5	0.477	0.565	156	13.5	9.27
Aliphatics >C21-C35	<0.1 mg/kg	TM173			328	16.8	1.48	742	47.7	618
Aliphatics >C35-C44	<0.1 mg/kg	TM173			161	3.15	<0.1	202	4.33	399
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173			514	20.4	2.05	1120	72.3	1030
Aromatics >EC5-EC7	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089			<0.01	<0.01	0.0107	<0.01	<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC10-EC12	<0.01 mg/kg	TM089			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatics >EC12-EC16	<0.1 mg/kg	TM173			0.384	2.19	1.99	39.7	1.9	2.65
Aromatics >EC16-EC21	<0.1 mg/kg	TM173			7.21	11	2.1	484	17.2	14.9
Aromatics >EC21-EC35	<0.1 mg/kg	TM173			482	52.2	6.7	1950	44.3	753
Aromatics >EC35-EC44	<0.1 mg/kg	TM173			384	21.4	1.22	479	9.93	569
Aromatics >EC40-EC44	<0.1 mg/kg	TM173			164	8.38	<0.1	173	3.41	233
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173			873	86.8	12	2950	73.4	1340
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173			1390	107	14.1	4080	146	2360



CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

TPH CWG (S)

Results Legend		Customer Sample R	WS07	WS08				
#	ISO17025 accredited.							
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.40 Soil/Solid 11/07/2016 . 14/07/2016 160714-104 13774526	0.00 - 0.40 Soil/Solid 11/07/2016 . 14/07/2016 160714-104 13774528				
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5	@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	46	52				
GRO TOT (Moisture Corrected)	<0.044 mg/kg	TM089	<0.044 M	<0.044 M				
Methyl tertiary butyl ether (MTBE)	<0.005 mg/kg	TM089	<0.005 #	<0.005 #				
Benzene	<0.01 mg/kg	TM089	<0.01 M	<0.01 M				
Toluene	<0.002 mg/kg	TM089	<0.002 M	<0.002 M				
Ethylbenzene	<0.003 mg/kg	TM089	<0.003 M	<0.003 M				
m,p-Xylene	<0.006 mg/kg	TM089	<0.006 M	<0.006 M				
o-Xylene	<0.003 mg/kg	TM089	<0.003 M	<0.003 M				
sum of detected mpo xylene by GC	<0.009 mg/kg	TM089	<0.009	<0.009				
sum of detected BTEX by GC	<0.024 mg/kg	TM089	<0.024	<0.024				
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C10-C12	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C12-C16	<0.1 mg/kg	TM173	0.333	<0.1				
Aliphatics >C16-C21	<0.1 mg/kg	TM173	0.344	<0.1				
Aliphatics >C21-C35	<0.1 mg/kg	TM173	13.8	10.8				
Aliphatics >C35-C44	<0.1 mg/kg	TM173	0.458	<0.1				
Total Aliphatics >C12-C44	<0.1 mg/kg	TM173	15	10.8				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics >EC10-EC12	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics >EC12-EC16	<0.1 mg/kg	TM173	<0.1	<0.1				
Aromatics >EC16-EC21	<0.1 mg/kg	TM173	2	<0.1				
Aromatics >EC21-EC35	<0.1 mg/kg	TM173	41.3	47.5				
Aromatics >EC35-EC44	<0.1 mg/kg	TM173	14.6	8.97				
Aromatics >EC40-EC44	<0.1 mg/kg	TM173	3.84	2.05				
Total Aromatics >EC12-EC44	<0.1 mg/kg	TM173	57.9	56.5				
Total Aliphatics & Aromatics >C5-C44	<0.1 mg/kg	TM173	72.9	67.3				



CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

VOC MS (S)

Results Legend			Customer Sample R		WS01	WS02	WS03	WS04	WS05	WS06
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.10 - 0.60	0.00 - 0.50	0.05 - 0.40	0.10 - 0.30	0.30 - 1.00	0.20 - 0.60
M	mCERTS accredited.				Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.				12/07/2016	11/07/2016	12/07/2016	12/07/2016	12/07/2016	12/07/2016
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-5	@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116			108	110	113	109	109	120
Toluene-d8**	%	TM116			98.5	98.9	98.1	95.3	101	87.3
4-Bromofluorobenzene**	%	TM116			89.8	87.8	82.8	87.2	92.9	73
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.006 M
Chloromethane	<0.007 mg/kg	TM116			<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.007 #
Vinyl Chloride	<0.006 mg/kg	TM116			<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.006 M
Bromomethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Chloroethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Trichlorofluoromethane	<0.006 mg/kg	TM116			<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.006 M
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.01 #
Carbon Disulphide	<0.007 mg/kg	TM116			<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.007 M
Dichloromethane	<0.01 mg/kg	TM116			<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.01 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.008 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.06 M	<0.006 M
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Bromochloromethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Chloroform	<0.008 mg/kg	TM116			<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.008 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.007 M
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Carbontetrachloride	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.005 M
Benzene	<0.009 mg/kg	TM116			<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.009 M
Trichloroethene	<0.009 mg/kg	TM116			<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.009 #
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Dibromomethane	<0.009 mg/kg	TM116			<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.009 M
Bromodichloromethane	<0.007 mg/kg	TM116			<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.007 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Toluene	<0.007 mg/kg	TM116			<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.007 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M



CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

VOC MS (S)

Results Legend			Customer Sample R		WS01	WS02	WS03	WS04	WS05	WS06
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.10 - 0.60 Soil/Solid 12/07/2016	0.00 - 0.50 Soil/Solid 11/07/2016	0.05 - 0.40 Soil/Solid 12/07/2016	0.10 - 0.30 Soil/Solid 12/07/2016	0.30 - 1.00 Soil/Solid 12/07/2016	0.20 - 0.60 Soil/Solid 12/07/2016
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted test.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				14/07/2016 160714-104 13774512	14/07/2016 160714-104 13774514	14/07/2016 160714-104 13774516	14/07/2016 160714-104 13774519	14/07/2016 160714-104 13774521	14/07/2016 160714-104 13774524
(F)	Trigger breach confirmed									
1-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.07 M	<0.007 M
Tetrachloroethene	<0.005 mg/kg	TM116			<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.005 M
Dibromochloromethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Chlorobenzene	<0.005 mg/kg	TM116			<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.005 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Ethylbenzene	<0.004 mg/kg	TM116			<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.04 M	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116			<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.01 #
o-Xylene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Styrene	<0.01 mg/kg	TM116			<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.01 #
Bromoform	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Isopropylbenzene	<0.005 mg/kg	TM116			<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.005 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,2,3-Trichloropropane	<0.016 mg/kg	TM116			<0.16 M	<0.16 M	<0.16 M	<0.16 M	<0.16 M	<0.016 M
Bromobenzene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
Propylbenzene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
2-Chlorotoluene	<0.009 mg/kg	TM116			<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.09 M	<0.009 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116			<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.008 M
4-Chlorotoluene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
tert-Butylbenzene	<0.014 mg/kg	TM116			<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.014 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116			<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.09 #	<0.009 #
sec-Butylbenzene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
4-Isopropyltoluene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116			<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.008 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116			<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.05 M	<0.005 M
n-Butylbenzene	<0.011 mg/kg	TM116			<0.11	<0.11	<0.11	<0.11	<0.11	<0.011
1,2-Dichlorobenzene	<0.01 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.1 M	<0.01 M
1,2-Dibromo-3-chloroprop ane	<0.014 mg/kg	TM116			<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.014 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116			<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.01 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116			<0.2	<0.2	<0.2	<0.2	<0.2	<0.02
Hexachlorobutadiene	<0.02 mg/kg	TM116			<0.2	<0.2	<0.2	<0.2	<0.2	<0.02
Naphthalene	<0.013 mg/kg	TM116			<0.13 M	<0.13 M	<0.13 M	<0.13 M	<0.13 M	<0.013 M

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number:	34529110
Report Number:	375845
Superseded Report:	370724

VOC MS (S)

[illegible]



CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

VOC MS (S)

Results Legend		Customer Sample R		WS07	WS08			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-5&	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM116	106	109				
Toluene-d8**	%	TM116	95.1	95.5				
4-Bromofluorobenzene**	%	TM116	75.2	82				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.06 M	<0.06 M				
Chloromethane	<0.007 mg/kg	TM116	<0.07 #	<0.07 #				
Vinyl Chloride	<0.006 mg/kg	TM116	<0.06 M	<0.06 M				
Bromomethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Chloroethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Trichlorofluoromethane	<0.006 mg/kg	TM116	<0.06 M	<0.06 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #				
Carbon Disulphide	<0.007 mg/kg	TM116	<0.07 M	<0.07 M				
Dichloromethane	<0.01 mg/kg	TM116	<0.1 #	<0.1 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.08 M	<0.08 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.06 M	<0.06 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Bromochloromethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Chloroform	<0.008 mg/kg	TM116	<0.08 M	<0.08 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.07 M	<0.07 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Carbontetrachloride	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.05 M	<0.05 M				
Benzene	<0.009 mg/kg	TM116	<0.09 M	<0.09 M				
Trichloroethene	<0.009 mg/kg	TM116	<0.09 #	<0.09 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Dibromomethane	<0.009 mg/kg	TM116	<0.09 M	<0.09 M				
Bromodichloromethane	<0.007 mg/kg	TM116	<0.07 M	<0.07 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Toluene	<0.007 mg/kg	TM116	<0.07 M	<0.07 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.1	<0.1				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				



CERTIFICATE OF ANALYSIS

SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

VOC MS (S)

Results Legend		Customer Sample R	WS07	WS08				
#	ISO17025 accredited. mCERTS accredited.							
M	Aqueous / settled sample.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.40 Soil/Solid 11/07/2016 . 14/07/2016 160714-104 13774526	0.00 - 0.40 Soil/Solid 11/07/2016 . 14/07/2016 160714-104 13774528				
aq	Dissolved / filtered sample.							
diss.filt	Total / unfiltered sample.							
tot.unfilt	Subcontracted test.							
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
**	Trigger breach confirmed							
(F)	Sample deviation (see appendix)							
1-5$								
Component	LOD/Units	Method						
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.07 M	<0.07 M				
Tetrachloroethene	<0.005 mg/kg	TM116	<0.05 M	<0.05 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.05 M	<0.05 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.04 M	<0.04 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #				
o-Xylene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Styrene	<0.01 mg/kg	TM116	<0.1 #	<0.1 #				
Bromoform	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.05 #	<0.05 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.16 M	<0.16 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.09 M	<0.09 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.08 M	<0.08 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.14 M	<0.14 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.09 #	<0.09 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.08 M	<0.08 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.05 M	<0.05 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.11	<0.11				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.1 M	<0.1 M				
1,2-Dibromo-3-chloroprop ane	<0.014 mg/kg	TM116	<0.14 M	<0.14 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.1 #	<0.1 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.2	<0.2				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.2	<0.2				
Naphthalene	<0.013 mg/kg	TM116	<0.13 M	<0.13 M				

SDG:	160714-104
Job:	H_ARCADIS_NMK-1336
Client Reference:	34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number:	34529110
Report Number:	375845
Superseded Report:	370724

VOC MS (S)

[illegible]



SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS01 0.10 - 0.60 SOLID 12/07/2016 00:00:00 20/07/2016 13:06:11 160714-104 13774512 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS02 0.00 - 0.50 SOLID 11/07/2016 00:00:00 20/07/2016 13:10:31 160714-104 13774514 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS03 0.05 - 0.40 SOLID 12/07/2016 00:00:00 20/07/2016 13:16:25 160714-104 13774516 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS04 0.10 - 0.30 SOLID 12/07/2016 00:00:00 20/07/2016 13:24:01 160714-104 13774519 TM048	26/7/16	Simon Postlewhite	Loose fibres in soil	Trace (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS05 0.30 - 1.00 SOLID 12/07/2016 00:00:00 20/07/2016 13:28:53 160714-104 13774521 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

SDG: 160714-104
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Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS06 0.20 - 0.60 SOLID 12/07/2016 00:00:00 20/07/2016 11:47:46 160714-104 13774524 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS07 0.00 - 0.40 SOLID 11/07/2016 00:00:00 20/07/2016 11:55:31 160714-104 13774526 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS08 0.00 - 0.40 SOLID 11/07/2016 00:00:00 20/07/2016 12:32:30 160714-104 13774528 TM048	26/7/16	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



SDG: 160714-104
Job: H_ARCADIS_NMK-1336
Client Reference: 34529110

Location: Castlebrook High
Customer: ARCADIS UK Ltd
Attention: Jonathan Harris

Order Number: 34529110
Report Number: 375845
Superseded Report: 370724

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).



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Test Completion Dates

Lab Sample No(s)	13774512	13774513	13774514	13774515	13774516	13774518	13774519	13774520	13774521	13774522
Customer Sample Ref.	WS01	WS01	WS02	WS02	WS03	WS03	WS04	WS04	WS05	WS05
AGS Ref.										
Depth	0.10 - 0.60	2.70 - 3.00	0.00 - 0.50	3.50 - 3.50	0.05 - 0.40	0.50	0.10 - 0.30	3.00	0.30 - 1.00	2.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016
Asbestos ID in Solid Samples	26-Jul-2016		26-Jul-2016		26-Jul-2016		26-Jul-2016		26-Jul-2016	
EPH CWG (Aliphatic) GC (S)	22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016	
EPH CWG (Aromatic) GC (S)	22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016	
GRO by GC-FID (S)	22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016	
Metals in solid samples by OES	22-Jul-2016		23-Jul-2016		22-Jul-2016		23-Jul-2016		22-Jul-2016	
PAH by GCMS	31-Aug-2016		31-Aug-2016		31-Aug-2016		31-Aug-2016		01-Sep-2016	
pH	21-Jul-2016		21-Jul-2016		21-Jul-2016		21-Jul-2016		21-Jul-2016	
Phenols by HPLC (S)	26-Jul-2016		23-Jul-2016		26-Jul-2016		26-Jul-2016		26-Jul-2016	
Sample description	20-Jul-2016	18-Jul-2016	20-Jul-2016	18-Jul-2016	20-Jul-2016	18-Jul-2016	20-Jul-2016	18-Jul-2016	20-Jul-2016	18-Jul-2016
Total Sulphate	22-Jul-2016		22-Jul-2016		22-Jul-2016		25-Jul-2016		22-Jul-2016	
TPH CWG GC (S)	22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016	
VOC MS (S)	22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016		22-Jul-2016	

Lab Sample No(s)	13774524	13774525	13774526	13774528	13774531	13774532
Customer Sample Ref.	WS06	WS06	WS07	WS08	WS01 TARMAC	WS06 TARMAC
AGS Ref.						
Depth	0.20 - 0.60	1.00	0.00 - 0.40	0.00 - 0.40	0.00 - 0.10	0.00 - 0.20
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)		22-Jul-2016	22-Jul-2016	22-Jul-2016		
Asbestos ID in Solid Samples	26-Jul-2016		26-Jul-2016	26-Jul-2016		
EPH CWG (Aliphatic) GC (S)	22-Jul-2016		22-Jul-2016	22-Jul-2016		
EPH CWG (Aromatic) GC (S)	22-Jul-2016		22-Jul-2016	22-Jul-2016		
GRO by GC-FID (S)	22-Jul-2016		22-Jul-2016	22-Jul-2016		
Metals in solid samples by OES	23-Jul-2016		22-Jul-2016	23-Jul-2016		
PAH by GCMS	01-Sep-2016		31-Aug-2016	31-Aug-2016	22-Jul-2016	22-Jul-2016
pH	21-Jul-2016		21-Jul-2016	21-Jul-2016		
Phenols by HPLC (S)	26-Jul-2016		26-Jul-2016	26-Jul-2016		
Sample description	20-Jul-2016	18-Jul-2016	20-Jul-2016	20-Jul-2016	19-Jul-2016	19-Jul-2016
Total Sulphate	25-Jul-2016		22-Jul-2016	25-Jul-2016		
TPH CWG GC (S)	22-Jul-2016		22-Jul-2016	22-Jul-2016		
VOC MS (S)	22-Jul-2016		22-Jul-2016	22-Jul-2016		



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ASSOCIATED AQC DATA

Anions by Kone (soil)

Component	Method Code	QC 1324	QC 1384	QC 1390
Chloride (soluble)	TM243	99.05 89.13 : 109.51	89.13 : 109.51	89.13 : 109.51
Water Soluble Sulphate as SO4 2:1 Extract	TM243	94.46 91.99 : 109.79	91.99 : 109.79	91.99 : 109.79

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1343	QC 1330
Total Aliphatics >C12-C35	TM173	94.79 69.98 : 113.27	88.13 62.50 : 112.50

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1343	QC 1330
Total Aromatics >EC12-EC35	TM173	104.0 58.94 : 130.85	72.67 60.62 : 126.95

GRO by GC-FID (S)

Component	Method Code	QC 1374
Benzene by GC (Moisture Corrected)	TM089	93.5 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	91.5 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	91.5 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	92.5 74.48 : 125.29
o Xylene by GC (Moisture Corrected)	TM089	91.5 79.00 : 121.00
QC	TM089	94.22 65.92 : 123.46
Toluene by GC (Moisture Corrected)	TM089	93.0 79.00 : 121.00

Metals in solid samples by OES

Component	Method Code	QC 1301	QC 1365
Aluminium	TM181	86.92 80.01 : 119.99	93.08 80.01 : 119.99
Antimony	TM181	90.68 77.50 : 122.50	92.11 77.50 : 122.50
Arsenic	TM181	300.88 82.63 : 117.37	315.93 82.63 : 117.37



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Metals in solid samples by OES

		QC 1301	QC 1365
Barium	TM181	86.47 79.45 : 120.55	87.22 79.45 : 120.55
Beryllium	TM181	400.0 82.93 : 117.07	417.05 82.93 : 117.07
Boron	TM181	241.98 69.98 : 130.02	238.93 69.98 : 130.02
Cadmium	TM181	287.39 81.95 : 118.05	302.52 81.95 : 118.05
Chromium	TM181	168.63 81.29 : 118.71	176.86 81.29 : 118.71
Cobalt	TM181	471.67 83.86 : 116.14	498.33 83.86 : 116.14
Copper	TM181	81.49 78.57 : 121.43	85.27 78.57 : 121.43
Iron	TM181	85.52 83.21 : 116.79	93.1 83.21 : 116.79
Lead	TM181	173.23 77.50 : 122.50	171.26 77.50 : 122.50
Manganese	TM181	84.2 82.91 : 117.09	89.0 82.91 : 117.09
Mercury	TM181	373.53 81.99 : 118.01	391.96 81.99 : 118.01
Molybdenum	TM181	390.13 81.45 : 118.55	391.72 81.45 : 118.55
Nickel	TM181	226.16 79.64 : 120.36	234.3 79.64 : 120.36
Phosphorus	TM181	84.8 81.03 : 118.97	87.33 81.03 : 118.97
Selenium	TM181	512.82 83.31 : 116.69	528.21 83.31 : 116.69
Strontium	TM181	160.92 83.64 : 116.36	168.2 83.64 : 116.36
Thallium	TM181	386.4 81.18 : 118.82	391.38 81.18 : 118.82
Tin	TM181	87.71 81.44 : 118.56	88.7 81.44 : 118.56
Titanium	TM181	91.41 71.02 : 128.98	89.06 71.02 : 128.98
Vanadium	TM181	88.53 86.61 : 113.39	89.71 86.61 : 113.39
Zinc	TM181	83.44 87.90 : 112.10	86.04 87.90 : 112.10

PAH by GCMS

Component	Method Code	QC 1382	QC 1485	QC 1404	QC 1471
Acenaphthene	TM218	95.0 78.84 : 114.36	92.5 70.85 : 111.95	89.0 70.85 : 111.95	98.5 78.84 : 114.36
Acenaphthylene	TM218	85.0 72.95 : 108.95	90.5 67.50 : 106.50	83.0 67.50 : 106.50	90.5 72.95 : 108.95
Anthracene	TM218	91.0 75.54 : 110.88	89.5 72.35 : 105.95	85.0 72.35 : 105.95	94.0 75.54 : 110.88
Benz(a)anthracene	TM218	103.0 78.02 : 127.38	104.0 82.00 : 127.00	95.0 82.00 : 127.00	102.0 78.02 : 127.38



CERTIFICATE OF ANALYSIS

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PAH by GCMS

		QC 1382	QC 1485	QC 1404	QC 1471
Benzo(a)pyrene	TM218	104.0 79.21 : 128.01	105.5 79.60 : 124.90	98.0 79.60 : 124.90	104.5 79.21 : 128.01
Benzo(b)fluoranthene	TM218	103.5 80.00 : 125.00	104.5 81.20 : 121.77	95.5 81.20 : 121.77	100.5 80.00 : 125.00
Benzo(ghi)perylene	TM218	94.5 77.90 : 118.70	94.0 77.49 : 119.12	93.0 77.49 : 119.12	95.0 77.90 : 118.70
Benzo(k)fluoranthene	TM218	103.5 78.77 : 120.72	96.5 83.50 : 116.50	91.5 83.50 : 116.50	99.0 78.77 : 120.72
Chrysene	TM218	94.5 78.77 : 118.99	93.0 80.95 : 114.55	89.5 80.95 : 114.55	94.5 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	94.5 76.39 : 122.63	94.5 77.15 : 122.45	92.0 77.15 : 122.45	96.5 76.39 : 122.63
Fluoranthene	TM218	96.5 77.25 : 117.75	94.5 79.08 : 114.40	89.0 79.08 : 114.40	96.5 77.25 : 117.75
Fluorene	TM218	95.0 79.28 : 117.35	90.0 79.03 : 113.38	86.0 79.03 : 113.38	93.5 79.28 : 117.35
Indeno(123cd)pyrene	TM218	96.0 78.87 : 122.50	97.0 75.65 : 125.15	93.5 75.65 : 125.15	98.5 78.87 : 122.50
Naphthalene	TM218	91.5 74.75 : 118.25	86.5 77.25 : 112.60	82.0 77.25 : 112.60	90.0 74.75 : 118.25
Phenanthrene	TM218	95.0 78.61 : 113.98	88.5 78.25 : 115.44	85.5 78.25 : 115.44	94.5 78.61 : 113.98
Pyrene	TM218	94.5 76.15 : 115.26	93.5 78.07 : 114.06	88.0 78.07 : 114.06	95.0 76.15 : 115.26

pH

Component	Method Code	QC 1315	QC 1322	QC 1319
pH	TM133	100.63 98.11 : 101.89	99.37 98.11 : 101.89	99.5 98.36 : 102.14

Phenols by HPLC (S)

Component	Method Code	QC 1363	QC 1365	QC 1377
2,3,5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	98.05 87.96 : 112.04	105.84 84.07 : 115.93	105.19 84.07 : 115.93
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	94.15 82.86 : 105.46	102.34 78.52 : 121.48	102.92 78.52 : 121.48
Catechol by HPLC (S)	TM062 (S)	31.43 76.28 : 137.67	2.86 89.77 : 110.23	15.24 89.77 : 110.23
Cresols by HPLC (S)	TM062 (S)	97.7 90.51 : 112.71	105.64 87.29 : 112.71	102.92 87.29 : 112.71
Napthol by HPLC (S)	TM062 (S)	88.57 89.39 : 128.63	78.57 91.21 : 108.79	81.43 91.21 : 108.79
Phenol by HPLC (S)	TM062 (S)	98.68 87.45 : 106.46	107.28 87.40 : 112.60	105.96 87.40 : 112.60
Resorcinol HPLC (S)	TM062 (S)	94.34 87.76 : 112.24	106.29 86.80 : 113.20	103.77 86.80 : 113.20
Xylenols by HPLC (S)	TM062 (S)	97.29 93.06 : 114.56	102.4 87.23 : 112.77	100.1 87.23 : 112.77



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Total Sulphate

Component	Method Code	QC 1378	QC 1328
Total Sulphate	TM221	106.82 70.57 : 128.43	103.03 70.57 : 128.43

VOC MS (S)

Component	Method Code	QC 1378	QC 1382
1,1,1,2-tetrachloroethane	TM116	107.0 80.28 : 118.09	92.8 76.60 : 121.00
1,1,1-Trichloroethane	TM116	103.6 81.77 : 121.07	91.8 77.80 : 123.40
1,1,2-Trichloroethane	TM116	98.0 78.55 : 105.28	85.4 75.40 : 119.80
1,1-Dichloroethane	TM116	104.6 74.63 : 123.32	97.2 74.46 : 129.15
1,2-Dichloroethane	TM116	106.4 86.58 : 129.62	95.8 86.62 : 136.90
1,4-Dichlorobenzene	TM116	104.0 73.23 : 116.39	91.2 72.76 : 126.34
2-Chlorotoluene	TM116	88.8 69.22 : 110.64	98.2 74.00 : 117.20
4-Chlorotoluene	TM116	88.4 68.57 : 106.26	94.4 71.20 : 113.20
Benzene	TM116	107.2 84.33 : 124.27	96.2 79.60 : 125.20
Carbon Disulphide	TM116	112.2 77.20 : 122.80	102.6 74.91 : 122.14
Carbontetrachloride	TM116	96.4 83.53 : 123.46	95.2 87.07 : 120.37
Chlorobenzene	TM116	110.0 81.40 : 118.90	90.4 75.00 : 115.53
Chloroform	TM116	105.8 82.73 : 119.72	94.2 82.00 : 128.80
Chloromethane	TM116	86.0 55.16 : 145.46	116.2 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	100.6 80.55 : 123.13	94.8 57.23 : 143.96
Dibromomethane	TM116	93.8 73.40 : 116.60	87.6 73.40 : 116.60
Dichloromethane	TM116	105.6 81.68 : 125.21	104.2 86.60 : 137.00
Ethylbenzene	TM116	101.4 81.09 : 116.49	91.0 73.60 : 115.60
Hexachlorobutadiene	TM116	78.4 30.92 : 132.28	59.4 42.69 : 142.65
Isopropylbenzene	TM116	83.0 64.86 : 120.15	84.8 64.24 : 119.40
Naphthalene	TM116	105.6 75.39 : 124.61	95.0 79.04 : 135.59
o-Xylene	TM116	87.8 69.50 : 105.49	85.2 51.65 : 118.61