

Appendix E - Laboratory Analytical Results



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

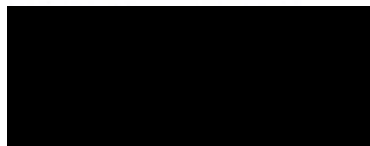
Date: 05 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 110928-23
Your Reference: 46370079
Location: Shell Hitchin
Report No: 153379

We received 5 samples on Wednesday September 28, 2011 and 5 of these samples were scheduled for analysis which was completed on Wednesday October 05, 2011. 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:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4385422	BH103		1.00	27/09/2011
4385418	BH105		0.60	27/09/2011
4385420	DUP01		0.70	27/09/2011
4385423	VP102		0.40	27/09/2011
4385419	VP103		0.70	26/09/2011

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



SDG: 110928-23
 Job: H_URS_WIM-108
 Client Reference: 46370079

Location: Shell Hitchin
 Customer: URS Corporation Limited
 Attention: Jocelyn Thomas

Order Number:
 Report Number: 153379
 Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container	
	4385418		BH105				0.60		60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL)	
	4385419		VP103				0.70		60g VOC (ALE215) 250g Amber Jar (AL) 1kg TUB	
	4385422		BH103				1.00		60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL)	
	4385420		DUP01				0.70		60g VOC (ALE215) 250g Amber Jar (AL) 250g VOC (ALE215) 250g Amber Jar (AL)	
CEN Readings	All	NDPs: 0 Tests: 2								
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2								
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 5								
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2								
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 5								
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5								
GRO by GC-FID (W)	All	NDPs: 0 Tests: 2								
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2								
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 2								
	Boron	NDPs: 0 Tests: 2								
	Cadmium	NDPs: 0 Tests: 2								
	Chromium	NDPs: 0 Tests: 2								
	Cobalt	NDPs: 0 Tests: 2								
	Copper	NDPs: 0 Tests: 2								
	Lead	NDPs: 0 Tests: 2								



SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
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Order Number:
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Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		4385420	4385423	4385422	4385419	4385418
	Customer Sample Reference		DUP01	VP102	BH103	VP103	BH105
	AGS Reference						
	Depth (m)		0.70	0.40	1.00	0.70	0.60
	Container		250g Amber Jar (AL)	60g VOC (ALE215) 250g Amber Jar (AL)	400g Tub (ALE214) 250g Amber Jar (AL)	60g VOC (ALE215) 1kg TUB	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL)
Metals by iCap-OES (Soil)	Mercury	NDPs: 0 Tests: 2			X		X
	Molybdenum	NDPs: 0 Tests: 2			X		X
	Nickel	NDPs: 0 Tests: 2			X		X
	Selenium	NDPs: 0 Tests: 2			X		X
	Tin	NDPs: 0 Tests: 2			X		X
	Zinc	NDPs: 0 Tests: 2			X		X
Oxygenates (S)	All	NDPs: 0 Tests: 5	X	X		X	X
Oxygenates (W)	All	NDPs: 0 Tests: 2			X		X
PAH by GCMS	All	NDPs: 0 Tests: 2			X		X
Sample description	All	NDPs: 0 Tests: 5	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 5	X	X	X	X	X
VOC MS (S)	All	NDPs: 0 Tests: 5	X	X		X	X
VOC MS (W)	All	NDPs: 0 Tests: 2			X		X



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Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
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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
4385422	BH103	1.00	Light Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	None
4385418	BH105	0.60	Dark Brown	Clay Loam	0.063 - 0.1 mm	Stones	None
4385420	DUP01	0.70	Light Brown	Ballast	2 - 10 mm	Stones	None
4385423	VP102	0.40	Light Brown	Sandy Clay Loam	0.063 - 0.1 mm	Stones	Vegetation
4385419	VP103	0.70	Light Brown	Loamy Sand	0.1 - 2 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:
Report Number: 153379
Superseded Report:

Page 6 of 48

Order Number:
Report Number: 153379
Superseded Report:

Page 7 of 48



CERTIFICATE OF ANALYSIS

SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

EPH CWG (Aromatic) GC (S)

Results Legend		Customer Sample R	BH103	BH105	DUP01	VP102	VP103	
#	ISO17025 accredited.		1.00	0.60	0.70	0.40	0.70	
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
\$	Deviating sample.		27/09/2011	27/09/2011	27/09/2011	27/09/2011	26/09/2011	
aq	Aqueous / settled sample.		28/09/2011	28/09/2011	28/09/2011	28/09/2011	28/09/2011	
diss.filt	Dissolved / filtered sample.		110928-23	110928-23	110928-23	110928-23	110928-23	
tot.unfilt	Total / unfiltered sample.		4385422	4385418	4385420	4385423	4385419	
*	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							
Component	LOD/Units	Method						
Aromatics >EC12-EC16	<100 µg/kg	TM173	1600	52400	42600	1410	36700	
Aromatics >EC16-EC21	<100 µg/kg	TM173	5680	271000	255000	2270	115000	
Aromatics >EC21-EC35	<100 µg/kg	TM173	28100	641000	745000	18400	616000	

Order Number:
Report Number: 153379
Superseded Report:

Page 9 of 48

Order Number:
Report Number: 153379
Superseded Report:

Page 10 of 48

Order Number:
Report Number: 153379
Superseded Report:

Page 11 of 48



CERTIFICATE OF ANALYSIS

SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.216	Moisture Content Ratio (%)	23.3
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	81.1
Particle Size <4mm	>95%		

Case			
SDG	110928-23		
Lab Sample Number(s)	4385418		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH105		
Depth (m)	0.60		
Solid Waste Analysis			
Total Organic Carbon (%)	2.09	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	0.0814	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	28-Sep-2011
pH (pH Units)	9.18
Conductivity (µS/cm)	466.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.309
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
05/10/2011 16:19:32



CERTIFICATE OF ANALYSIS

SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.216	Moisture Content Ratio (%)	23.3
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	81.1
Particle Size <4mm	>95%		

Case			
SDG	110928-23		
Lab Sample Number(s)	4385418		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH105		
Depth (m)	0.60		
Solid Waste Analysis			
Total Organic Carbon (%)	2.09	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	0.0814	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	0.027	<0.01	0.054	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	0.014	<0.01	0.028	<0.1	-
Aromatics >EC10-EC12	0.018	<0.01	0.036	<0.1	-
Aromatics >EC12-EC16	0.18	<0.01	0.36	<0.1	-
Aromatics >EC16-EC21	0.122	<0.01	0.244	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	0.00111	<0.001	0.00222	<0.01	-

Leach Test Information

Date Prepared	28-Sep-2011
pH (pH Units)	9.18
Conductivity (µS/cm)	466.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.309
Volume of Eluate VE1 (Litres)	

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WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.216	Moisture Content Ratio (%)	23.3
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	81.1
Particle Size <4mm	>95%		

Case			
SDG	110928-23		
Lab Sample Number(s)	4385418		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH105		
Depth (m)	0.60		

Solid Waste Analysis

Total Organic Carbon (%)	2.09				
Loss on Ignition (%)	-				
Sum of BTEX (mg/kg)	0.0814				
Sum of 7 PCBs (mg/kg)	-				
Mineral Oil (mg/kg)	-				
PAH Sum of 17 (mg/kg)	-				
pH (pH Units)	-				
ANC to pH 6 (mol/kg)	-				
ANC to pH 4 (mol/kg)	-				

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	0.00134	<0.001	0.00268	<0.01	- - - -
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	- - - -
p/m-Xylene	0.00253	<0.001	0.00506	<0.01	- - - -
o-Xylene	0.00273	<0.001	0.00546	<0.01	- - - -
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	- - - -

Leach Test Information

Date Prepared	28-Sep-2011
pH (pH Units)	9.18
Conductivity (µS/cm)	466.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.309
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.208	Moisture Content Ratio (%)	18.9
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.1
Particle Size <4mm	>95%		

Case			
SDG	110928-23		
Lab Sample Number(s)	4385422		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH103		
Depth (m)	1.00		
Solid Waste Analysis			
Total Organic Carbon (%)	0.746	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	28-Sep-2011
pH (pH Units)	8.60
Conductivity (µS/cm)	415.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

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Client Reference		Site Location	Shell Hitchin
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Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.1
Particle Size <4mm	>95%		

Case			
SDG	110928-23		
Lab Sample Number(s)	4385422		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH103		
Depth (m)	1.00		
Solid Waste Analysis			
Total Organic Carbon (%)	0.746	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	28-Sep-2011
pH (pH Units)	8.60
Conductivity (µS/cm)	415.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
05/10/2011 16:19:32



SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.208	Moisture Content Ratio (%)	18.9
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.1
Particle Size <4mm	>95%		

Case			
SDG	110928-23		
Lab Sample Number(s)	4385422		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH103		
Depth (m)	1.00		

Solid Waste Analysis

Total Organic Carbon (%)	0.746			
Loss on Ignition (%)	-			
Sum of BTEX (mg/kg)	<24.0			
Sum of 7 PCBs (mg/kg)	-			
Mineral Oil (mg/kg)	-			
PAH Sum of 17 (mg/kg)	-			
pH (pH Units)	-			
ANC to pH 6 (mol/kg)	-			
ANC to pH 4 (mol/kg)	-			

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	- - - -
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	- - - -
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
o-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	- - - -

Leach Test Information

Date Prepared	28-Sep-2011
pH (pH Units)	8.60
Conductivity (µS/cm)	415.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
05/10/2011 16:19:32



SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10 ⁻⁷							
NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

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		
PM114		Leaching Procedure for CEN Two Stage BatchTest 2:1/8:1 Cumulative		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
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		
TM132	In - house Method	ELTRA CS800 Operators Guide		
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		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Test Completion Dates

Lab Sample No(s)	4385422	4385418	4385420	4385423	4385419
Customer Sample Ref.	BH103	BH105	DUP01	VP102	VP103
AGS Ref.					
Depth	1.00	0.60	0.70	0.40	0.70
Type	SOLID	SOLID	SOLID	SOLID	SOLID
CEN 2:1 Leachate (1 Stage)	29-Sep-2011	29-Sep-2011			
CEN Readings	30-Sep-2011	30-Sep-2011			
EPH CWG (Aliphatic) Aqueous GC (W)	03-Oct-2011	03-Oct-2011			
EPH CWG (Aliphatic) GC (S)	30-Sep-2011	30-Sep-2011	29-Sep-2011	30-Sep-2011	29-Sep-2011
EPH CWG (Aromatic) Aqueous GC (W)	03-Oct-2011	03-Oct-2011			
EPH CWG (Aromatic) GC (S)	30-Sep-2011	30-Sep-2011	30-Sep-2011	30-Sep-2011	30-Sep-2011
GRO by GC-FID (S)	04-Oct-2011	04-Oct-2011	04-Oct-2011	04-Oct-2011	04-Oct-2011
GRO by GC-FID (W)	03-Oct-2011	03-Oct-2011			
Hexavalent Chromium (s)	01-Oct-2011	01-Oct-2011			
Metals by iCap-OES (Soil)	30-Sep-2011	30-Sep-2011			
Oxygenates (S)	04-Oct-2011	04-Oct-2011	04-Oct-2011	05-Oct-2011	04-Oct-2011
Oxygenates (W)	04-Oct-2011	04-Oct-2011			
PAH by GCMS	30-Sep-2011	30-Sep-2011			
Sample description	28-Sep-2011	28-Sep-2011	28-Sep-2011	28-Sep-2011	28-Sep-2011
Total Organic Carbon	30-Sep-2011	30-Sep-2011	30-Sep-2011	30-Sep-2011	30-Sep-2011
TPH CWG (W)	03-Oct-2011	03-Oct-2011			
VOC MS (S)	04-Oct-2011	04-Oct-2011	04-Oct-2011	05-Oct-2011	04-Oct-2011
VOC MS (W)	03-Oct-2011	03-Oct-2011			



SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 45
sqcresultname	TM174	sqcrecovery 0.00 : 0.00

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 40	QC 40
Total Aliphatics >C12-C35	TM173	80.42 67.09 : 98.92	81.04 63.33 : 106.07

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 41
sqcresultname	TM174	sqcrecovery 0.00 : 0.00

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 40	QC 40
Total Aromatics >EC12-EC35	TM173	85.33 63.44 : 117.90	85.33 67.63 : 106.82

GRO by GC-FID (S)

Component	Method Code	QC 45	QC 49
Benzene by GC (Moisture Corrected)	TM089	99.0 80.47 : 112.02	93.5 80.47 : 112.02
Ethylbenzene by GC (Moisture Corrected)	TM089	101.0 77.65 : 114.82	99.0 77.65 : 114.82
m & p Xylene by GC (Moisture Corrected)	TM089	100.75 77.43 : 115.19	99.0 77.43 : 115.19
MTBE GC-FID (Moisture Corrected)	TM089	102.0 79.00 : 121.00	92.0 79.00 : 121.00
o Xylene by GC (Moisture Corrected)	TM089	101.0 78.07 : 118.52	99.0 78.07 : 118.52
QC	TM089	85.76 73.02 : 108.70	92.59 73.02 : 108.70
Toluene by GC (Moisture Corrected)	TM089	100.0 78.05 : 115.14	97.0 78.05 : 115.14



SDG: 110928-23
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Report Number: 153379
Superseded Report:

GRO by GC-FID (W)

Component	Method Code	QC 41
Benzene by GC	TM245	90.5 74.18 : 120.19
Ethylbenzene by GC	TM245	91.0 68.50 : 123.48
m & p Xylene by GC	TM245	90.75 66.97 : 125.40
MTBE GC-FID	TM245	90.5 75.54 : 119.85
o Xylene by GC	TM245	91.0 67.51 : 121.24
QC	TM245	94.64 67.60 : 116.92
Toluene by GC	TM245	92.0 71.27 : 123.09

Hexavalent Chromium (s)

Component	Method Code	QC 49
Hexavalent Chromium	TM151	114.0 92.03 : 118.13

Metals by iCap-OES (Soil)

Component	Method Code	QC 48
Aluminium	TM181	104.05 40.58 : 159.72
Antimony	TM181	122.77 106.70 : 132.42
Arsenic	TM181	110.76 81.30 : 128.50
Barium	TM181	101.84 43.94 : 149.86
Beryllium	TM181	115.25 100.48 : 119.52
Boron	TM181	107.64 89.77 : 153.99
Cadmium	TM181	115.53 102.16 : 117.84
Calcium	TM181	110.87 81.59 : 128.96
Chromium	TM181	110.87 81.59 : 128.96
Cobalt	TM181	110.53 86.57 : 133.43
Copper	TM181	107.55 77.11 : 121.88
Iron	TM181	109.5 47.39 : 152.18
Lead	TM181	115.07 83.56 : 132.07



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Superseded Report:

Metals by iCap-OES (Soil)

		QC 48
Magnesium	TM181	79.52 : 120.48
Manganese	TM181	114.69 78.31 : 123.77
Mercury	TM181	109.63 97.76 : 122.20
Molybdenum	TM181	117.59 93.47 : 145.63
Nickel	TM181	113.3 84.59 : 133.71
Phosphorus	TM181	118.22 46.20 : 149.96
Potassium	TM181	72.38 : 127.62
Selenium	TM181	113.86 99.21 : 121.10
Sodium	TM181	84.80 : 115.20
Strontium	TM181	112.94 49.69 : 164.57
Thallium	TM181	119.1 70.82 : 159.96
Tin	TM181	109.23 93.63 : 124.72
Titanium	TM181	94.81 47.70 : 146.38
Vanadium	TM181	108.1 48.55 : 154.47
Zinc	TM181	110.97 78.82 : 124.59

Oxygenates (S)

Component	Method Code	QC 46	QC 47
Benzene raw	TM288	94.0 76.41 : 116.38	98.25 76.41 : 116.38
Diisopropyl ether raw	TM288	86.75 78.68 : 128.65	90.25 78.68 : 128.65
Ethanol raw	TM288	73.8 29.57 : 198.54	67.0 29.57 : 198.54
Ethylbenzene raw	TM288	97.75 75.93 : 132.30	108.0 75.93 : 132.30
o-Xylene raw	TM288	92.75 67.81 : 123.00	101.75 67.81 : 123.00
p/m-Xylene raw	TM288	96.38 76.41 : 125.53	105.88 76.41 : 125.53
tert Butanol raw	TM288	93.0 75.64 : 168.91	92.0 75.64 : 168.91
tert-amyl methyl ether raw	TM288	85.75 64.00 : 136.00	90.25 64.00 : 136.00
tert-butyl ethyl ether raw	TM288	87.0 64.00 : 136.00	91.0 64.00 : 136.00
tert-butyl methyl ether raw	TM288	89.25 83.50 : 129.91	92.75 83.50 : 129.91



CERTIFICATE OF ANALYSIS

SDG: 110928-23
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Order Number:
Report Number: 153379
Superseded Report:

Oxygenates (S)

		QC 46	QC 47
Toluene raw	TM288	87.75 71.50 : 107.70	92.75 71.50 : 107.70

Oxygenates (W)

Component	Method Code	QC 49
Benzene	TM289	98.5 64.00 : 136.00
Diisopropyl ether	TM289	83.0 64.00 : 136.00
Ethanol	TM289	98.2 60.84 : 141.13
Ethylbenzene	TM289	94.5 64.00 : 136.00
o-Xylene	TM289	97.5 64.00 : 136.00
p/m-Xylene	TM289	96.5 71.56 : 125.03
tert Butanol	TM289	94.0 70.51 : 143.48
tert-amyl methyl ether	TM289	87.5 61.37 : 145.66
tert-butyl ethyl ether	TM289	85.0 71.10 : 132.36
tert-butyl methyl ether	TM289	86.5 72.87 : 135.34
Toluene	TM289	97.5 64.00 : 136.00

PAH by GCMS

Component	Method Code	QC 43	QC 46
Acenaphthene	TM218	95.5 83.39 : 110.89	90.5 78.38 : 107.88
Acenaphthylene	TM218	81.0 67.85 : 104.34	81.0 66.59 : 97.40
Anthracene	TM218	89.0 80.25 : 106.26	91.0 70.02 : 108.14
Benz(a)anthracene	TM218	88.5 81.16 : 117.23	98.5 75.52 : 122.57
Benzo(a)pyrene	TM218	89.5 75.48 : 121.80	100.0 81.94 : 122.53
Benzo(b)fluoranthene	TM218	93.0 78.12 : 121.99	100.5 86.08 : 119.90
Benzo(ghi)perylene	TM218	93.0 85.86 : 114.85	104.0 74.07 : 119.02
Benzo(k)fluoranthene	TM218	93.0 77.71 : 116.48	101.0 86.13 : 115.27
Chrysene	TM218	93.0 87.63 : 114.45	97.0 75.35 : 119.13
Dibenzo(ah)anthracene	TM218	93.0 86.91 : 115.12	100.5 72.56 : 120.05
Fluoranthene	TM218	92.0 74.24 : 114.09	93.0 75.41 : 112.08



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Order Number:
Report Number: 153379
Superseded Report:

PAH by GCMS

		QC 43	QC 46
Fluorene	TM218	93.5 73.88 : 111.54	91.5 79.26 : 109.59
Indeno(123cd)pyrene	TM218	91.5 86.46 : 116.18	102.0 71.54 : 119.37
Naphthalene	TM218	91.0 76.04 : 107.88	87.0 76.45 : 106.42
Phenanthrene	TM218	95.5 74.34 : 113.46	91.0 74.28 : 110.55
Pyrene	TM218	91.5 74.69 : 113.49	93.5 76.12 : 112.08

Total Organic Carbon

Component	Method Code	QC 48	QC 48
Total Organic Carbon	TM132	128.14 112.23 : 144.85	137.72 112.23 : 144.85

VOC MS (S)

Component	Method Code	QC 48	QC 46
1,1,1,2-tetrachloroethane	TM116	95.6 79.70 : 131.43	99.8 79.70 : 131.43
1,1,1-Trichloroethane	TM116	100.0 65.91 : 140.05	103.8 65.91 : 140.05
1,1,2-Trichloroethane	TM116	106.6 88.70 : 147.24	114.4 88.70 : 147.24
1,1-Dichloroethane	TM116	106.6 69.50 : 147.71	105.4 69.50 : 147.71
1,2-Dichloroethane	TM116	103.0 72.54 : 154.14	115.0 72.54 : 154.14
1,4-Dichlorobenzene	TM116	101.0 68.76 : 143.94	105.0 68.76 : 143.94
2-Chlorotoluene	TM116	120.6 83.88 : 169.64	125.6 83.88 : 169.64
4-Chlorotoluene	TM116	119.4 63.90 : 187.23	124.2 63.90 : 187.23
Benzene	TM116	103.0 68.68 : 145.95	105.8 68.68 : 145.95
Carbon Disulphide	TM116	98.0 54.38 : 132.45	99.8 54.38 : 132.45
Carbontetrachloride	TM116	105.2 73.36 : 139.36	114.2 73.36 : 139.36
Chlorobenzene	TM116	99.0 81.53 : 130.33	103.8 81.53 : 130.33
Chloroform	TM116	103.8 69.66 : 148.03	109.8 69.66 : 148.03
Chloromethane	TM116	155.8 34.85 : 197.27	252.0 34.85 : 197.27
Cis-1,2-Dichloroethene	TM116	102.8 64.50 : 137.05	103.4 64.50 : 137.05



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Report Number: 153379
Superseded Report:

VOC MS (S)

		QC 48	QC 46
Dibromomethane	TM116	103.0 65.13 : 138.40	116.0 65.13 : 138.40
Dichloromethane	TM116	110.6 70.67 : 150.15	112.2 70.67 : 150.15
Ethylbenzene	TM116	97.6 70.86 : 132.33	102.2 70.86 : 132.33
Hexachlorobutadiene	TM116	132.6 34.74 : 187.69	139.2 34.74 : 187.69
Isopropylbenzene	TM116	85.2 53.42 : 123.07	80.6 53.42 : 123.07
Naphthalene	TM116	103.8 76.11 : 139.72	111.4 76.11 : 139.72
o-Xylene	TM116	92.0 64.33 : 127.08	90.6 64.33 : 127.08
p/m-Xylene	TM116	98.9 69.99 : 132.19	101.0 69.99 : 132.19
Sec-Butylbenzene	TM116	95.2 33.32 : 159.06	90.6 33.32 : 159.06
Tetrachloroethene	TM116	105.8 78.08 : 139.93	111.4 78.08 : 139.93
Toluene	TM116	97.0 65.92 : 140.08	101.2 65.92 : 140.08
Trichloroethene	TM116	95.8 67.45 : 143.34	103.8 67.45 : 143.34
Trichlorofluoromethane	TM116	112.4 73.22 : 143.68	119.2 73.22 : 143.68
Vinyl Chloride	TM116	108.8 53.84 : 178.24	106.0 53.84 : 178.24

VOC MS (W)

Component	Method Code	QC 41
1,1,1,2-Tetrachloroethane	TM208	98.5 78.44 : 132.60
1,1,1-Trichloroethane	TM208	109.5 82.89 : 127.03
1,1-Dichloroethane	TM208	115.0 77.09 : 139.26
1,2-Dichloroethane	TM208	115.5 76.92 : 137.00
2-Chlorotoluene	TM208	93.5 71.51 : 138.58
4-Chlorotoluene	TM208	102.0 71.36 : 140.30
Benzene	TM208	119.0 75.59 : 136.08
Bromomethane	TM208	118.5 75.78 : 148.00
Carbontetrachloride	TM208	109.0 80.59 : 133.93
Chlorobenzene	TM208	101.5 80.31 : 128.02
Chloroform	TM208	115.5 83.42 : 132.37



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VOC MS (W)

		QC 41
Chloromethane	TM208	128.5 65.92 : 179.80
Cis-1,2-Dichloroethene	TM208	116.5 79.85 : 133.15
Dichloromethane	TM208	112.5 75.54 : 141.85
Ethylbenzene	TM208	101.5 79.89 : 124.59
Hexachlorobutadiene	TM208	61.5 55.77 : 158.25
o-Xylene	TM208	98.5 74.49 : 131.29
p/m-Xylene	TM208	99.75 79.11 : 123.92
Tert-butyl methyl ether	TM208	109.5 72.42 : 136.24
Tetrachloroethene	TM208	96.0 74.98 : 135.52
Toluene	TM208	110.0 80.34 : 126.47
Trichloroethene	TM208	101.5 80.68 : 127.52
Vinyl Chloride	TM208	103.0 66.04 : 159.76

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: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

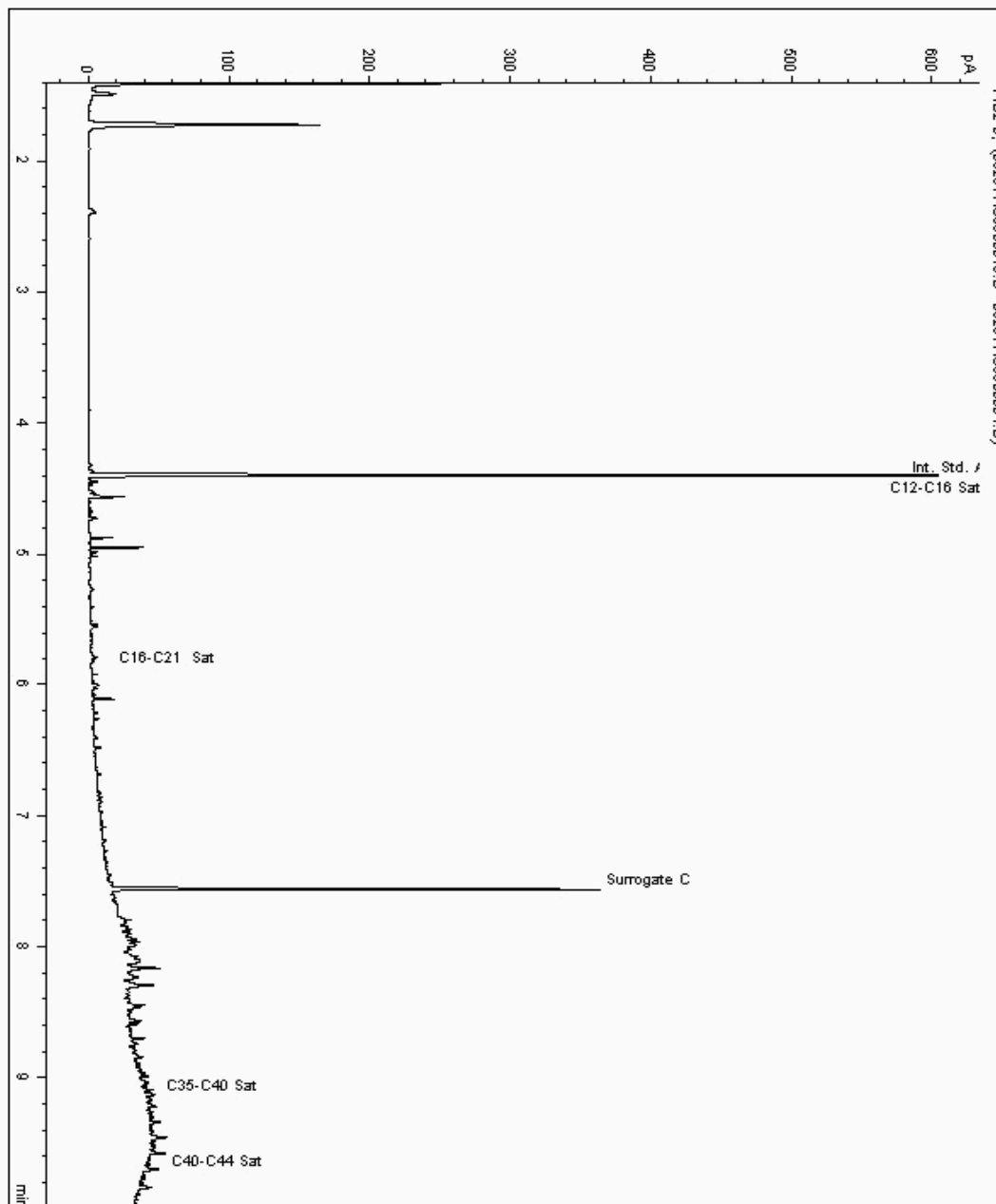
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4393583
Sample ID : VP103

Depth : 0.70

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

Sample Identity: 4361232-4393583
Date Acquired : 29/09/11 15:32:15 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.014





SDG: 110928-23
Job: H_URS_WIM-108
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Order Number:
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Superseded Report:

Chromatogram

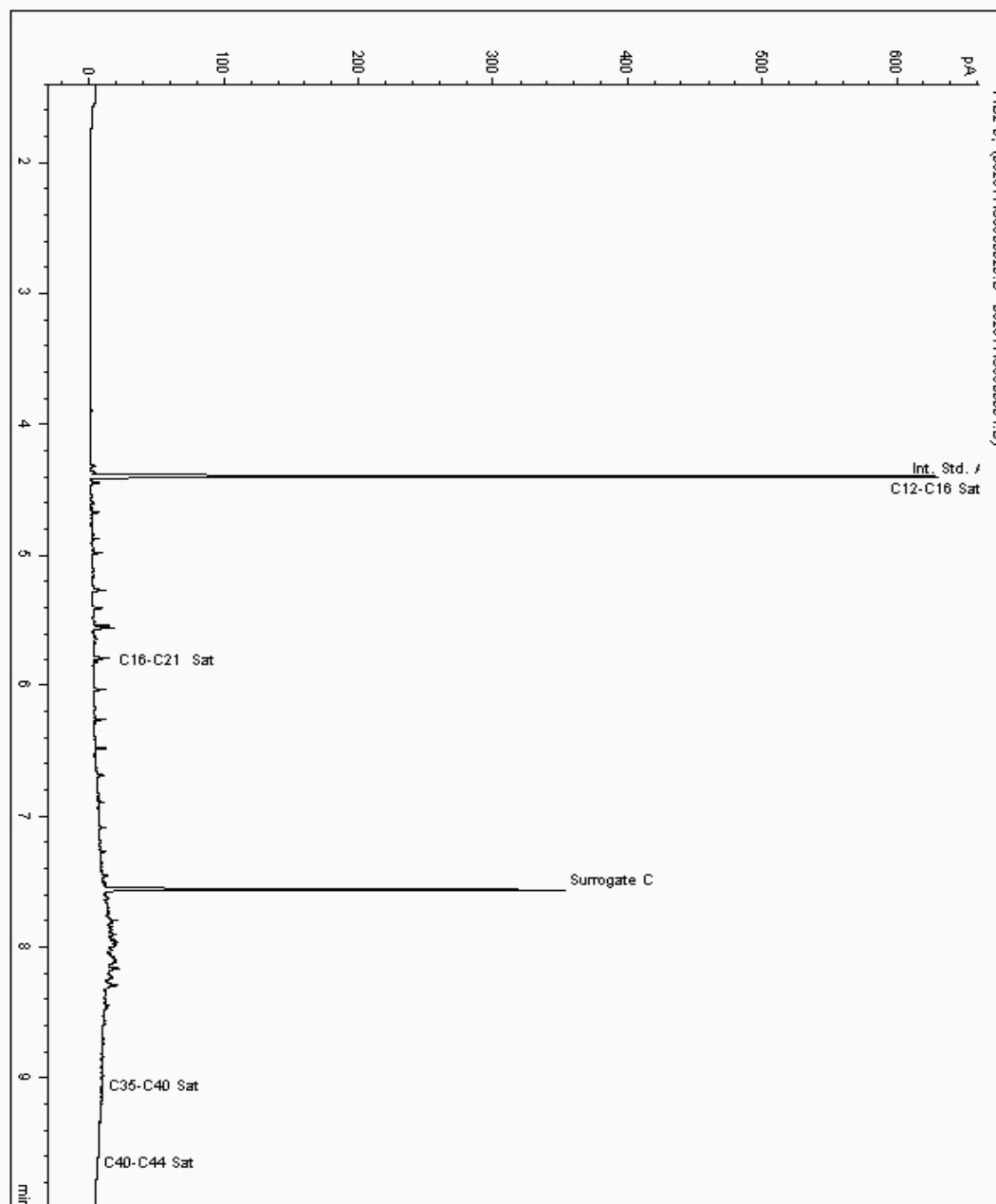
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4393614
Sample ID : DUP01

Depth : 0.70

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

Sample Identity: 4361241-4393614
Date Acquired : 29/09/11 16:47:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.042





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

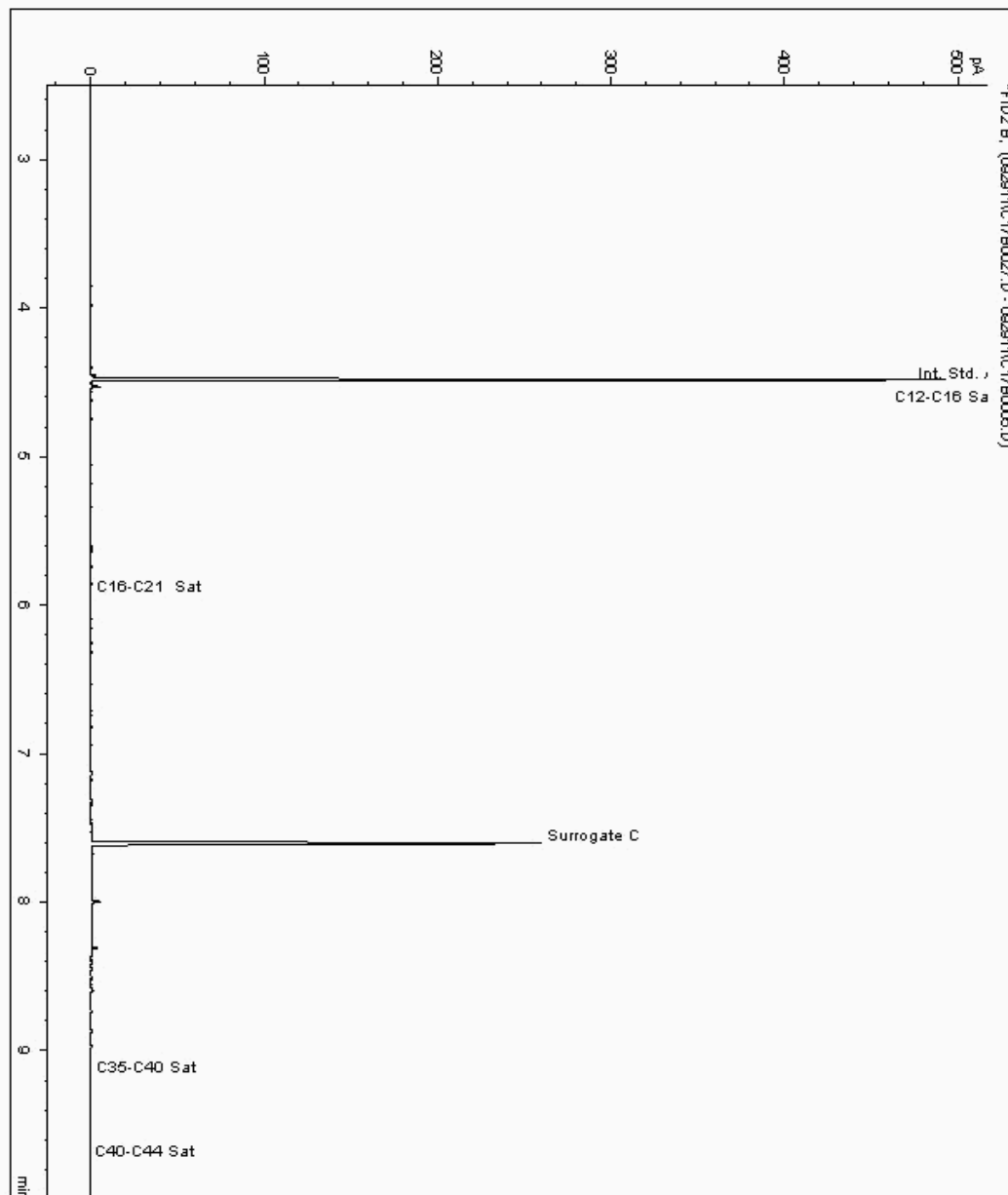
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4394886
Sample ID : BH103

Depth : 1.00

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

Sample Identity: 4361253-4394886
Date Acquired : 29/09/11 22:29:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.956





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
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Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

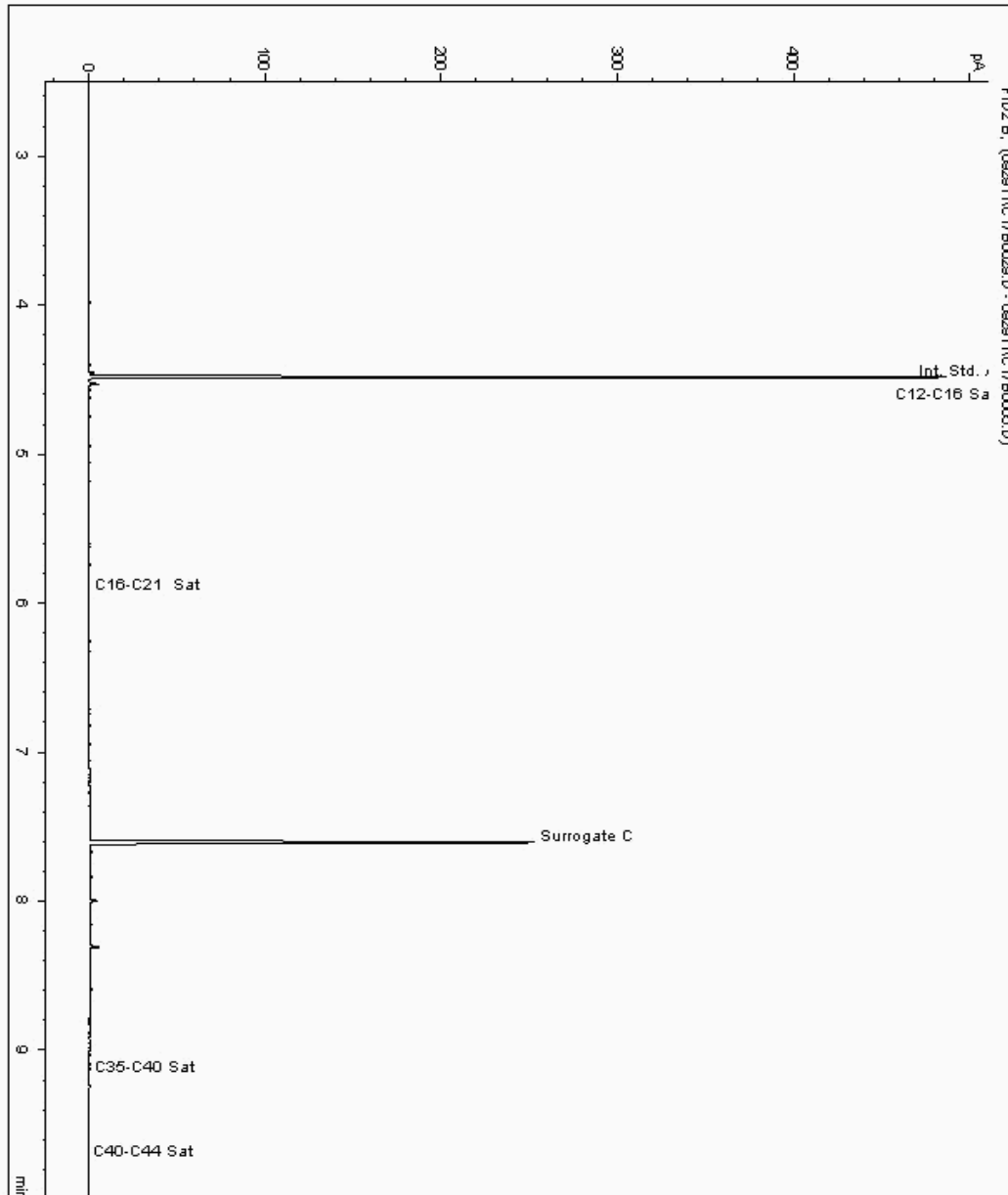
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4394928
Sample ID : VP102

Depth : 0.40

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

Sample Identity: 4361261-4394928
Date Acquired : 29/09/11 23:00:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

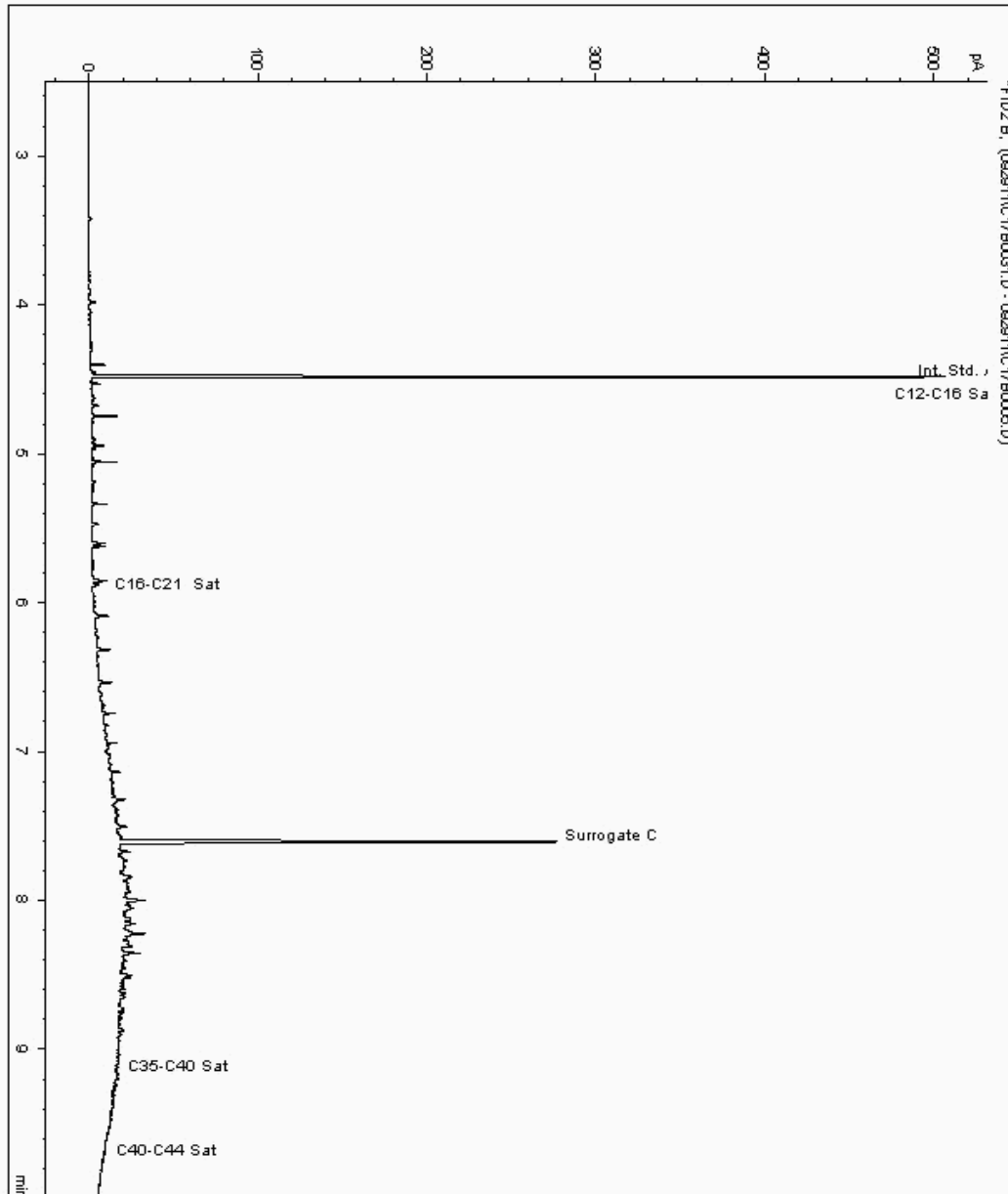
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4394952
Sample ID : BH105

Depth : 0.60

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

Sample Identity: 4361224-4394952
Date Acquired : 29/09/11 23:41:27 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.988





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

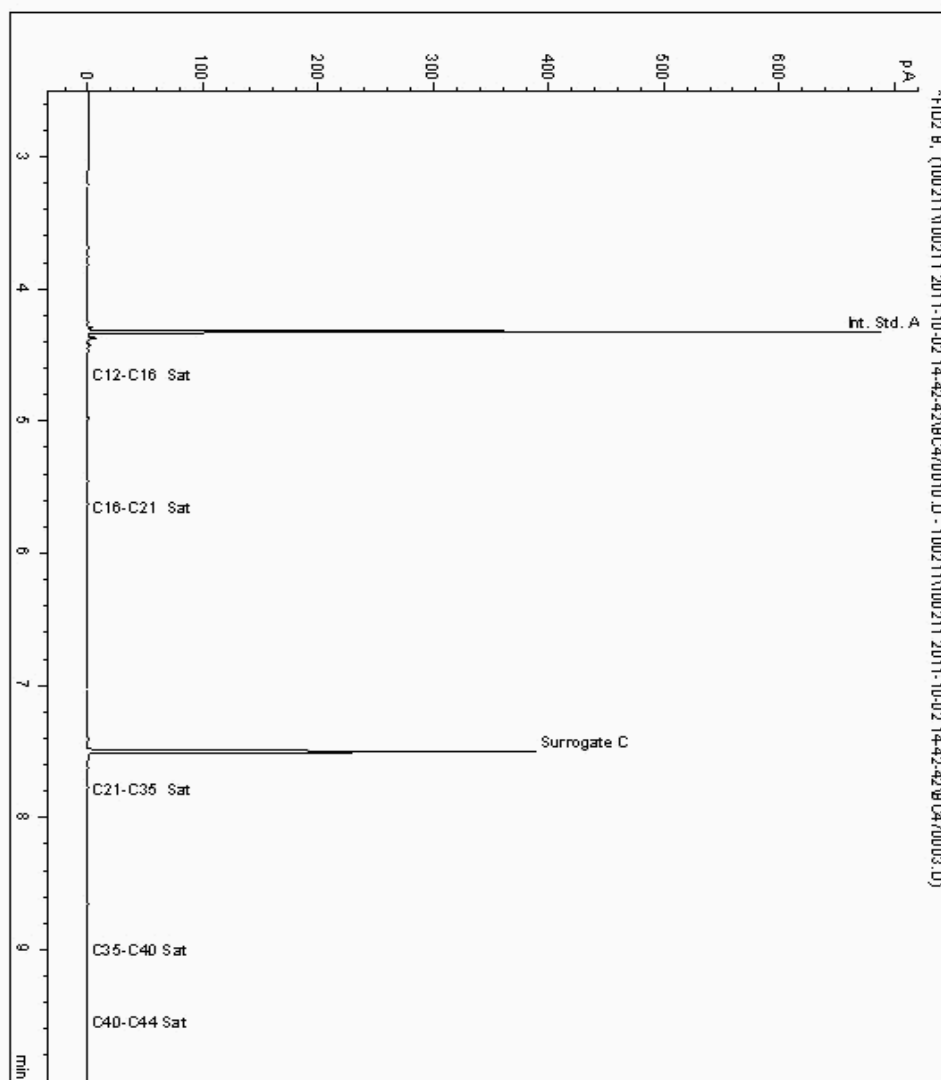
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4407068
Sample ID : BH103

Depth : 1.00

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

Sample Identity: 4361275-4407068
Date Acquired : 02/10/11 17:35:43
Units : ppb
Dilution :
CF : 1
Multiplier : 0.013





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

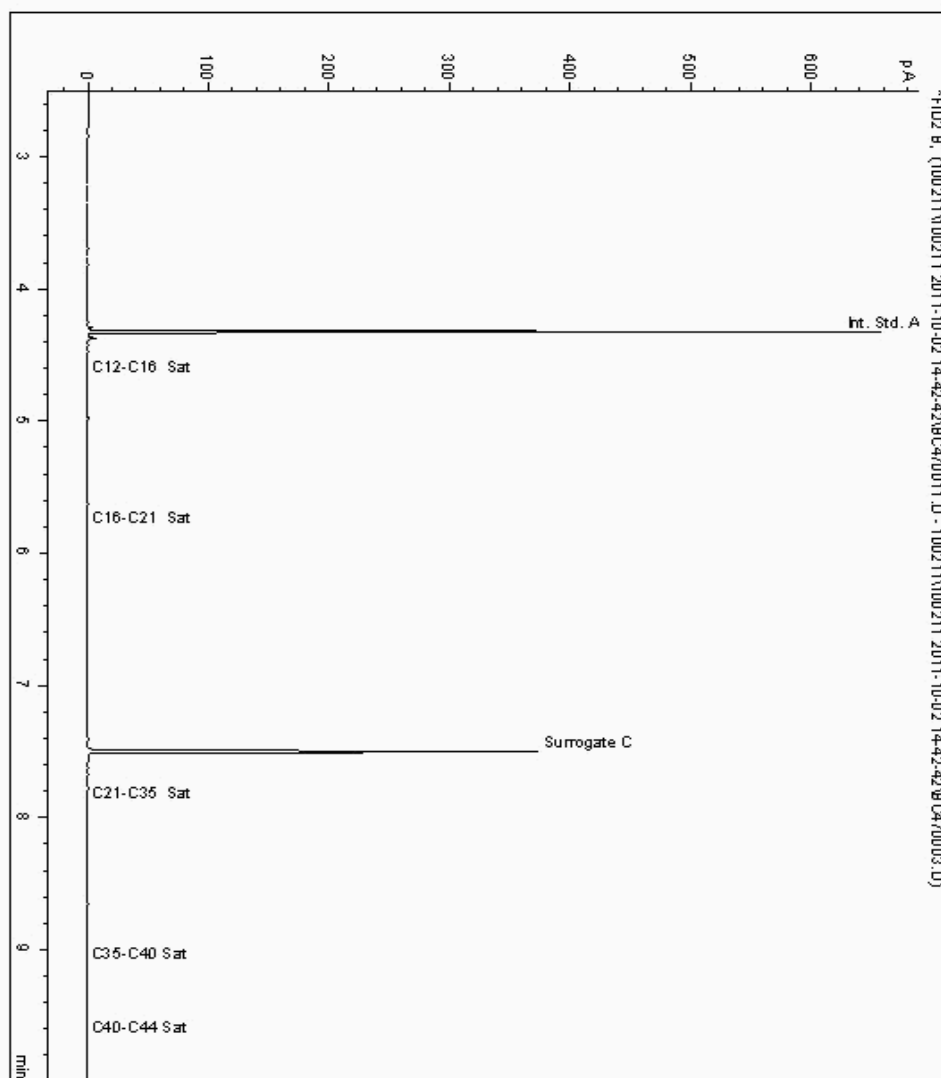
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4407087
Sample ID : BH105

Depth : 0.60

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

Sample Identity: 4361282-4407087
Date Acquired : 02/10/11 17:54:38
Units : ppb
Dilution :
CF : 1
Multiplier : 0.013





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

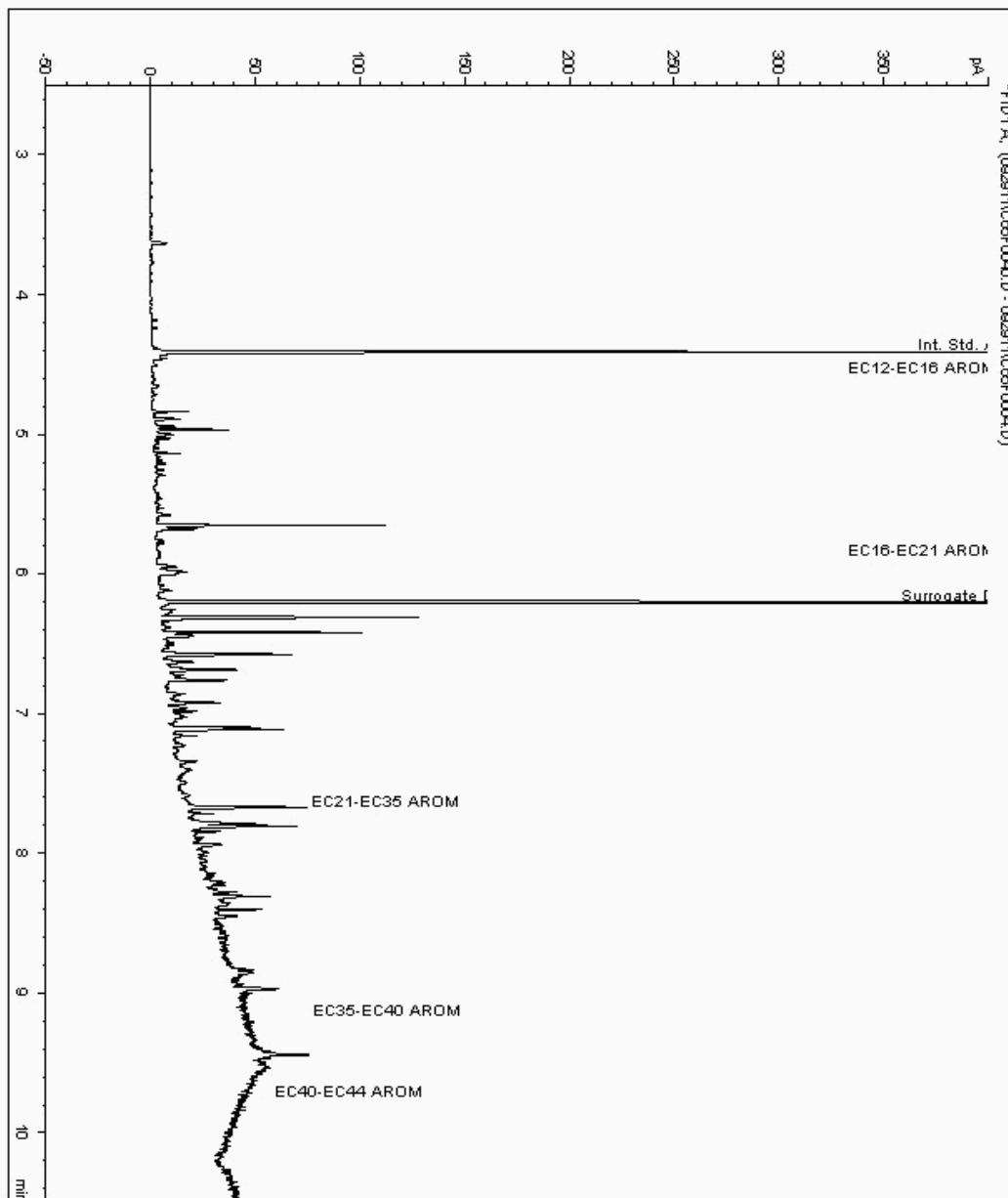
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4393583
Sample ID : VP103

Depth : 0.70

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

Sample Identity: 4361233-4393583
Date Acquired : 29/09/11 22:42:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 2.028





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

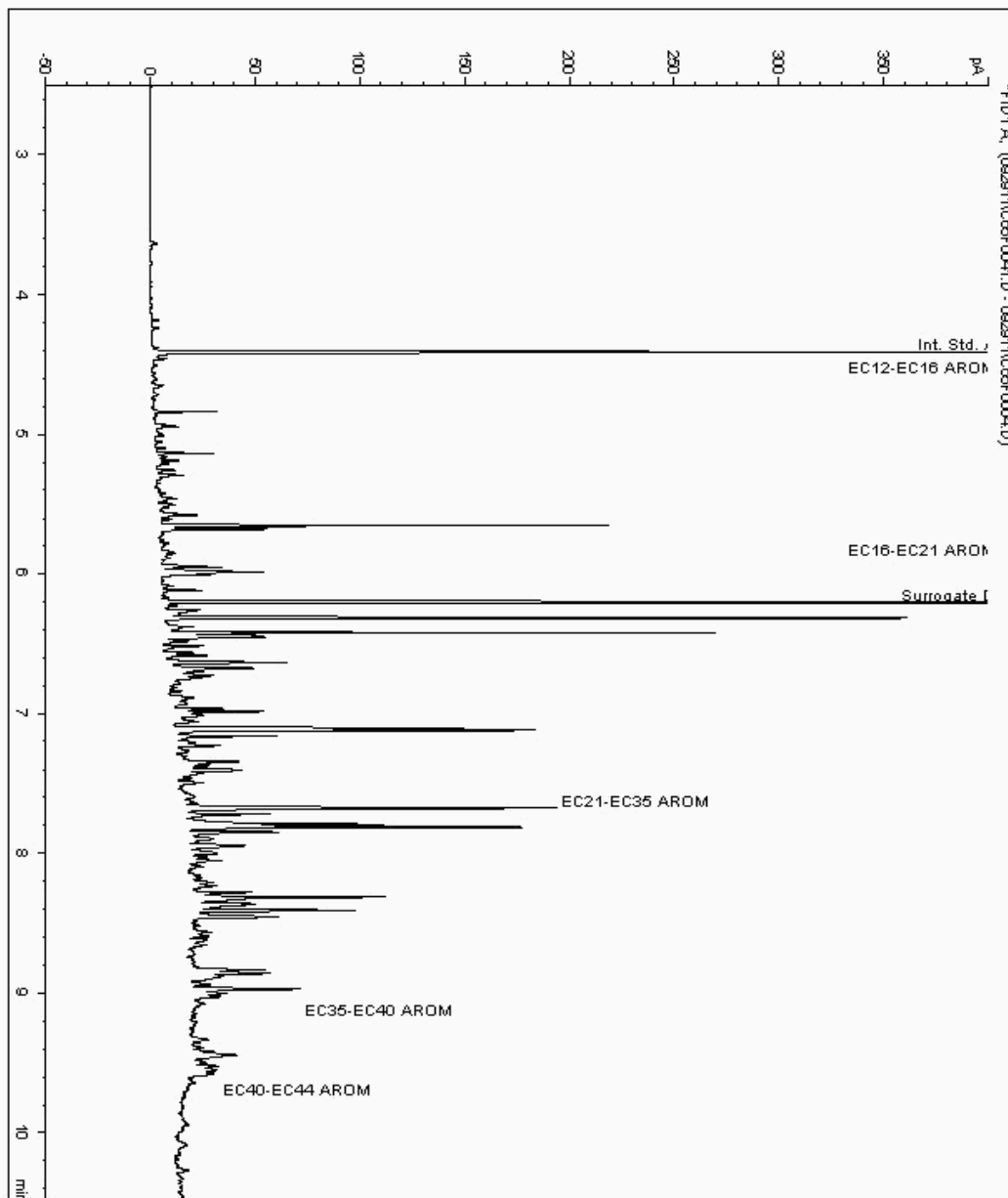
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4393614
Sample ID : DUP01

Depth : 0.70

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

Sample Identity: 4361242-4393614
Date Acquired : 29/09/11 23:03:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 2.083





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

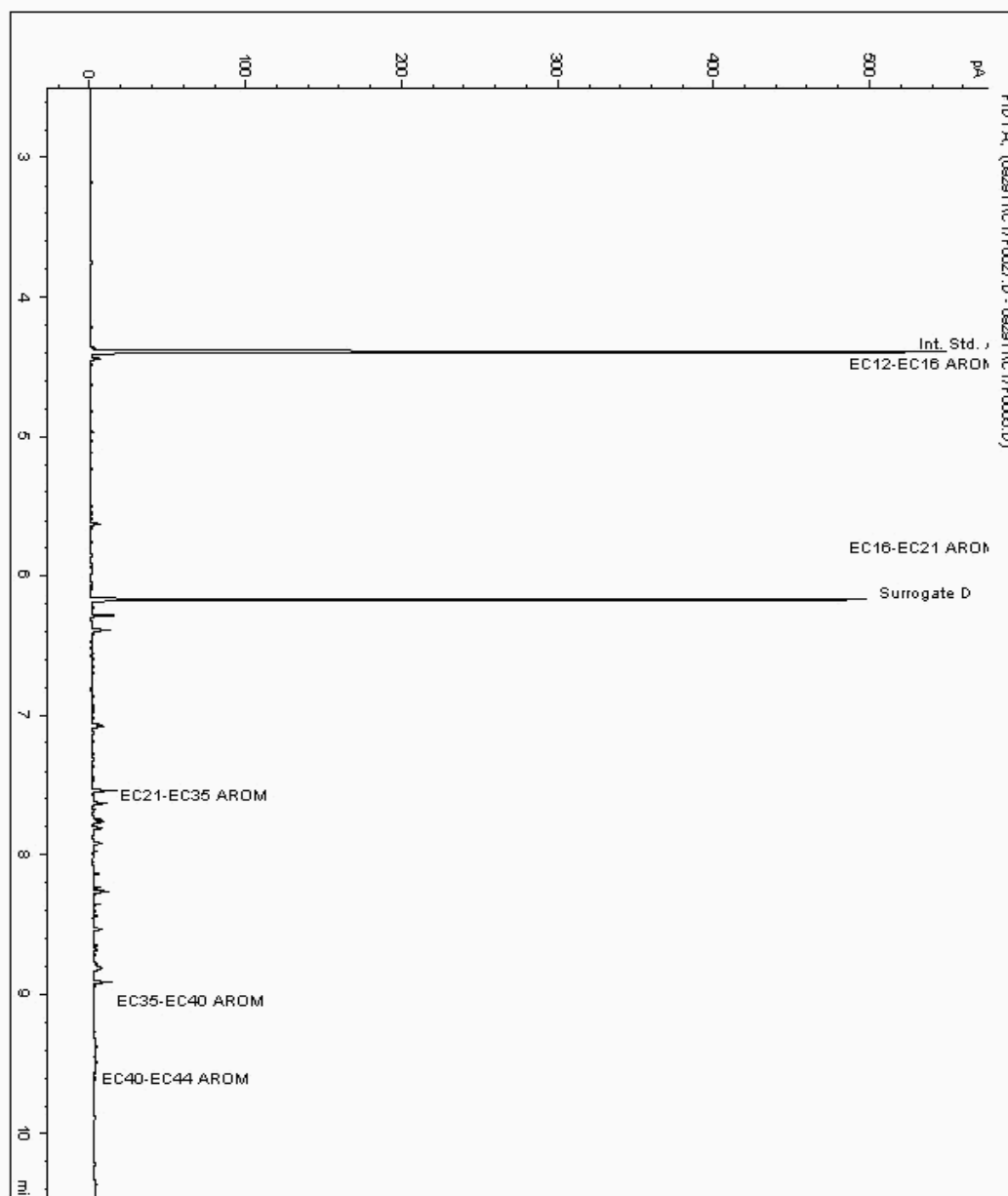
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4394886
Sample ID : BH103

Depth : 1.00

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

Sample Identity: 4361254-4394886
Date Acquired : 29/09/11 22:29:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.956





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

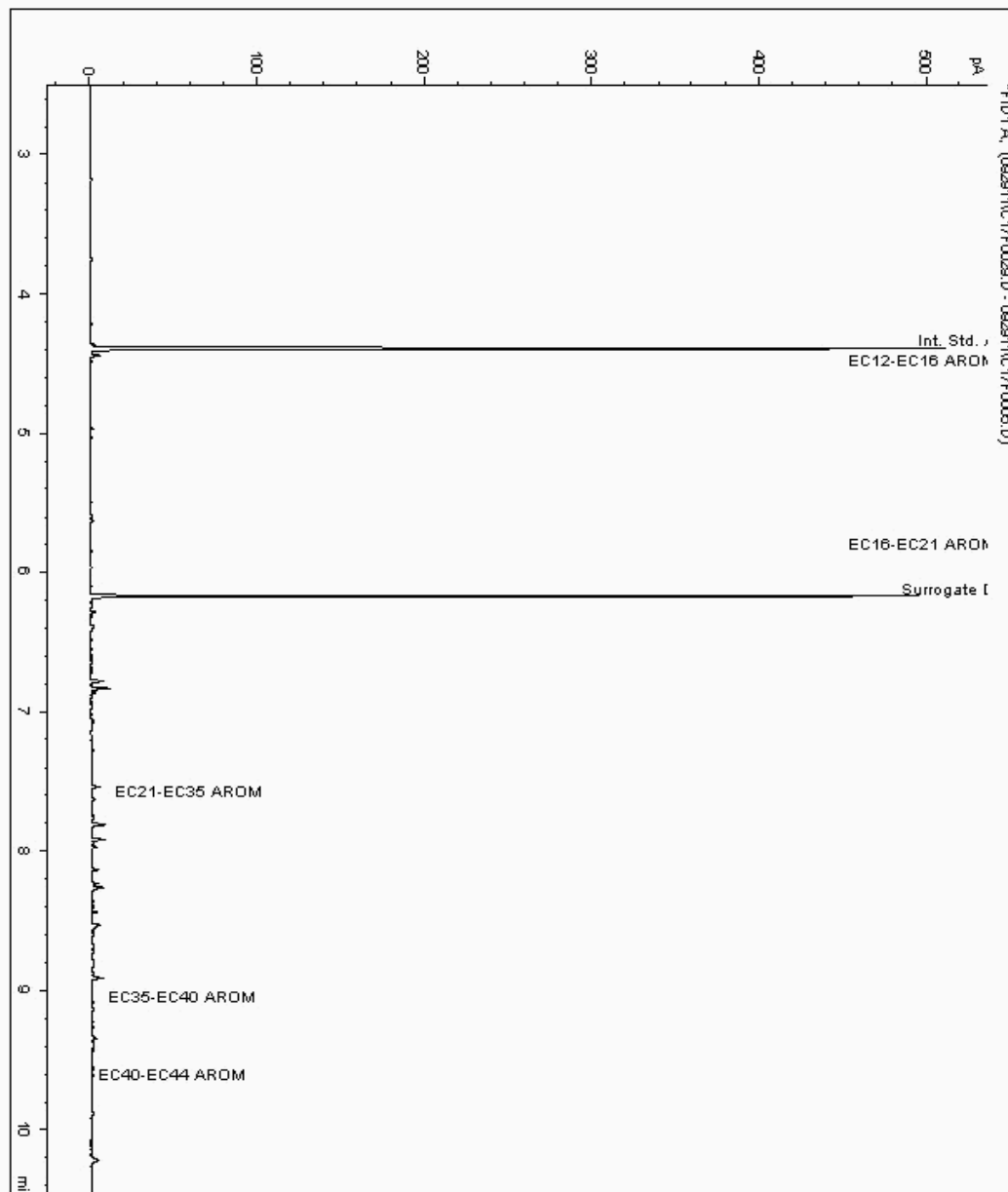
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4394928
Sample ID : VP102

Depth : 0.40

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

Sample Identity: 4361262-4394928
Date Acquired : 29/09/11 23:00:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

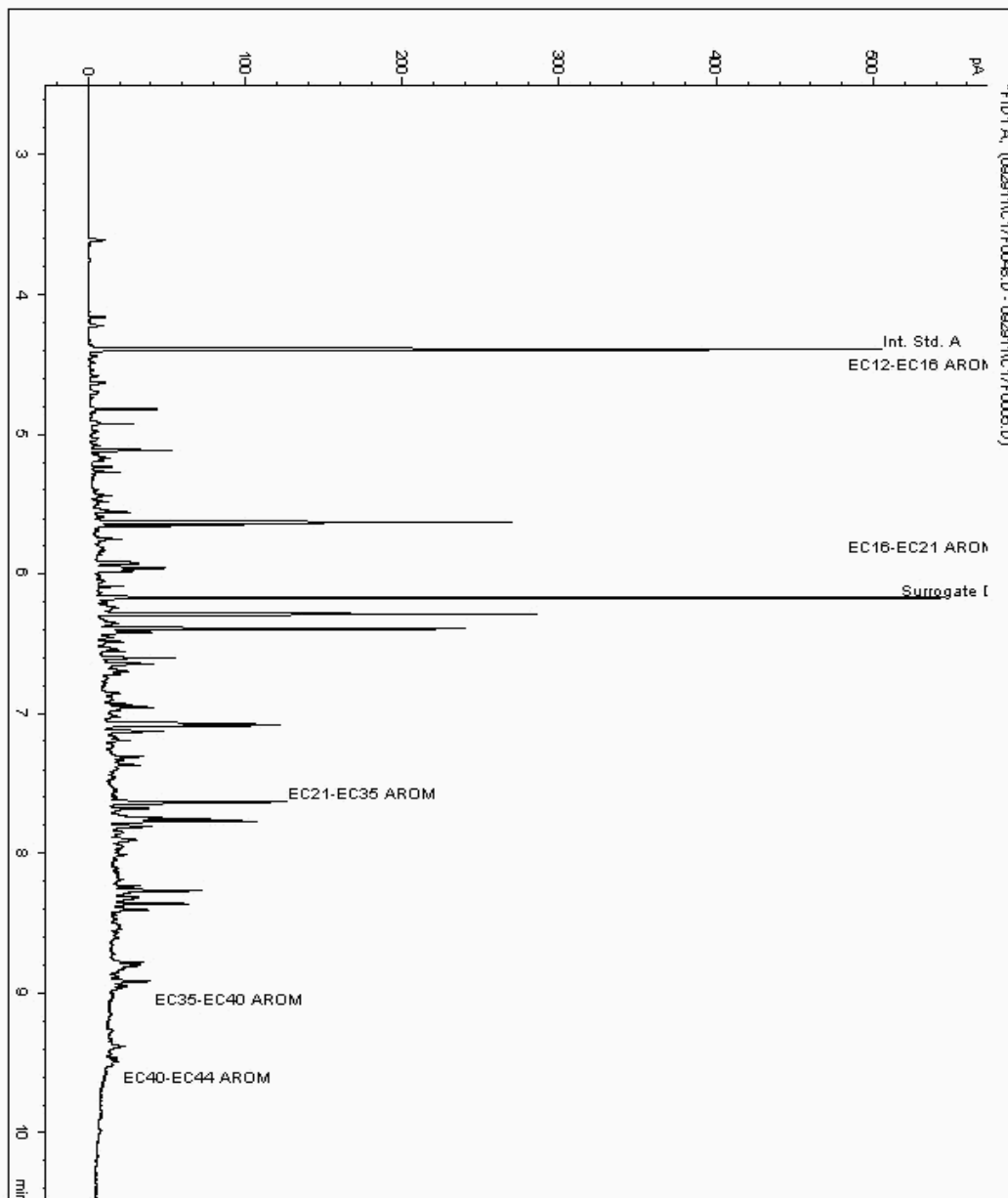
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4394952
Sample ID : BH105

Depth : 0.60

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

Sample Identity: 4361225-4394952
Date Acquired : 30/09/11 12:35:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.976





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

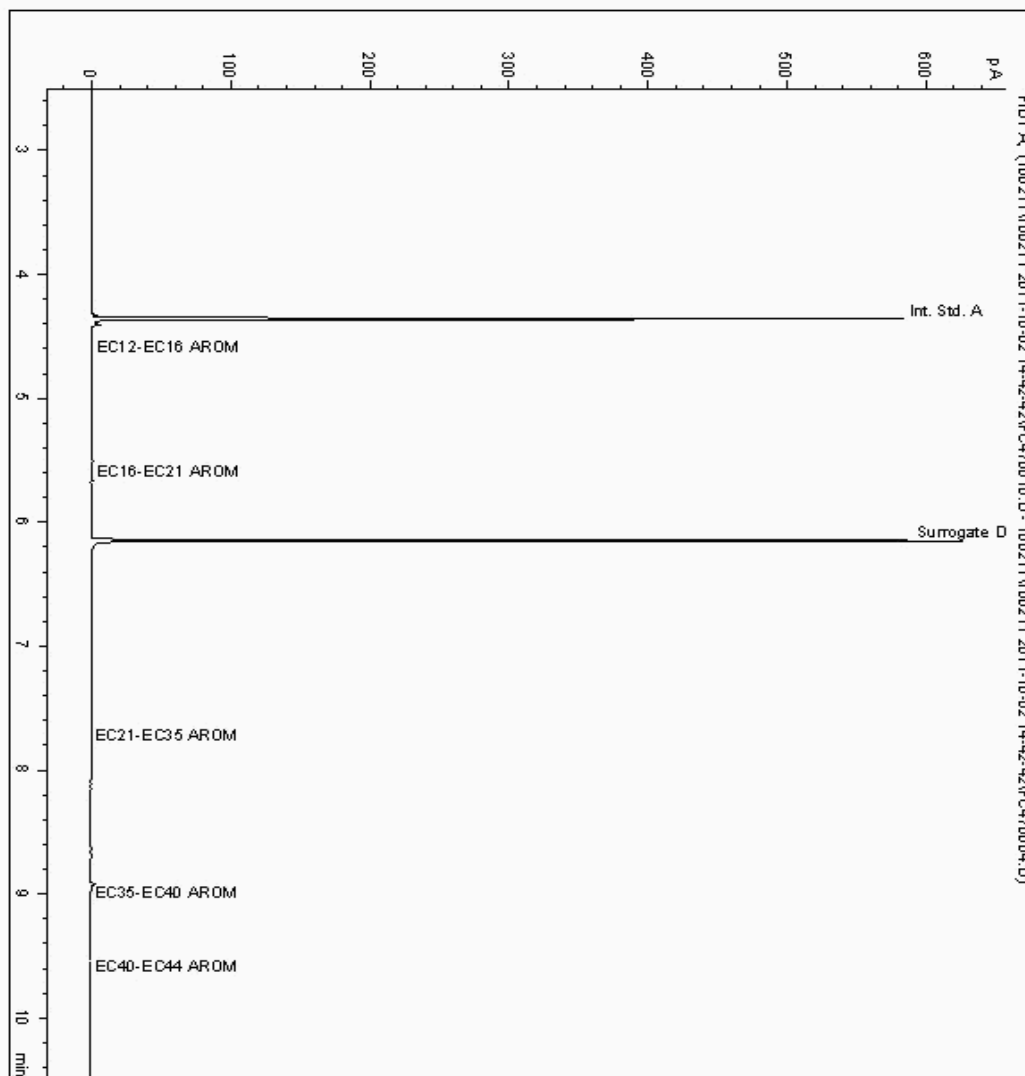
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4407068
Sample ID : BH103

Depth : 1.00

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

Sample Identity: 4361276-4407068
Date Acquired : 02/10/11 17:35:43
Units : ppb
Dilution :
CF : 1
Multiplier : 0.013





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

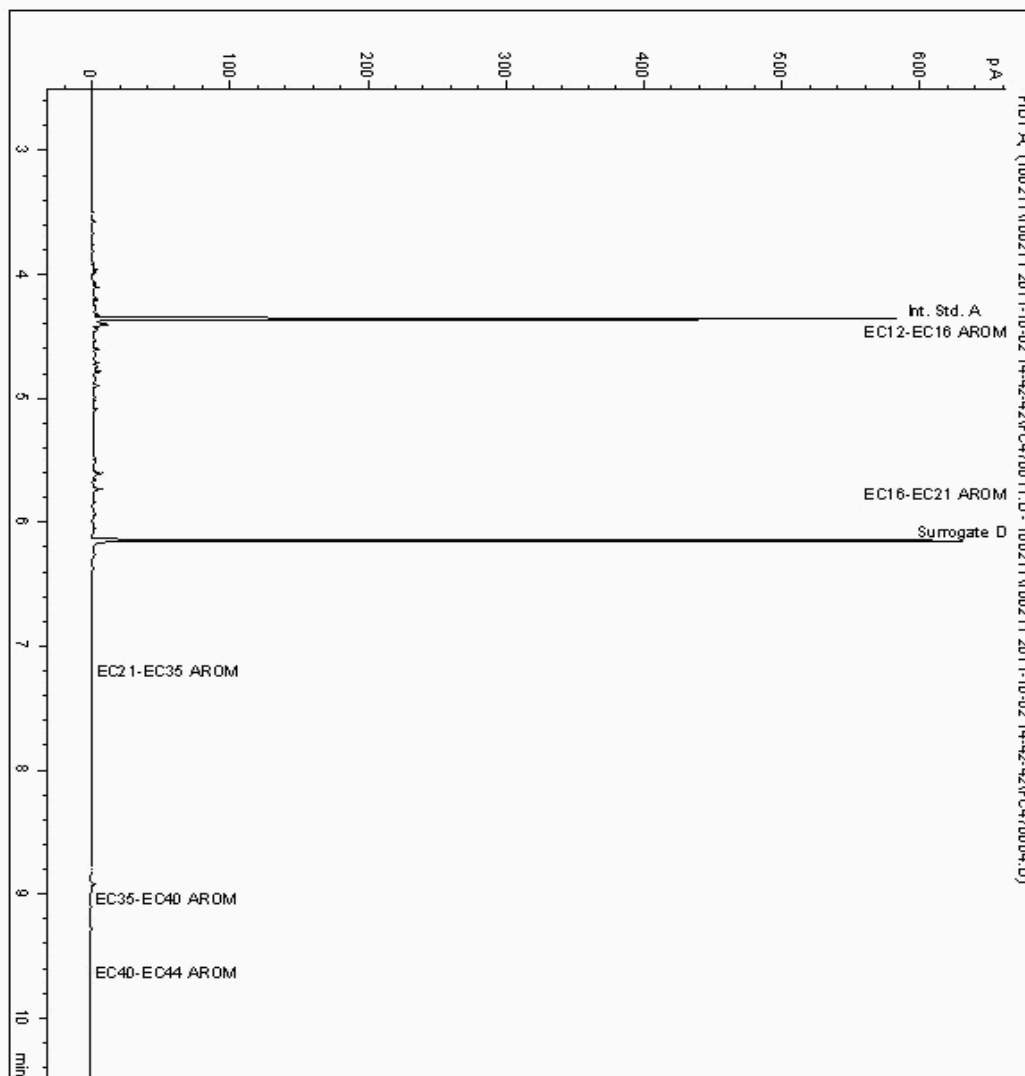
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4407087
Sample ID : BH105

Depth : 0.60

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

Sample Identity: 4361283-4407087
Date Acquired : 02/10/11 17:54:38
Units : ppb
Dilution :
CF : 1
Multiplier : 0.013





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

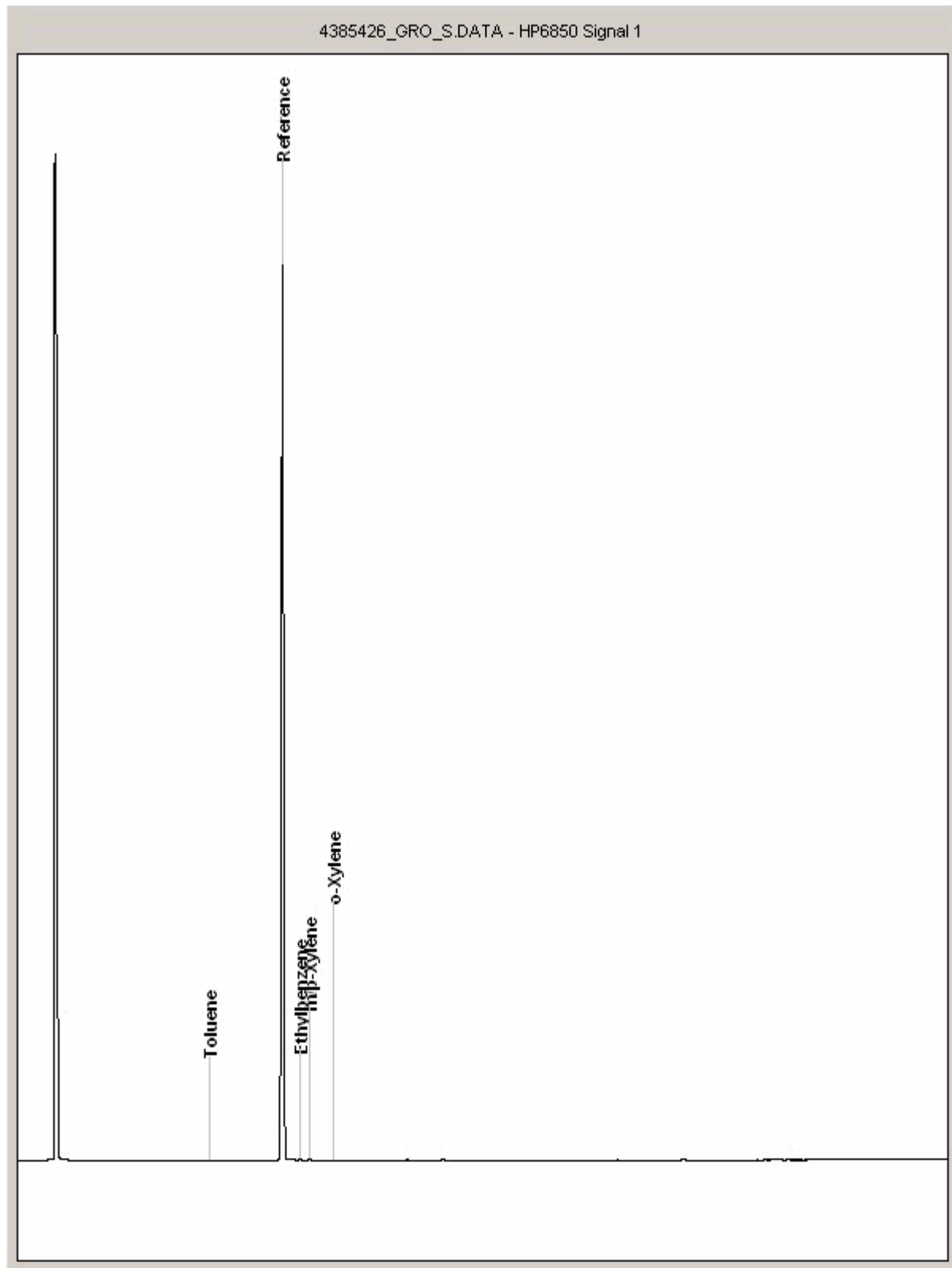
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4385426
Sample ID : VP102

Depth : 0.40





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

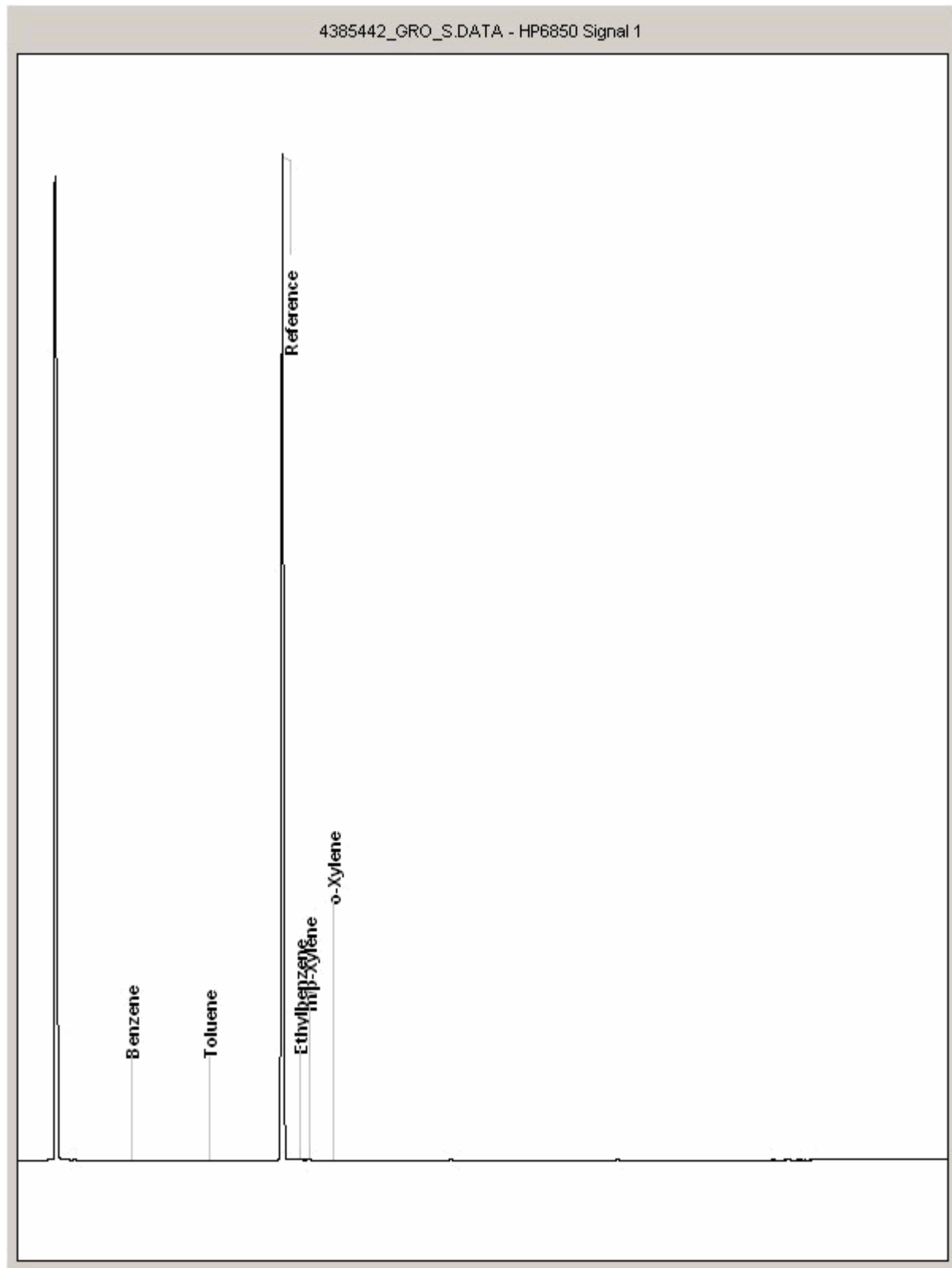
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4385442
Sample ID : BH103

Depth : 1.00





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

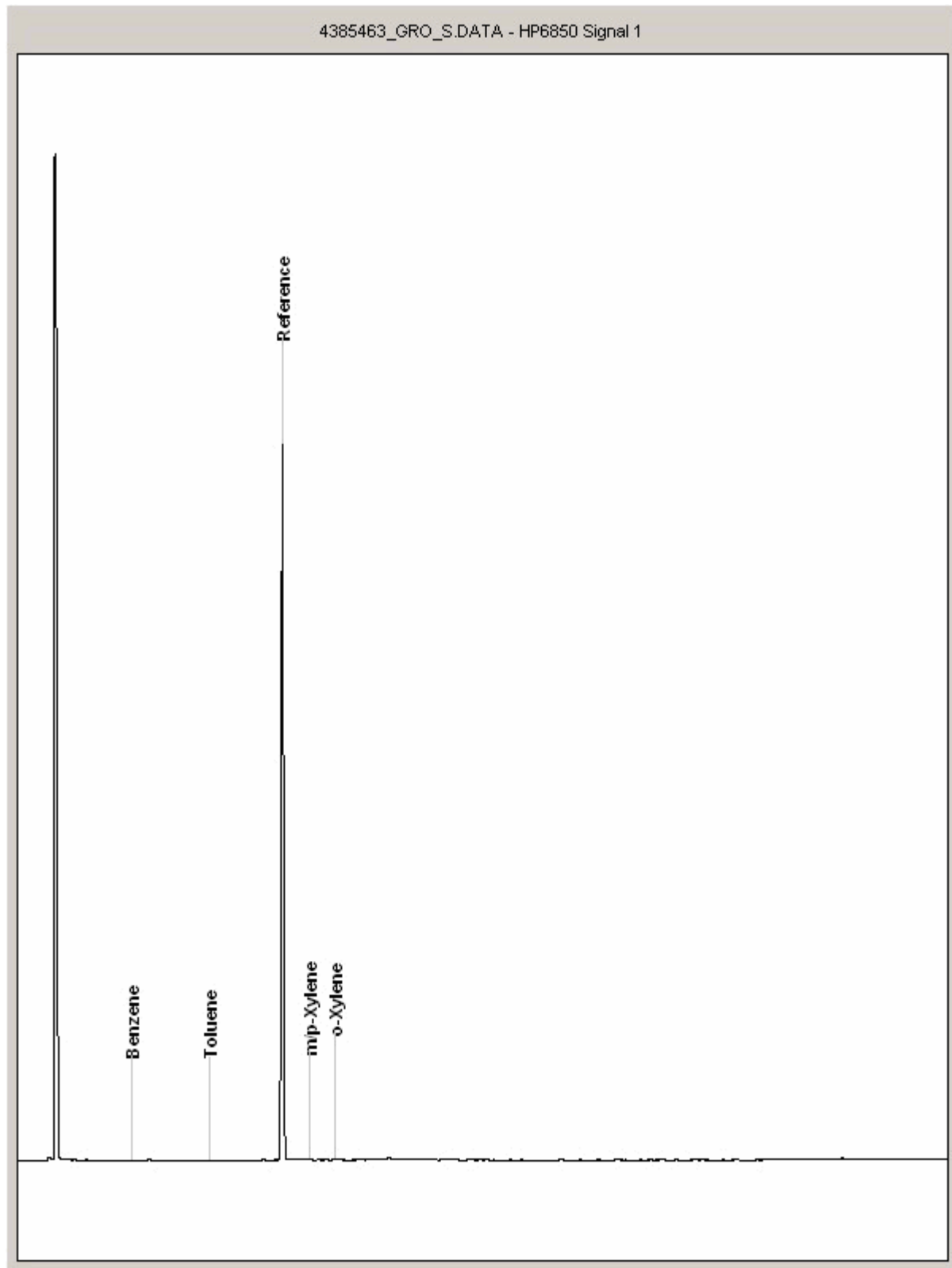
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4385463
Sample ID : DUP01

Depth : 0.70





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

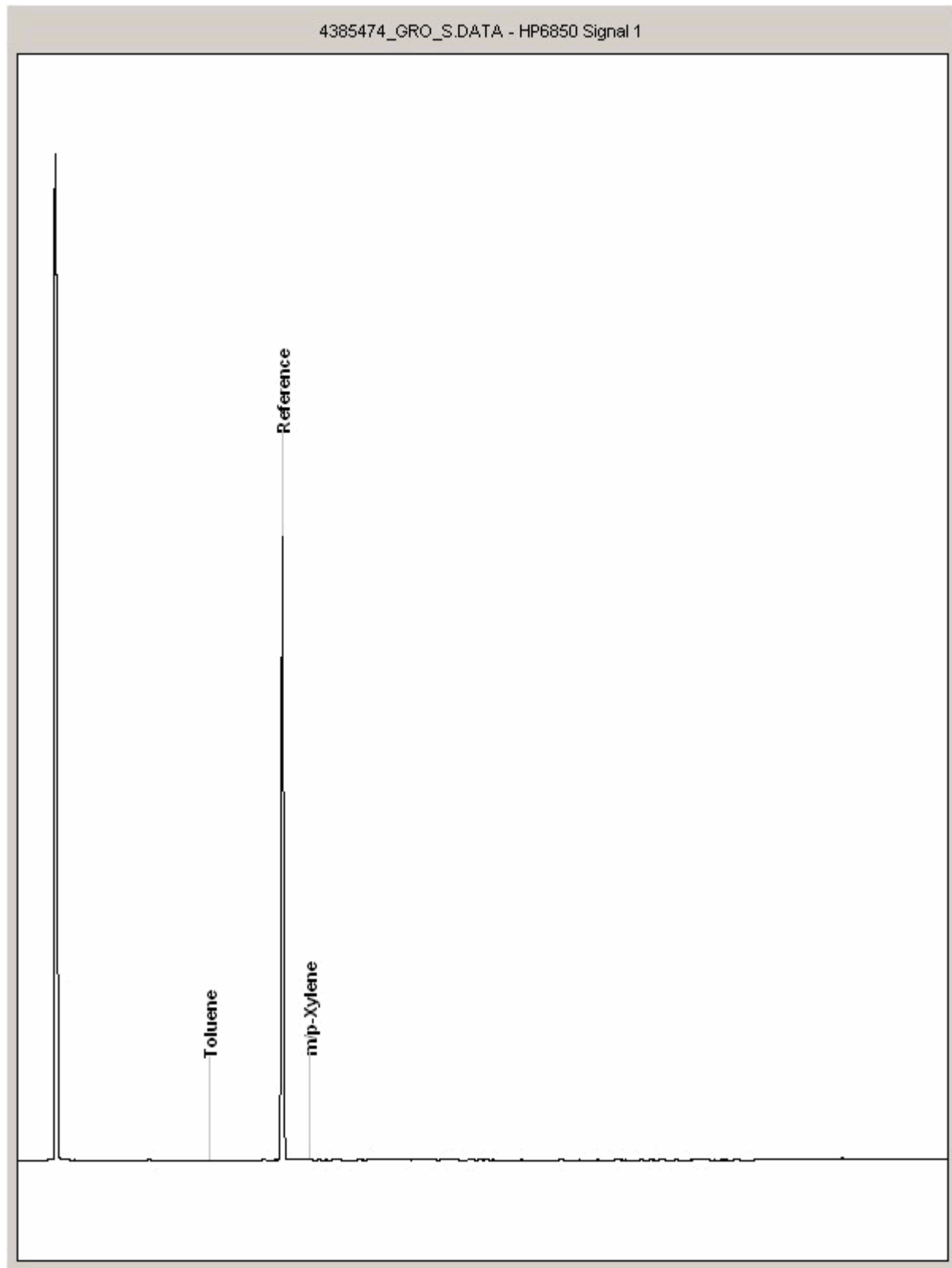
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4385474
Sample ID : VP103

Depth : 0.70





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

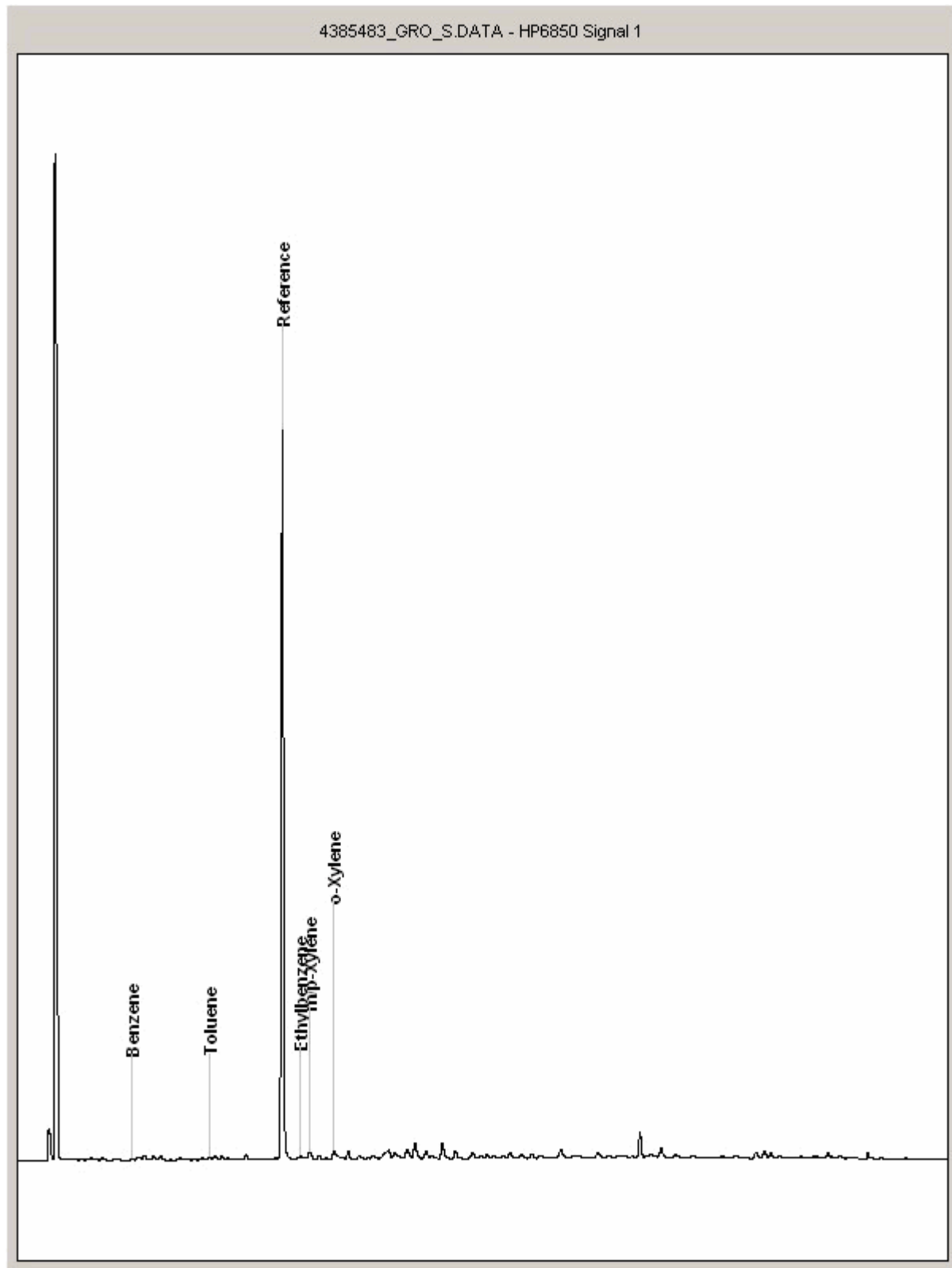
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4385483
Sample ID : BH105

Depth : 0.60





CERTIFICATE OF ANALYSIS

SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

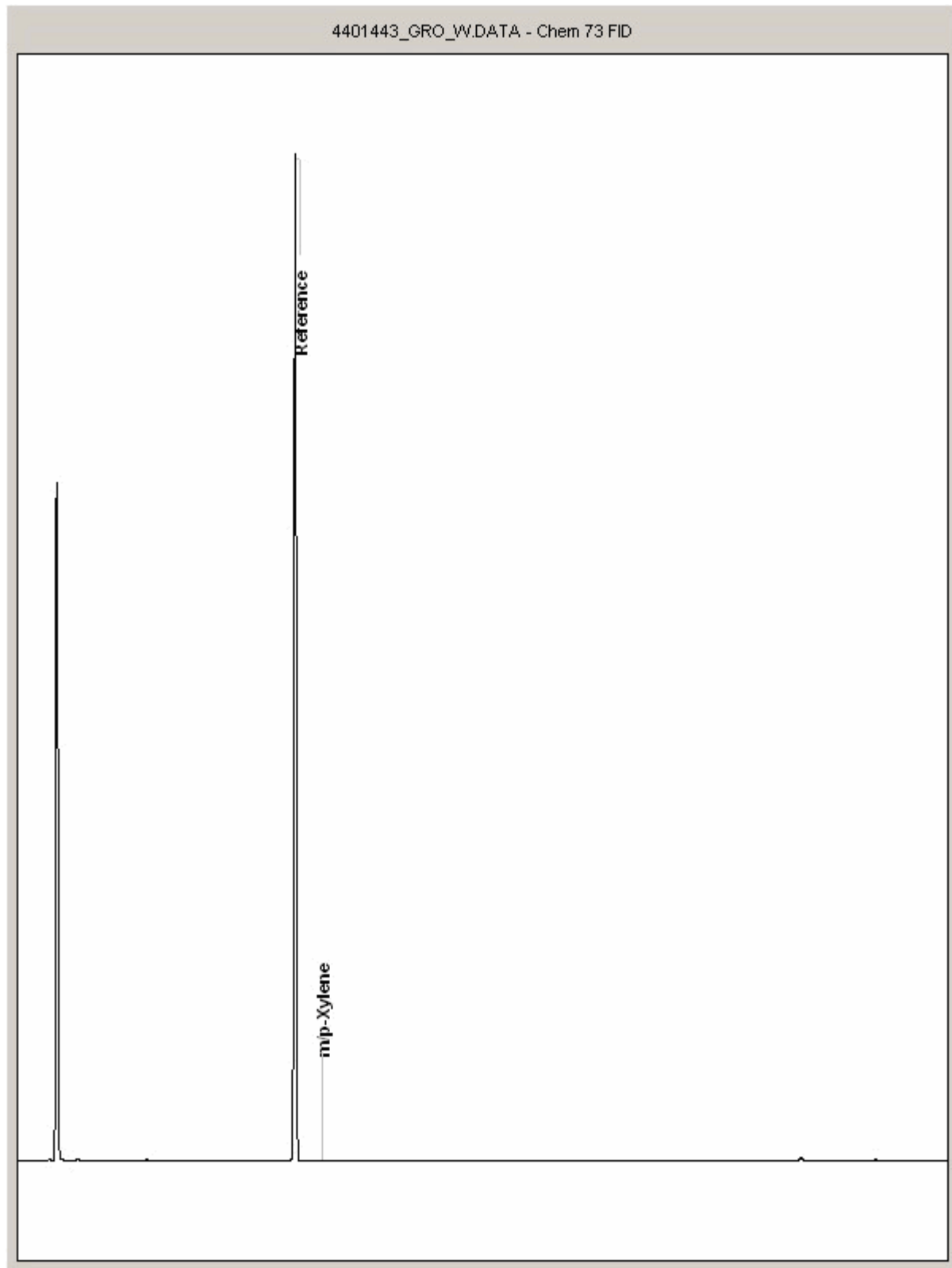
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4401443
Sample ID : BH103

Depth : 1.00





SDG: 110928-23
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

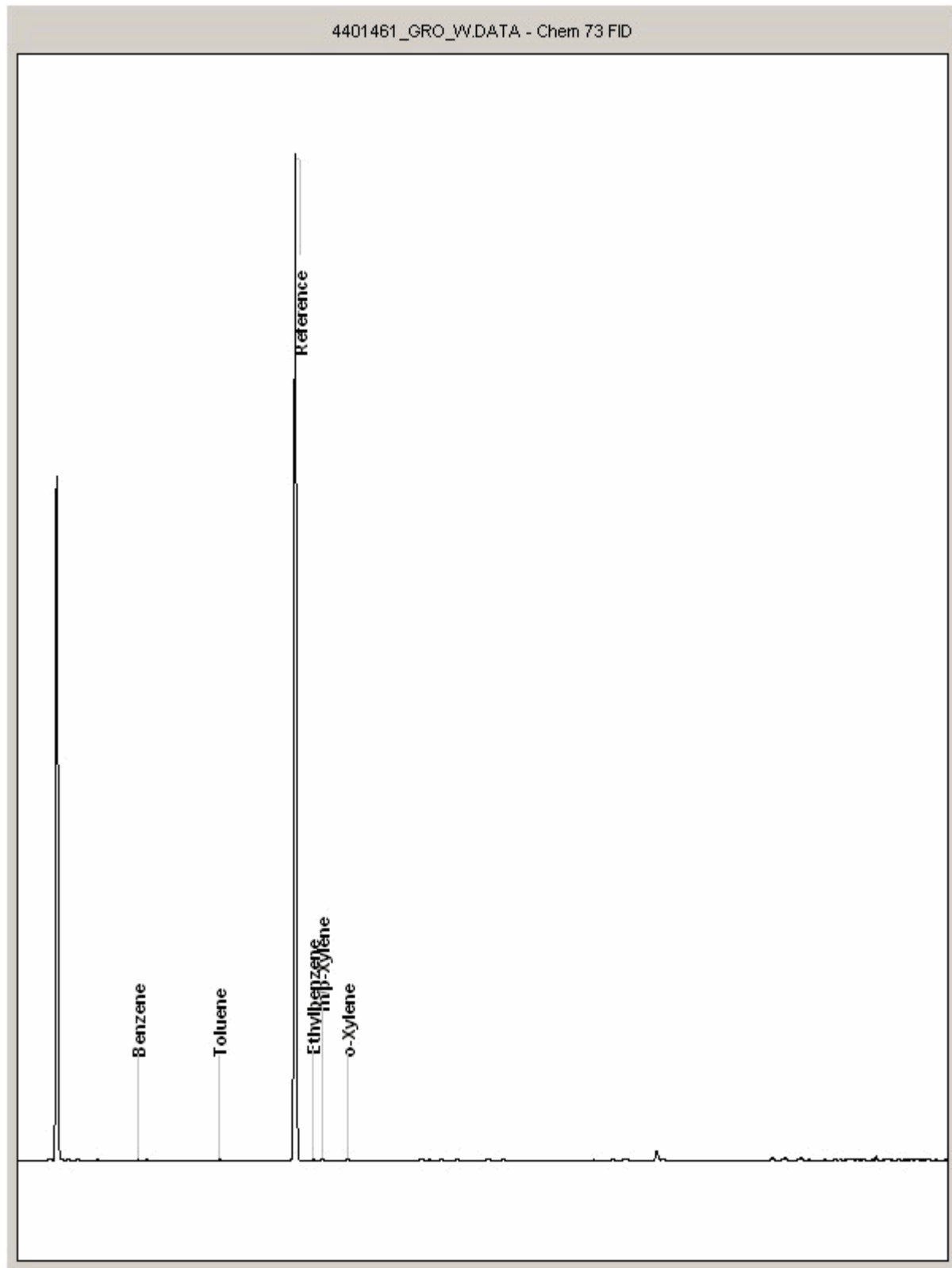
Order Number:
Report Number: 153379
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4401461
Sample ID : BH105

Depth : 0.60





CERTIFICATE OF ANALYSIS

SDG:	110928-23	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153379
Client Reference:	46370079	Attention:	Jocelyn Thomas	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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 themajor 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 C4 -C10 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRI by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Wednesday, September 28, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : September 28, 2011 6:00

Instructions Received : September 28, 2011 6:00

Laboratory SDG No : 110928-23

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☐ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 04, 2011

Coolbox Temperature (°C) : 14.4
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 5 SOLID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	110928-23	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	September 28, 2011 6:00
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Sample Type : CEN 2:1

Legend

Test



Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	LAB-51 (W)	LAB-54 (W)
4385422	BH103	1.00	27/09/2011	X	X
4385418	BH105	0.60	27/09/2011	X	X

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
---------------	---------------------	-----------	--------------	----------------

Sample Type :

No Records

SDG Number	110928-23	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 28, 2011 6:00
Description		T/A	No. Scheduled
Requested Due	October 04, 2011		
Sample Type	SOLID		
LAB-04 (S)		5	2
LAB-07 (S)		5	5
LAB-10 (S)		5	5
PAH by GCMS		5	2
Fraction Organic Carbon (FOC)		5	5

SDG Number	110928-23	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	September 28, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 04, 2011			
Sample Type	CEN 2:1			
LAB-51 (W)		5	2	
LAB-54 (W)		5	2	

SDG Number	110928-23	Location	Shell Hitchin		
Customer	URS Corporation Limited	Date Received	September 28, 2011 6:00		
Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type :	SOLID				
LAB-04 (S)					
	2	Arsenic	#M	ICPOES	<0.6 mg/kg
	2	Boron	#	ICPOES	<0.7 mg/kg
	2	Cadmium	#M	ICPOES	<0.02 mg/kg
	2	Chromium	#M	ICPOES	<0.9 mg/kg
	2	Chromium, Hexavalent	#	SPECTROPHOTOMETRIC	<0.6 mg/kg
	2	Cobalt	#M	ICPOES	<0.1 mg/kg
	2	Copper	#M	ICPOES	<1.4 mg/kg
	2	Lead	#M	ICPOES	<0.7 mg/kg
	2	Mercury	#M	ICPOES	<0.14 mg/kg
	2	Molybdenum	#	ICPOES	<0.1 mg/kg
	2	Nickel	#M	ICPOES	<0.2 mg/kg
	2	Selenium	#	ICPOES	<1 mg/kg
	2	Tin	#	ICPOES	<0.24 mg/kg
	2	Zinc	#M	ICPOES	<1.9 mg/kg
LAB-07 (S)					
	5	Aliphatics >C12-C16		GC	<100 µg/kg
	5	Aliphatics >C16-C21		GC	<100 µg/kg
	5	Aliphatics >C21-C35		GC	<100 µg/kg
	5	Aliphatics >C35-C44		GC	<100 µg/kg
	5	Aromatics >EC12-EC16		GC	<100 µg/kg
	5	Aromatics >EC16-EC21		GC	<100 µg/kg
	5	Aromatics >EC21-EC35		GC	<100 µg/kg
	5	Aliphatics >C10-C12		GC	<10 µg/kg
	5	Aliphatics >C5-C6		GC	<10 µg/kg
	5	Aliphatics >C6-C8		GC	<10 µg/kg
	5	Aliphatics >C8-C10		GC	<10 µg/kg
	5	Aromatics >EC10-EC12		GC	<10 µg/kg
	5	Aromatics >EC5-EC7		GC	<10 µg/kg
	5	Aromatics >EC7-EC8		GC	<10 µg/kg
	5	Aromatics >EC8-EC10		GC	<10 µg/kg
	5	GRO Surrogate % recovery**		GC	
LAB-10 (S)					
	5	Benzene	#M	GCMS	<9 µg/kg
	5	Diisopropyl ether		GCMS	<1 µg/kg
	5	Ethanol		GCMS	<50 µg/kg
	5	Ethylbenzene	#M	GCMS	<4 µg/kg
	5	Methyl Tertiary Butyl Ether	#M	GCMS	<11 µg/kg
	5	o-Xylene	#M	GCMS	<10 µg/kg
	5	p/m-Xylene	#	GCMS	<14 µg/kg
	5	tert Butanol		GCMS	<10 µg/kg
	5	Tert-amyl methyl ether		GCMS	<15 µg/kg
	5	tert-butyl ethyl ether		GCMS	<1 µg/kg
	5	Toluene	#M	GCMS	<5 µg/kg
	5	Toluene-d8**		GCMS	
PAH by GCMS					
	2	PAH US EPA 16 by GC-MS (S)	#M	GCMS	VARIOUS
Total Organic Carbon					
	5	Fraction Organic Carbon (FOC)	#	IR	<0.002 -

SDG Number	110928-23	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 28, 2011 6:00

Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
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Sample Type : CEN 2:1

LAB-51 (W)	2	Aliphatics >C12-C16 (aq)		GC	<10 µg/l
	2	Aliphatics >C16-C21 (aq)		GC	<10 µg/l
	2	Aliphatics >C21-C35 (aq)		GC	<10 µg/l
	2	Aromatics >EC12-EC16 (aq)		GC	<10 µg/l
	2	Aromatics >EC16-EC21 (aq)		GC	<10 µg/l
	2	Aromatics >EC21-EC35 (aq)		GC	<10 µg/l
	2	Aliphatics >C10-C12		GC	<10 µg/l
	2	Aliphatics >C5-C6		GC	<10 µg/l
	2	Aliphatics >C6-C8		GC	<10 µg/l
	2	Aliphatics >C8-C10		GC	<10 µg/l
	2	Aromatics >EC10-EC12		GC	<10 µg/l
	2	Aromatics >EC5-EC7		GC	<10 µg/l
	2	Aromatics >EC7-EC8		GC	<10 µg/l
	2	Aromatics >EC8-EC10		GC	<10 µg/l
	2	GRO Surrogate % recovery**		GC	

LAB-54 (W)	2	Benzene		GCMS	<1 µg/l
	2	Diisopropyl ether		GCMS	<1 µg/l
	2	Ethanol		GCMS	<50 µg/l
	2	Ethylbenzene		GCMS	<1 µg/l
	2	m,p-Xylene		GCMS	<1 µg/l
	2	Methyl tertiary butyl ether (MTBE)		GCMS	<1 µg/l
	2	o-Xylene		GCMS	<1 µg/l
	2	tert Butanol		GCMS	<10 µg/l
	2	tert-Amyl methyl ether (TAME)		GCMS	<1 µg/l
	2	tert-butyl ethyl ether		GCMS	<1 µg/l
	2	Toluene		GCMS	<1 µg/l
	2	Toluene-d8**		GCMS	

Disclaimers

Please Note :

1. Following reviews by UKAS on the use of correct containers for analysis, we will no longer accredit volatile samples that are not received in the correct containers. We would like to highlight that best practice for sampling volatiles is to take every sample (soils and waters) in duplicate vials or volatile jars with **no headspace**. This will include analysis for the following parameters: VOC, Dissolved gases, VFA, Alcohols, TEL, GRO or TPH CWG.
2. The recommended storage temperature for water and soil samples is 5°C +/- 3°C (MCERTS for Waters July 2008).
3. When an analysis has been requested on an inappropriate bottle (this includes unpreserved bottles for a preserved analysis) and the analysis goes ahead, it will not conform to our Quality Management System, and may not be accredited.
4. We are accredited to MCERTS for sand, clay and loam/topsoil. This also includes naturally occurring soil profiles and fill/made ground where 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.
5. It is assumed that detection limits for samples scheduled are below the critical level of interest required for the project, if they are not or you would like to receive clarification of these, please contact the laboratory.

Surcharges :

6. Surcharges will be applied for accelerated turnaround times where these are requested based on the relevant contract or quotation prices. If the requested rapid turnaround fails but the report still meets rapid turnaround criteria an appropriate surcharge will still be applied. Surcharges are not subject to any discount.

Purchase Orders :

7. If these are used by your company, then data cannot be released unless we have received a copy of the purchase order.

Sample Disposal :

8. If sufficient soil/water sample (tubs, bottles and 250g jars) is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed).
9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
10. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions for sample disposal.
11. For extended storage periods, a storage charge of £1 (or € equivalent) per sample per month will be applied for each month or part thereof until the customer cancels the request for sample storage.
12. ALcontrol Laboratories reserve the right to charge £3 (or € equivalent) for samples received and stored but not analysed.

Subcontracted Analysis :

13. Please note that any analyses marked with an asterisk (*) will be subcontracted to an approved laboratory. Please note turnaround times for subcontracted analysis may sometimes be in excess of the turnaround requested and for some analyses can be up to 15-20 days. If this is unacceptable please contact us immediately as you may prefer to subcontract the work yourselves. Subcontracted samples will be disposed of by the subcontracted laboratory and are therefore not covered under the ALcontrol terms and conditions of sample disposal.

Asbestos :

14. When requested the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces.
15. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025, and no analysis will be undertaken on the remaining samples. At no point is the fibre content of the soil sample determined.
16. Where no asbestos containing material is found this will be reported as "No ACM detected".



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Wednesday, September 28, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : September 28, 2011 6:00

Instructions Received : September 28, 2011 6:00

Laboratory SDG No : 110928-33

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☐ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 04, 2011

Coolbox Temperature (°C) : 14.4
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 2 SOLID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	110928-33	Customer	URS Corporation Limited		Location	Shell Hitchin	Date Received	September 28, 2011 6:00
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Sample Type : SOLID				Fraction Organic Carbon (FOC)	PAH by GCMS	LAB-04 (S)	LAB-07 (S)	LAB-10 (S)
Legend								
Test								
X								
Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled					
4385970	BH101	0.80	27/09/2011	X	X	X	X	X
4385968	BH102	0.80	27/09/2011	X			X	X

SDG Number	110928-33	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	September 28, 2011 6:00
-------------------	-----------	-----------------	-------------------------	-----------------	---------------	----------------------	-------------------------

Sample Type : CEN 2:1					
Legend Test 					
Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	LAB-51 (W)	LAB-54 (W)
4385970	BH101	0.80	27/09/2011	X	X

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
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Sample Type :

No Records

SDG Number	110928-33	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 28, 2011 6:00
Description		T/A	No. Scheduled
Requested Due	October 04, 2011		
Sample Type	SOLID		
LAB-04 (S)		5	1
LAB-07 (S)		5	2
LAB-10 (S)		5	2
PAH by GCMS		5	1
Fraction Organic Carbon (FOC)		5	2

SDG Number	110928-33	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 28, 2011 6:00
Description		T/A	No. Scheduled
Requested Due	October 04, 2011		
Sample Type	CEN 2:1		
LAB-51 (W)		5	1
LAB-54 (W)		5	1

SDG Number		110928-33		Location		Shell Hitchin	
Customer		URS Corporation Limited		Date Received		September 28, 2011 6:00	
Analysis / Suite		No.	Component	UKAS (#) MCerts (M)	Method	LoD	
Sample Type :		SOLID					
LAB-04 (S)							
		1	Arsenic	#M	ICPOES	<0.6 mg/kg	
		1	Boron	#	ICPOES	<0.7 mg/kg	
		1	Cadmium	#M	ICPOES	<0.02 mg/kg	
		1	Chromium	#M	ICPOES	<0.9 mg/kg	
		1	Chromium, Hexavalent	#	SPECTROPHOTOMETRIC	<0.6 mg/kg	
		1	Cobalt	#M	ICPOES	<0.1 mg/kg	
		1	Copper	#M	ICPOES	<1.4 mg/kg	
		1	Lead	#M	ICPOES	<0.7 mg/kg	
		1	Mercury	#M	ICPOES	<0.14 mg/kg	
		1	Molybdenum	#	ICPOES	<0.1 mg/kg	
		1	Nickel	#M	ICPOES	<0.2 mg/kg	
		1	Selenium	#	ICPOES	<1 mg/kg	
		1	Tin	#	ICPOES	<0.24 mg/kg	
		1	Zinc	#M	ICPOES	<1.9 mg/kg	
LAB-07 (S)							
		2	Aliphatics >C12-C16		GC	<100 µg/kg	
		2	Aliphatics >C16-C21		GC	<100 µg/kg	
		2	Aliphatics >C21-C35		GC	<100 µg/kg	
		2	Aliphatics >C35-C44		GC	<100 µg/kg	
		2	Aromatics >EC12-EC16		GC	<100 µg/kg	
		2	Aromatics >EC16-EC21		GC	<100 µg/kg	
		2	Aromatics >EC21-EC35		GC	<100 µg/kg	
		2	Aliphatics >C10-C12		GC	<10 µg/kg	
		2	Aliphatics >C5-C6		GC	<10 µg/kg	
		2	Aliphatics >C6-C8		GC	<10 µg/kg	
		2	Aliphatics >C8-C10		GC	<10 µg/kg	
		2	Aromatics >EC10-EC12		GC	<10 µg/kg	
		2	Aromatics >EC5-EC7		GC	<10 µg/kg	
		2	Aromatics >EC7-EC8		GC	<10 µg/kg	
		2	Aromatics >EC8-EC10		GC	<10 µg/kg	
		2	GRO Surrogate % recovery**		GC		
LAB-10 (S)							
		2	Benzene	#M	GCMS	<9 µg/kg	
		2	Diisopropyl ether		GCMS	<1 µg/kg	
		2	Ethanol		GCMS	<50 µg/kg	
		2	Ethylbenzene	#M	GCMS	<4 µg/kg	
		2	Methyl Tertiary Butyl Ether	#M	GCMS	<11 µg/kg	
		2	o-Xylene	#M	GCMS	<10 µg/kg	
		2	p/m-Xylene	#	GCMS	<14 µg/kg	
		2	tert Butanol		GCMS	<10 µg/kg	
		2	Tert-amyl methyl ether		GCMS	<15 µg/kg	
		2	tert-butyl ethyl ether		GCMS	<1 µg/kg	
		2	Toluene	#M	GCMS	<5 µg/kg	
		2	Toluene-d8**		GCMS		
PAH by GCMS							
		1	PAH US EPA 16 by GC-MS (S)	#M	GCMS	VARIOUS	
Total Organic Carbon							
		2	Fraction Organic Carbon (FOC)	#	IR	<0.002 -	

SDG Number	110928-33	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 28, 2011 6:00

Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
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Sample Type : CEN 2:1

LAB-51 (W)					
	1	Aliphatics >C12-C16 (aq)		GC	<10 µg/l
	1	Aliphatics >C16-C21 (aq)		GC	<10 µg/l
	1	Aliphatics >C21-C35 (aq)		GC	<10 µg/l
	1	Aromatics >EC12-EC16 (aq)		GC	<10 µg/l
	1	Aromatics >EC16-EC21 (aq)		GC	<10 µg/l
	1	Aromatics >EC21-EC35 (aq)		GC	<10 µg/l
	1	Aliphatics >C10-C12		GC	<10 µg/l
	1	Aliphatics >C5-C6		GC	<10 µg/l
	1	Aliphatics >C6-C8		GC	<10 µg/l
	1	Aliphatics >C8-C10		GC	<10 µg/l
	1	Aromatics >EC10-EC12		GC	<10 µg/l
	1	Aromatics >EC5-EC7		GC	<10 µg/l
	1	Aromatics >EC7-EC8		GC	<10 µg/l
	1	Aromatics >EC8-EC10		GC	<10 µg/l
	1	GRO Surrogate % recovery**		GC	

LAB-54 (W)					
	1	Benzene		GCMS	<1 µg/l
	1	Diisopropyl ether		GCMS	<1 µg/l
	1	Ethanol		GCMS	<50 µg/l
	1	Ethylbenzene		GCMS	<1 µg/l
	1	m,p-Xylene		GCMS	<1 µg/l
	1	Methyl tertiary butyl ether (MTBE)		GCMS	<1 µg/l
	1	o-Xylene		GCMS	<1 µg/l
	1	tert Butanol		GCMS	<10 µg/l
	1	tert-Amyl methyl ether (TAME)		GCMS	<1 µg/l
	1	tert-butyl ethyl ether		GCMS	<1 µg/l
	1	Toluene		GCMS	<1 µg/l
	1	Toluene-d8**		GCMS	

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Sample Disposal :

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9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
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Asbestos :

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16. Where no asbestos containing material is found this will be reported as "No ACM detected".



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

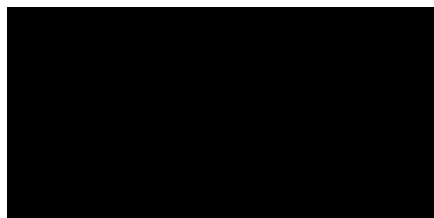
CERTIFICATE OF ANALYSIS

Date: 04 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 110928-33
Your Reference: 46370079
Location: Shell Hitchin
Report No: 153175

We received 2 samples on Wednesday September 28, 2011 and 2 of these samples were scheduled for analysis which was completed on Tuesday October 04, 2011. 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.



Onia McVnhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4385968	BH102		0.80	27/09/2011

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



SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

SOLID**Results Legend**

Test

No Determination
Possible**Lab Sample No(s)**4385968
4385970**Customer
Sample Reference**BH102
BH101**AGS Reference****Depth (m)**0.80
0.80**Container**60g VOC (ALE215)
250g Amber Jar (AL
60g VOC (ALE215)
400g Tub (ALE214)
250g Amber Jar (AL
1kg TUB

CEN Readings	All	NDPs: 0 Tests: 1	X						
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X						
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2		X		X			
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X						
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2		X		X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X	X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X						
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1			X				
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1	X						
	Boron	NDPs: 0 Tests: 1	X						
	Cadmium	NDPs: 0 Tests: 1	X						
	Chromium	NDPs: 0 Tests: 1	X						
	Cobalt	NDPs: 0 Tests: 1	X						
	Copper	NDPs: 0 Tests: 1	X						
	Lead	NDPs: 0 Tests: 1	X						



SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		4385968	4385968
	Customer Sample Reference		BH101	BH102
	AGS Reference			
	Depth (m)		0.80	0.80
	Container		60g VOC (ALE215) 250g Amber Jar (AL) 60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL) 1kg TUB	
Metals by iCap-OES (Soil)	Mercury	NDPs: 0 Tests: 1	X	
	Molybdenum	NDPs: 0 Tests: 1	X	
	Nickel	NDPs: 0 Tests: 1	X	
	Selenium	NDPs: 0 Tests: 1	X	
	Tin	NDPs: 0 Tests: 1	X	
	Zinc	NDPs: 0 Tests: 1	X	
Oxygenates (S)	All	NDPs: 0 Tests: 2		X X
Oxygenates (W)	All	NDPs: 0 Tests: 1	X	
PAH by GCMS	All	NDPs: 0 Tests: 1	X	
Sample description	All	NDPs: 0 Tests: 2	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X
VOC MS (S)	All	NDPs: 0 Tests: 2		X X
VOC MS (W)	All	NDPs: 0 Tests: 1	X	



SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	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
Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2		
4385970	BH101	0.80	Light Brown	Silty Clay	0.063 - 0.1 mm	Stones	None		
4385968	BH102	0.80	Light Brown	Sandy Loam	0.1 - 2 mm	Stones	None		

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:
Report Number: 153175
Superseded Report:

Page 6 of 33

Order Number:
Report Number: 153175
Superseded Report:

Page 7 of 33

Order Number:
Report Number: 153175
Superseded Report:

Page 8 of 33

Order Number:
Report Number: 153175
Superseded Report:

Page 9 of 33

Order Number:
Report Number: 153175
Superseded Report:

Page 10 of 33

Order Number:
Report Number: 153175
Superseded Report:

Page 11 of 33



CERTIFICATE OF ANALYSIS

SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.205	Moisture Content Ratio (%)	17.4
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	85.2
Particle Size <4mm	>95%		

Case			
SDG	110928-33		
Lab Sample Number(s)	4385970		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH101		
Depth (m)	0.80		
Solid Waste Analysis			
Total Organic Carbon (%)	0.371	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	29-Sep-2011
pH (pH Units)	8.64
Conductivity (µS/cm)	400.00
Temperature (°C)	22.90
Volume Leachant (Litres)	0.320
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
04/10/2011 16:22:18



CERTIFICATE OF ANALYSIS

SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.205	Moisture Content Ratio (%)	17.4
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	85.2
Particle Size <4mm	>95%		

Case			
SDG	110928-33		
Lab Sample Number(s)	4385970		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH101		
Depth (m)	0.80		
Solid Waste Analysis			
Total Organic Carbon (%)	0.371	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC12-EC16	0.013	<0.01	0.026	<0.1	-
Aromatics >EC16-EC21	0.01	<0.01	0.02	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	29-Sep-2011
pH (pH Units)	8.64
Conductivity (µS/cm)	400.00
Temperature (°C)	22.90
Volume Leachant (Litres)	0.320
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
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SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.205	Moisture Content Ratio (%)	17.4
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	85.2
Particle Size <4mm	>95%		

Case			
SDG	110928-33		
Lab Sample Number(s)	4385970		
Sampled Date	27-Sep-2011		
Customer Sample Ref.	BH101		
Depth (m)	0.80		

Solid Waste Analysis

Total Organic Carbon (%)	0.371			
Loss on Ignition (%)	-			
Sum of BTEX (mg/kg)	<24.0			
Sum of 7 PCBs (mg/kg)	-			
Mineral Oil (mg/kg)	-			
PAH Sum of 17 (mg/kg)	-			
pH (pH Units)	-			
ANC to pH 6 (mol/kg)	-			
ANC to pH 4 (mol/kg)	-			

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	- - - -
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	- - - -
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
o-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	- - - -

Leach Test Information

Date Prepared	29-Sep-2011
pH (pH Units)	8.64
Conductivity (µS/cm)	400.00
Temperature (°C)	22.90
Volume Leachant (Litres)	0.320
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
04/10/2011 16:22:18



SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10 ⁻⁷							
NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

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		
PM114		Leaching Procedure for CEN Two Stage BatchTest 2:1/8:1 Cumulative		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
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		
TM132	In - house Method	ELTRA CS800 Operators Guide		
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		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	4385970	4385968
Customer Sample Ref.	BH101	BH102
AGS Ref.		
Depth	0.80	0.80
Type	SOLID	SOLID

CEN 2:1 Leachate (1 Stage)	29-Sep-2011	
CEN Readings	30-Sep-2011	
EPH CWG (Aliphatic) Aqueous GC (W)	03-Oct-2011	
EPH CWG (Aliphatic) GC (S)	03-Oct-2011	03-Oct-2011
EPH CWG (Aromatic) Aqueous GC (W)	03-Oct-2011	
EPH CWG (Aromatic) GC (S)	03-Oct-2011	03-Oct-2011
GRO by GC-FID (S)	04-Oct-2011	04-Oct-2011
GRO by GC-FID (W)	03-Oct-2011	
Hexavalent Chromium (s)	01-Oct-2011	
Metals by iCap-OES (Soil)	03-Oct-2011	
Oxygenates (S)	04-Oct-2011	04-Oct-2011
Oxygenates (W)	04-Oct-2011	
PAH by GCMS	30-Sep-2011	
Sample description	29-Sep-2011	29-Sep-2011
Total Organic Carbon	03-Oct-2011	03-Oct-2011
TPH CWG (W)	03-Oct-2011	
VOC MS (S)	04-Oct-2011	04-Oct-2011
VOC MS (W)	03-Oct-2011	



SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 45
sqcresultname	TM174	sqcrecovery 0.00 : 0.00

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 41
Total Aliphatics >C12-C35	TM173	82.5 64.28 : 103.38

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 41
sqcresultname	TM174	sqcrecovery 0.00 : 0.00

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 41
Total Aromatics >EC12-EC35	TM173	96.67 66.16 : 121.82

GRO by GC-FID (S)

Component	Method Code	QC 45
Benzene by GC (Moisture Corrected)	TM089	99.0 80.47 : 112.02
Ethylbenzene by GC (Moisture Corrected)	TM089	101.0 77.65 : 114.82
m & p Xylene by GC (Moisture Corrected)	TM089	100.75 77.43 : 115.19
MTBE GC-FID (Moisture Corrected)	TM089	102.0 79.00 : 121.00
o Xylene by GC (Moisture Corrected)	TM089	101.0 78.07 : 118.52
QC	TM089	85.76 73.02 : 108.70
Toluene by GC (Moisture Corrected)	TM089	100.0 78.05 : 115.14



SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

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Report Number: 153175
Superseded Report:

GRO by GC-FID (W)

Component	Method Code	QC 41
Benzene by GC	TM245	90.5 74.18 : 120.19
Ethylbenzene by GC	TM245	91.0 68.50 : 123.48
m & p Xylene by GC	TM245	90.75 66.97 : 125.40
MTBE GC-FID	TM245	90.5 75.54 : 119.85
o Xylene by GC	TM245	91.0 67.51 : 121.24
QC	TM245	94.64 67.60 : 116.92
Toluene by GC	TM245	92.0 71.27 : 123.09

Hexavalent Chromium (s)

Component	Method Code	QC 49
Hexavalent Chromium	TM151	114.0 92.03 : 118.13

Metals by iCap-OES (Soil)

Component	Method Code	QC 43	QC 44
Aluminium	TM181	113.29 40.58 : 159.72	109.25 40.58 : 159.72
Antimony	TM181	119.8 106.70 : 132.42	113.86 106.70 : 132.42
Arsenic	TM181	112.66 81.30 : 128.50	107.59 81.30 : 128.50
Barium	TM181	108.59 43.94 : 149.86	105.52 43.94 : 149.86
Beryllium	TM181	111.02 100.48 : 119.52	109.32 100.48 : 119.52
Boron	TM181	121.02 89.77 : 153.99	115.29 89.77 : 153.99
Cadmium	TM181	111.65 102.16 : 117.84	107.77 102.16 : 117.84
Chromium	TM181	112.42 81.59 : 128.96	111.8 81.59 : 128.96
Cobalt	TM181	109.77 86.57 : 133.43	107.52 86.57 : 133.43
Copper	TM181	106.95 77.11 : 121.88	105.28 77.11 : 121.88
Iron	TM181	110.61 47.39 : 152.18	105.59 47.39 : 152.18
Lead	TM181	112.87 83.56 : 132.07	111.03 83.56 : 132.07
Manganese	TM181	117.66 78.31 : 123.77	108.39 78.31 : 123.77



SDG: 110928-33
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Superseded Report:

Metals by iCap-OES (Soil)

		QC 43	QC 44
Mercury	TM181	111.68 97.76 : 122.20	103.48 97.76 : 122.20
Molybdenum	TM181	118.61 93.47 : 145.63	114.52 93.47 : 145.63
Nickel	TM181	114.89 84.59 : 133.71	112.77 84.59 : 133.71
Phosphorus	TM181	119.33 46.20 : 149.96	108.8 46.20 : 149.96
Selenium	TM181	111.71 99.21 : 121.10	106.77 99.21 : 121.10
Strontium	TM181	114.69 49.69 : 164.57	112.59 49.69 : 164.57
Thallium	TM181	115.0 70.82 : 159.96	113.08 70.82 : 159.96
Tin	TM181	220.77 93.63 : 124.72	109.23 93.63 : 124.72
Titanium	TM181	115.58 47.70 : 146.38	111.04 47.70 : 146.38
Vanadium	TM181	108.1 48.55 : 154.47	106.58 48.55 : 154.47
Zinc	TM181	109.72 78.82 : 124.59	107.78 78.82 : 124.59

Oxygenates (S)

Component	Method Code	QC 46
Benzene raw	TM288	94.0 76.41 : 116.38
Diisopropyl ether raw	TM288	86.75 78.68 : 128.65
Ethanol raw	TM288	73.8 29.57 : 198.54
Ethylbenzene raw	TM288	97.75 75.93 : 132.30
o-Xylene raw	TM288	92.75 67.81 : 123.00
p/m-Xylene raw	TM288	96.38 76.41 : 125.53
tert Butanol raw	TM288	93.0 75.64 : 168.91
tert-amyl methyl ether raw	TM288	85.75 64.00 : 136.00
tert-butyl ethyl ether raw	TM288	87.0 64.00 : 136.00
tert-butyl methyl ether raw	TM288	89.25 83.50 : 129.91
Toluene raw	TM288	87.75 71.50 : 107.70

Oxygenates (W)



SDG: 110928-33
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Location: Shell Hitchin
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Order Number:
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Superseded Report:

Oxygenates (W)

Component	Method Code	QC 49
Benzene	TM289	98.5 64.00 : 136.00
Diisopropyl ether	TM289	83.0 64.00 : 136.00
Ethanol	TM289	98.2 60.84 : 141.13
Ethylbenzene	TM289	94.5 64.00 : 136.00
o-Xylene	TM289	97.5 64.00 : 136.00
p/m-Xylene	TM289	96.5 71.56 : 125.03
tert Butanol	TM289	94.0 70.51 : 143.48
tert-amyl methyl ether	TM289	87.5 61.37 : 145.66
tert-butyl ethyl ether	TM289	85.0 71.10 : 132.36
tert-butyl methyl ether	TM289	86.5 72.87 : 135.34
Toluene	TM289	97.5 64.00 : 136.00

PAH by GCMS

Component	Method Code	QC 44
Acenaphthene	TM218	89.0 78.38 : 107.88
Acenaphthylene	TM218	79.0 66.59 : 97.40
Anthracene	TM218	86.0 70.02 : 108.14
Benz(a)anthracene	TM218	96.0 75.52 : 122.57
Benzo(a)pyrene	TM218	96.5 81.94 : 122.53
Benzo(b)fluoranthene	TM218	97.0 86.08 : 119.90
Benzo(ghi)perylene	TM218	96.0 74.07 : 119.02
Benzo(k)fluoranthene	TM218	95.0 86.13 : 115.27
Chrysene	TM218	92.5 75.35 : 119.13
Dibenzo(ah)anthracene	TM218	93.5 72.56 : 120.05
Fluoranthene	TM218	91.0 75.41 : 112.08
Fluorene	TM218	88.5 79.26 : 109.59
Indeno(123cd)pyrene	TM218	95.5 71.54 : 119.37
Naphthalene	TM218	88.0 76.45 : 106.42



CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

PAH by GCMS

		QC 44
Phenanthrene	TM218	87.5 74.28 : 110.55
Pyrene	TM218	90.5 76.12 : 112.08

Total Organic Carbon

Component	Method Code	QC 45
Total Organic Carbon	TM132	120.96 112.23 : 144.85

VOC MS (S)

Component	Method Code	QC 48
1,1,1,2-tetrachloroethane	TM116	95.6 79.70 : 131.43
1,1,1-Trichloroethane	TM116	100.0 65.91 : 140.05
1,1,2-Trichloroethane	TM116	106.6 88.70 : 147.24
1,1-Dichloroethane	TM116	106.6 69.50 : 147.71
1,2-Dichloroethane	TM116	103.0 72.54 : 154.14
1,4-Dichlorobenzene	TM116	101.0 68.76 : 143.94
2-Chlorotoluene	TM116	120.6 83.88 : 169.64
4-Chlorotoluene	TM116	119.4 63.90 : 187.23
Benzene	TM116	103.0 68.68 : 145.95
Carbon Disulphide	TM116	98.0 54.38 : 132.45
Carbontetrachloride	TM116	105.2 73.36 : 139.36
Chlorobenzene	TM116	99.0 81.53 : 130.33
Chloroform	TM116	103.8 69.66 : 148.03
Chloromethane	TM116	155.8 34.85 : 197.27
Cis-1,2-Dichloroethene	TM116	102.8 64.50 : 137.05
Dibromomethane	TM116	103.0 65.13 : 138.40
Dichloromethane	TM116	110.6 70.67 : 150.15
Ethylbenzene	TM116	97.6 70.86 : 132.33



CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

VOC MS (S)

		QC 48
Hexachlorobutadiene	TM116	132.6 34.74 : 187.69
Isopropylbenzene	TM116	85.2 53.42 : 123.07
Naphthalene	TM116	103.8 76.11 : 139.72
o-Xylene	TM116	92.0 64.33 : 127.08
p/m-Xylene	TM116	98.9 69.99 : 132.19
Sec-Butylbenzene	TM116	95.2 33.32 : 159.06
Tetrachloroethene	TM116	105.8 78.08 : 139.93
Toluene	TM116	97.0 65.92 : 140.08
Trichloroethene	TM116	95.8 67.45 : 143.34
Trichlorofluoromethane	TM116	112.4 73.22 : 143.68
Vinyl Chloride	TM116	108.8 53.84 : 178.24

VOC MS (W)

Component	Method Code	QC 41
1,1,1,2-Tetrachloroethane	TM208	98.5 78.44 : 132.60
1,1,1-Trichloroethane	TM208	109.5 82.89 : 127.03
1,1-Dichloroethane	TM208	115.0 77.09 : 139.26
1,2-Dichloroethane	TM208	115.5 76.92 : 137.00
2-Chlorotoluene	TM208	93.5 71.51 : 138.58
4-Chlorotoluene	TM208	102.0 71.36 : 140.30
Benzene	TM208	119.0 75.59 : 136.08
Bromomethane	TM208	118.5 75.78 : 148.00
Carbontetrachloride	TM208	109.0 80.59 : 133.93
Chlorobenzene	TM208	101.5 80.31 : 128.02
Chloroform	TM208	115.5 83.42 : 132.37
Chloromethane	TM208	128.5 65.92 : 179.80
Cis-1,2-Dichloroethene	TM208	116.5 79.85 : 133.15
Dichloromethane	TM208	112.5 75.54 : 141.85



SDG:	110928-33	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153175
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

VOC MS (W)

		QC 41
Ethylbenzene	TM208	101.5 79.89 : 124.59
Hexachlorobutadiene	TM208	61.5 55.77 : 158.25
o-Xylene	TM208	98.5 74.49 : 131.29
p/m-Xylene	TM208	99.75 79.11 : 123.92
Tert-butyl methyl ether	TM208	109.5 72.42 : 136.24
Tetrachloroethene	TM208	96.0 74.98 : 135.52
Toluene	TM208	110.0 80.34 : 126.47
Trichloroethene	TM208	101.5 80.68 : 127.52
Vinyl Chloride	TM208	103.0 66.04 : 159.76

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.



CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

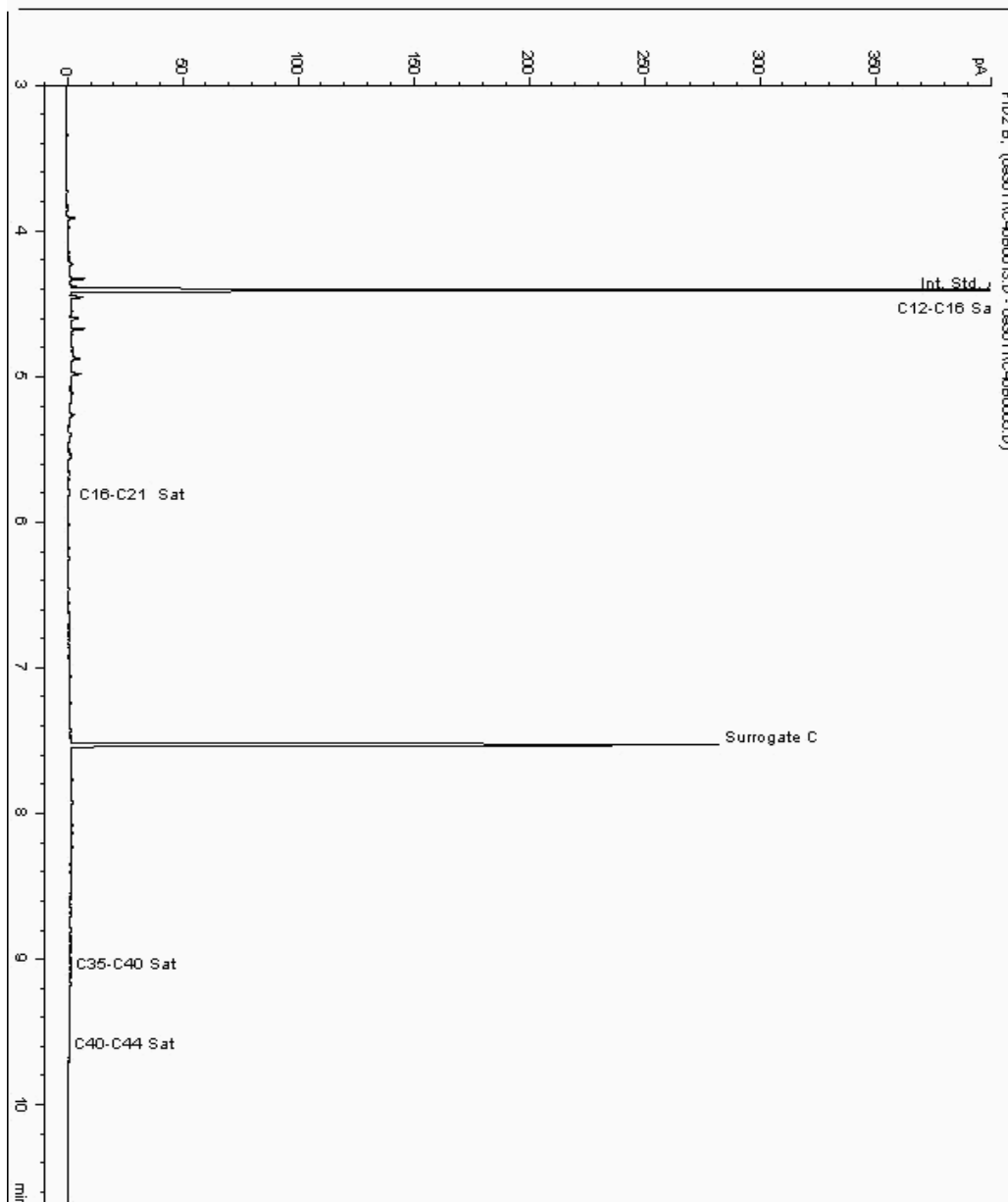
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4404417
Sample ID : BH102

Depth : 0.80

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

Sample Identity: 4361408-4404417
Date Acquired : 30/09/11 20:24:44 PM
Units : ppb
Dilution:





SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

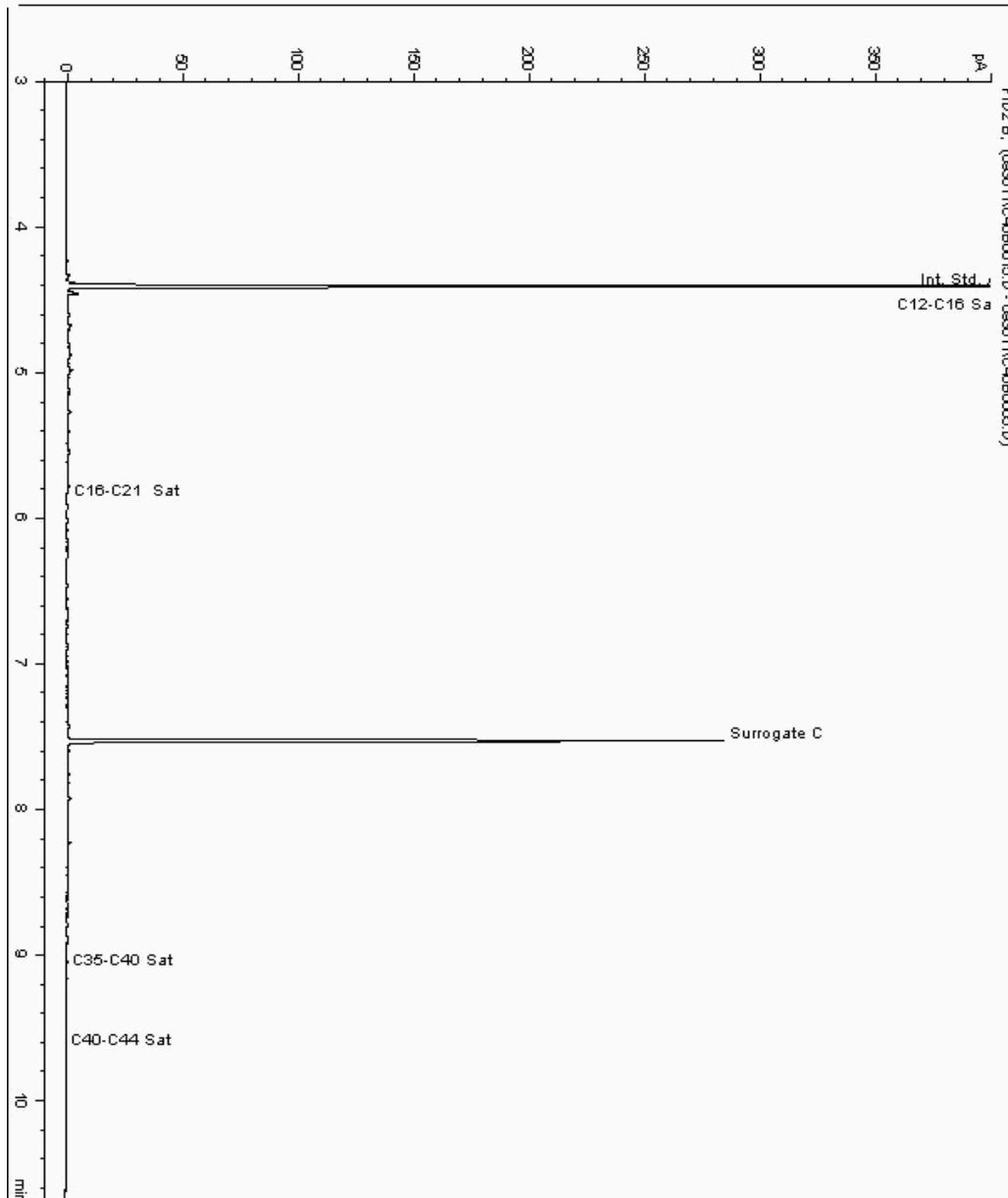
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4404439
Sample ID : BH101

Depth : 0.80

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

Sample Identity: 4361421-4404439
Date Acquired : 30/09/11 20:55:23 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

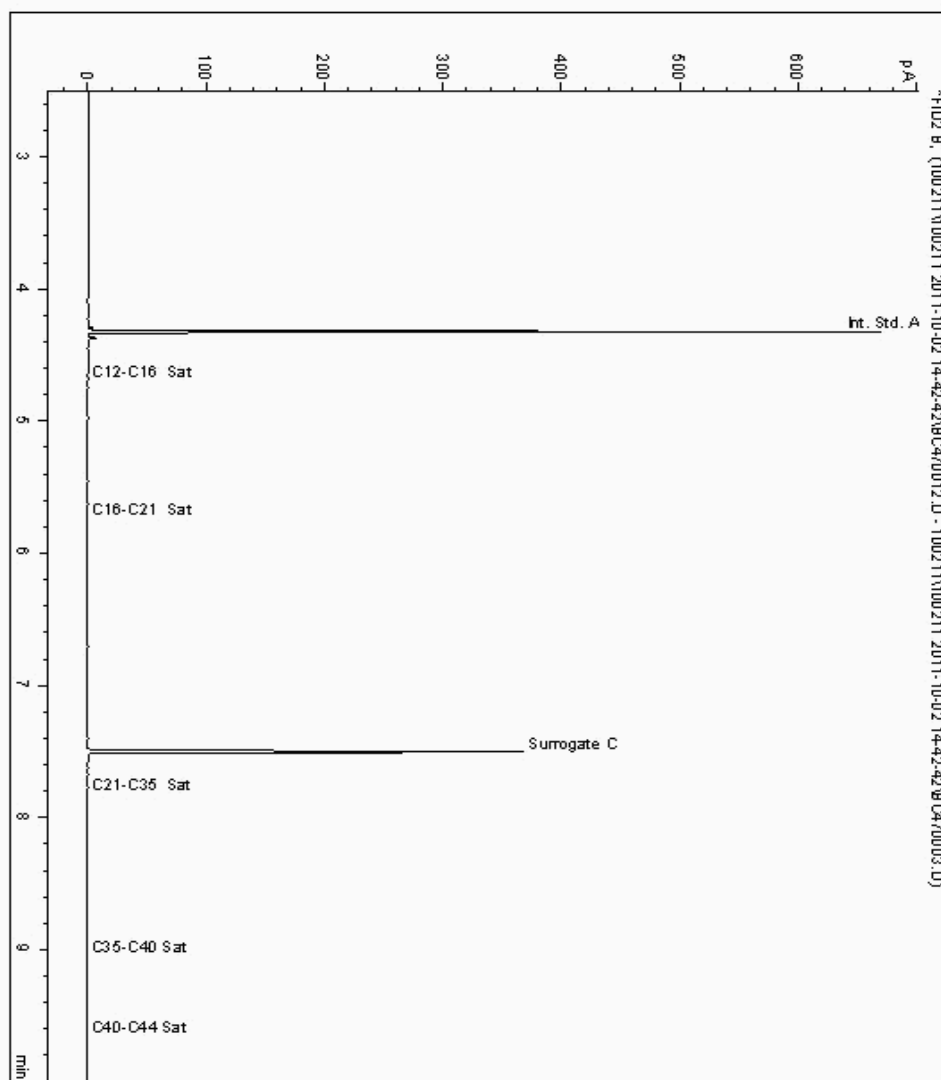
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4407003
Sample ID : BH101

Depth : 0.80

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

Sample Identity: 4361434-4407003
Date Acquired : 02/10/11 18:13:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.013





CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

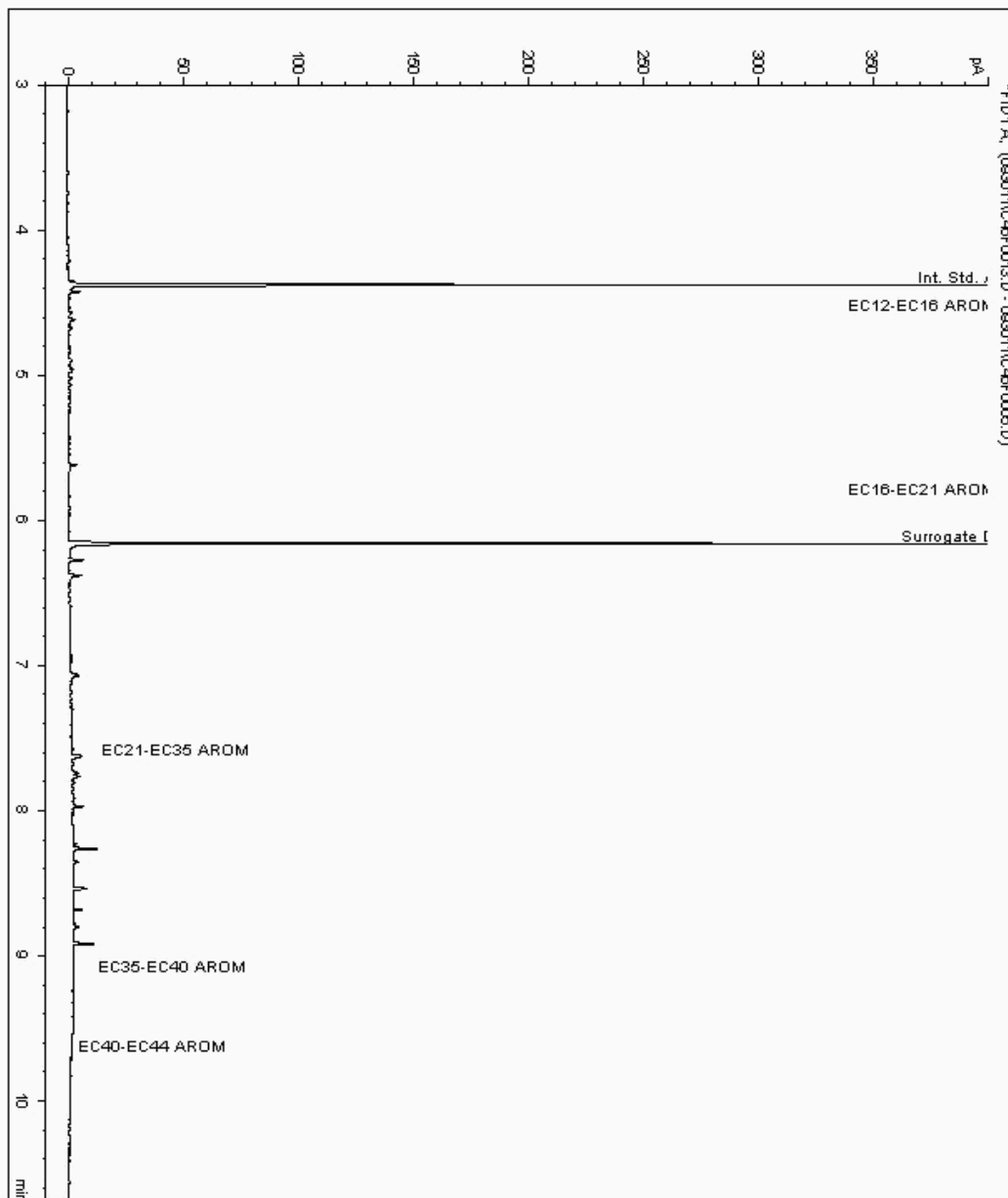
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4404417
Sample ID : BH102

Depth : 0.80

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

Sample Identity: 4361409-4404417
Date Acquired : 30/09/11 20:24:44 PM
Units : ppb
Dilution:





SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

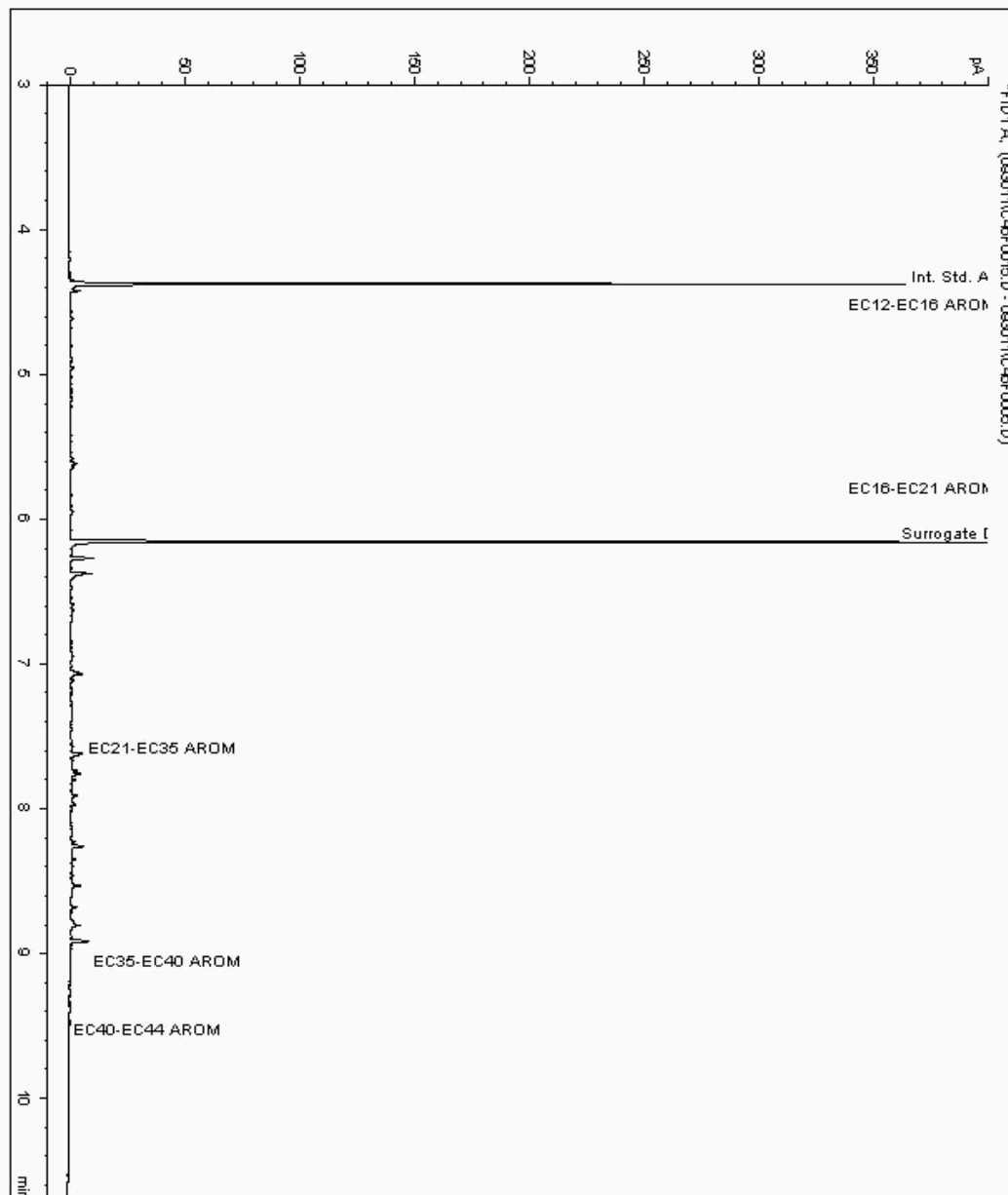
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4404439
Sample ID : BH101

Depth : 0.80

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

Sample Identity: 4361422-4404439
Date Acquired : 30/09/11 20:55:23 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

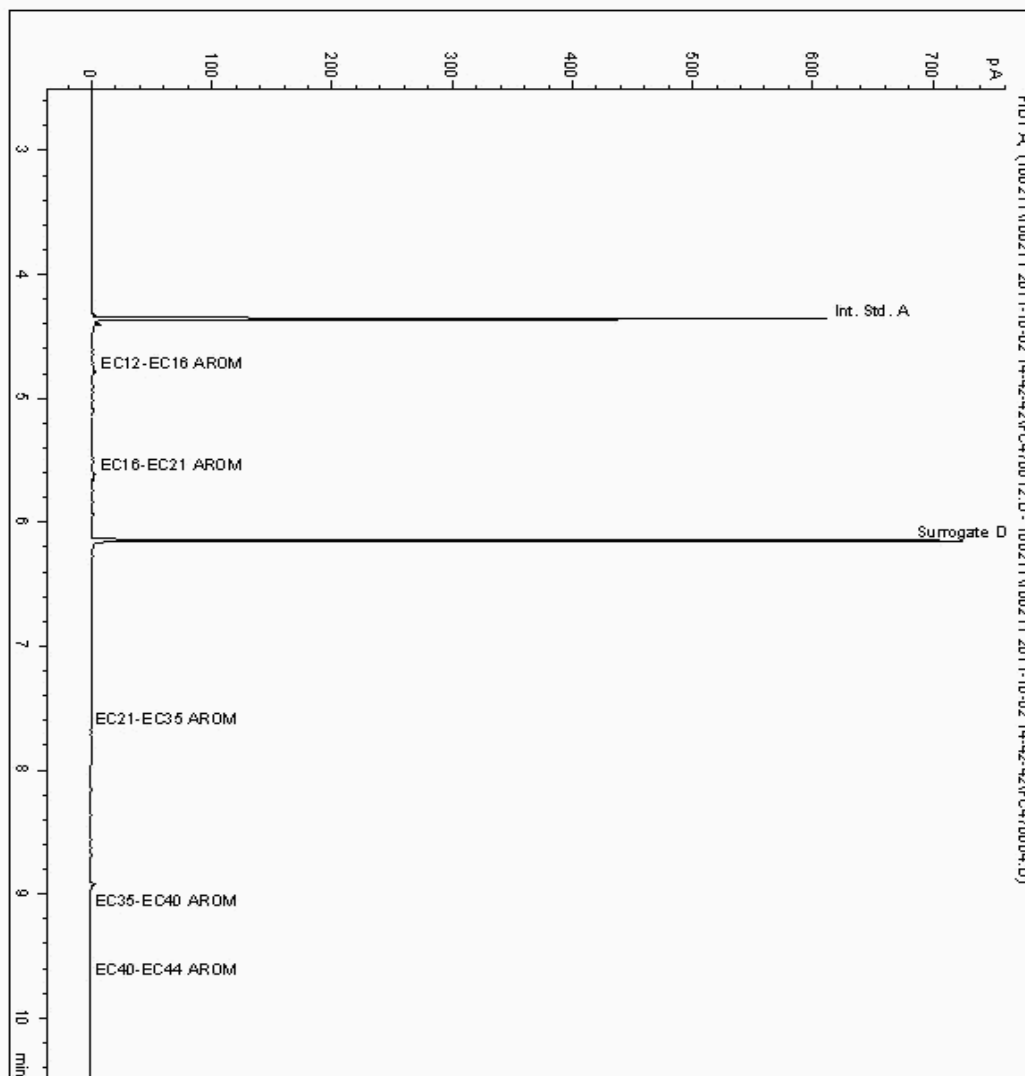
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4407003
Sample ID : BH101

Depth : 0.80

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

Sample Identity: 4361435-4407003
Date Acquired : 02/10/11 18:13:43
Units : ppb
Dilution :
CF : 1
Multiplier : 0.013





SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

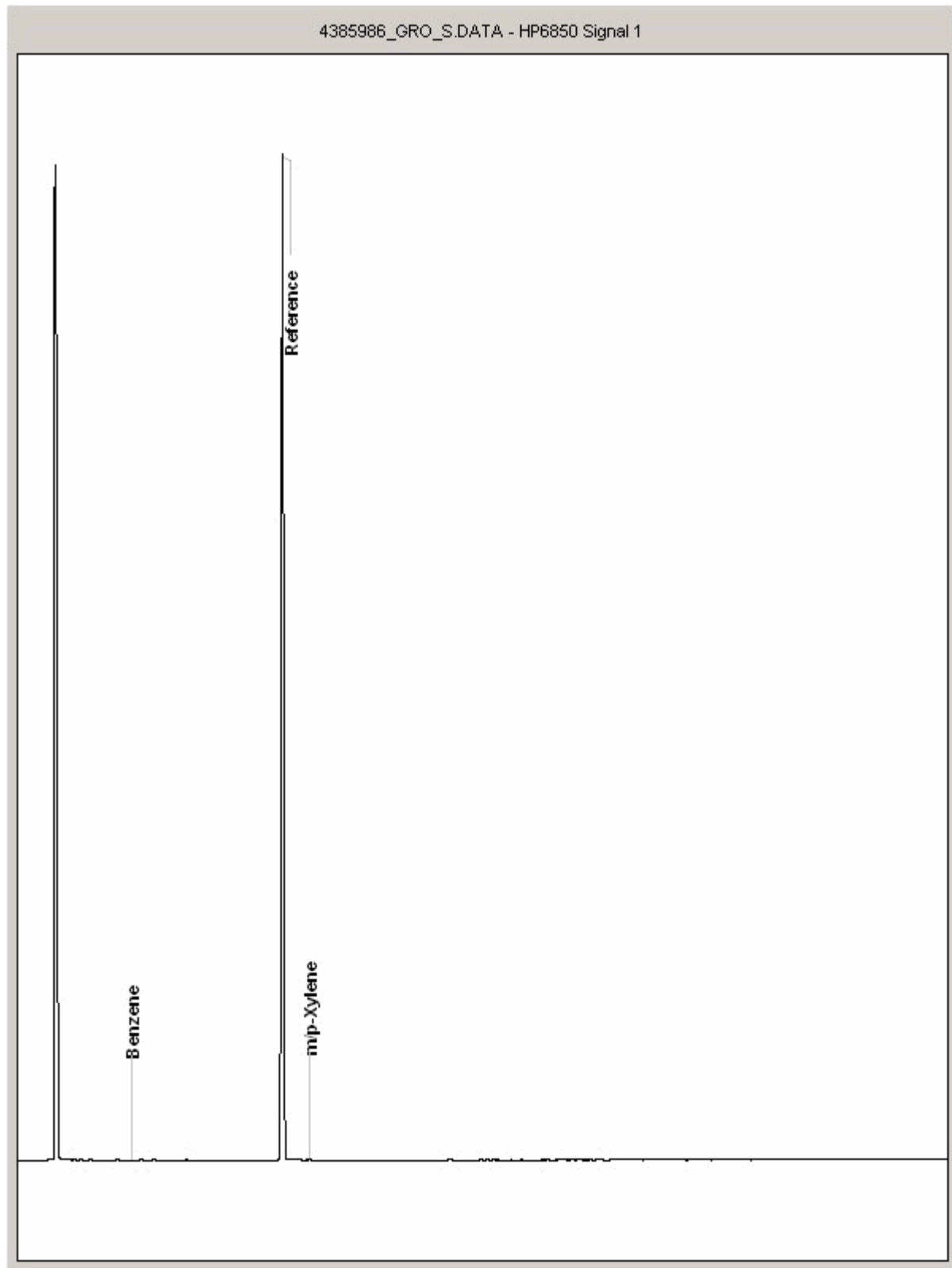
Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4385986
Sample ID : BH101

Depth : 0.80





CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

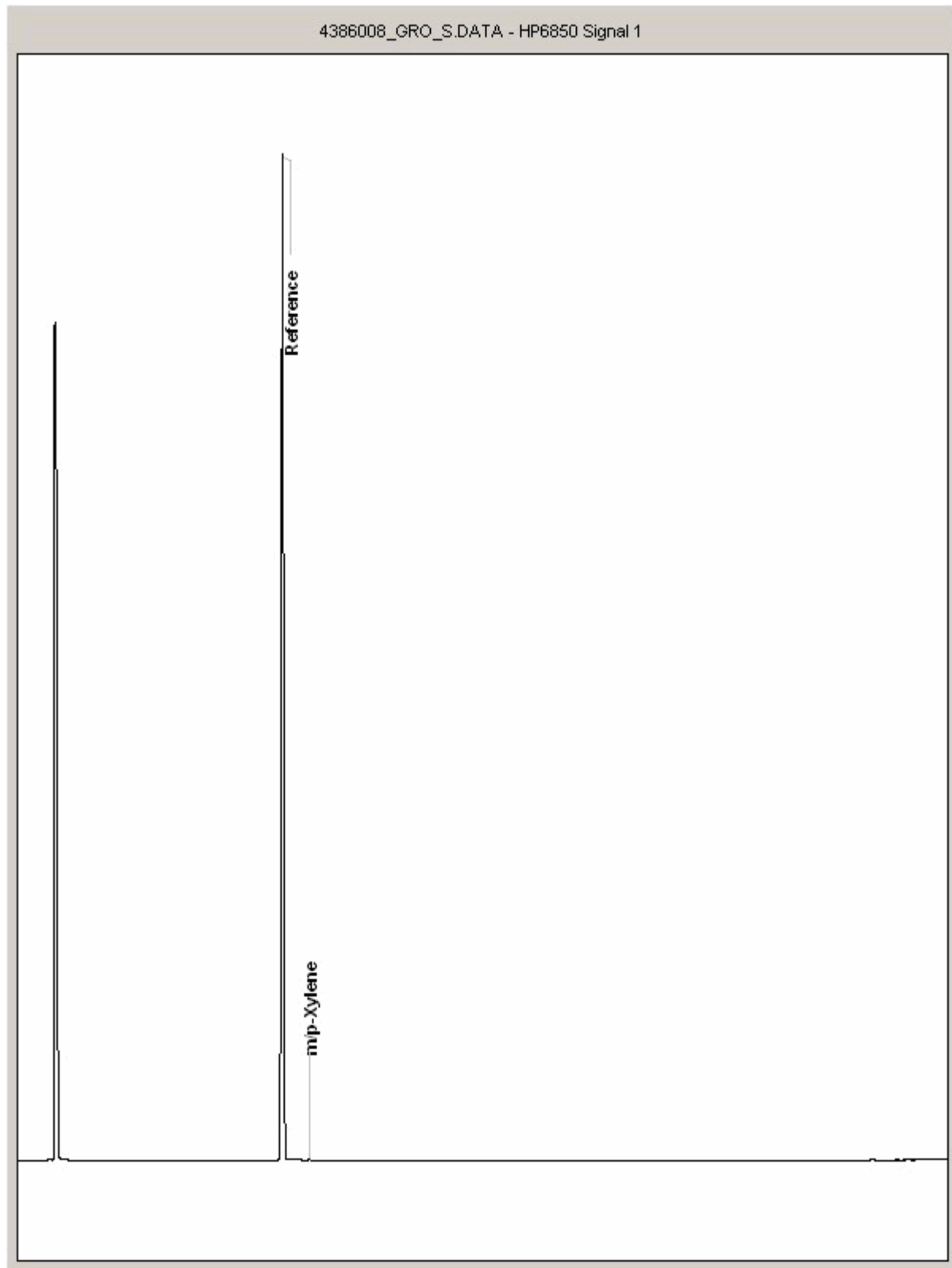
Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4386008
Sample ID : BH102

Depth : 0.80





CERTIFICATE OF ANALYSIS

SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

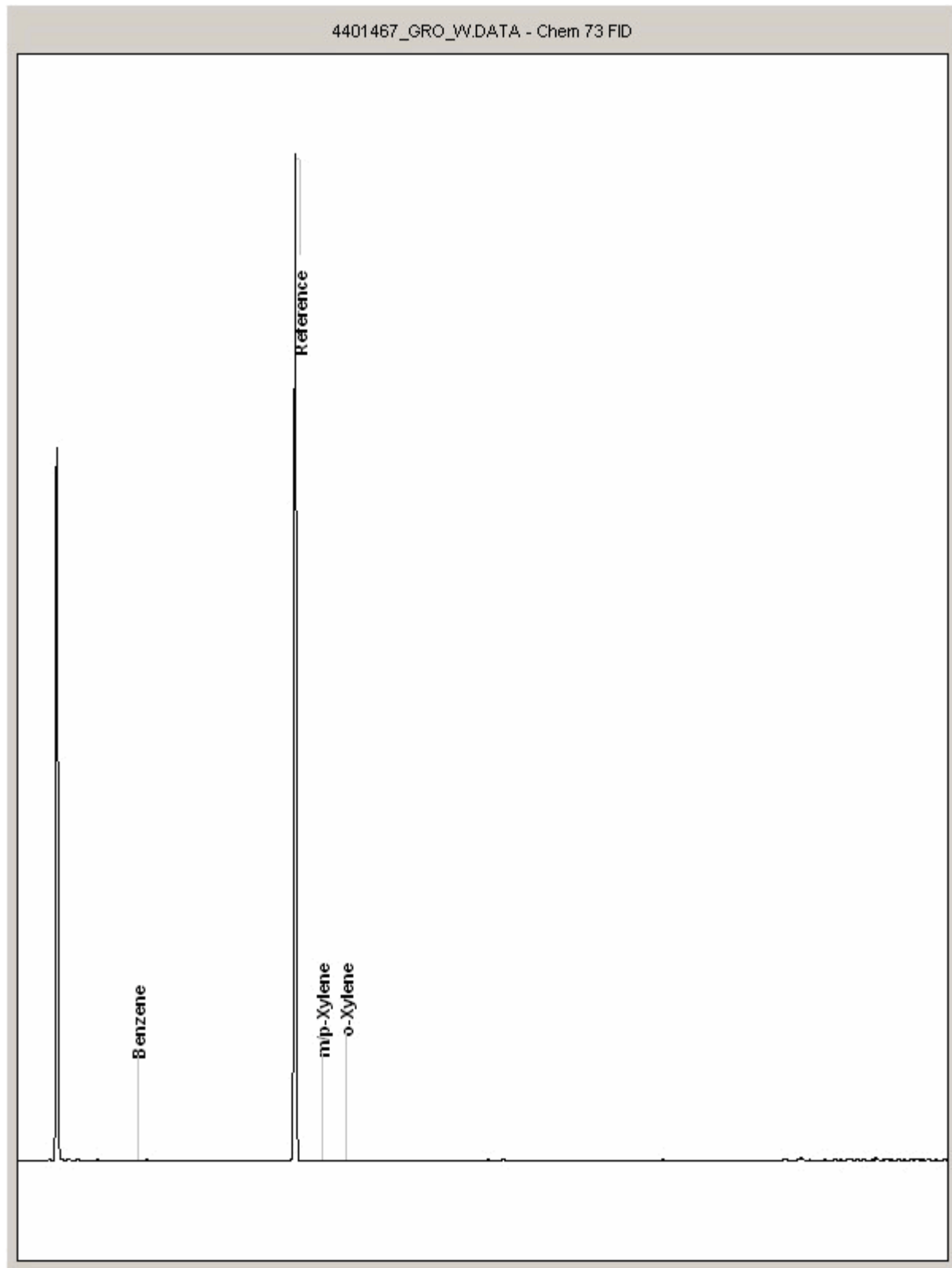
Order Number:
Report Number: 153175
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4401467
Sample ID : BH101

Depth : 0.80





SDG: 110928-33
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153175
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 Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 C₄ -C₁₀ 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.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8/C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC-MS
TRI by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC-MS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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



Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Friday, September 30, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : September 30, 2011 6:00

Instructions Received : September 30, 2011 6:00

Laboratory SDG No : 110930-19

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☒ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 10, 2011

Coolbox Temperature (°C) : 16.6
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 8 SOLID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	110930-19	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	September 30, 2011 6:00
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Sample Type : SOLID
Legend

Test



Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Fraction Organic Carbon (FOC)	PAH by GC/MS	LAB-04 (S)	LAB-07 (S)	LAB-10 (S)	WAC-E (Total Waste Suite) (S)
4401784	BH103	3.20	29/09/2011	X			X	X	
4401780	BH105	4.10	29/09/2011	X			X	X	
4401779	BH106	0.50	28/09/2011	X	X	X	X	X	
4401783	DUP02	4.10	29/09/2011	X			X	X	
4401777	UP101	0.60	28/09/2011	X			X	X	
4401785	WAC01		29/09/2011						X
4401786	WAC02		29/09/2011						X

Sample Type : CEN 2:1				LAB-51 (W)	LAB-54 (W)
Legend					
Test					
					
Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled		
4401784	BH103	3.20	29/09/2011	X	X
4401780	BH105	4.10	29/09/2011	X	X
4401779	BH106	0.50	28/09/2011	X	X

SDG Number	110930-19	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	September 30, 2011 6:00
-------------------	-----------	-----------------	-------------------------	-----------------	---------------	----------------------	-------------------------

Sample Type : CEN 10:1C

Legend

Test



Lab Sample ID Customer Sample Ref Depth (m) Date Sampled

WAC-A (W)

4401785	WAC01		29/09/2011	X
4401786	WAC02		29/09/2011	X

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
---------------	---------------------	-----------	--------------	----------------

Sample Type : SOLID

4401774

NOID

OnHold

1

No Records

SDG Number	110930-19	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 30, 2011 6:00
Description		T/A	No. Scheduled
Requested Due	October 06, 2011		
Sample Type	SOLID		
LAB-04 (S)		5	1
LAB-07 (S)		5	5
LAB-10 (S)		5	5
PAH by GCMS		5	1
Fraction Organic Carbon (FOC)		5	5

SDG Number	110930-19	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	September 30, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 06, 2011			
Sample Type	CEN 2:1			
LAB-51 (W)		5	3	
LAB-54 (W)		5	3	

SDG Number	110930-19	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	September 30, 2011 6:00	
Description		T/A	No. Scheduled	
Requested Due	October 10, 2011			
Sample Type	SOLID			
WAC-E (Total Waste Suite) (S)		7	2	

SDG Number	110930-19	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	September 30, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 10, 2011			
Sample Type	CEN 10:1C			
WAC-A (W)		7	2	

SDG Number	110930-19	Location	Shell Hitchin		
Customer	URS Corporation Limited	Date Received	September 30, 2011 6:00		
Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type : SOLID					
LAB-04 (S)					
	1	Arsenic	#M	ICPOES	<0.6 mg/kg
	1	Boron	#	ICPOES	<0.7 mg/kg
	1	Cadmium	#M	ICPOES	<0.02 mg/kg
	1	Chromium	#M	ICPOES	<0.9 mg/kg
	1	Chromium, Hexavalent	#	SPECTROPHOTOMETRIC	<0.6 mg/kg
	1	Cobalt	#M	ICPOES	<0.1 mg/kg
	1	Copper	#M	ICPOES	<1.4 mg/kg
	1	Lead	#M	ICPOES	<0.7 mg/kg
	1	Mercury	#M	ICPOES	<0.14 mg/kg
	1	Molybdenum	#	ICPOES	<0.1 mg/kg
	1	Nickel	#M	ICPOES	<0.2 mg/kg
	1	Selenium	#	ICPOES	<1 mg/kg
	1	Tin	#	ICPOES	<0.24 mg/kg
	1	Zinc	#M	ICPOES	<1.9 mg/kg
LAB-07 (S)					
	5	Aliphatics >C12-C16		GC	<100 µg/kg
	5	Aliphatics >C16-C21		GC	<100 µg/kg
	5	Aliphatics >C21-C35		GC	<100 µg/kg
	5	Aliphatics >C35-C44		GC	<100 µg/kg
	5	Aromatics >EC12-EC16		GC	<100 µg/kg
	5	Aromatics >EC16-EC21		GC	<100 µg/kg
	5	Aromatics >EC21-EC35		GC	<100 µg/kg
	5	Aliphatics >C10-C12		GC	<10 µg/kg
	5	Aliphatics >C5-C6		GC	<10 µg/kg
	5	Aliphatics >C6-C8		GC	<10 µg/kg
	5	Aliphatics >C8-C10		GC	<10 µg/kg
	5	Aromatics >EC10-EC12		GC	<10 µg/kg
	5	Aromatics >EC5-EC7		GC	<10 µg/kg
	5	Aromatics >EC7-EC8		GC	<10 µg/kg
	5	Aromatics >EC8-EC10		GC	<10 µg/kg
	5	GRO Surrogate % recovery**		GC	
LAB-10 (S)					
	5	Benzene	#M	GCMS	<9 µg/kg
	5	Diisopropyl ether		GCMS	<1 µg/kg
	5	Ethanol		GCMS	<50 µg/kg
	5	Ethylbenzene	#M	GCMS	<4 µg/kg
	5	Methyl Tertiary Butyl Ether	#M	GCMS	<11 µg/kg
	5	o-Xylene	#M	GCMS	<10 µg/kg
	5	p/m-Xylene	#	GCMS	<14 µg/kg
	5	tert Butanol		GCMS	<10 µg/kg
	5	Tert-amyl methyl ether		GCMS	<15 µg/kg
	5	tert-butyl ethyl ether		GCMS	<1 µg/kg
	5	Toluene	#M	GCMS	<5 µg/kg
	5	Toluene-d8**		GCMS	
PAH by GCMS					
	1	PAH US EPA 16 by GC-MS (S)	#M	GCMS	VARIOUS
Total Organic Carbon					
	5	Fraction Organic Carbon (FOC)	#	IR	<0.002 -
WAC-E (Total Waste Suite) (S)					
	2	Organic Carbon, Total	#	IR	<0.2 %
	2	Benzene	#M	GC	<10 µg/kg
	2	Ethylbenzene	#M	GC	<3 µg/kg
	2	GRO Surrogate % recovery**		GC	

SDG Number	110930-19	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 30, 2011 6:00

Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
	2	m,p-Xylene	#M	GC	<6 µg/kg
	2	Methyl tertiary butyl ether (MTBE)	#	GC	<5 µg/kg
	2	o-Xylene	#M	GC	<3 µg/kg
	2	sum of detected BTEX by GC		GC	<24 µg/kg
	2	sum of detected mpo xylene by GC		GC	<9 µg/kg
	2	Toluene	#M	GC	<2 µg/kg
	2	ANC @ pH 4	#	TITRATION	<0.03 mol/kg
	2	ANC @ pH 6	#	TITRATION	<0.03 mol/kg
	2	Loss on ignition	#M	GRAVIMETRIC	<0.7 %
	2	pH	#M	METER	1 pH Units
	2	Mineral oil >C10-C40	#	GC	<1 mg/kg
	2	PCB congener 101	#M	GCMS	<3 µg/kg
	2	PCB congener 118	#M	GCMS	<3 µg/kg
	2	PCB congener 138	#M	GCMS	<3 µg/kg
	2	PCB congener 153	#M	GCMS	<3 µg/kg
	2	PCB congener 180	#M	GCMS	<3 µg/kg
	2	PCB congener 28	#M	GCMS	<3 µg/kg
	2	PCB congener 52	#M	GCMS	<3 µg/kg
	2	Sum of detected PCB 7 Congeners		GCMS	<21 µg/kg
	2	Polyaromatic hydrocarbons, Total 17		GC	<10 mg/kg

SDG Number	110930-19	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	September 30, 2011 6:00

Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
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Sample Type : CEN 2:1

LAB-51 (W)	3	Aliphatics >C12-C16 (aq)		GC	<10 µg/l
	3	Aliphatics >C16-C21 (aq)		GC	<10 µg/l
	3	Aliphatics >C21-C35 (aq)		GC	<10 µg/l
	3	Aromatics >EC12-EC16 (aq)		GC	<10 µg/l
	3	Aromatics >EC16-EC21 (aq)		GC	<10 µg/l
	3	Aromatics >EC21-EC35 (aq)		GC	<10 µg/l
	3	Aliphatics >C10-C12		GC	<10 µg/l
	3	Aliphatics >C5-C6		GC	<10 µg/l
	3	Aliphatics >C6-C8		GC	<10 µg/l
	3	Aliphatics >C8-C10		GC	<10 µg/l
	3	Aromatics >EC10-EC12		GC	<10 µg/l
	3	Aromatics >EC5-EC7		GC	<10 µg/l
	3	Aromatics >EC7-EC8		GC	<10 µg/l
	3	Aromatics >EC8-EC10		GC	<10 µg/l
	3	GRO Surrogate % recovery**		GC	

LAB-54 (W)	3	Benzene		GCMS	<1 µg/l
	3	Diisopropyl ether		GCMS	<1 µg/l
	3	Ethanol		GCMS	<50 µg/l
	3	Ethylbenzene		GCMS	<1 µg/l
	3	m,p-Xylene		GCMS	<1 µg/l
	3	Methyl tertiary butyl ether (MTBE)		GCMS	<1 µg/l
	3	o-Xylene		GCMS	<1 µg/l
	3	tert Butanol		GCMS	<10 µg/l
	3	tert-Amyl methyl ether (TAME)		GCMS	<1 µg/l
	3	tert-butyl ethyl ether		GCMS	<1 µg/l
	3	Toluene		GCMS	<1 µg/l
	3	Toluene-d8**		GCMS	

SDG Number		110930-19		Location	Shell Hitchin
Customer		URS Corporation Limited		Date Received	September 30, 2011 6:00
Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type : CEN 10:1C					
WAC-A (W)					
	2	Carbon, Organic (diss.filt)		IR	<3 mg/l
	2	Antimony (diss.filt)		ICPMS	<0.16 µg/l
	2	Arsenic (diss.filt)		ICPMS	<0.12 µg/l
	2	Barium (diss.filt)		ICPMS	<0.03 µg/l
	2	Cadmium (diss.filt)		ICPMS	<0.1 µg/l
	2	Chromium (diss.filt)		ICPMS	<0.22 µg/l
	2	Copper (diss.filt)		ICPMS	<0.85 µg/l
	2	Lead (diss.filt)		ICPMS	<0.02 µg/l
	2	Mercury (diss.filt)		AFS	<0.01 µg/l
	2	Molybdenum (diss.filt)		ICPMS	<0.24 µg/l
	2	Nickel (diss.filt)		ICPMS	<0.15 µg/l
	2	Selenium (diss.filt)		ICPMS	<0.39 µg/l
	2	Zinc (diss.filt)		ICPMS	<0.41 µg/l
	2	Chloride		SPECTROPHOTOMETRIC	<2 mg/l
	2	Dissolved solids, Total (meter)		METER	<5 mg/l
	2	Fluoride		SPECTROPHOTOMETRIC	<0.5 mg/l
	2	Sulphate		SPECTROPHOTOMETRIC	<2 mg/l
	2	Phenols, Total Detected monohydric		HPLC	<0.016 mg/l

Disclaimers

Please Note :

1. Following reviews by UKAS on the use of correct containers for analysis, we will no longer accredit volatile samples that are not received in the correct containers. We would like to highlight that best practice for sampling volatiles is to take every sample (soils and waters) in duplicate vials or volatile jars with **no headspace**. This will include analysis for the following parameters: VOC, Dissolved gases, VFA, Alcohols, TEL, GRO or TPH CWG.
2. The recommended storage temperature for water and soil samples is 5°C +/- 3°C (MCERTS for Waters July 2008).
3. When an analysis has been requested on an inappropriate bottle (this includes unpreserved bottles for a preserved analysis) and the analysis goes ahead, it will not conform to our Quality Management System, and may not be accredited.
4. We are accredited to MCERTS for sand, clay and loam/topsoil. This also includes naturally occurring soil profiles and fill/made ground where 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.
5. It is assumed that detection limits for samples scheduled are below the critical level of interest required for the project, if they are not or you would like to receive clarification of these, please contact the laboratory.

Surcharges :

6. Surcharges will be applied for accelerated turnaround times where these are requested based on the relevant contract or quotation prices. If the requested rapid turnaround fails but the report still meets rapid turnaround criteria an appropriate surcharge will still be applied. Surcharges are not subject to any discount.

Purchase Orders :

7. If these are used by your company, then data cannot be released unless we have received a copy of the purchase order.

Sample Disposal :

8. If sufficient soil/water sample (tubs, bottles and 250g jars) is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed).
9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
10. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions for sample disposal.
11. For extended storage periods, a storage charge of £1 (or € equivalent) per sample per month will be applied for each month or part thereof until the customer cancels the request for sample storage.
12. ALcontrol Laboratories reserve the right to charge £3 (or € equivalent) for samples received and stored but not analysed.

Subcontracted Analysis :

13. Please note that any analyses marked with an asterisk (*) will be subcontracted to an approved laboratory. Please note turnaround times for subcontracted analysis may sometimes be in excess of the turnaround requested and for some analyses can be up to 15-20 days. If this is unacceptable please contact us immediately as you may prefer to subcontract the work yourselves. Subcontracted samples will be disposed of by the subcontracted laboratory and are therefore not covered under the ALcontrol terms and conditions of sample disposal.

Asbestos :

14. When requested the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces.
15. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025, and no analysis will be undertaken on the remaining samples. At no point is the fibre content of the soil sample determined.
16. Where no asbestos containing material is found this will be reported as "No ACM detected".



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

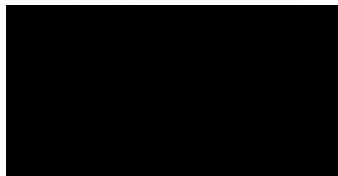
Date: 11 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 110930-19
Your Reference: 46370079
Location: Shell Hitchin
Report No: 154156

We received 8 samples on Friday September 30, 2011 and 7 of these samples were scheduled for analysis which was completed on Tuesday October 11, 2011. 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





CERTIFICATE OF ANALYSIS

Validated

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4401784	BH103		3.20	29/09/2011
4401780	BH105		4.10	29/09/2011
4401779	BH106		0.50	28/09/2011
4401783	DUP02		4.10	29/09/2011
4401774	NOID			
4401777	UP101		0.60	28/09/2011

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



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		4401779	4401780	4401784	4401786	4401785	4401783	4401786	4401777	4401784	4401786	4401785
	Customer Sample Reference		BH106	BH105	BH103	UP101	WAC01	DUP02	WAC02				
	AGS Reference												
	Depth (m)		0.50	4.10	3.20	0.60		4.10					
	Container		60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 2											
Anions by Kone (w)	All	NDPs: 0 Tests: 2											
CEN 2:1 Readings	All	NDPs: 0 Tests: 2											
CEN 8:1 Readings	All	NDPs: 0 Tests: 2											
CEN Readings	All	NDPs: 0 Tests: 3											
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2											
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 2											
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3											
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 5											
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3											
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 5											
Fluoride	All	NDPs: 0 Tests: 2											
GRO by GC-FID (S)	All	NDPs: 0 Tests: 7											
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3											
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1											



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

SOLID

Results Legend



Test

No Determination
Possible

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Loss on Ignition in soils

All

NDPs: 0
Tests: 2

X

X

Mercury Dissolved

All

NDPs: 0
Tests: 2

X

X

Metals by iCap-OES (Soil)

Arsenic

NDPs: 0
Tests: 1

X

Boron

NDPs: 0
Tests: 1

X

Cadmium

NDPs: 0
Tests: 1

X

Chromium

NDPs: 0
Tests: 1

X

Cobalt

NDPs: 0
Tests: 1

X

Copper

NDPs: 0
Tests: 1

X

Lead

NDPs: 0
Tests: 1

X

Mercury

NDPs: 0
Tests: 1

X

Molybdenum

NDPs: 0
Tests: 1

X

Nickel

NDPs: 0
Tests: 1

X

Selenium

NDPs: 0
Tests: 1

X

Tin

NDPs: 0
Tests: 1

X

Zinc

NDPs: 0
Tests: 1

X



SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container	
	4401779		BH106				0.50		60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
	4401780		BH105				4.10		60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
	4401784		BH103				3.20		60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
	4401777		UP101				0.60		60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
	4401786		WAC02						60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
	4401783		DUP02				4.10		60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
	4401785		WAC01						60g VOC (ALE215) 250g Amber Jar (AL 1kg TUB	
Mineral Oil	All	NDPs: 0 Tests: 2								
Oxygenates (S)	All	NDPs: 0 Tests: 5								
Oxygenates (W)	All	NDPs: 0 Tests: 3								
PAH by GCMS	All	NDPs: 0 Tests: 1								
PAH Value of soil	All	NDPs: 0 Tests: 2								
PCBs by GCMS	All	NDPs: 0 Tests: 2								
pH	All	NDPs: 0 Tests: 2								
Phenols by HPLC (W)	All	NDPs: 0 Tests: 2								
Sample description	All	NDPs: 0 Tests: 7								
Total Dissolved Solids	All	NDPs: 0 Tests: 2								
Total Organic Carbon	All	NDPs: 0 Tests: 7								
VOC MS (S)	All	NDPs: 0 Tests: 5								
VOC MS (W)	All	NDPs: 0 Tests: 3								



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	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
4401784	BH103	3.20	Light Brown	Sand	0.1 - 2 mm	Stones	None
4401780	BH105	4.10	Yellow	Loamy Sand	0.063 - 0.1 mm	Stones	None
4401779	BH106	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Oil/Petroleum
4401783	DUP02	4.10	Beige	Loamy Sand	0.1 - 2 mm	Stones	None
4401777	UP101	0.60	Light Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	None
4401785	WAC01		Light Brown	Sand	0.1 - 2 mm	Stones	None
4401786	WAC02		Light Brown	Loamy Sand	0.1 - 2 mm	Stones	None

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.



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Results Legend			Customer Sample R		BH103	BH105	BH106	DUP02	UP101	WAC01
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference		3.20	4.10	0.50	4.10	0.60	.
M	mCERTS accredited.				Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
\$	Deviating sample.				29/09/2011	29/09/2011	28/09/2011	29/09/2011	28/09/2011	29/09/2011
aq	Aqueous / settled sample.				30/09/2011	30/09/2011	30/09/2011	30/09/2011	30/09/2011	30/09/2011
diss.filt	Dissolved / filtered sample.				110930-19	110930-19	110930-19	110930-19	110930-19	110930-19
tot.unfilt	Total / unfiltered sample.				4401784	4401780	4401779	4401783	4401777	4401785
*	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									
Component	LOD/Units	Method								
Loss on ignition	<0.7 %	TM018								1.23
										M
Mineral oil >C10-C40	<1 mg/kg	TM061								115
										#
Organic Carbon, Total	<0.2 %	TM132								<0.2
										#
Fraction Organic Carbon (FOC)	<0.002 -	TM132			0.00288	<0.002	0.00702	<0.002	0.0123	
					#	#	#	#	#	
pH	1 pH Units	TM133								8.92
										M
Chromium, Hexavalent	<0.6 mg/kg	TM151					<0.6			
							#			
PCB congener 28	<3 µg/kg	TM168								<3
										M
PCB congener 52	<3 µg/kg	TM168								<3
										M
PCB congener 101	<3 µg/kg	TM168								<3
										M
PCB congener 118	<3 µg/kg	TM168								<3
										M
PCB congener 138	<3 µg/kg	TM168								<3
										M
PCB congener 153	<3 µg/kg	TM168								<3
										M
PCB congener 180	<3 µg/kg	TM168								<3
										M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168								<21
Arsenic	<0.6 mg/kg	TM181					13.9			
							M			
Boron	<0.7 mg/kg	TM181					9.31			
							#			
Cadmium	<0.02 mg/kg	TM181					0.367			
							M			
Chromium	<0.9 mg/kg	TM181					17.5			
							M			
Cobalt	<0.1 mg/kg	TM181					5.63			
							M			
Copper	<1.4 mg/kg	TM181					13.8			
							M			
Lead	<0.7 mg/kg	TM181					37.1			
							M			
Mercury	<0.14 mg/kg	TM181					<0.14			
							M			
Molybdenum	<0.1 mg/kg	TM181					<0.1			
							#			
Nickel	<0.2 mg/kg	TM181					17.1			
							M			
Selenium	<1 mg/kg	TM181					<1			
							#			
Tin	<0.24 mg/kg	TM181					0.89			
							#			
Zinc	<1.9 mg/kg	TM181					85.9			
							M			
ANC @ pH 4	<0.03 mol/kg	TM182								2.38
										#
ANC @ pH 6	<0.03 mol/kg	TM182								0.291
										#
Polyaromatic hydrocarbons, Total 17	<10 mg/kg	TM213								<10
Ethanol	<50 µg/kg	TM288			<50	<50	<50	<50	<50	
tert Butanol	<10 µg/kg	TM288			<10	<10	<10	<10	<10	
Diisopropyl ether	<1 µg/kg	TM288			<1	<1	<1	<1	<1	
tert-butyl ethyl ether	<1 µg/kg	TM288			<1	<1	<1	<1	<1	

Order Number:
Report Number: 154156
Superseded Report:

Page 8 of 66

Order Number:
Report Number: 154156
Superseded Report:

Page 9 of 66

Order Number:
Report Number: 154156
Superseded Report:

Page 10 of 66

GRO by GC-FID (S)

Order Number:
Report Number: 154156
Superseded Report:

Page 11 of 66

Order Number:
Report Number: 154156
Superseded Report:

Page 12 of 66

Order Number:
Report Number: 154156
Superseded Report:

Page 13 of 66

Order Number:
Report Number: 154156
Superseded Report:

Page 14 of 66



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.215	Moisture Content Ratio (%)	22.8
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	81.4
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401779		
Sampled Date	28-Sep-2011		
Customer Sample Ref.	BH106		
Depth (m)	0.50		
Solid Waste Analysis			
Total Organic Carbon (%)	0.702	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	9.71
Conductivity (µS/cm)	468.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.310
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
11/10/2011 10:58:43



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.215	Moisture Content Ratio (%)	22.8
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	81.4
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401779		
Sampled Date	28-Sep-2011		
Customer Sample Ref.	BH106		
Depth (m)	0.50		
Solid Waste Analysis			
Total Organic Carbon (%)	0.702	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	0.011	<0.01	0.022	<0.1	-
Aliphatics >C10-C12	0.019	<0.01	0.038	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	0.013	<0.01	0.026	<0.1	-
Aromatics >EC12-EC16	0.046	<0.01	0.092	<0.1	-
Aromatics >EC16-EC21	0.106	<0.01	0.212	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	9.71
Conductivity (µS/cm)	468.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.310
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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Mcerts Certification does not apply to leachates
11/10/2011 10:58:43



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.215	Moisture Content Ratio (%)	22.8
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	81.4
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401779		
Sampled Date	28-Sep-2011		
Customer Sample Ref.	BH106		
Depth (m)	0.50		

Solid Waste Analysis

Total Organic Carbon (%)	0.702			
Loss on Ignition (%)	-			
Sum of BTEX (mg/kg)	<24.0			
Sum of 7 PCBs (mg/kg)	-			
Mineral Oil (mg/kg)	-			
PAH Sum of 17 (mg/kg)	-			
pH (pH Units)	-			
ANC to pH 6 (mol/kg)	-			
ANC to pH 4 (mol/kg)	-			

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	- - - -
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	- - - -
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
o-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	- - - -

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	9.71
Conductivity (µS/cm)	468.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.310
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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11/10/2011 10:58:43



CERTIFICATE OF ANALYSIS

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.227	Moisture Content Ratio (%)	29.8
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	77.1
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401780		
Sampled Date	29-Sep-2011		
Customer Sample Ref.	BH105		
Depth (m)	4.10		
Solid Waste Analysis			
Total Organic Carbon (%)	<0.200	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	8.61
Conductivity (µS/cm)	274.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.298
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
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11/10/2011 10:58:43



CERTIFICATE OF ANALYSIS

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.227	Moisture Content Ratio (%)	29.8
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	77.1
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401780		
Sampled Date	29-Sep-2011		
Customer Sample Ref.	BH105		
Depth (m)	4.10		
Solid Waste Analysis			
Total Organic Carbon (%)	<0.200	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	8.61
Conductivity (µS/cm)	274.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.298
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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11/10/2011 10:58:43



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.227	Moisture Content Ratio (%)	29.8
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	77.1
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401780		
Sampled Date	29-Sep-2011		
Customer Sample Ref.	BH105		
Depth (m)	4.10		
Solid Waste Analysis			
Total Organic Carbon (%)	<0.200	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	-
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	-
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	-
o-Xylene	<0.001	<0.001	<0.002	<0.01	-
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	8.61
Conductivity (µS/cm)	274.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.298
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
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Mcerts Certification does not apply to leachates
11/10/2011 10:58:43



CERTIFICATE OF ANALYSIS

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.207	Moisture Content Ratio (%)	18.7
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.3
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401784		
Sampled Date	29-Sep-2011		
Customer Sample Ref.	BH103		
Depth (m)	3.20		
Solid Waste Analysis			
Total Organic Carbon (%)	0.288	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	8.46
Conductivity (µS/cm)	227.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
11/10/2011 10:58:43



CERTIFICATE OF ANALYSIS

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.207	Moisture Content Ratio (%)	18.7
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.3
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401784		
Sampled Date	29-Sep-2011		
Customer Sample Ref.	BH103		
Depth (m)	3.20		
Solid Waste Analysis			
Total Organic Carbon (%)	0.288	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	8.46
Conductivity (µS/cm)	227.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
11/10/2011 10:58:43



CERTIFICATE OF ANALYSIS

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.207	Moisture Content Ratio (%)	18.7
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.3
Particle Size <4mm	>95%		

Case			
SDG	110930-19		
Lab Sample Number(s)	4401784		
Sampled Date	29-Sep-2011		
Customer Sample Ref.	BH103		
Depth (m)	3.20		

Solid Waste Analysis

Total Organic Carbon (%)	0.288				
Loss on Ignition (%)	-				
Sum of BTEX (mg/kg)	<24.0				
Sum of 7 PCBs (mg/kg)	-				
Mineral Oil (mg/kg)	-				
PAH Sum of 17 (mg/kg)	-				
pH (pH Units)	-				
ANC to pH 6 (mol/kg)	-				
ANC to pH 4 (mol/kg)	-				

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	- - - -
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	- - - -
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
o-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	- - - -

Leach Test Information

Date Prepared	03-Oct-2011
pH (pH Units)	8.46
Conductivity (µS/cm)	227.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
11/10/2011 10:58:43



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/3

Client Reference

Mass Sample taken (kg) 0.190

Mass of dry sample (kg) 0.175

Particle Size <4mm >95%

Site Location

Shell Hitchin

Moisture Content Ratio (%) 8.89

Dry Matter Content Ratio (%) 91.8

Case

SDG 110930-19

Lab Sample Number(s) 4401785

Sampled Date 29-Sep-2011

Customer Sample Ref. WAC01

Depth (m)

Landfill Waste Acceptance
Criteria LimitsInert Waste
LandfillStable
Non-reactive
Hazardous
Waste in Non-
Hazardous
LandfillHazardous
Waste Landfill

Solid Waste Analysis

Total Organic Carbon (%) <0.2

Loss on Ignition (%) 1.23

Sum of BTEX (mg/kg) <24

Sum of 7 PCBs (mg/kg) <21

Mineral Oil (mg/kg) 115

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 8.92

ANC to pH 6 (mol/kg) 0.291

ANC to pH 4 (mol/kg) 2.38

3

5

6

-

-

10

6

-

-

1

-

-

500

-

-

100

-

-

-

<6 or >9

-

-

-

-

-

-

-

Eluate Analysis

C₂Concⁿ in 2:1
eluateC₈Concⁿ in 8:1
eluateA₂2:1 concⁿ
leachedA₂₋₁₀Cumulative
concⁿ
leachedLimit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	mg/l	mg/kg	
Arsenic	0.000754	0.00118	0.00151 0.0112
Barium	0.0136	0.00384	0.0271 0.051
Cadmium	<0.0001	<0.0001	<0.0002 <0.001
Chromium	0.00211	0.00121	0.0042 0.0132
Copper	0.00222	0.00109	0.00443 0.0123
Mercury Dissolved (CVAF)	<0.00001	0.0000116	<0.00002 0.000101
Molybdenum	0.00324	0.00476	0.00647 0.0456
Nickel	0.00152	0.000415	0.00304 0.00557
Lead	0.000146	0.000117	0.000292 0.00121
Antimony	<0.00016	0.0122	<0.00032 0.106
Selenium	<0.00039	0.00118	<0.000779 0.0103
Zinc	0.00228	0.000964	0.00456 0.0113
Chloride	6.6	<2	13.2 <20
Fluoride	0.518	<0.5	1.03 <5
Sulphate (soluble)	19	<2	38 24.4
Total Dissolved Solids	131	38.9	262 507
Total Monohydric Phenols (W)	<0.016	<0.016	<0.032 <0.16
Dissolved Organic Carbon	3.46	<3	6.92 <30

Leach Test Information

2:1

8:1

Date Prepared	03-Oct-2011	03-Oct-2011
pH (pH Units)	8.599	9.072
Conductivity (µS/cm)	168.60	48.50
Temperature (°C)	20.60	21.10
Volume Leachant (Litres)	0.334	1.400
Volume of Eluate VE1 (Litres)	0.225	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

11/10/2011 10:58:47

10:58:28 11/10/2011



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/3

Client Reference

Mass Sample taken (kg) 0.186

Mass of dry sample (kg) 0.175

Particle Size <4mm >95%

Site Location

Shell Hitchin

Moisture Content Ratio (%) 6.39

Dry Matter Content Ratio (%) 94

Case

SDG 110930-19

Lab Sample Number(s) 4401786

Sampled Date 29-Sep-2011

Customer Sample Ref. WAC02

Depth (m)

Landfill Waste Acceptance
Criteria LimitsInert Waste
LandfillStable
Non-reactive
Hazardous
Waste in Non-
Hazardous
LandfillHazardous
Waste Landfill

Solid Waste Analysis

Total Organic Carbon (%) <0.2

Loss on Ignition (%) 1.24

Sum of BTEX (mg/kg) <24

Sum of 7 PCBs (mg/kg) <21

Mineral Oil (mg/kg) 34.6

PAH Sum of 17 (mg/kg) <10

pH (pH Units) 8.46

ANC to pH 6 (mol/kg) 0.303

ANC to pH 4 (mol/kg) 2.95

3

5

6

-

-

10

6

-

-

1

-

-

500

-

-

100

-

-

-

<6 or >9

-

-

-

-

-

-

-

Eluate Analysis

C₂Concⁿ in 2:1
eluateC₈Concⁿ in 8:1
eluateA₂2:1 concⁿ
leachedA₂₋₁₀Cumulative
concⁿ
leachedLimit values for compliance leaching test
using BS EN 12457-3 at L/S 10 l/kg

	mg/l	mg/kg		
Arsenic	0.000631	0.000607	0.00126	0.0061
Barium	0.0112	0.00204	0.0224	0.032
Cadmium	<0.0001	<0.0001	<0.0002	<0.001
Chromium	0.00364	0.00101	0.00729	0.0134
Copper	0.00183	<0.00085	0.00366	<0.0085
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001
Molybdenum	0.00278	0.00136	0.00557	0.0154
Nickel	0.000984	0.000294	0.00197	0.00381
Lead	0.000198	0.00005	0.000396	0.000686
Antimony	0.000422	0.000224	0.000844	0.00249
Selenium	<0.00039	0.000868	<0.00078	0.00759
Zinc	0.00105	<0.00041	0.0021	<0.0041
Chloride	7.1	<2	14.2	<20
Fluoride	0.569	<0.5	1.14	<5
Sulphate (soluble)	25.7	<2	51.4	32.3
Total Dissolved Solids	151	44.3	302	577
Total Monohydric Phenols (W)	<0.016	<0.016	<0.032	<0.16
Dissolved Organic Carbon	<3	<3	<6	<30

Leach Test Information

2:1

8:1

Date Prepared	03-Oct-2011	03-Oct-2011
pH (pH Units)	8.575	7.566
Conductivity (µS/cm)	196.60	52.80
Temperature (°C)	20.40	21.40
Volume Leachant (Litres)	0.339	1.400
Volume of Eluate VE1 (Litres)	0.220	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

11/10/2011 10:58:47

10:58:28 11/10/2011



SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

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		
PM114		Leaching Procedure for CEN Two Stage Batch Test 2:1/8:1 Cumulative		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition		
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
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		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM182	CEN/TC 292 - WI 292046-characterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM213	In-house Method	Rapid Determination of PAHs by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Test Completion Dates

Lab Sample No(s)	4401784	4401780	4401779	4401783	4401777	4401785	4401786
Customer Sample Ref.	BH103	BH105	BH106	DUP02	UP101	WAC01	WAC02
AGS Ref.							
Depth	3.20	4.10	0.50	4.10	0.60		
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
ANC at pH4 and ANC at pH 6						05-Oct-2011	06-Oct-2011
Anions by Kone (w)						07-Oct-2011	07-Oct-2011
CEN 2:1 Leachate (1 Stage)	03-Oct-2011	03-Oct-2011	03-Oct-2011				
CEN 2:1 Leachate (2 Stage)						03-Oct-2011	03-Oct-2011
CEN 2:1 Readings						04-Oct-2011	04-Oct-2011
CEN 8:1 Leachate (2 Stage)						04-Oct-2011	04-Oct-2011
CEN 8:1 Readings						07-Oct-2011	07-Oct-2011
CEN Readings	05-Oct-2011	05-Oct-2011	05-Oct-2011				
Dissolved Metals by ICP-MS						06-Oct-2011	06-Oct-2011
Dissolved Organic/Inorganic Carbon						07-Oct-2011	06-Oct-2011
EPH CWG (Aliphatic) Aqueous GC (W)	06-Oct-2011	06-Oct-2011	06-Oct-2011				
EPH CWG (Aliphatic) GC (S)	05-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	05-Oct-2011		
EPH CWG (Aromatic) Aqueous GC (W)	06-Oct-2011	06-Oct-2011	06-Oct-2011				
EPH CWG (Aromatic) GC (S)	05-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	05-Oct-2011		
Fluoride						06-Oct-2011	06-Oct-2011
GRO by GC-FID (S)	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	11-Oct-2011	11-Oct-2011
GRO by GC-FID (W)	06-Oct-2011	06-Oct-2011	06-Oct-2011				
Hexavalent Chromium (s)			06-Oct-2011				
Loss on Ignition in soils						06-Oct-2011	07-Oct-2011
Mercury Dissolved						06-Oct-2011	06-Oct-2011
Metals by iCap-OES (Soil)			05-Oct-2011				
Mineral Oil						06-Oct-2011	07-Oct-2011
Oxygenates (S)	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011		
Oxygenates (W)	05-Oct-2011	05-Oct-2011	05-Oct-2011				
PAH by GCMS			05-Oct-2011				
PAH Value of soil						05-Oct-2011	05-Oct-2011
PCBs by GCMS						05-Oct-2011	07-Oct-2011
pH						03-Oct-2011	04-Oct-2011
Phenols by HPLC (W)						07-Oct-2011	07-Oct-2011
Sample description	03-Oct-2011	03-Oct-2011	03-Oct-2011	03-Oct-2011	03-Oct-2011	03-Oct-2011	03-Oct-2011
Total Dissolved Solids						06-Oct-2011	06-Oct-2011
Total Organic Carbon	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	07-Oct-2011
TPH CWG (W)	06-Oct-2011	06-Oct-2011	06-Oct-2011				
VOC MS (S)	06-Oct-2011	06-Oct-2011	06-Oct-2011	06-Oct-2011	10-Oct-2011		
VOC MS (W)	05-Oct-2011	05-Oct-2011	05-Oct-2011				



SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

ASSOCIATED AQC DATA

ANC at pH4 and ANC at pH 6

Component	Method Code	QC 48	QC 44
ANC pH_4 dry soil	TM182	104.52 95.27 : 105.63	100.28 95.27 : 105.63
ANC pH_6 dry soil	TM182	103.91 77.89 : 124.50	98.7 77.89 : 124.50

Anions by Kone (w)

Component	Method Code	QC 42	QC 42	QC 47
Chloride	TM184	101.0 97.70 : 105.47	102.0 97.70 : 105.47	102.0 97.70 : 105.47
Nitrite as NO2	TM184	100.0 92.92 : 105.47	92.92 : 105.47	103.0 92.92 : 105.47
Phosphate (Ortho as PO4)	TM184	102.4 95.74 : 105.80	95.74 : 105.80	95.74 : 105.80
Sulphate (soluble)	TM184	103.2 95.09 : 105.03	102.0 95.09 : 105.03	101.2 95.09 : 105.03
TON as NO3	TM184	103.0 93.27 : 107.89	93.27 : 107.89	101.0 93.27 : 107.89

Dissolved Metals by ICP-MS

Component	Method Code	QC 48	QC 45	QC 46	QC 45
Aluminium	TM152	105.33 85.92 : 113.93	109.2 89.70 : 116.91	103.87 89.70 : 116.91	109.33 85.92 : 113.93
Antimony	TM152	95.2 86.76 : 115.12	98.93 88.52 : 115.10	95.07 88.52 : 115.10	97.73 86.76 : 115.12
Arsenic	TM152	102.8 87.20 : 114.59	107.07 88.01 : 113.65	100.93 88.01 : 113.65	105.6 87.20 : 114.59
Barium	TM152	102.8 89.08 : 113.66	107.2 91.77 : 114.85	103.47 91.77 : 114.85	106.67 89.08 : 113.66
Beryllium	TM152	106.27 87.93 : 123.39	114.53 87.52 : 117.84	101.87 87.52 : 117.84	108.67 87.93 : 123.39
Bismuth	TM152	93.07 89.07 : 112.23	96.13 90.09 : 110.23	95.6 90.09 : 110.23	87.87 80.92 : 100.46
Boron	TM152	107.33 77.44 : 118.69	123.47 77.85 : 119.29	105.2 77.85 : 119.29	107.87 77.44 : 118.69
Cadmium	TM152	106.67 90.19 : 115.33	102.0 80.87 : 123.01	104.53 80.87 : 123.01	106.27 90.19 : 115.33
Chromium	TM152	104.27 88.99 : 113.23	113.6 90.69 : 114.98	104.67 90.69 : 114.98	107.6 88.99 : 113.23
Cobalt	TM152	101.73 89.55 : 116.62	114.8 89.85 : 118.62	104.13 89.85 : 118.62	108.0 89.55 : 116.62
Copper	TM152	106.8 86.08 : 116.83	112.0 88.90 : 115.48	103.6 88.90 : 115.48	104.93 86.08 : 116.83
Lead	TM152	102.8 90.44 : 112.64	105.6 92.73 : 112.77	106.8 92.73 : 112.77	106.4 90.44 : 112.64
Lithium	TM152	107.07 79.54 : 117.89	115.33 85.81 : 117.65	101.33 85.81 : 117.65	109.87 79.54 : 117.89
Manganese	TM152	104.0 90.95 : 112.73	110.53 91.72 : 115.43	103.87 91.72 : 115.43	105.87 90.95 : 112.73



SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Dissolved Metals by ICP-MS

		QC 48	QC 45	QC 46	QC 45
Molybdenum	TM152	98.53 90.05 : 112.07	106.93 88.15 : 117.50	101.33 88.15 : 117.50	107.87 90.05 : 112.07
Nickel	TM152	103.73 85.63 : 115.56	110.93 87.49 : 114.30	104.93 87.49 : 114.30	105.6 85.63 : 115.56
Phosphorus	TM152	102.67 87.35 : 114.28	119.33 88.00 : 118.02	104.13 88.00 : 118.02	110.93 87.35 : 114.28
Selenium	TM152	103.2 88.46 : 114.56	109.2 87.24 : 114.84	103.87 87.24 : 114.84	106.4 88.46 : 114.56
Silver	TM152	99.73 86.36 : 109.10	101.6 86.39 : 109.81	99.33 86.39 : 109.81	106.0 81.37 : 112.35
Strontium	TM152	104.13 92.99 : 112.37	106.8 91.27 : 118.05	106.53 91.27 : 118.05	111.2 92.99 : 112.37
Tellurium	TM152	99.6 87.83 : 120.02	104.13 84.92 : 124.22	92.53 84.92 : 124.22	104.53 87.83 : 120.02
Thallium	TM152	102.4 88.48 : 113.55	105.6 92.67 : 112.05	103.33 92.67 : 112.05	105.87 88.48 : 113.55
Tin	TM152	100.8 87.37 : 117.58	103.87 90.73 : 113.66	102.0 90.73 : 113.66	104.67 87.37 : 117.58
Titanium	TM152	101.47 91.36 : 113.66	109.47 90.67 : 115.98	102.27 90.67 : 115.98	106.8 91.36 : 113.66
Uranium	TM152	103.73 90.44 : 111.35	106.13 90.75 : 112.74	102.4 90.75 : 112.74	103.6 90.44 : 111.35
Vanadium	TM152	102.27 89.52 : 113.06	114.27 88.95 : 119.67	103.6 88.95 : 119.67	108.4 89.52 : 113.06
Zinc	TM152	104.4 87.93 : 117.33	106.93 85.94 : 115.27	104.67 85.94 : 115.27	105.87 87.93 : 117.33

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 40	QC 41	QC 47
Dissolved Inorganic Carbon	TM090	107.17 85.33 : 110.04	94.17 85.17 : 108.79	96.5 86.42 : 108.17
Dissolved Organic Carbon	TM090	111.0 93.30 : 114.73	103.67 90.80 : 116.75	101.5 90.00 : 113.28

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 45	QC 49	QC 43
Total Aliphatics >C12-C35	TM173	74.58 69.61 : 98.11	74.58 67.09 : 98.92	89.17 64.28 : 103.38

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 45	QC 49	QC 43
Total Aromatics >EC12-EC35	TM173	82.67 72.46 : 119.87	82.67 63.44 : 117.90	104.67 66.16 : 121.82



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Fluoride

Component	Method Code	QC 47	QC 42	QC 40
Fluoride	TM104	98.0 81.33 : 118.67	99.33 93.42 : 106.23	98.67 93.42 : 106.23

GRO by GC-FID (S)

Component	Method Code	QC 48	QC 41
Benzene by GC (Moisture Corrected)	TM089	101.5 75.59 : 114.65	96.5 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	100.5 74.94 : 119.83	99.0 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	99.75 73.43 : 122.35	99.0 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	102.0 79.00 : 121.00	94.0 79.00 : 121.00
o Xylene by GC (Moisture Corrected)	TM089	101.0 73.41 : 115.31	99.0 79.00 : 121.00
QC	TM089	90.84 67.57 : 115.17	111.12 81.49 : 139.05
Toluene by GC (Moisture Corrected)	TM089	101.0 78.11 : 116.39	97.5 79.00 : 121.00

GRO by GC-FID (W)

Component	Method Code	QC 49
Benzene by GC	TM245	101.5 70.73 : 117.15
Ethylbenzene by GC	TM245	101.5 67.94 : 118.86
m & p Xylene by GC	TM245	101.25 70.91 : 116.72
MTBE GC-FID	TM245	101.0 77.43 : 113.45
o Xylene by GC	TM245	101.5 70.52 : 120.41
QC	TM245	91.21 66.61 : 111.92
Toluene by GC	TM245	102.0 74.45 : 115.83

Hexavalent Chromium (s)

Component	Method Code	QC 41
Hexavalent Chromium	TM151	102.0 92.03 : 118.13

Loss on Ignition in soils



CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Loss on Ignition in soils

Component	Method Code	QC 42	QC 44
Loss on Ignition	TM018	101.0 90.61 : 106.27	95.2 90.61 : 106.27

Mercury Dissolved

Component	Method Code	QC 49	QC 48	QC 42	QC 40
Mercury Dissolved (CVAf)	TM183	108.0 85.87 : 123.88	100.0 85.87 : 123.88	104.0 85.87 : 123.88	103.0 85.87 : 123.88

Metals by iCap-OES (Soil)

Component	Method Code	QC 40
Aluminium	TM181	109.25 40.58 : 159.72
Antimony	TM181	113.86 106.70 : 132.42
Arsenic	TM181	108.86 81.30 : 128.50
Barium	TM181	101.23 43.94 : 149.86
Beryllium	TM181	107.63 100.48 : 119.52
Boron	TM181	118.47 89.77 : 153.99
Cadmium	TM181	107.77 102.16 : 117.84
Chromium	TM181	109.63 81.59 : 128.96
Cobalt	TM181	106.77 86.57 : 133.43
Copper	TM181	103.0 77.11 : 121.88
Iron	TM181	105.03 47.39 : 152.18
Lead	TM181	107.72 83.56 : 132.07
Manganese	TM181	105.59 78.31 : 123.77
Mercury	TM181	107.58 97.76 : 122.20
Molybdenum	TM181	113.5 93.47 : 145.63
Nickel	TM181	111.17 84.59 : 133.71
Phosphorus	TM181	114.75 46.20 : 149.96



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Order Number:
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Superseded Report:

Metals by iCap-OES (Soil)

		QC 40
Selenium	TM181	108.49 99.21 : 121.10
Strontium	TM181	113.29 49.69 : 164.57
Thallium	TM181	117.31 70.82 : 159.96
Tin	TM181	108.46 93.63 : 124.72
Titanium	TM181	103.9 47.70 : 146.38
Vanadium	TM181	105.32 48.55 : 154.47
Zinc	TM181	107.08 78.82 : 124.59

Mineral Oil

Component	Method Code	QC 44	QC 41
EPH (DRO) (C10-C40)	TM061	94.38 70.89 : 114.41	93.75 70.89 : 114.41
Mineral Oil	TM061	84.33 66.05 : 100.97	79.67 66.05 : 100.97

Oxygenates (S)

Component	Method Code	QC 42
Benzene raw	TM288	106.25 76.41 : 116.38
Diisopropyl ether raw	TM288	98.75 78.68 : 128.65
Ethanol raw	TM288	55.1 29.57 : 198.54
Ethylbenzene raw	TM288	112.75 75.93 : 132.30
o-Xylene raw	TM288	106.25 67.81 : 123.00
p/m-Xylene raw	TM288	110.75 76.41 : 125.53
tert Butanol raw	TM288	108.5 75.64 : 168.91
tert-amyl methyl ether raw	TM288	102.0 64.00 : 136.00
tert-butyl ethyl ether raw	TM288	101.5 64.00 : 136.00
tert-butyl methyl ether raw	TM288	104.25 83.50 : 129.91
Toluene raw	TM288	96.0 71.50 : 107.70

Oxygenates (W)



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Report Number: 154156
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Oxygenates (W)

Component	Method Code	QC 46
Benzene	TM289	106.5 64.00 : 136.00
Diisopropyl ether	TM289	90.0 64.00 : 136.00
Ethanol	TM289	95.4 60.84 : 141.13
Ethylbenzene	TM289	105.0 64.00 : 136.00
o-Xylene	TM289	107.5 64.00 : 136.00
p/m-Xylene	TM289	106.75 71.56 : 125.03
tert Butanol	TM289	90.0 70.51 : 143.48
tert-amyl methyl ether	TM289	92.0 61.37 : 145.66
tert-butyl ethyl ether	TM289	91.0 71.10 : 132.36
tert-butyl methyl ether	TM289	93.0 72.87 : 135.34
Toluene	TM289	103.5 64.00 : 136.00

PAH by GCMS

Component	Method Code	QC 43
Acenaphthene	TM218	99.5 83.39 : 110.89
Acenaphthylene	TM218	90.0 67.85 : 104.34
Anthracene	TM218	97.0 80.25 : 106.26
Benz(a)anthracene	TM218	100.0 81.16 : 117.23
Benzo(a)pyrene	TM218	104.5 75.48 : 121.80
Benzo(b)fluoranthene	TM218	105.0 78.12 : 121.99
Benzo(ghi)perylene	TM218	97.5 85.86 : 114.85
Benzo(k)fluoranthene	TM218	99.5 77.71 : 116.48
Chrysene	TM218	96.0 87.63 : 114.45
Dibenzo(ah)anthracene	TM218	100.5 86.91 : 115.12
Fluoranthene	TM218	101.5 74.24 : 114.09
Fluorene	TM218	98.0 73.88 : 111.54
Indeno(123cd)pyrene	TM218	100.5 86.46 : 116.18
Naphthalene	TM218	97.0 76.04 : 107.88



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Report Number: 154156
Superseded Report:

PAH by GCMS

		QC 43
Phenanthrene	TM218	100.5 74.34 : 113.46
Pyrene	TM218	101.0 74.69 : 113.49

PAH Value of soil

Component	Method Code	QC 46
PAH Total 17 (inc Coronene)	TM213	107.06 94.09 : 122.28

PCBs by GCMS

Component	Method Code	QC 44	QC 49
PCB congener 101	TM168	100.0 80.14 : 123.93	113.0 67.81 : 119.19
PCB congener 114	TM168	98.2 74.21 : 124.55	117.0 66.93 : 124.39
PCB congener 156	TM168	99.9 72.16 : 130.30	113.0 67.42 : 127.28
PCB congener 180	TM168	102.0 75.63 : 127.70	115.0 68.17 : 126.68
PCB congener 28	TM168	98.5 79.83 : 121.33	114.0 74.46 : 120.80

pH

Component	Method Code	QC 47	QC 43
pH	TM133	98.93 96.55 : 102.99	99.73 96.55 : 102.99

Phenols by HPLC (W)

Component	Method Code	QC 45	QC 49	QC 42	QC 40
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	99.0 93.62 : 109.26	100.0 93.62 : 109.26	103.0 93.62 : 109.26	105.0 100.10 : 106.85
2-Isopropyl Phenol by HPLC (W)	TM259	105.0 95.28 : 108.84	103.0 95.28 : 108.84	103.0 95.28 : 108.84	102.0 95.72 : 107.93
Cresols by HPLC (W)	TM259	97.67 93.83 : 110.08	94.67 93.83 : 110.08	97.33 92.31 : 106.08	100.0 91.70 : 102.05
Napthol by HPLC (W)	TM259	90.0 85.04 : 105.90	93.0 85.04 : 105.90	98.0 85.04 : 105.90	94.0 90.36 : 106.87
Phenol by HPLC (W)	TM259	97.0 93.02 : 105.72	99.0 93.02 : 105.72	99.0 93.02 : 105.72	104.0 92.40 : 108.30
Xylenols by HPLC (W)	TM259	97.0 94.65 : 107.41	96.17 94.65 : 107.41	97.33 94.65 : 107.41	104.33 97.88 : 108.21

Total Dissolved Solids



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Total Dissolved Solids

Component	Method Code	QC 41	QC 43	QC 48
Total Dissolved Solids	TM123	99.3 97.22 : 102.24	101.0 97.22 : 102.24	100.0 97.22 : 102.24

Total Organic Carbon

Component	Method Code	QC 47	QC 45	QC 43
Total Organic Carbon	TM132	120.96 112.23 : 144.85	122.75 112.23 : 144.85	128.14 112.23 : 144.85

VOC MS (S)

Component	Method Code	QC 47
1,1,1,2-tetrachloroethane	TM116	93.6 80.75 : 134.87
1,1,1-Trichloroethane	TM116	107.4 84.19 : 134.57
1,1,2-Trichloroethane	TM116	105.4 91.60 : 151.72
1,1-Dichloroethane	TM116	87.8 85.08 : 141.06
1,2-Dichloroethane	TM116	118.6 90.28 : 129.77
1,4-Dichlorobenzene	TM116	101.8 80.34 : 130.56
2-Chlorotoluene	TM116	126.2 88.26 : 165.36
4-Chlorotoluene	TM116	119.8 84.89 : 151.49
Benzene	TM116	99.0 85.95 : 133.16
Carbon Disulphide	TM116	79.4 62.46 : 128.58
Carbontetrachloride	TM116	116.8 76.98 : 135.83
Chlorobenzene	TM116	95.4 78.76 : 126.20
Chloroform	TM116	102.2 89.60 : 133.62
Chloromethane	TM116	179.8 54.23 : 194.35
Cis-1,2-Dichloroethene	TM116	91.0 81.21 : 131.85
Dibromomethane	TM116	103.8 83.63 : 143.96
Dichloromethane	TM116	90.0 85.94 : 142.25



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Order Number:
Report Number: 154156
Superseded Report:

VOC MS (S)

		QC 47
Ethylbenzene	TM116	98.2 77.81 : 125.24
Hexachlorobutadiene	TM116	124.2 36.10 : 224.99
Isopropylbenzene	TM116	89.4 58.17 : 114.25
Naphthalene	TM116	98.4 82.96 : 141.95
o-Xylene	TM116	90.8 70.79 : 120.57
p/m-Xylene	TM116	96.0 75.73 : 125.60
Sec-Butylbenzene	TM116	100.6 48.48 : 143.01
Tetrachloroethene	TM116	110.4 85.00 : 144.27
Toluene	TM116	99.8 77.44 : 123.88
Trichloroethene	TM116	107.0 83.82 : 129.72
Trichlorofluoromethane	TM116	117.0 84.99 : 140.63
Vinyl Chloride	TM116	79.6 55.95 : 182.21

VOC MS (W)

Component	Method Code	QC 41
1,1,1,2-Tetrachloroethane	TM208	122.0 85.60 : 129.18
1,1,1-Trichloroethane	TM208	126.0 67.74 : 143.94
1,1-Dichloroethane	TM208	131.5 85.12 : 135.36
1,2-Dichloroethane	TM208	120.5 83.09 : 130.94
2-Chlorotoluene	TM208	125.5 85.95 : 128.57
4-Chlorotoluene	TM208	123.0 86.75 : 129.37
Benzene	TM208	127.5 71.02 : 150.91
Bromomethane	TM208	136.0 75.82 : 152.83
Carbontetrachloride	TM208	127.0 88.44 : 132.63
Chlorobenzene	TM208	123.0 87.46 : 128.69
Chloroform	TM208	126.5 87.93 : 130.26
Chloromethane	TM208	154.5 45.21 : 180.21
Cis-1,2-Dichloroethene	TM208	122.0 86.77 : 129.76



SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

VOC MS (W)

		QC 41
Dichloromethane	TM208	119.0 86.39 : 132.42
Ethylbenzene	TM208	122.0 79.89 : 124.87
Hexachlorobutadiene	TM208	122.0 65.01 : 146.82
o-Xylene	TM208	120.5 82.79 : 121.93
p/m-Xylene	TM208	121.25 80.96 : 122.17
Tert-butyl methyl ether	TM208	112.0 55.80 : 123.76
Tetrachloroethene	TM208	125.5 84.78 : 129.31
Toluene	TM208	122.5 84.35 : 124.90
Trichloroethene	TM208	125.5 85.11 : 127.08
Vinyl Chloride	TM208	125.5 50.00 : 170.88

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: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

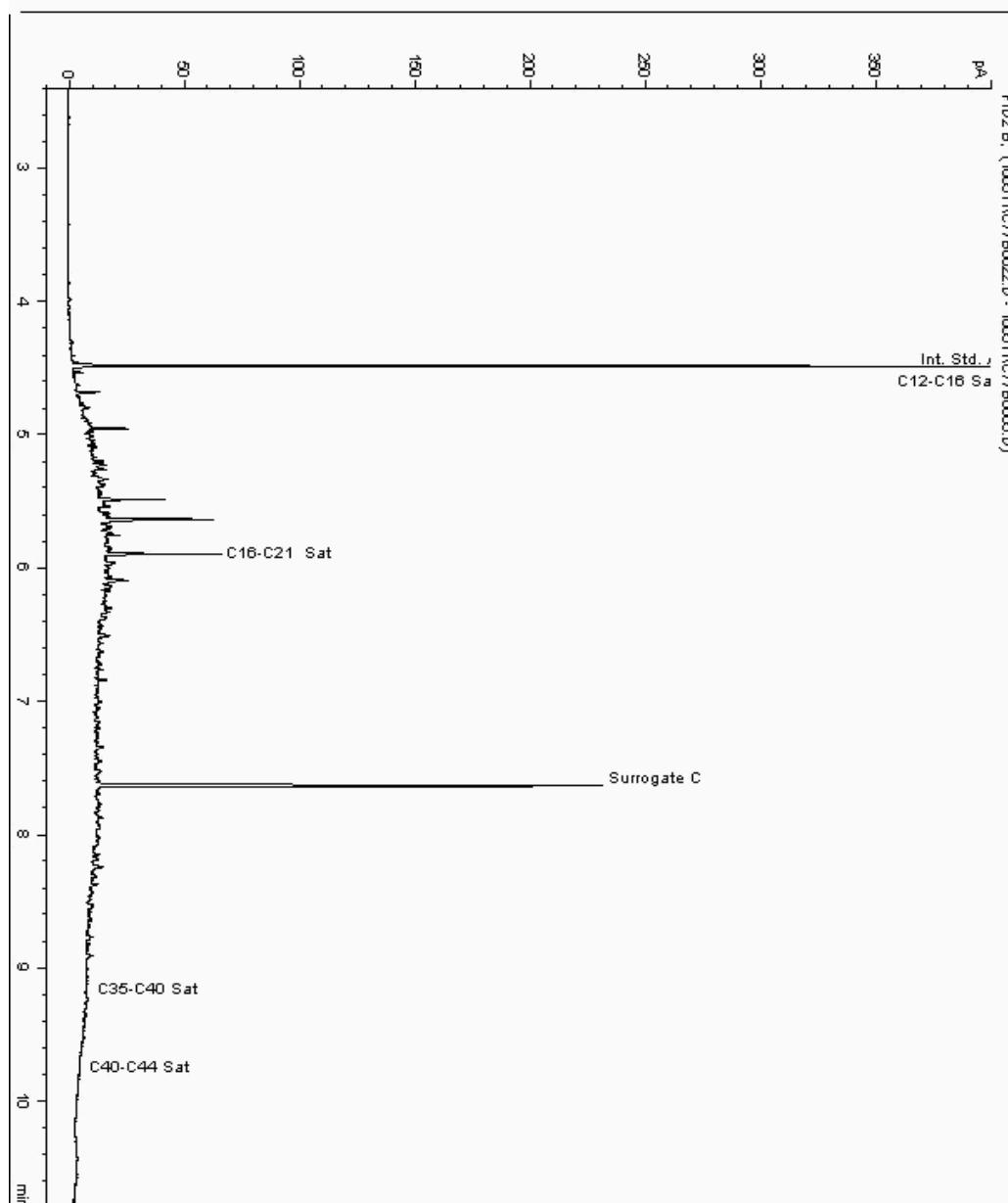
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4430423
Sample ID : BH103

Depth : 3.20

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

Sample Identity: 4377978-4430423
Date Acquired : 05/10/11 15:32:27 PM
Units : ppb
Dilution:





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

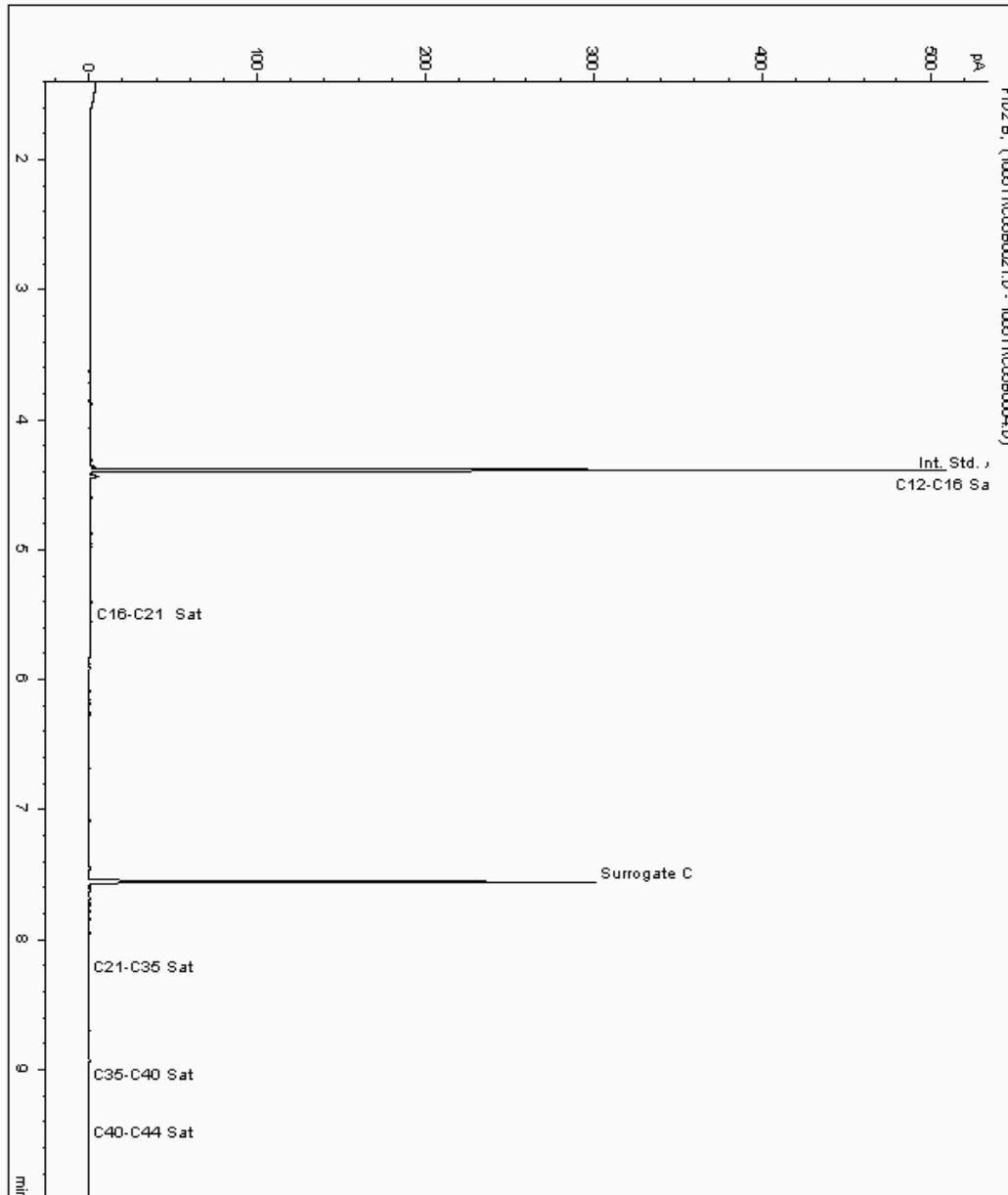
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4433610
Sample ID : DUP02

Depth : 4.10

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

Sample Identity: 4377969-4433610
Date Acquired : 05/10/11 20:52:15 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.977





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

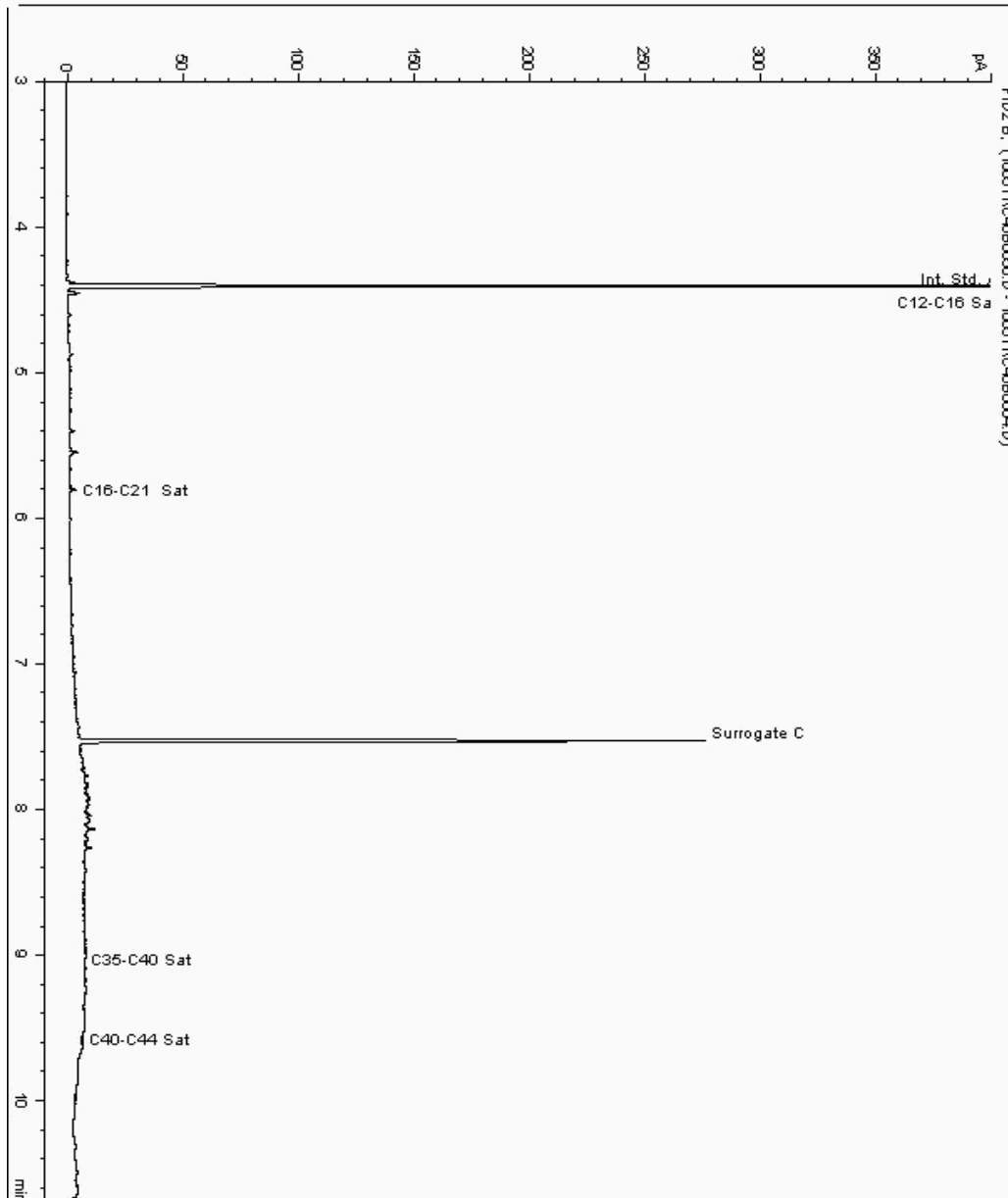
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4433632
Sample ID : UP101

Depth : 0.60

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

Sample Identity: 4377933-4433632
Date Acquired : 05/10/11 21:00:43 PM
Units : ppb
Dilution:





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

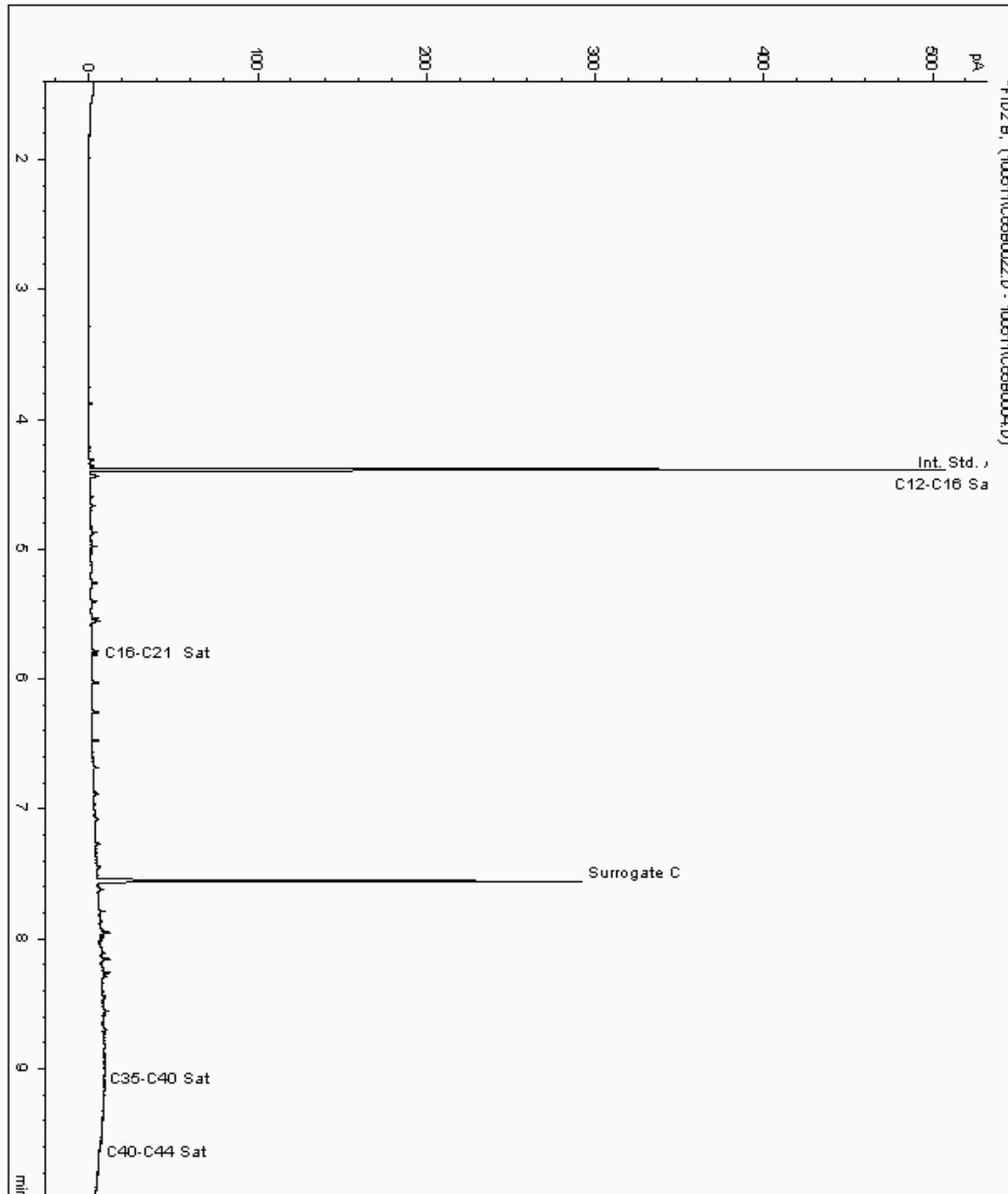
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4434043
Sample ID : BH106

Depth : 0.50

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

Sample Identity: 4377945-4434043
Date Acquired : 05/10/11 21:13:09 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.982





SDG: 110930-19
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

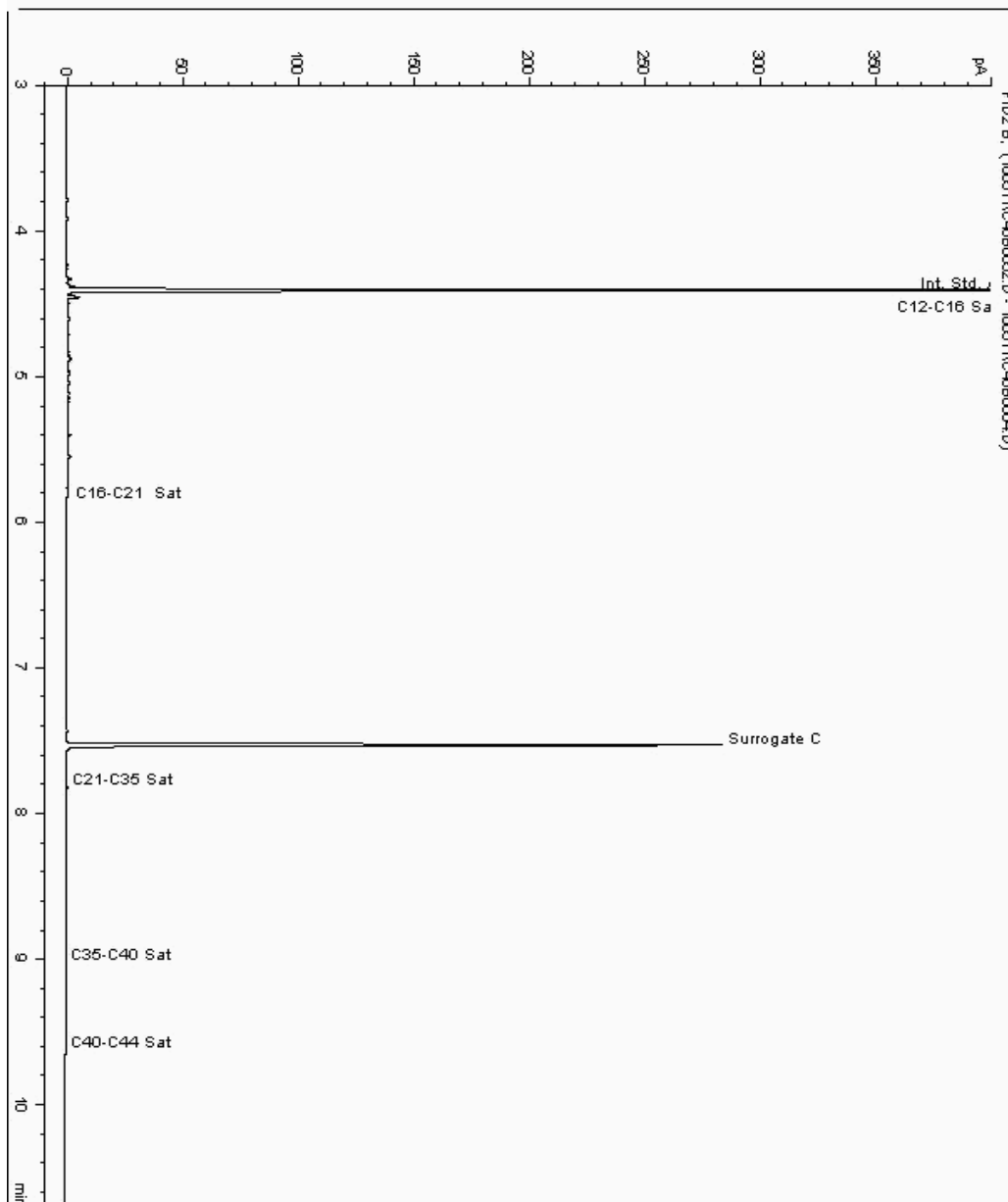
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4434104
Sample ID : BH105

Depth : 4.10

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

Sample Identity: 4377953-4434104
Date Acquired : 05/10/11 21:31:31 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

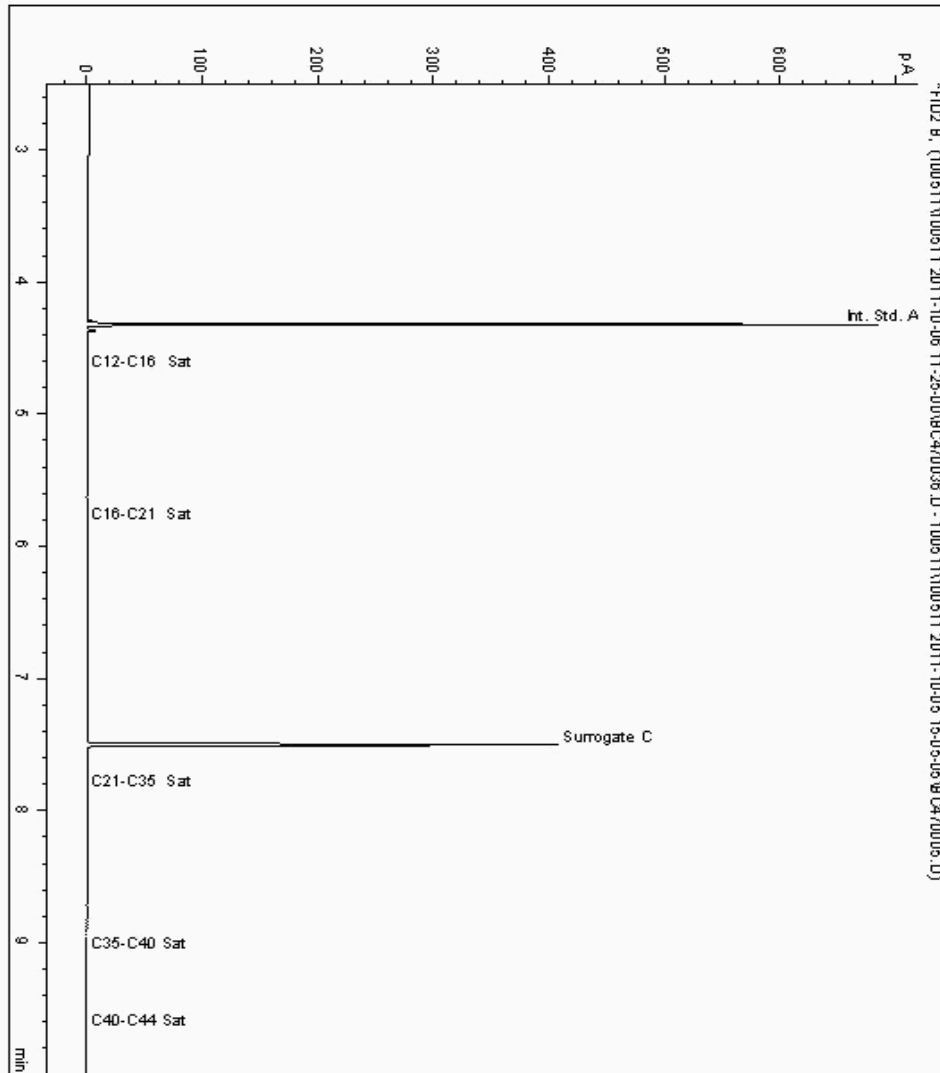
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4430191
Sample ID : BH103

Depth : 3.20

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

Sample Identity: 4377996-4430191
Date Acquired : 06/10/11 12:13:45
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

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Location: Shell Hitchin
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

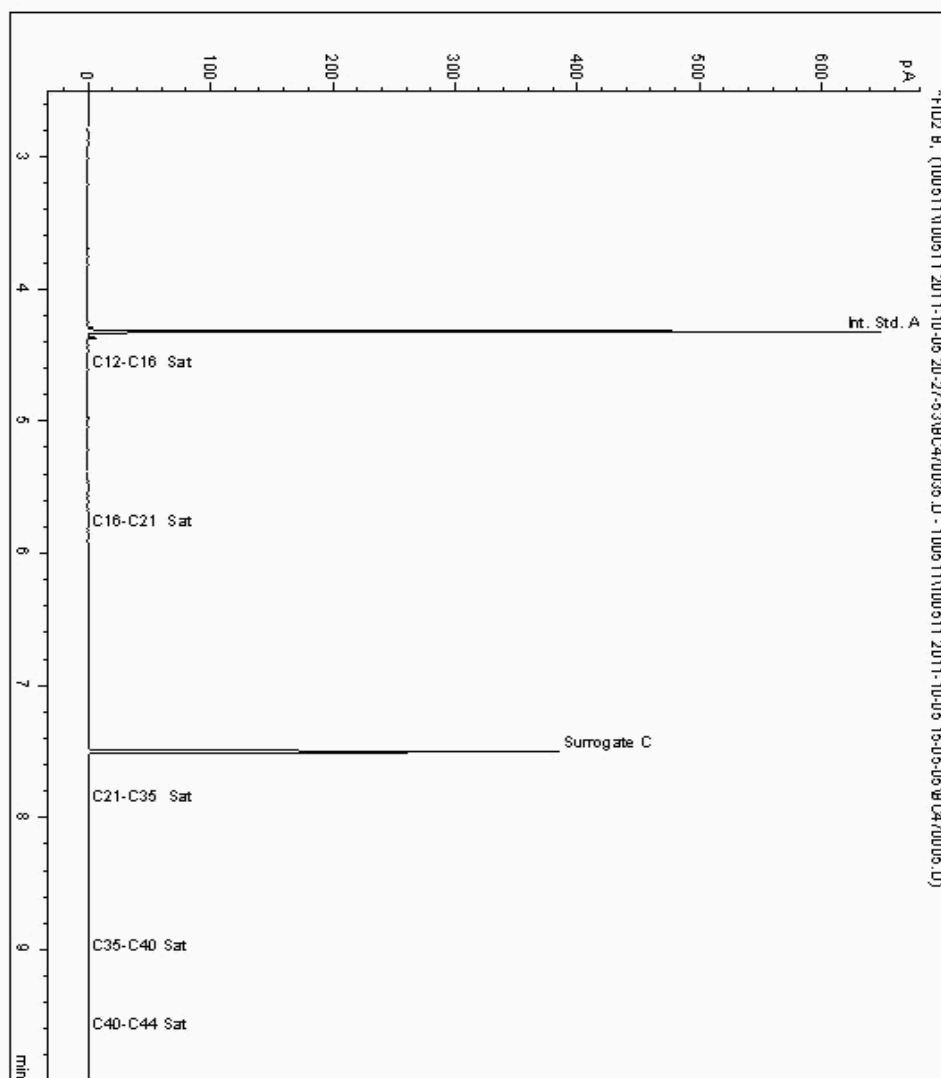
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4430200
Sample ID : BH106

Depth : 0.50

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

Sample Identity: 4378026-4430200
Date Acquired : 06/10/11 01:56:33
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

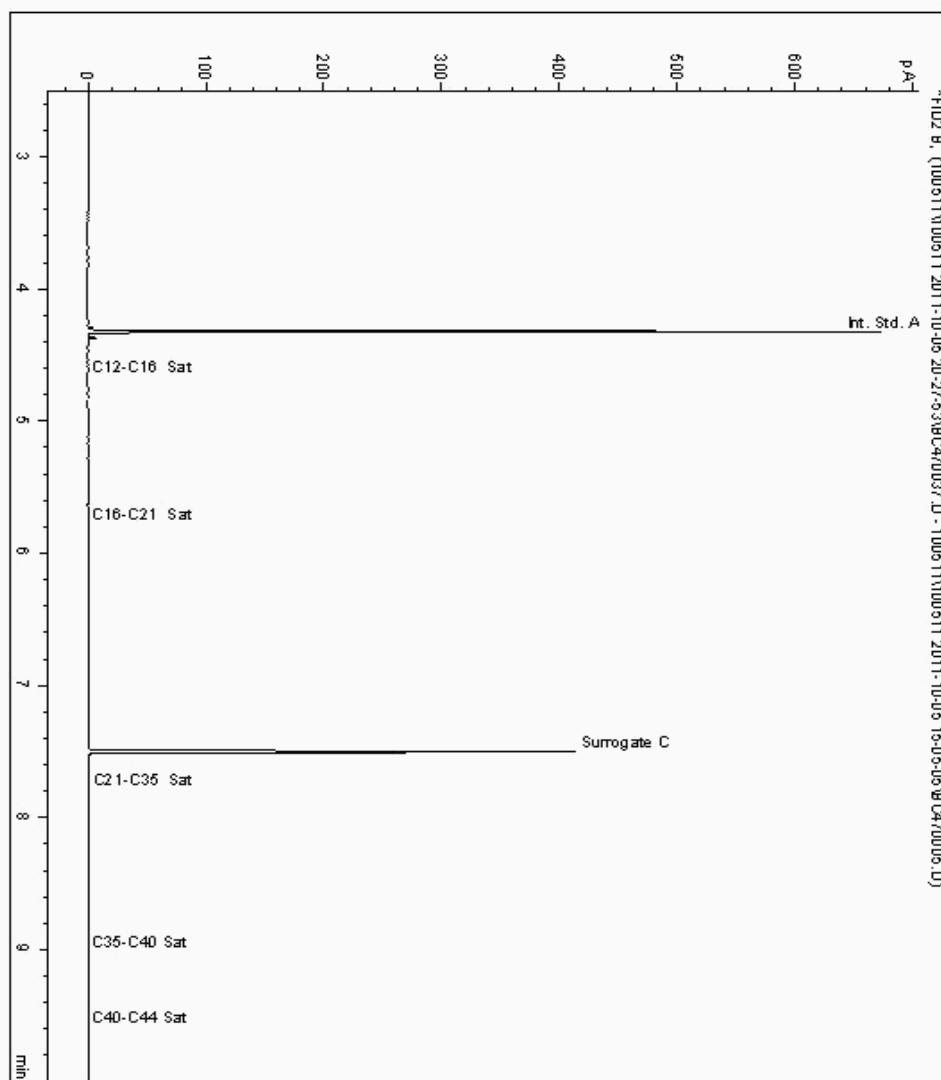
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4430218
Sample ID : BH105

Depth : 4.10

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

Sample Identity: 4378012-4430218
Date Acquired : 06/10/11 02:35:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 110930-19
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Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

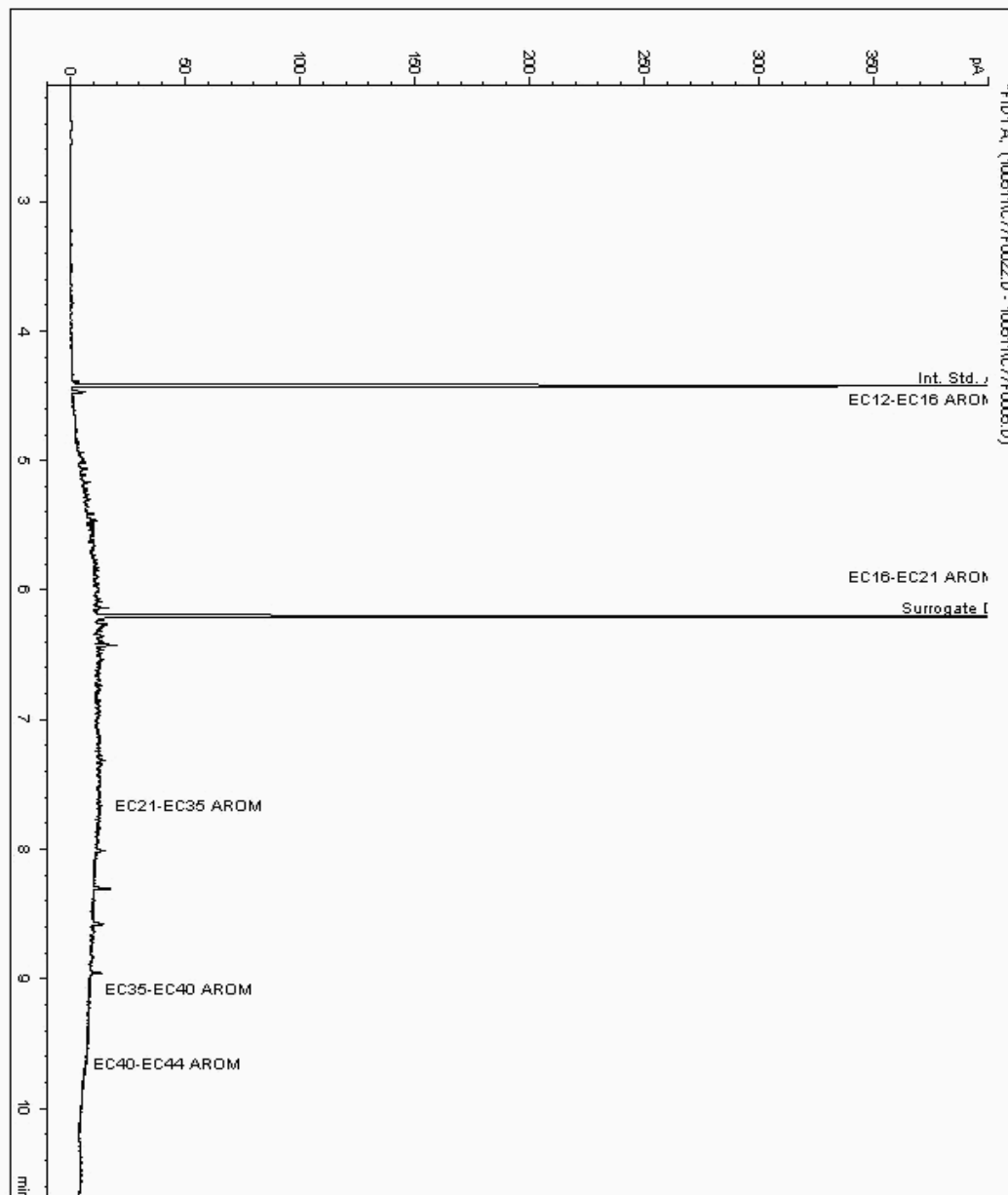
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4430423
Sample ID : BH103

Depth : 3.20

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

Sample Identity: 4377979-4430423
Date Acquired : 05/10/11 15:32:27 PM
Units : ppb
Dilution:



SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
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Order Number:
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Superseded Report:

Chromatogram

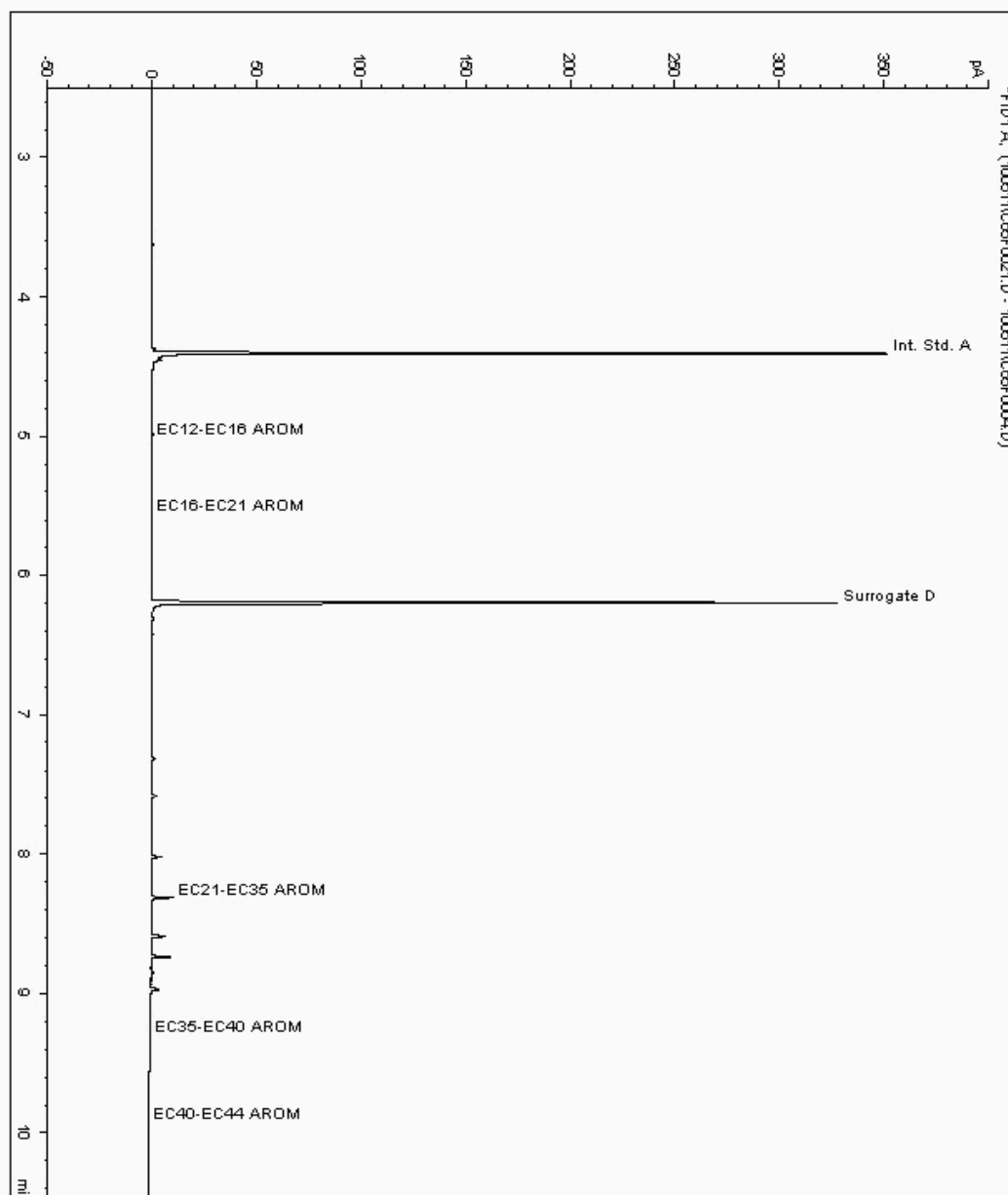
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4433610
Sample ID : DUP02

Depth : 4.10

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

Sample Identity: 4377970-4433610
Date Acquired : 05/10/11 20:52:15 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.977





SDG: 110930-19
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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

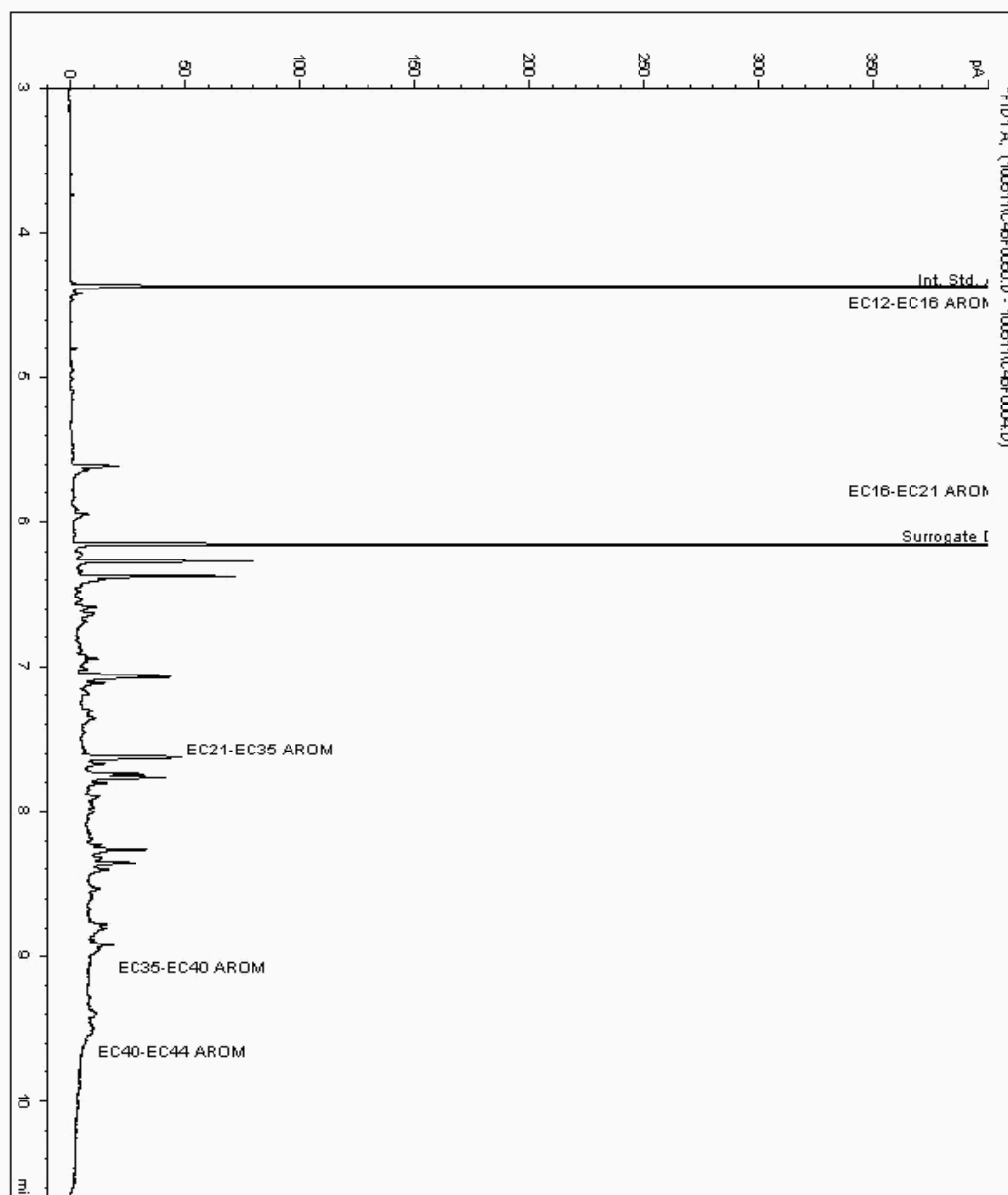
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4433632
Sample ID : UP101

Depth : 0.60

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

Sample Identity: 4377934-4433632
Date Acquired : 05/10/11 21:00:43 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

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Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

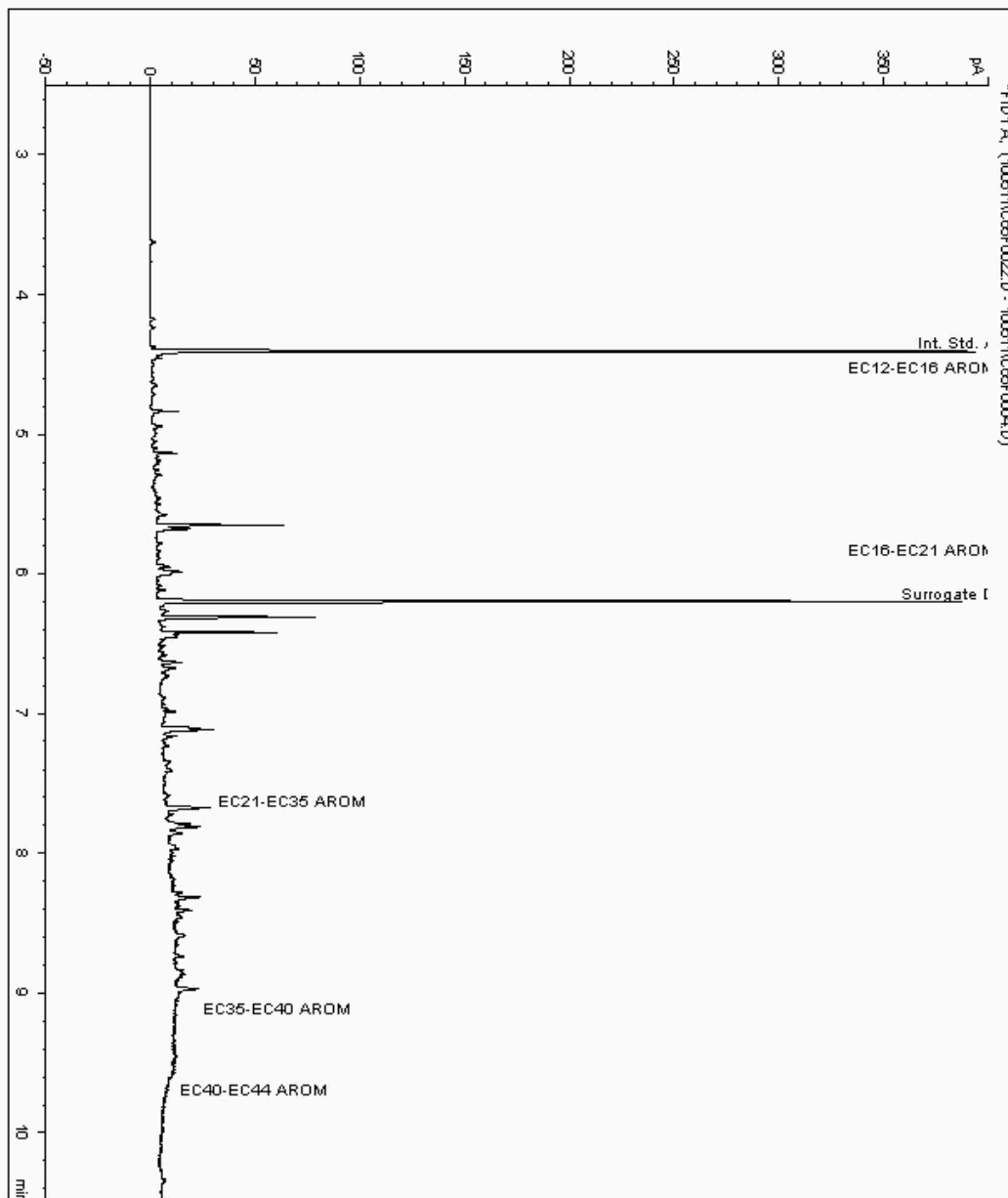
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4434043
Sample ID : BH106

Depth : 0.50

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

Sample Identity: 4377946-4434043
Date Acquired : 05/10/11 21:13:09 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.982





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

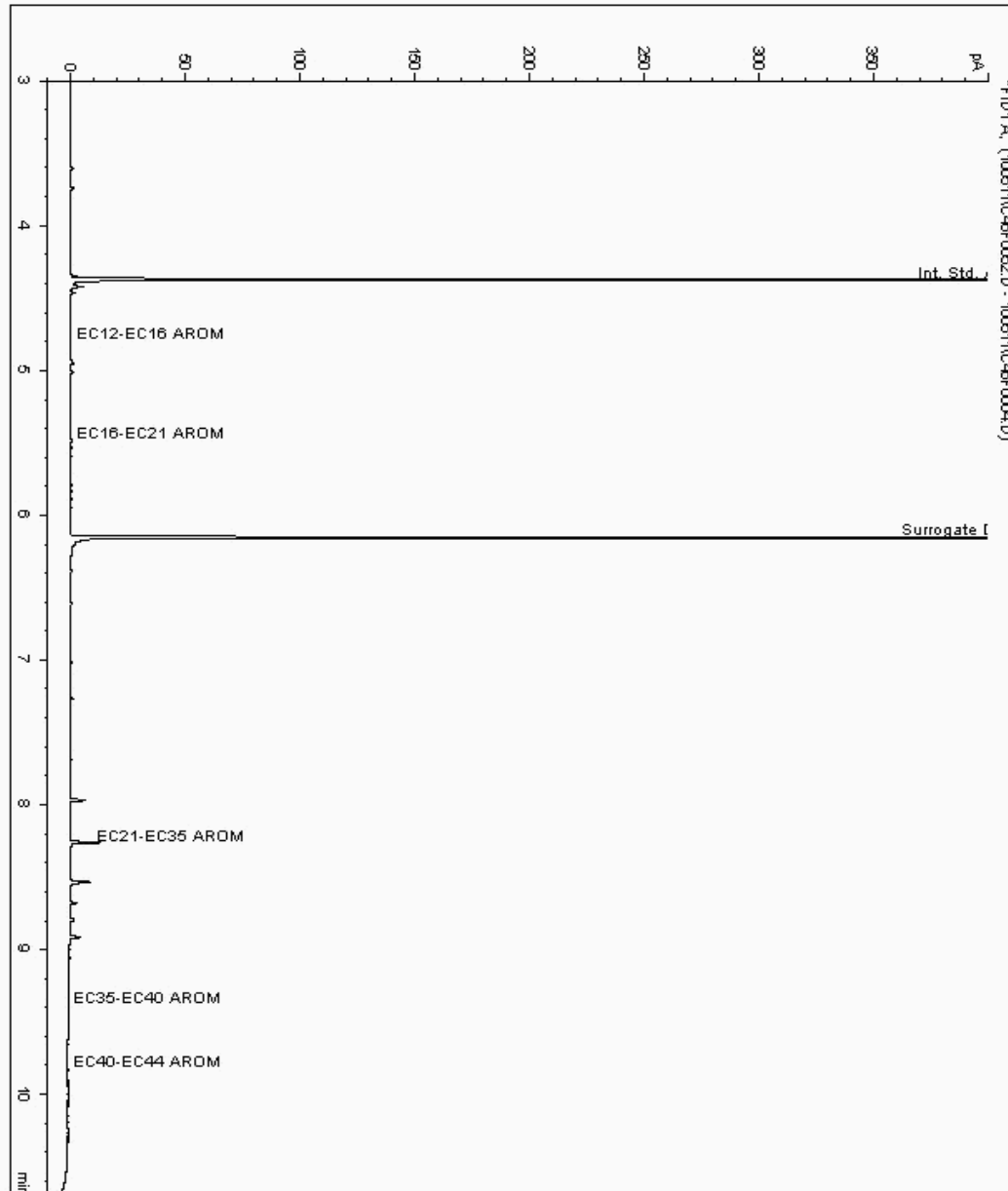
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4434104
Sample ID : BH105

Depth : 4.10

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

Sample Identity: 4377954-4434104
Date Acquired : 05/10/11 21:31:31 PM
Units : ppb
Dilution:





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

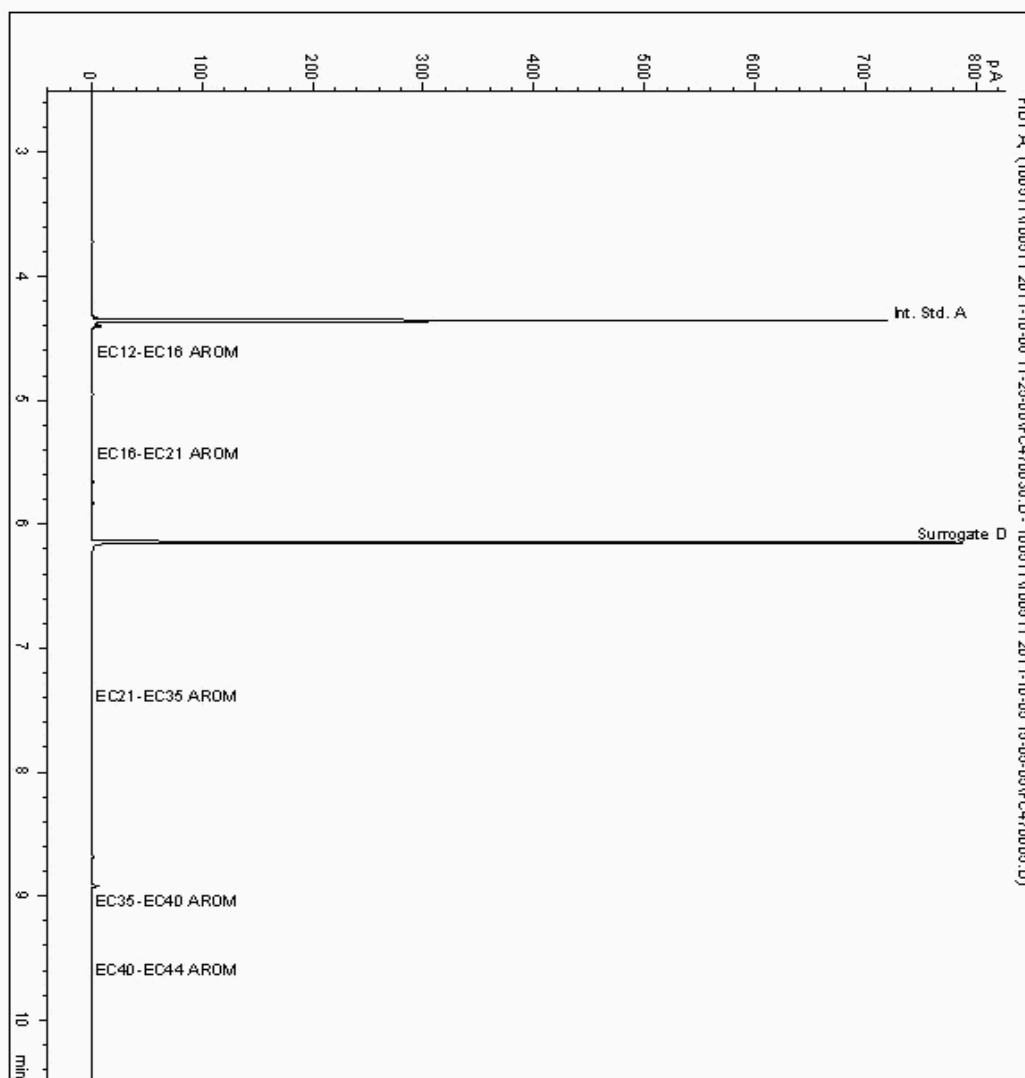
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4430191
Sample ID : BH103

Depth : 3.20

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

Sample Identity: 4377997-4430191
Date Acquired : 06/10/11 12:13:45
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

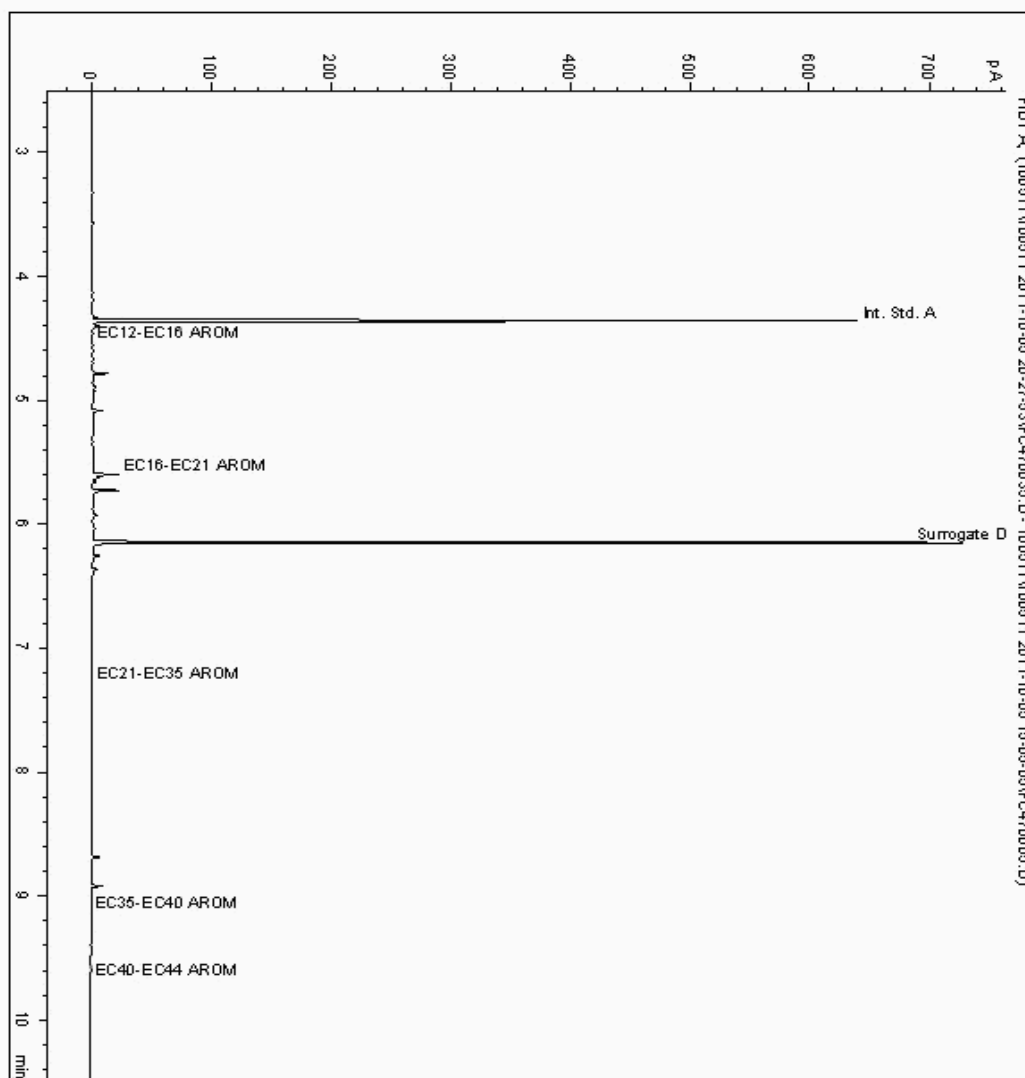
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4430200
Sample ID : BH106

Depth : 0.50

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

Sample Identity: 4378027-4430200
Date Acquired : 06/10/11 01:56:33
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

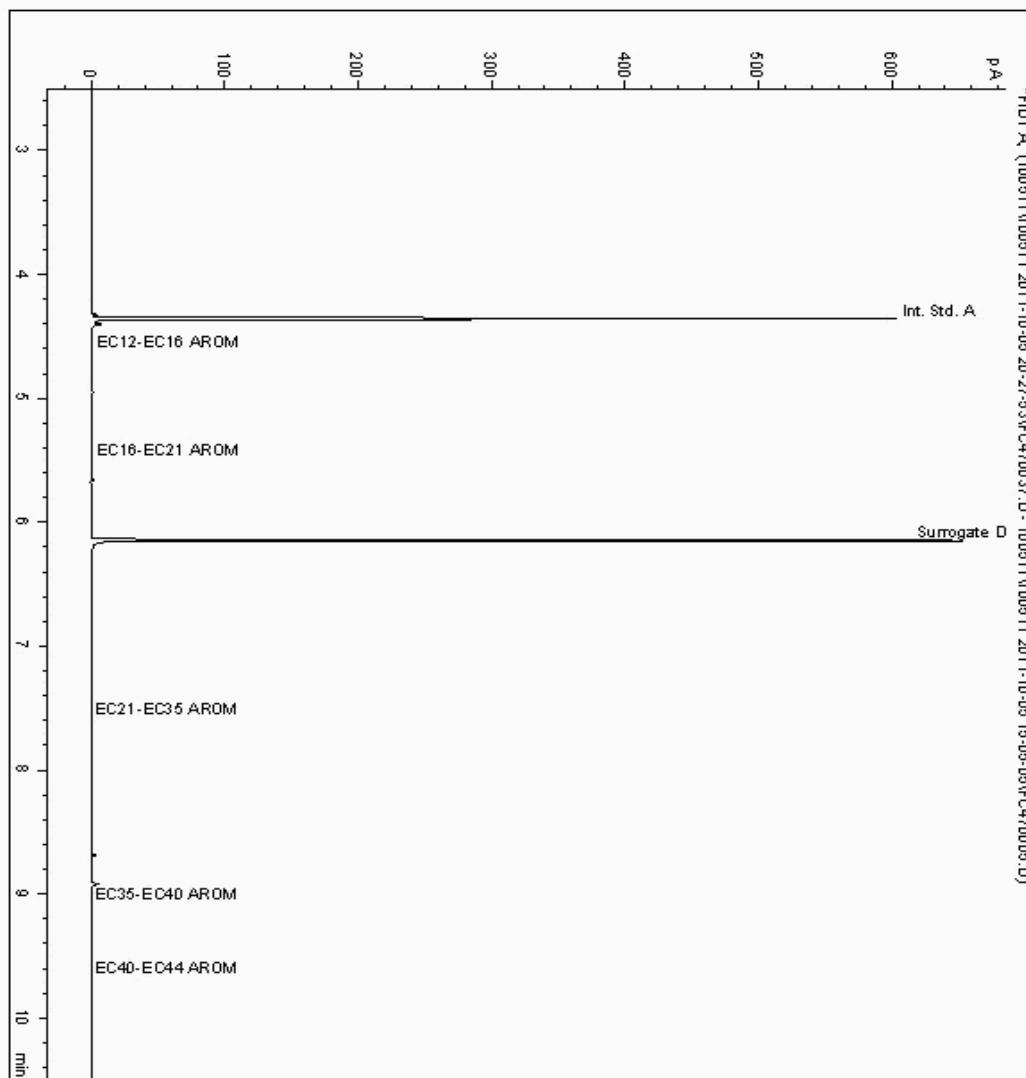
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4430218
Sample ID : BH105

Depth : 4.10

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

Sample Identity: 4378013-4430218
Date Acquired : 06/10/11 02:35:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

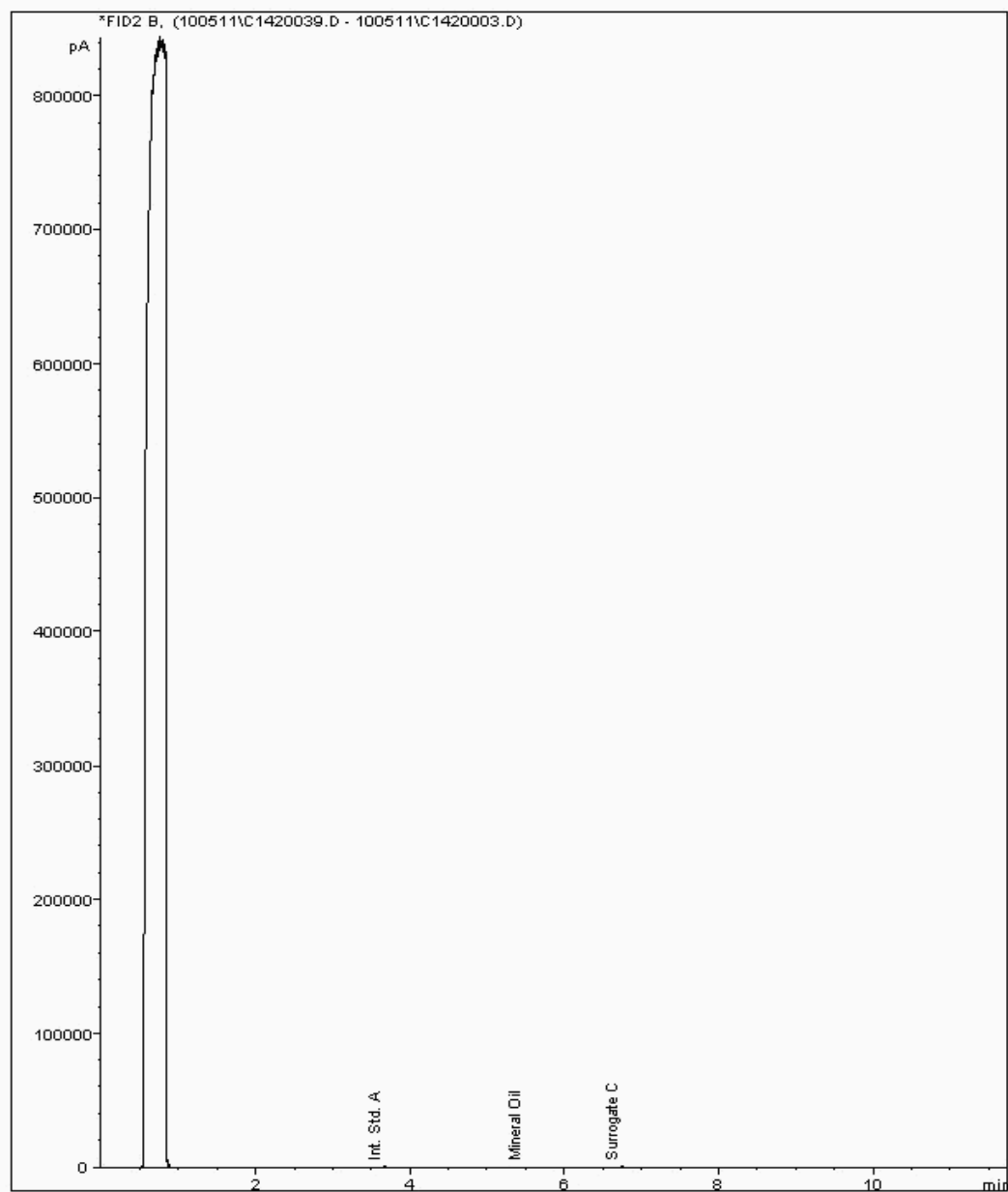
Analysis: Mineral Oil

Sample No : 4430396
Sample ID : WAC01

Depth :

Alcontrol/Geochem Analytical Services
Mineral Oil Range Organics (C10 - C40)

Sample Identity : 4377989-4430396
Date Acquired : 05/10/11 21:14:19 PM
Units : mg/kg
Sample Multiplier : 0.000
Dilution :





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

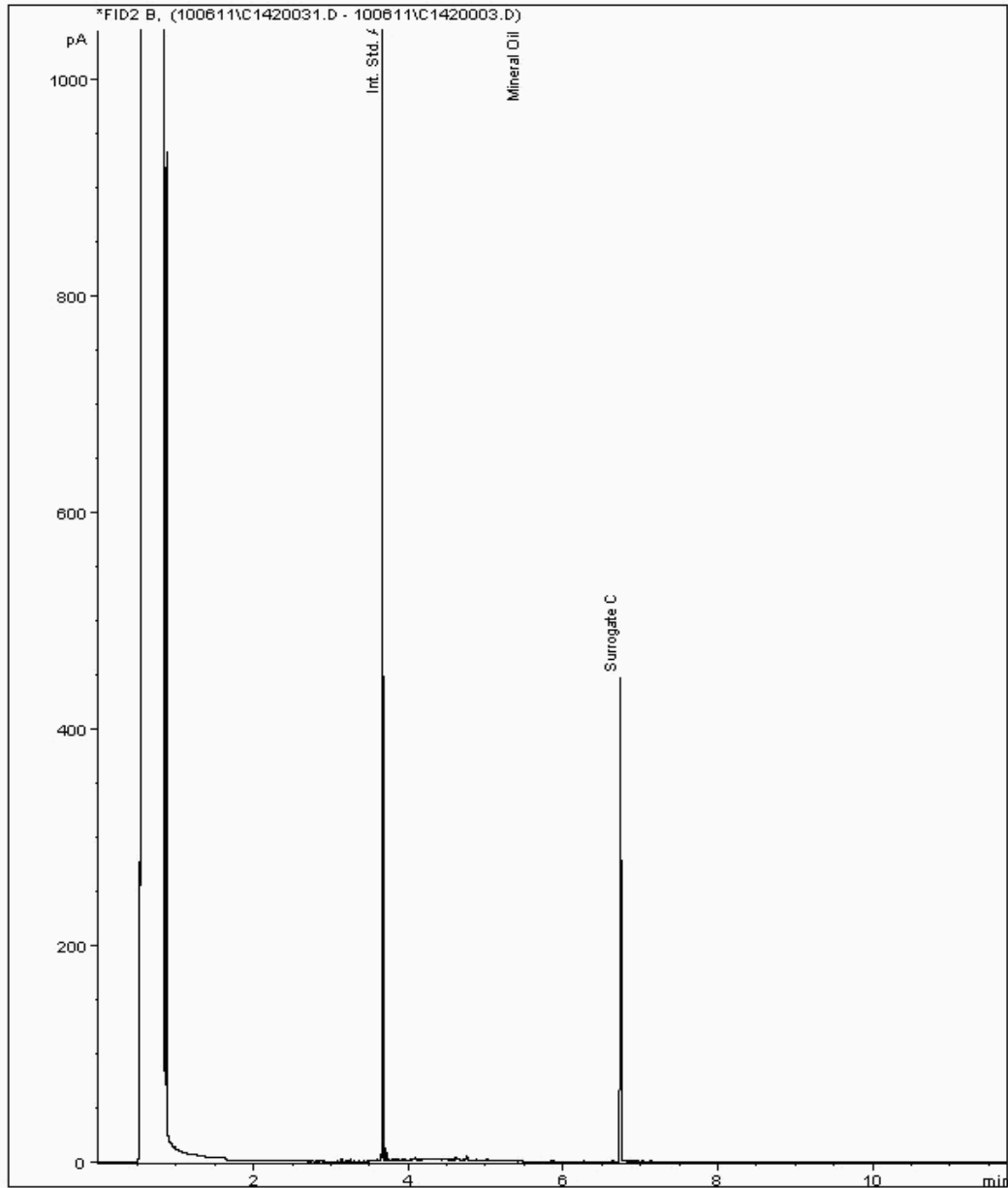
Analysis: Mineral Oil

Sample No : 4433504
Sample ID : WAC02

Depth :

Alcontrol/Geochem Analytical Services
Mineral Oil Range Organics (C10 - C40)

Sample Identity : 4378005-4433504
Date Acquired : 06/10/11 18:00:45 PM
Units : mg/kg
Sample Multiplier : 0.000
Dilution :





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

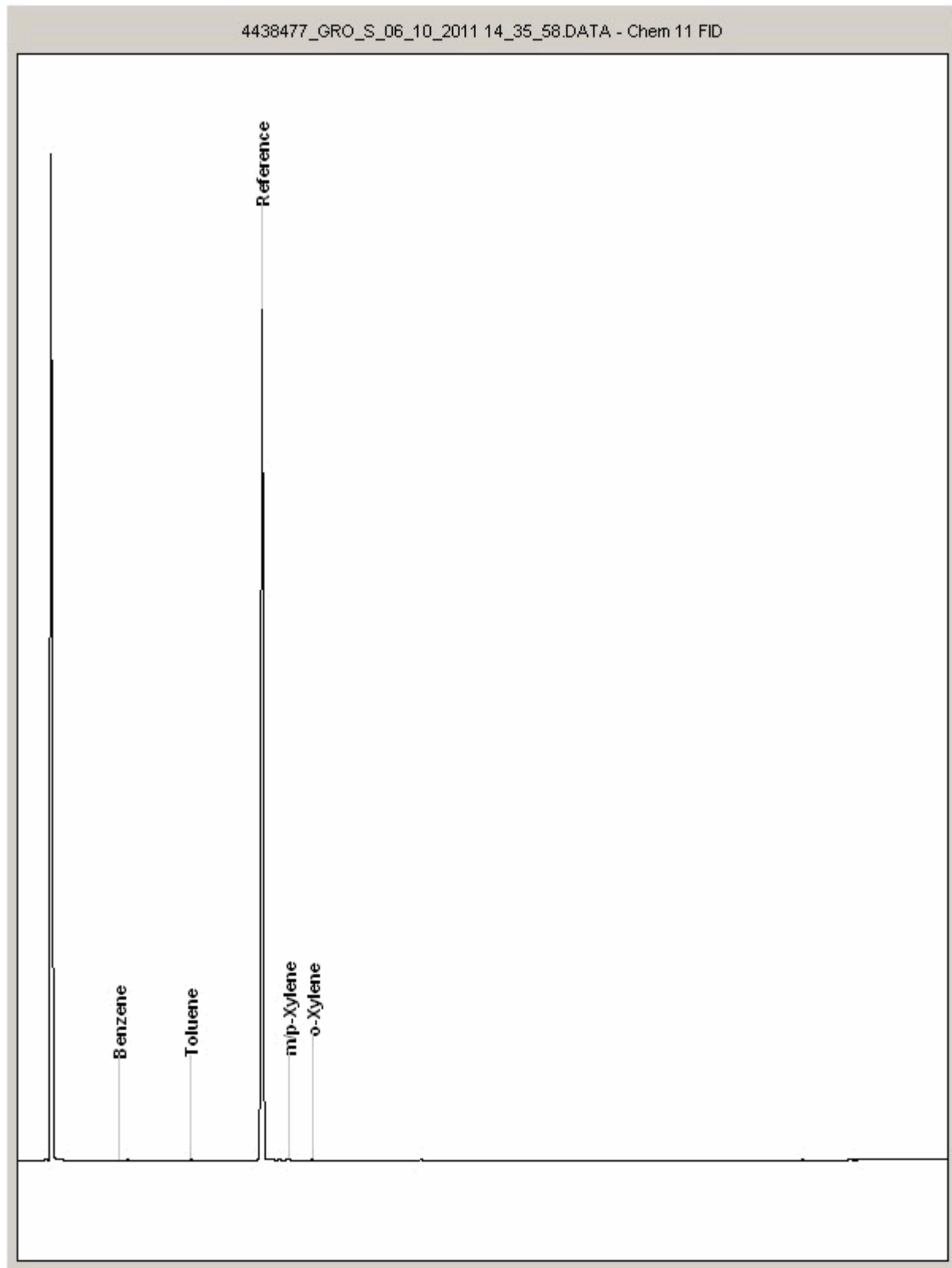
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4438477
Sample ID : UP101

Depth : 0.60





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

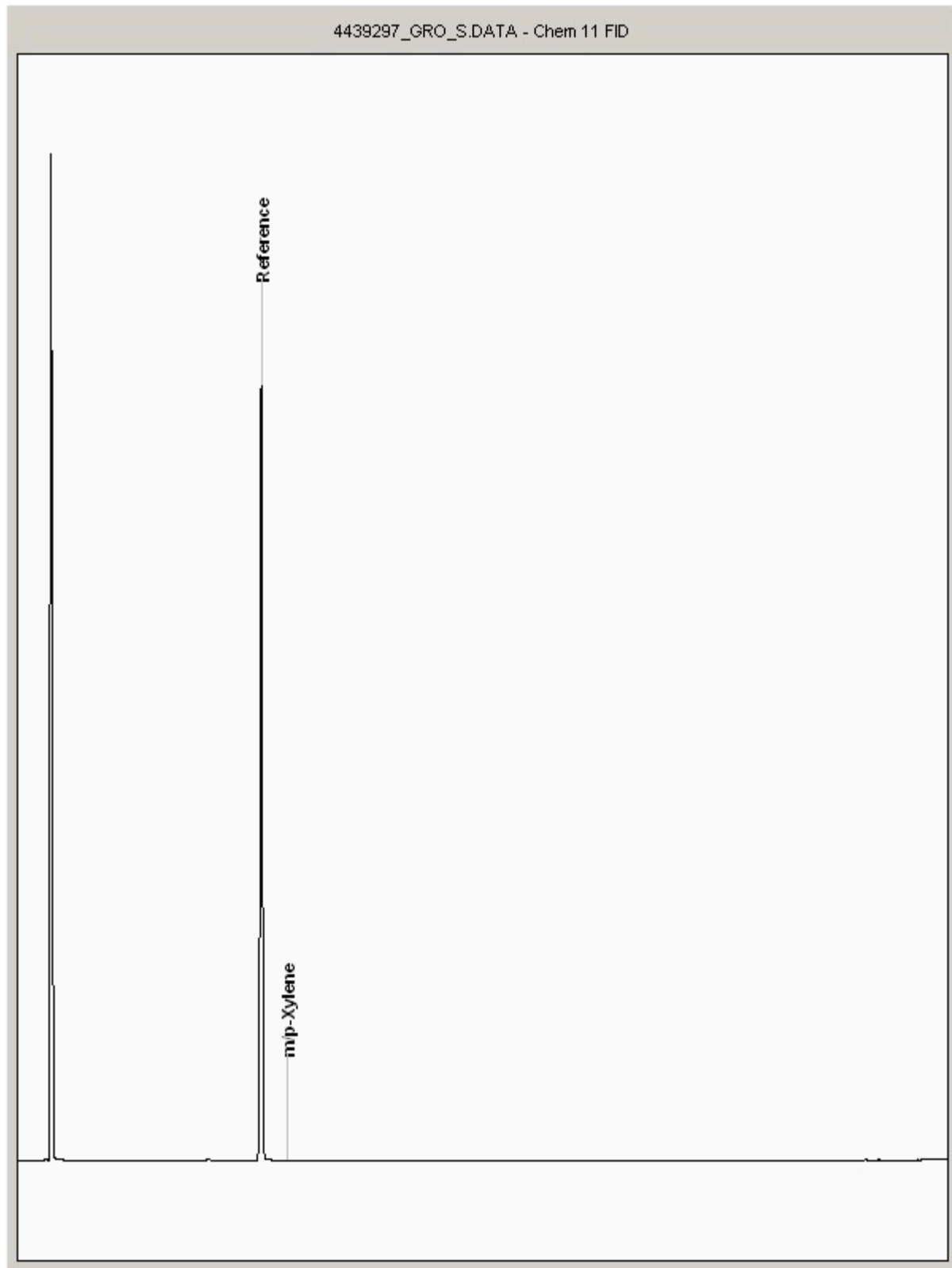
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4439297
Sample ID : BH103

Depth : 3.20





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

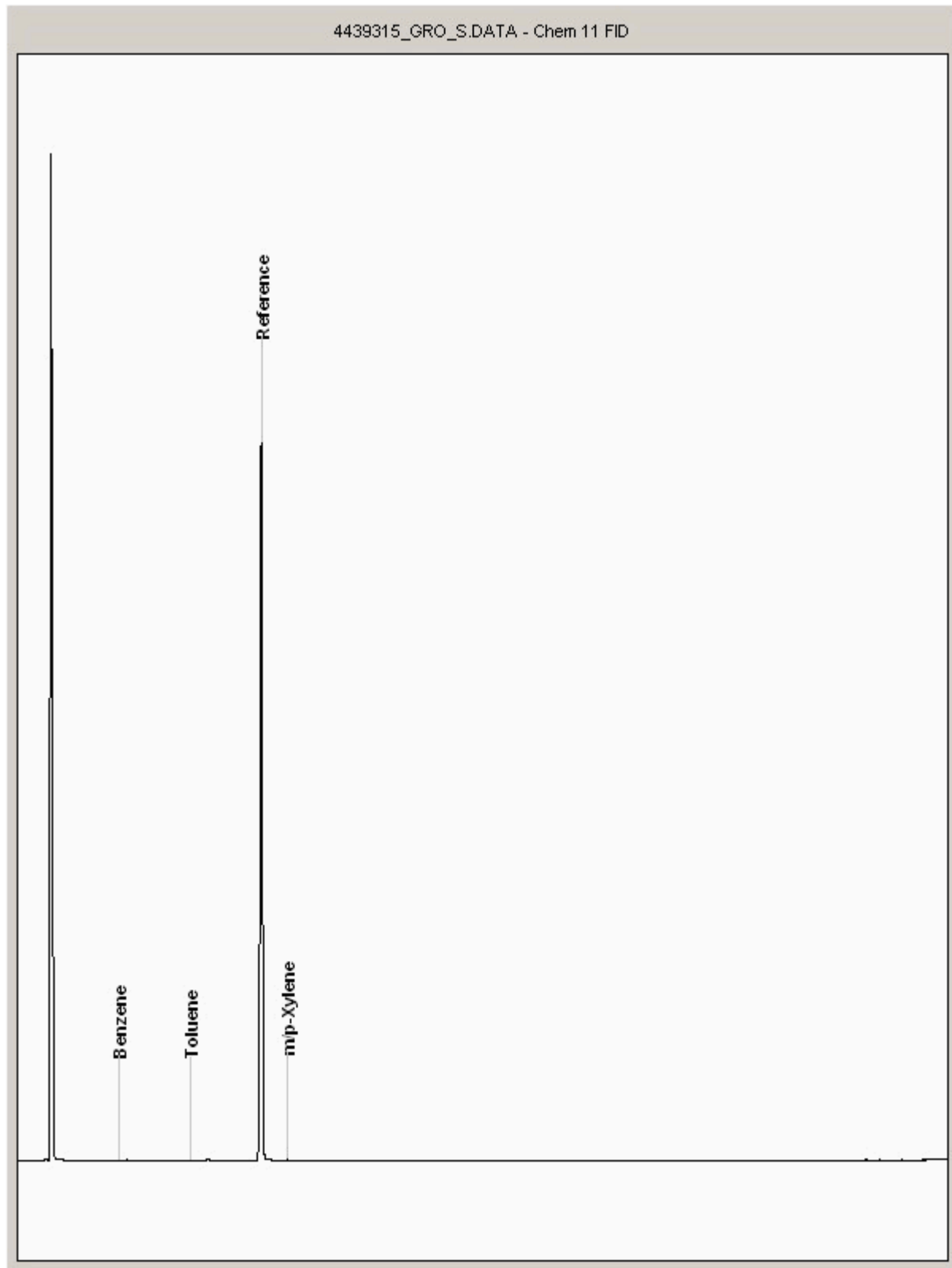
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4439315
Sample ID : BH105

Depth : 4.10





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

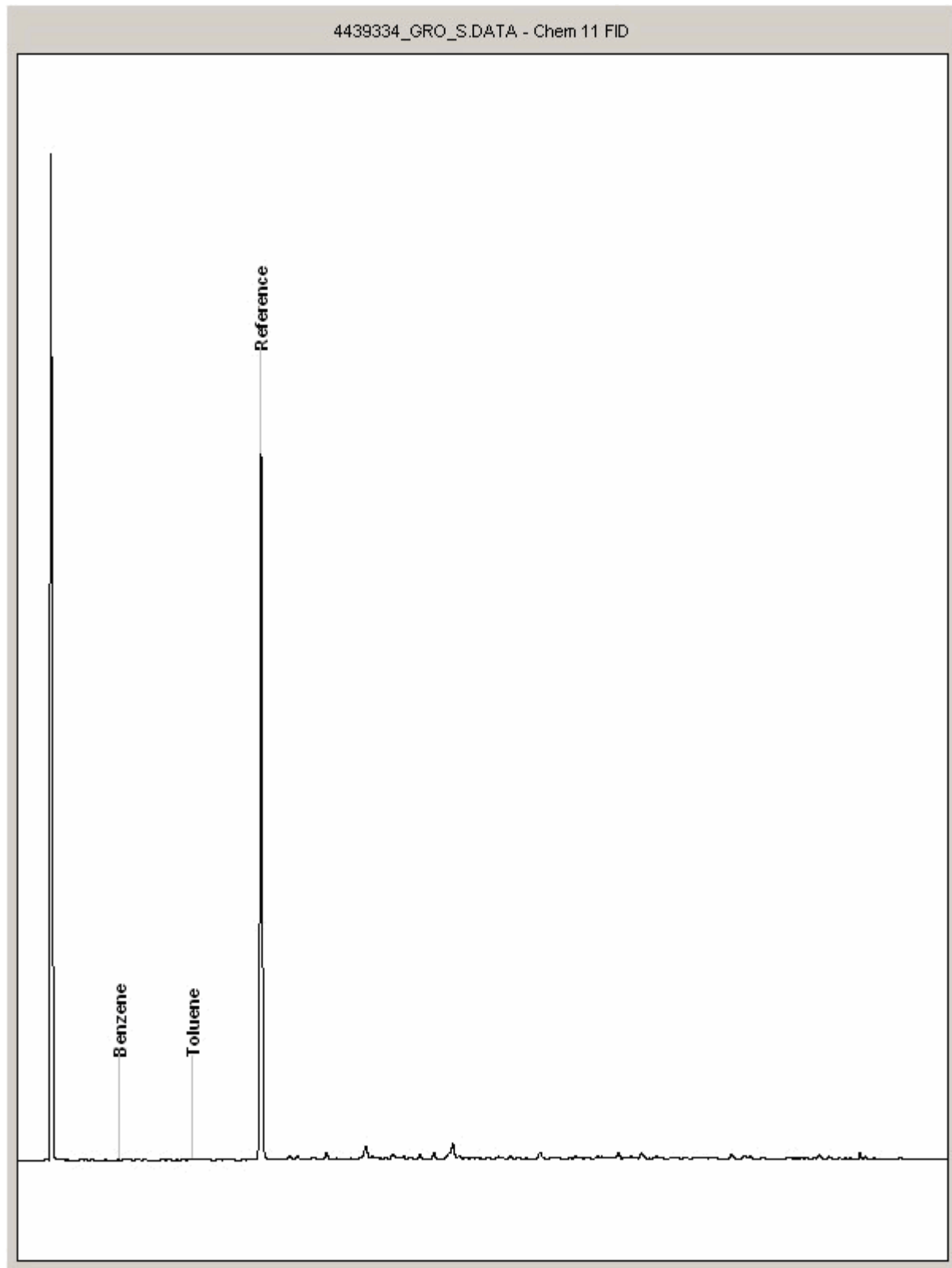
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4439334
Sample ID : BH106

Depth : 0.50





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

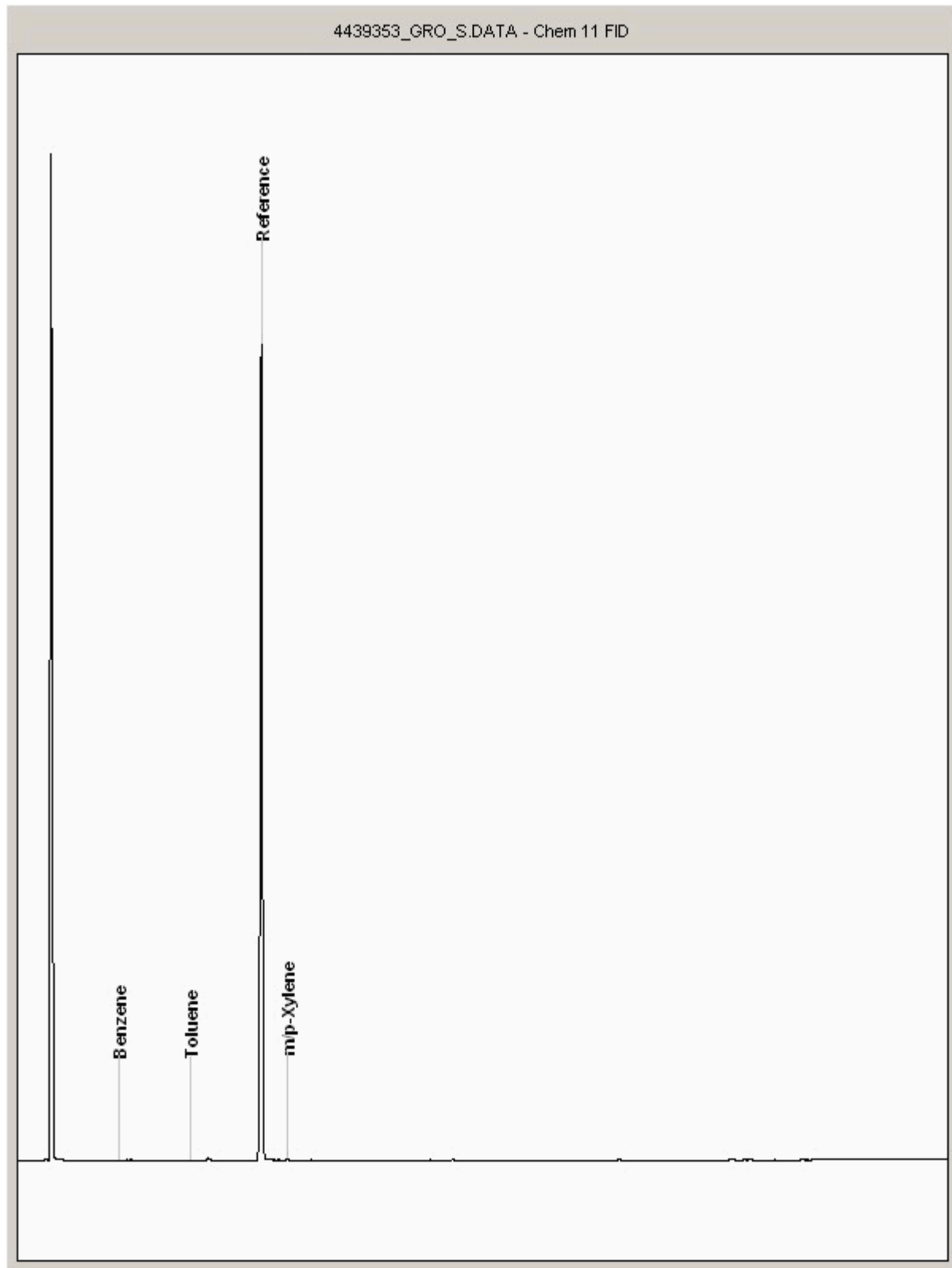
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4439353
Sample ID : DUP02

Depth : 4.10





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

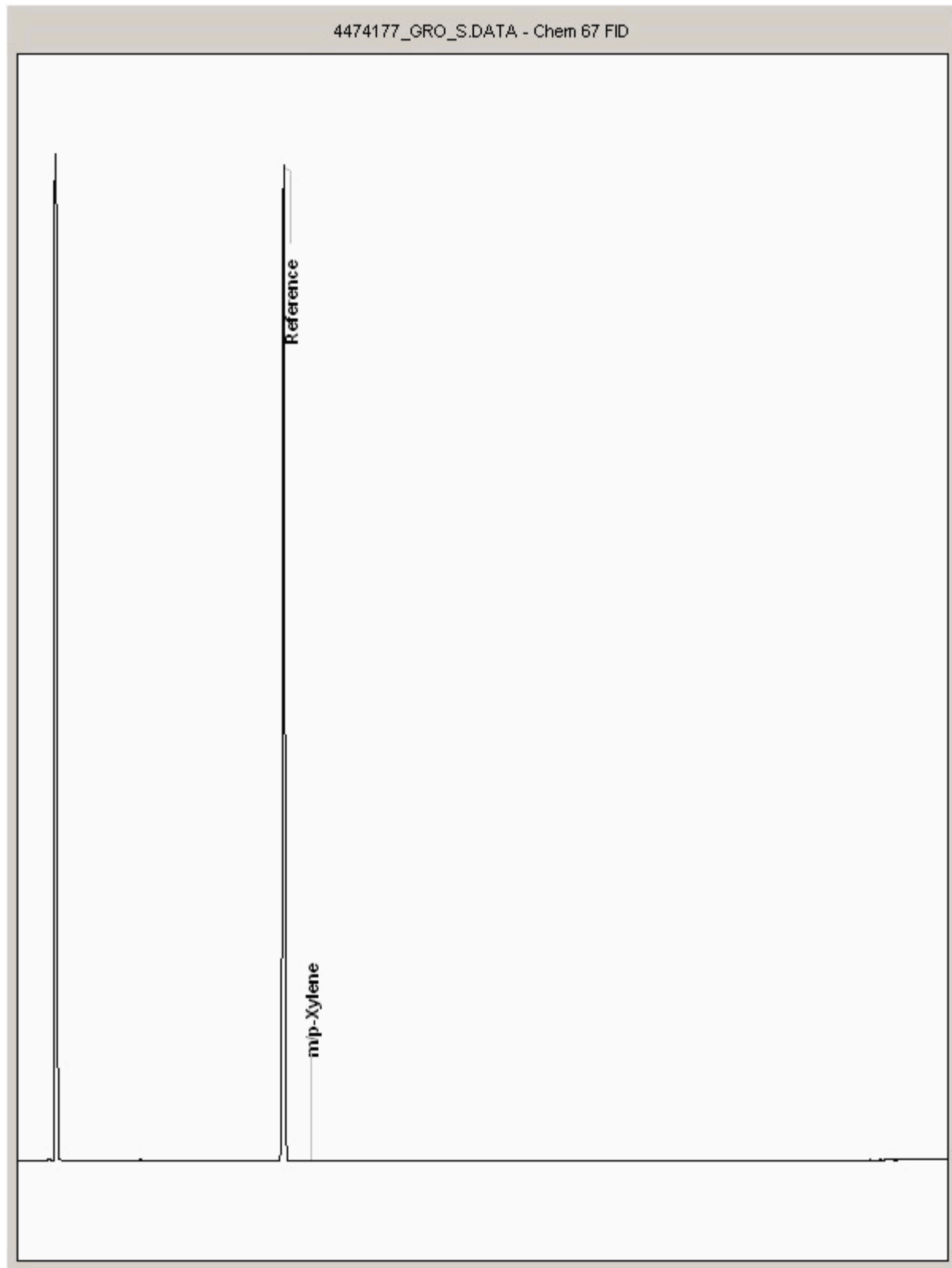
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4474177
Sample ID : WAC01

Depth :





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

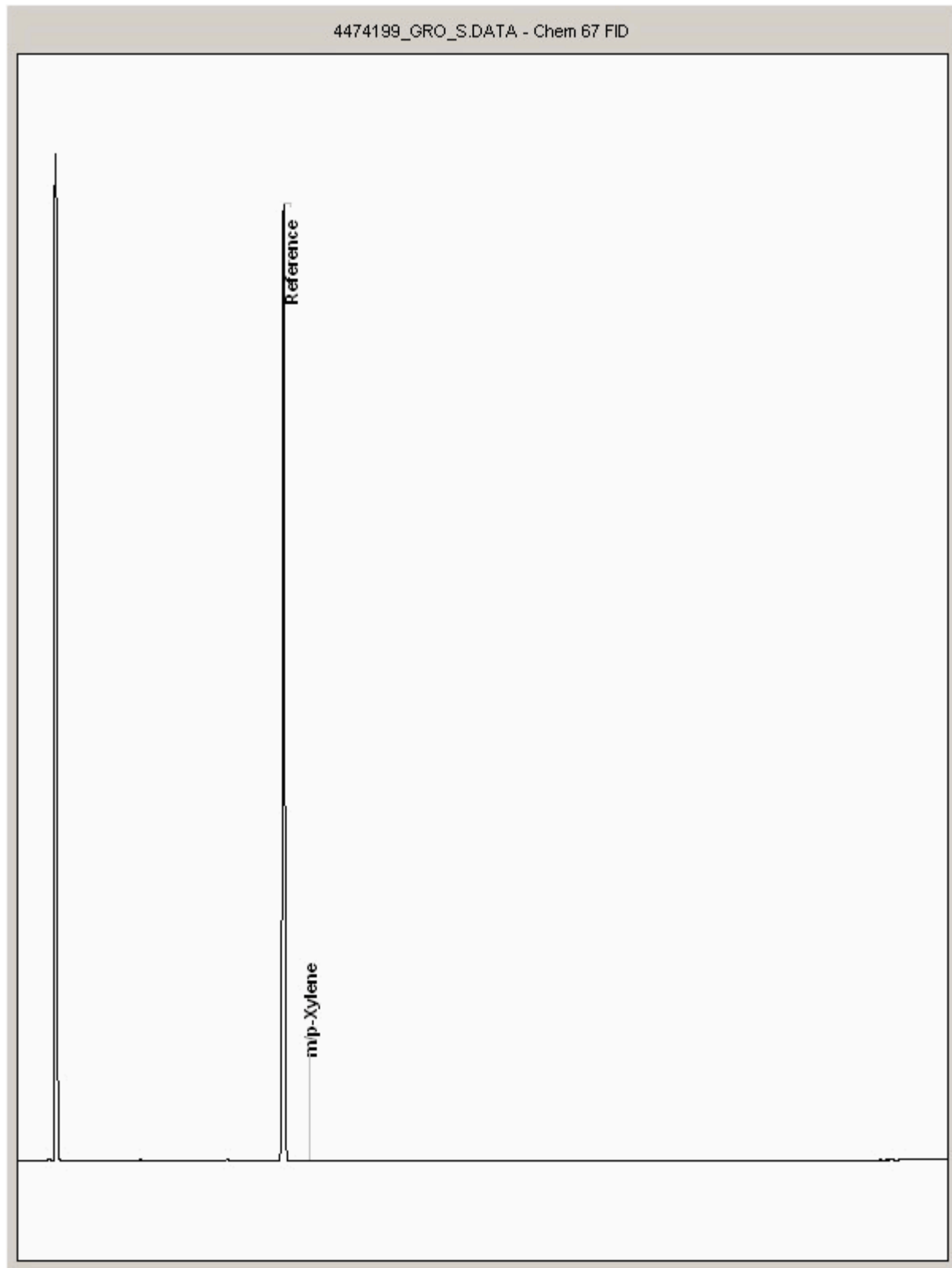
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4474199
Sample ID : WAC02

Depth :





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

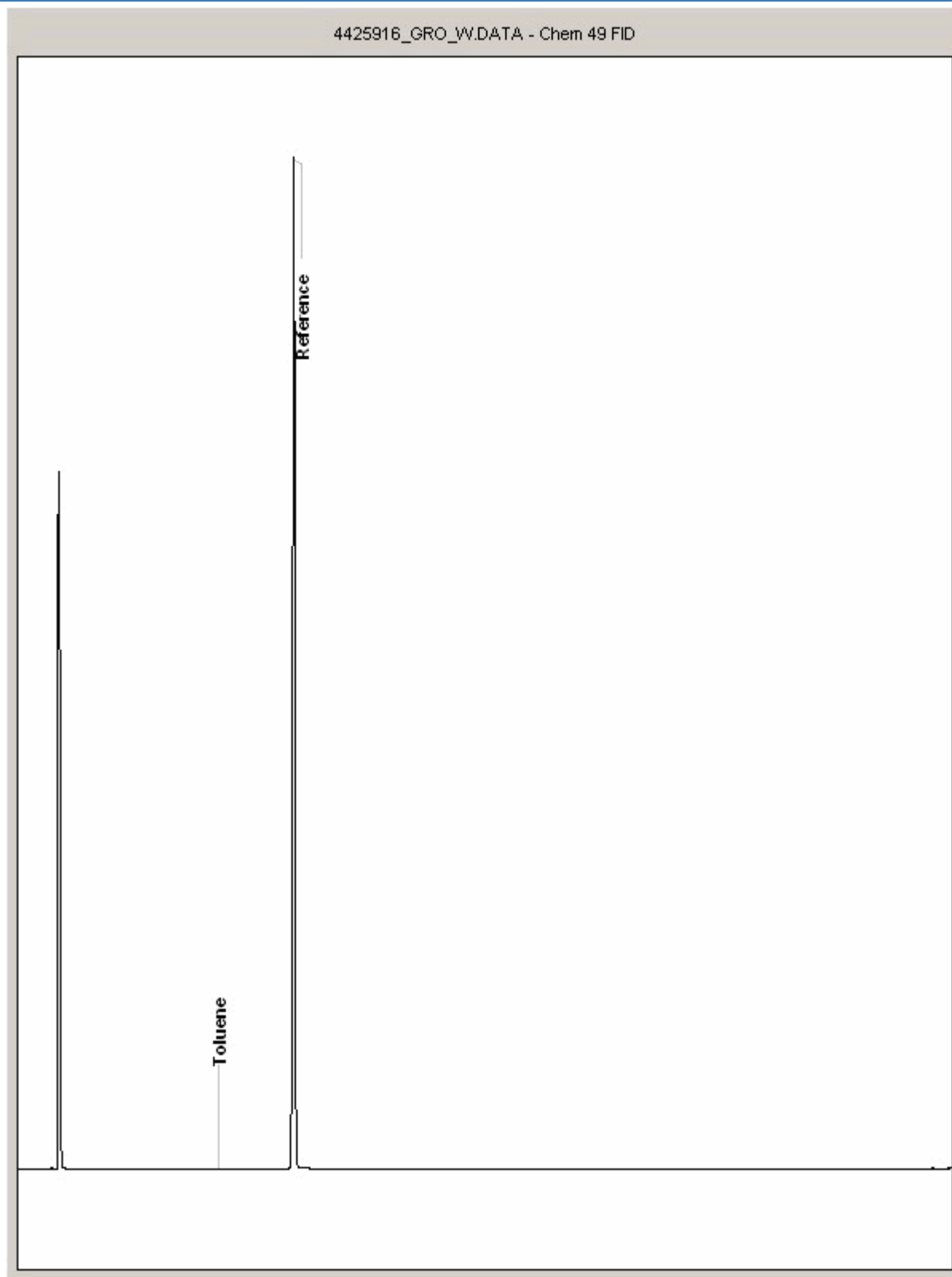
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4425916
Sample ID : BH103

Depth : 3.20





SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

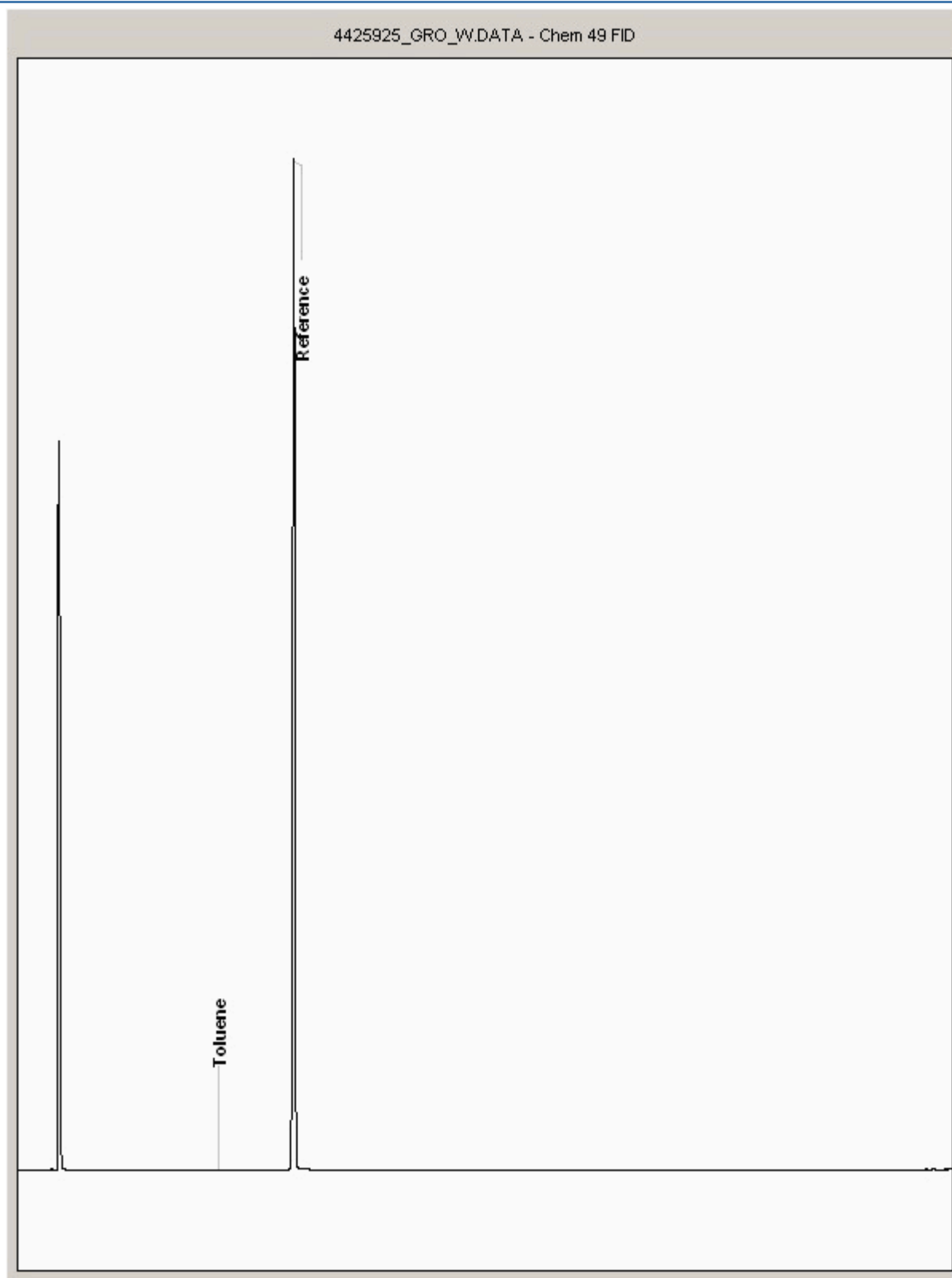
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4425925
Sample ID : BH105

Depth : 4.10





CERTIFICATE OF ANALYSIS

SDG: 110930-19
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

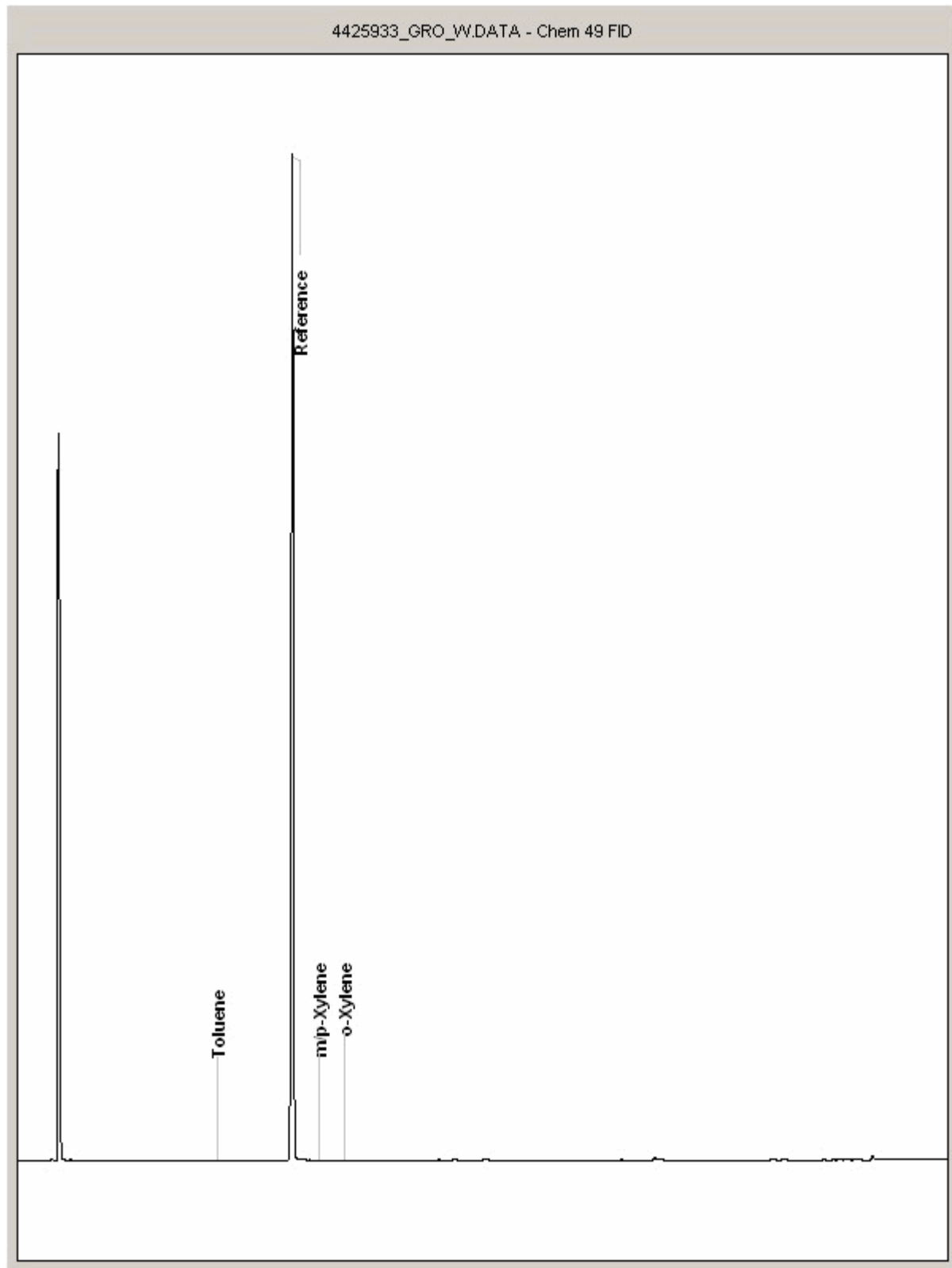
Order Number:
Report Number: 154156
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4425933
Sample ID : BH106

Depth : 0.50





CERTIFICATE OF ANALYSIS

SDG:	110930-19	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154156
Client Reference:	46370079	Attention:	Jocelyn Thomas	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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 themajor 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 C4 -C10 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRI by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Monday, October 3, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : October 1, 2011 7:00

Instructions Received : October 1, 2011 7:00

Laboratory SDG No : 111003-37

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☐ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 07, 2011

Coolbox Temperature (°C) : 19.2
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 1 SOLID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	111003-37	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	October 1, 2011 7:00
-------------------	-----------	-----------------	-------------------------	-----------------	---------------	----------------------	----------------------

Sample Type : SOLID				Fraction Organic Carbon (FOC)	LAB-07 (S)	LAB-10 (S)
Legend						
Test						
			</			

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
---------------	---------------------	-----------	--------------	----------------

Sample Type :

No Records

SDG Number	111003-37	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	October 1, 2011	7:00
Description			T/A	No. Scheduled
Requested Due	October 07, 2011			
Sample Type	SOLID			
LAB-07 (S)			5	1
LAB-10 (S)			5	1
Fraction Organic Carbon (FOC)			5	1

SDG Number	111003-37	Location	Shell Hitchin		
Customer	URS Corporation Limited	Date Received	October 1, 2011 7:00		
Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type :	SOLID				
LAB-07 (S)					
	1	Aliphatics >C12-C16		GC	<100 µg/kg
	1	Aliphatics >C16-C21		GC	<100 µg/kg
	1	Aliphatics >C21-C35		GC	<100 µg/kg
	1	Aliphatics >C35-C44		GC	<100 µg/kg
	1	Aromatics >EC12-EC16		GC	<100 µg/kg
	1	Aromatics >EC16-EC21		GC	<100 µg/kg
	1	Aromatics >EC21-EC35		GC	<100 µg/kg
	1	Aliphatics >C10-C12		GC	<10 µg/kg
	1	Aliphatics >C5-C6		GC	<10 µg/kg
	1	Aliphatics >C6-C8		GC	<10 µg/kg
	1	Aliphatics >C8-C10		GC	<10 µg/kg
	1	Aromatics >EC10-EC12		GC	<10 µg/kg
	1	Aromatics >EC5-EC7		GC	<10 µg/kg
	1	Aromatics >EC7-EC8		GC	<10 µg/kg
	1	Aromatics >EC8-EC10		GC	<10 µg/kg
	1	GRO Surrogate % recovery**		GC	
LAB-10 (S)					
	1	Benzene	#M	GCMS	<9 µg/kg
	1	Diisopropyl ether		GCMS	<1 µg/kg
	1	Ethanol		GCMS	<50 µg/kg
	1	Ethylbenzene	#M	GCMS	<4 µg/kg
	1	Methyl Tertiary Butyl Ether	#M	GCMS	<11 µg/kg
	1	o-Xylene	#M	GCMS	<10 µg/kg
	1	p/m-Xylene	#	GCMS	<14 µg/kg
	1	tert Butanol		GCMS	<10 µg/kg
	1	Tert-amyl methyl ether		GCMS	<15 µg/kg
	1	tert-butyl ethyl ether		GCMS	<1 µg/kg
	1	Toluene	#M	GCMS	<5 µg/kg
	1	Toluene-d8**		GCMS	
Total Organic Carbon					
	1	Fraction Organic Carbon (FOC)	#	IR	<0.002 -



Disclaimers

Please Note :

1. Following reviews by UKAS on the use of correct containers for analysis, we will no longer accredit volatile samples that are not received in the correct containers. We would like to highlight that best practice for sampling volatiles is to take every sample (soils and waters) in duplicate vials or volatile jars with **no headspace**. This will include analysis for the following parameters: VOC, Dissolved gases, VFA, Alcohols, TEL, GRO or TPH CWG.
2. The recommended storage temperature for water and soil samples is 5°C +/- 3°C (MCERTS for Waters July 2008).
3. When an analysis has been requested on an inappropriate bottle (this includes unpreserved bottles for a preserved analysis) and the analysis goes ahead, it will not conform to our Quality Management System, and may not be accredited.
4. We are accredited to MCERTS for sand, clay and loam/topsoil. This also includes naturally occurring soil profiles and fill/made ground where 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.
5. It is assumed that detection limits for samples scheduled are below the critical level of interest required for the project, if they are not or you would like to receive clarification of these, please contact the laboratory.

Surcharges :

6. Surcharges will be applied for accelerated turnaround times where these are requested based on the relevant contract or quotation prices. If the requested rapid turnaround fails but the report still meets rapid turnaround criteria an appropriate surcharge will still be applied. Surcharges are not subject to any discount.

Purchase Orders :

7. If these are used by your company, then data cannot be released unless we have received a copy of the purchase order.

Sample Disposal :

8. If sufficient soil/water sample (tubs, bottles and 250g jars) is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed).
9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
10. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions for sample disposal.
11. For extended storage periods, a storage charge of £1 (or € equivalent) per sample per month will be applied for each month or part thereof until the customer cancels the request for sample storage.
12. ALcontrol Laboratories reserve the right to charge £3 (or € equivalent) for samples received and stored but not analysed.

Subcontracted Analysis :

13. Please note that any analyses marked with an asterisk (*) will be subcontracted to an approved laboratory. Please note turnaround times for subcontracted analysis may sometimes be in excess of the turnaround requested and for some analyses can be up to 15-20 days. If this is unacceptable please contact us immediately as you may prefer to subcontract the work yourselves. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions of sample disposal.
- Asbestos :**
14. When requested the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces.
15. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025, and no analysis will be undertaken on the remaining samples. At no point is the fibre content of the soil sample determined.
16. Where no asbestos containing material is found this will be reported as "No ACM detected".



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

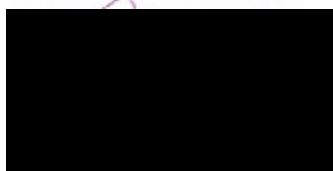
Date: 07 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 111003-37
Your Reference: 46370079
Location: Shell Hitchin
Report No: 153704

We received 1 sample on Saturday October 01, 2011 and 1 of these samples were scheduled for analysis which was completed on Friday October 07, 2011. 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:



Sorra C. Allan
Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4417347	BH102		2.70	30/09/2011

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



SDG: 111003-37
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153704
Superseded Report:

SOLID**Results Legend**

Test

No Determination
Possible**Lab Sample No(s)**

4417347

**Customer
Sample Reference**

BH102

AGS Reference**Depth (m)**

2.70

Container60g VOC (ALE215)
250g Amber Jar (AL

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
Oxygenates (S)	All	NDPs: 0 Tests: 1	X
Sample description	All	NDPs: 0 Tests: 1	X
Total Organic Carbon	All	NDPs: 0 Tests: 1	X
VOC MS (S)	All	NDPs: 0 Tests: 1	X



SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	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
Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2		
4417347	BH102	2.70	Dark Brown	Sand	0.1 - 2 mm	None	None		

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:
Report Number: 153704
Superseded Report:

Page 5 of 18

Order Number:
Report Number: 153704
Superseded Report:

Page 6 of 18

Order Number:
Report Number: 153704
Superseded Report:

Page 7 of 18

Order Number:
Report Number: 153704
Superseded Report:

Page 8 of 18

Order Number:
Report Number: 153704
Superseded Report:

Page 9 of 18



SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10 ⁻⁷							
NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
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		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	4417347
Customer Sample Ref.	BH102
AGS Ref.	
Depth	2.70
Type	SOLID
EPH CWG (Aliphatic) GC (S)	05-Oct-2011
EPH CWG (Aromatic) GC (S)	05-Oct-2011
GRO by GC-FID (S)	07-Oct-2011
Oxygenates (S)	06-Oct-2011
Sample description	03-Oct-2011
Total Organic Carbon	06-Oct-2011
VOC MS (S)	07-Oct-2011



SDG: 111003-37
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153704
Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 49
Total Aliphatics >C12-C35	TM173	85.83 68.60 : 100.41

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 49
Total Aromatics >EC12-EC35	TM173	98.0 60.37 : 122.36

GRO by GC-FID (S)

Component	Method Code	QC 46
Benzene by GC (Moisture Corrected)	TM089	118.5 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	115.0 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	114.25 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	121.0 79.00 : 121.00
o Xylene by GC (Moisture Corrected)	TM089	114.0 79.00 : 121.00
QC	TM089	81.56 81.49 : 139.05
Toluene by GC (Moisture Corrected)	TM089	116.5 79.00 : 121.00

Oxygenates (S)

Component	Method Code	QC 47
Benzene raw	TM288	98.25 76.41 : 116.38
Diisopropyl ether raw	TM288	89.5 78.68 : 128.65
Ethanol raw	TM288	97.9 29.57 : 198.54
Ethylbenzene raw	TM288	107.75 75.93 : 132.30
o-Xylene raw	TM288	102.25 67.81 : 123.00
p/m-Xylene raw	TM288	106.25 76.41 : 125.53
tert Butanol raw	TM288	114.0 75.64 : 168.91
tert-amyl methyl ether raw	TM288	91.5 64.00 : 136.00



SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Oxygenates (S)

		QC 47
tert-butyl ethyl ether raw	TM288	91.25 64.00 : 136.00
tert-butyl methyl ether raw	TM288	94.25 83.50 : 129.91
Toluene raw	TM288	92.0 71.50 : 107.70

Total Organic Carbon

Component	Method Code	QC 45
Total Organic Carbon	TM132	122.75 112.23 : 144.85

VOC MS (S)

Component	Method Code	QC 42
1,1,1,2-tetrachloroethane	TM116	101.0 79.70 : 131.43
1,1,1-Trichloroethane	TM116	95.0 65.91 : 140.05
1,1,2-Trichloroethane	TM116	115.8 88.70 : 147.24
1,1-Dichloroethane	TM116	97.4 69.50 : 147.71
1,2-Dichloroethane	TM116	108.8 72.54 : 154.14
1,4-Dichlorobenzene	TM116	102.8 68.76 : 143.94
2-Chlorotoluene	TM116	113.0 83.88 : 169.64
4-Chlorotoluene	TM116	117.0 63.90 : 187.23
Benzene	TM116	100.4 68.68 : 145.95
Carbon Disulphide	TM116	97.6 54.38 : 132.45
Carbontetrachloride	TM116	99.4 73.36 : 139.36
Chlorobenzene	TM116	102.8 81.53 : 130.33
Chloroform	TM116	100.8 69.66 : 148.03
Chloromethane	TM116	111.4 34.85 : 197.27
Cis-1,2-Dichloroethene	TM116	95.6 64.50 : 137.05
Dibromomethane	TM116	91.0 65.13 : 138.40
Dichloromethane	TM116	105.8 70.67 : 150.15



SDG: 111003-37
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153704
Superseded Report:

VOC MS (S)

		QC 42
Ethylbenzene	TM116	98.4 70.86 : 132.33
Hexachlorobutadiene	TM116	158.8 34.74 : 187.69
Isopropylbenzene	TM116	80.8 53.42 : 123.07
Naphthalene	TM116	101.6 76.11 : 139.72
o-Xylene	TM116	90.2 64.33 : 127.08
p/m-Xylene	TM116	99.5 69.99 : 132.19
Sec-Butylbenzene	TM116	83.0 33.32 : 159.06
Tetrachloroethene	TM116	110.4 78.08 : 139.93
Toluene	TM116	97.6 65.92 : 140.08
Trichloroethene	TM116	98.8 67.45 : 143.34
Trichlorofluoromethane	TM116	111.4 73.22 : 143.68
Vinyl Chloride	TM116	100.8 53.84 : 178.24

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.

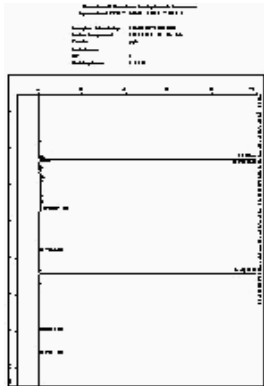
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Chromatogram

Analysis:	EPH CWG (Aliphatic) GC (S)	Sample No :	4431733	Depth :	2.70
		Sample ID :	BH102		





CERTIFICATE OF ANALYSIS

SDG: 111003-37
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

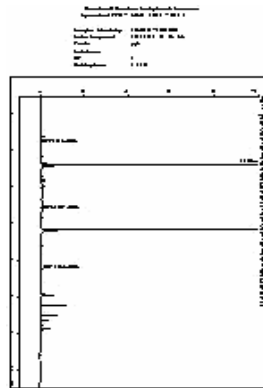
Order Number:
Report Number: 153704
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4431733
Sample ID : BH102

Depth : 2.70





SDG: 111003-37
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

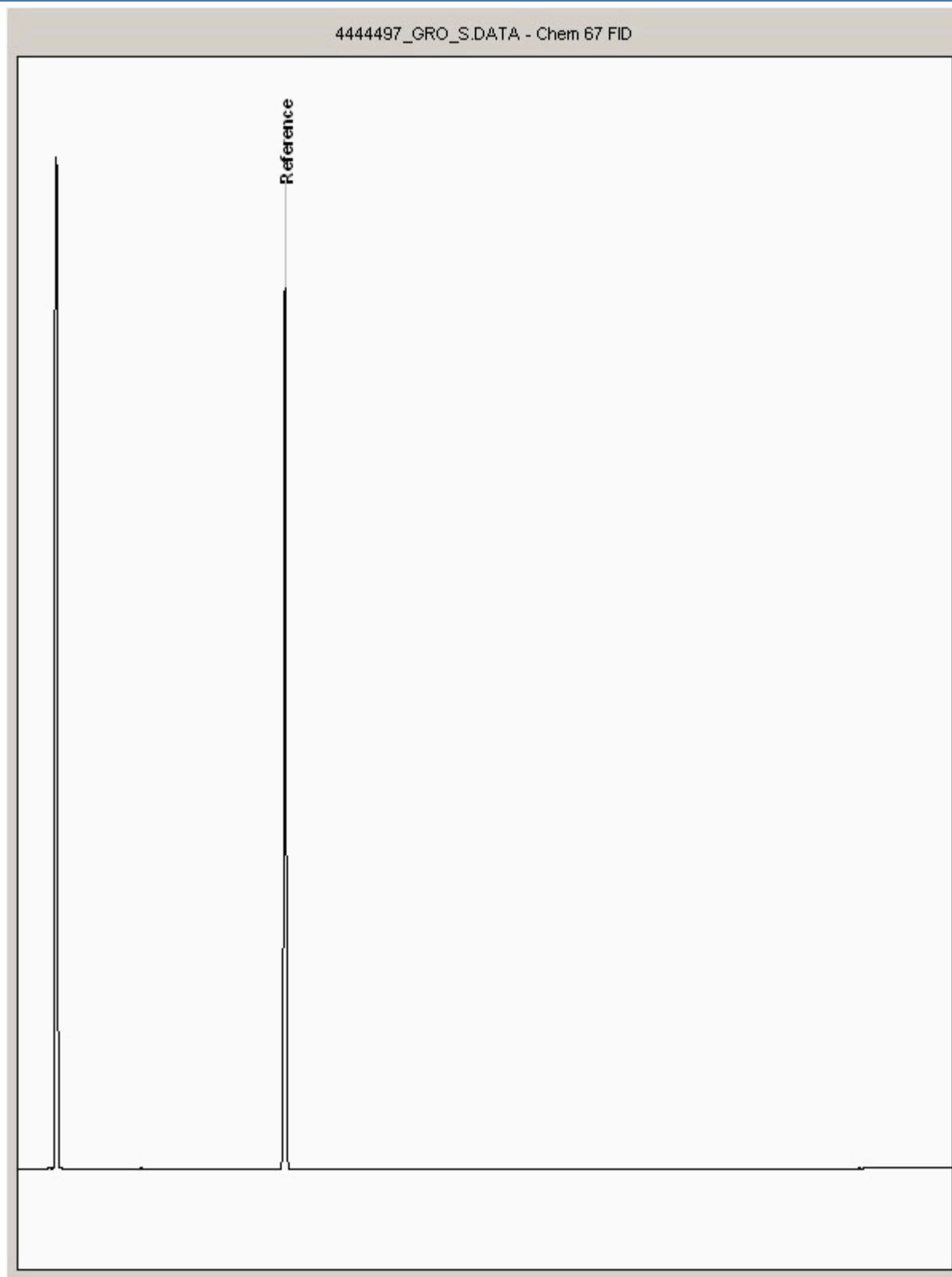
Order Number:
Report Number: 153704
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4444497
Sample ID : BH102

Depth : 2.70





CERTIFICATE OF ANALYSIS

SDG:	111003-37	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153704
Client Reference:	46370079	Attention:	Jocelyn Thomas	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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 C4 -C10 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRI by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Tuesday, October 4, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : October 4, 2011 6:00

Instructions Received : October 4, 2011 6:00

Laboratory SDG No : 111004-9

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☐ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 10, 2011

Coolbox Temperature (°C) : 13.6
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 1 SOLID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	111004-9	Customer	URS Corporation Limited		Location	Shell Hitchin	Date Received	October 4, 2011 6:00
-------------------	----------	-----------------	-------------------------	--	-----------------	---------------	----------------------	----------------------

Sample Type : SOLID				Fraction Organic Carbon (FOC)	LAB-07 (S)	LAB-10 (S)
Legend						
Test X						
Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled			
4423107	BH101	5.40	03/10/2011	X	X	X

SDG Number	111004-9	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	October 4, 2011 6:00
-------------------	----------	-----------------	-------------------------	-----------------	---------------	----------------------	----------------------

Sample Type : CEN 2:1

Legend

Test



Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	LAB-51 (W)	LAB-54 (W)
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4423107	BH101	5.40	03/10/2011	X	X
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LAB-51 (W)

LAB-54 (W)

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
---------------	---------------------	-----------	--------------	----------------

Sample Type :

No Records

SDG Number	111004-9	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	October 4, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 10, 2011			
Sample Type	SOLID			
LAB-07 (S)		5	1	
LAB-10 (S)		5	1	
Fraction Organic Carbon (FOC)		5	1	

SDG Number	111004-9	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	October 4, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 10, 2011			
Sample Type	CEN 2:1			
LAB-51 (W)		5	1	
LAB-54 (W)		5	1	

SDG Number	111004-9	Location	Shell Hitchin		
Customer	URS Corporation Limited	Date Received	October 4, 2011 6:00		
Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type :	SOLID				
LAB-07 (S)					
	1	Aliphatics >C12-C16		GC	<100 µg/kg
	1	Aliphatics >C16-C21		GC	<100 µg/kg
	1	Aliphatics >C21-C35		GC	<100 µg/kg
	1	Aliphatics >C35-C44		GC	<100 µg/kg
	1	Aromatics >EC12-EC16		GC	<100 µg/kg
	1	Aromatics >EC16-EC21		GC	<100 µg/kg
	1	Aromatics >EC21-EC35		GC	<100 µg/kg
	1	Aliphatics >C10-C12		GC	<10 µg/kg
	1	Aliphatics >C5-C6		GC	<10 µg/kg
	1	Aliphatics >C6-C8		GC	<10 µg/kg
	1	Aliphatics >C8-C10		GC	<10 µg/kg
	1	Aromatics >EC10-EC12		GC	<10 µg/kg
	1	Aromatics >EC5-EC7		GC	<10 µg/kg
	1	Aromatics >EC7-EC8		GC	<10 µg/kg
	1	Aromatics >EC8-EC10		GC	<10 µg/kg
	1	GRO Surrogate % recovery**		GC	
LAB-10 (S)					
	1	Benzene	#M	GCMS	<9 µg/kg
	1	Diisopropyl ether		GCMS	<1 µg/kg
	1	Ethanol		GCMS	<50 µg/kg
	1	Ethylbenzene	#M	GCMS	<4 µg/kg
	1	Methyl Tertiary Butyl Ether	#M	GCMS	<11 µg/kg
	1	o-Xylene	#M	GCMS	<10 µg/kg
	1	p/m-Xylene	#	GCMS	<14 µg/kg
	1	tert Butanol		GCMS	<10 µg/kg
	1	Tert-amyl methyl ether		GCMS	<15 µg/kg
	1	tert-butyl ethyl ether		GCMS	<1 µg/kg
	1	Toluene	#M	GCMS	<5 µg/kg
	1	Toluene-d8**		GCMS	
Total Organic Carbon					
	1	Fraction Organic Carbon (FOC)	#	IR	<0.002 -

SDG Number	111004-9	Location	Shell Hitchin
Customer	URS Corporation Limited	Date Received	October 4, 2011 6:00

Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
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Sample Type : CEN 2:1

LAB-51 (W)					
	1	Aliphatics >C12-C16 (aq)		GC	<10 µg/l
	1	Aliphatics >C16-C21 (aq)		GC	<10 µg/l
	1	Aliphatics >C21-C35 (aq)		GC	<10 µg/l
	1	Aromatics >EC12-EC16 (aq)		GC	<10 µg/l
	1	Aromatics >EC16-EC21 (aq)		GC	<10 µg/l
	1	Aromatics >EC21-EC35 (aq)		GC	<10 µg/l
	1	Aliphatics >C10-C12		GC	<10 µg/l
	1	Aliphatics >C5-C6		GC	<10 µg/l
	1	Aliphatics >C6-C8		GC	<10 µg/l
	1	Aliphatics >C8-C10		GC	<10 µg/l
	1	Aromatics >EC10-EC12		GC	<10 µg/l
	1	Aromatics >EC5-EC7		GC	<10 µg/l
	1	Aromatics >EC7-EC8		GC	<10 µg/l
	1	Aromatics >EC8-EC10		GC	<10 µg/l
	1	GRO Surrogate % recovery**		GC	

LAB-54 (W)					
	1	Benzene		GCMS	<1 µg/l
	1	Diisopropyl ether		GCMS	<1 µg/l
	1	Ethanol		GCMS	<50 µg/l
	1	Ethylbenzene		GCMS	<1 µg/l
	1	m,p-Xylene		GCMS	<1 µg/l
	1	Methyl tertiary butyl ether (MTBE)		GCMS	<1 µg/l
	1	o-Xylene		GCMS	<1 µg/l
	1	tert Butanol		GCMS	<10 µg/l
	1	tert-Amyl methyl ether (TAME)		GCMS	<1 µg/l
	1	tert-butyl ethyl ether		GCMS	<1 µg/l
	1	Toluene		GCMS	<1 µg/l
	1	Toluene-d8**		GCMS	

Disclaimers

Please Note :

1. Following reviews by UKAS on the use of correct containers for analysis, we will no longer accredit volatile samples that are not received in the correct containers. We would like to highlight that best practice for sampling volatiles is to take every sample (soils and waters) in duplicate vials or volatile jars with **no headspace**. This will include analysis for the following parameters: VOC, Dissolved gases, VFA, Alcohols, TEL, GRO or TPH CWG.
2. The recommended storage temperature for water and soil samples is 5°C +/- 3°C (MCERTS for Waters July 2008).
3. When an analysis has been requested on an inappropriate bottle (this includes unpreserved bottles for a preserved analysis) and the analysis goes ahead, it will not conform to our Quality Management System, and may not be accredited.
4. We are accredited to MCERTS for sand, clay and loam/topsoil. This also includes naturally occurring soil profiles and fill/made ground where 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.
5. It is assumed that detection limits for samples scheduled are below the critical level of interest required for the project, if they are not or you would like to receive clarification of these, please contact the laboratory.

Surcharges :

6. Surcharges will be applied for accelerated turnaround times where these are requested based on the relevant contract or quotation prices. If the requested rapid turnaround fails but the report still meets rapid turnaround criteria an appropriate surcharge will still be applied. Surcharges are not subject to any discount.

Purchase Orders :

7. If these are used by your company, then data cannot be released unless we have received a copy of the purchase order.

Sample Disposal :

8. If sufficient soil/water sample (tubs, bottles and 250g jars) is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed).
9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
10. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions for sample disposal.
11. For extended storage periods, a storage charge of £1 (or € equivalent) per sample per month will be applied for each month or part thereof until the customer cancels the request for sample storage.
12. ALcontrol Laboratories reserve the right to charge £3 (or € equivalent) for samples received and stored but not analysed.

Subcontracted Analysis :

13. Please note that any analyses marked with an asterisk (*) will be subcontracted to an approved laboratory. Please note turnaround times for subcontracted analysis may sometimes be in excess of the turnaround requested and for some analyses can be up to 15-20 days. If this is unacceptable please contact us immediately as you may prefer to subcontract the work yourselves. Subcontracted samples will be disposed of by the subcontracted laboratory and are therefore not covered under the ALcontrol terms and conditions of sample disposal.

Asbestos :

14. When requested the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces.
15. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025, and no analysis will be undertaken on the remaining samples. At no point is the fibre content of the soil sample determined.
16. Where no asbestos containing material is found this will be reported as "No ACM detected".



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

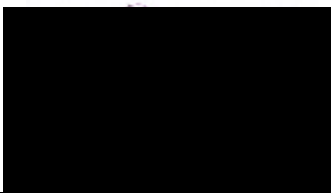
Date: 10 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 111004-9
Your Reference: 46370079
Location: Shell Hitchin
Report No: 153992

We received 1 sample on Tuesday October 04, 2011 and 1 of these samples were scheduled for analysis which was completed on Monday October 10, 2011. 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:



Operations Manager





SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		4423107	
	Customer Sample Reference		BH101	
	AGS Reference			
	Depth (m)		5.40	
	Container		60g VOC (ALE215) 250g Amber Jar (AL) 1kg TUB	
CEN Readings	All	NDPs: 0 Tests: 1	X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1		X
EPH CWG (Aromatic) Aqueous GC (W)	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
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X	
Oxygenates (S)	All	NDPs: 0 Tests: 1		X
Oxygenates (W)	All	NDPs: 0 Tests: 1	X	
Sample description	All	NDPs: 0 Tests: 1		X
Total Organic Carbon	All	NDPs: 0 Tests: 1		X
VOC MS (S)	All	NDPs: 0 Tests: 1		X
VOC MS (W)	All	NDPs: 0 Tests: 1	X	



SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	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
4423107	BH101	5.40	Dark Brown	Clay Loam	<0.063 mm	Stones	None

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:
Report Number: 153992
Superseded Report:

Page 4 of 25

Order Number:
Report Number: 153992
Superseded Report:

Page 5 of 25

Order Number:
Report Number: 153992
Superseded Report:

Page 6 of 25

Order Number:
Report Number: 153992
Superseded Report:

Page 7 of 25

Order Number:
Report Number: 153992
Superseded Report:

Page 8 of 25



CERTIFICATE OF ANALYSIS

SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.200	Moisture Content Ratio (%)	14.4
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	87.4
Particle Size <4mm	>95%		

Case			
SDG	111004-9		
Lab Sample Number(s)	4423107		
Sampled Date	03-Oct-2011		
Customer Sample Ref.	BH101		
Depth (m)	5.40		
Solid Waste Analysis			
Total Organic Carbon (%)	0.438	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	-	-	-	-	0.5	2	25
Barium	-	-	-	-	20	100	300
Cadmium	-	-	-	-	0.04	1	5
Chromium	-	-	-	-	0.5	10	70
Copper	-	-	-	-	2	50	100
Mercury Dissolved (CVAf)	-	-	-	-	0.01	0.2	2
Molybdenum	-	-	-	-	0.5	10	30
Nickel	-	-	-	-	0.4	10	40
Lead	-	-	-	-	0.5	10	50
Antimony	-	-	-	-	0.06	0.7	5
Selenium	-	-	-	-	0.1	0.5	7
Zinc	-	-	-	-	4	50	200
Chloride	-	-	-	-	800	15000	25000
Fluoride	-	-	-	-	10	150	500
Sulphate (soluble)	-	-	-	-	1000	20000	50000
Total Dissolved Solids	-	-	-	-	4000	60000	100000
Total Monohydric Phenols (W)	-	-	-	-	1	-	-
Dissolved Organic Carbon	-	-	-	-	500	800	1000

Leach Test Information

Date Prepared	05-Oct-2011
pH (pH Units)	8.43
Conductivity (µS/cm)	756.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.325
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
10/10/2011 11:49:18



CERTIFICATE OF ANALYSIS

SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.200	Moisture Content Ratio (%)	14.4
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	87.4
Particle Size <4mm	>95%		

Case			
SDG	111004-9		
Lab Sample Number(s)	4423107		
Sampled Date	03-Oct-2011		
Customer Sample Ref.	BH101		
Depth (m)	5.40		
Solid Waste Analysis			
Total Organic Carbon (%)	0.438	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-
TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	05-Oct-2011
pH (pH Units)	8.43
Conductivity (µS/cm)	756.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.325
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
10/10/2011 11:49:18



CERTIFICATE OF ANALYSIS

SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.200	Moisture Content Ratio (%)	14.4
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	87.4
Particle Size <4mm	>95%		

Case			
SDG	111004-9		
Lab Sample Number(s)	4423107		
Sampled Date	03-Oct-2011		
Customer Sample Ref.	BH101		
Depth (m)	5.40		

Solid Waste Analysis

Total Organic Carbon (%)	0.438				
Loss on Ignition (%)	-				
Sum of BTEX (mg/kg)	<24.0				
Sum of 7 PCBs (mg/kg)	-				
Mineral Oil (mg/kg)	-				
PAH Sum of 17 (mg/kg)	-				
pH (pH Units)	-				
ANC to pH 6 (mol/kg)	-				
ANC to pH 4 (mol/kg)	-				

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	- - - -
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	- - - -
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
o-Xylene	<0.001	<0.001	<0.002	<0.01	- - - -
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	- - - -

Leach Test Information

Date Prepared	05-Oct-2011
pH (pH Units)	8.43
Conductivity (µS/cm)	756.00
Temperature (°C)	21.20
Volume Leachant (Litres)	0.325
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
10/10/2011 11:49:18



SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10 ⁻⁷							
NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM114		Leaching Procedure for CEN Two Stage BatchTest 2:1/8:1 Cumulative		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
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		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	4423107
Customer Sample Ref.	BH101
AGS Ref.	
Depth	5.40
Type	SOLID

CEN 2:1 Leachate (1 Stage)	05-Oct-2011
CEN Readings	07-Oct-2011
EPH CWG (Aliphatic) Aqueous GC (W)	07-Oct-2011
EPH CWG (Aliphatic) GC (S)	06-Oct-2011
EPH CWG (Aromatic) Aqueous GC (W)	07-Oct-2011
EPH CWG (Aromatic) GC (S)	06-Oct-2011
GRO by GC-FID (S)	10-Oct-2011
GRO by GC-FID (W)	08-Oct-2011
Oxygenates (S)	08-Oct-2011
Oxygenates (W)	08-Oct-2011
Sample description	04-Oct-2011
Total Organic Carbon	06-Oct-2011
TPH CWG (W)	08-Oct-2011
VOC MS (S)	10-Oct-2011
VOC MS (W)	08-Oct-2011



SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 49
Total Aliphatics >C12-C35	TM173	82.71 63.33 : 106.07

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 49
Total Aromatics >EC12-EC35	TM173	97.33 67.63 : 106.82

GRO by GC-FID (S)

Component	Method Code	QC 49
Benzene by GC (Moisture Corrected)	TM089	91.5 80.47 : 112.02
Ethylbenzene by GC (Moisture Corrected)	TM089	90.5 77.65 : 114.82
m & p Xylene by GC (Moisture Corrected)	TM089	91.75 77.43 : 115.19
MTBE GC-FID (Moisture Corrected)	TM089	99.5 79.00 : 121.00
o Xylene by GC (Moisture Corrected)	TM089	91.5 78.07 : 118.52
QC	TM089	73.02 : 108.70
Toluene by GC (Moisture Corrected)	TM089	104.0 78.05 : 115.14

GRO by GC-FID (W)

Component	Method Code	QC 41
Benzene by GC	TM245	90.0 74.18 : 120.19
Ethylbenzene by GC	TM245	86.5 68.50 : 123.48
m & p Xylene by GC	TM245	85.0 66.97 : 125.40
MTBE GC-FID	TM245	91.0 75.54 : 119.85
o Xylene by GC	TM245	86.0 67.51 : 121.24
QC	TM245	94.12 67.60 : 116.92
Toluene by GC	TM245	88.0 71.27 : 123.09

Oxygenates (S)



SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

Oxygenates (S)

Component	Method Code	QC 42
Benzene raw	TM288	104.25 76.41 : 116.38
Diisopropyl ether raw	TM288	96.25 78.68 : 128.65
Ethanol raw	TM288	89.0 29.57 : 198.54
Ethylbenzene raw	TM288	107.0 75.93 : 132.30
o-Xylene raw	TM288	100.5 67.81 : 123.00
p/m-Xylene raw	TM288	104.38 76.41 : 125.53
tert Butanol raw	TM288	109.5 75.64 : 168.91
tert-amyl methyl ether raw	TM288	95.75 64.00 : 136.00
tert-butyl ethyl ether raw	TM288	96.75 64.00 : 136.00
tert-butyl methyl ether raw	TM288	98.75 83.50 : 129.91
Toluene raw	TM288	93.25 71.50 : 107.70

Oxygenates (W)

Component	Method Code	QC 48
Benzene	TM289	103.5 64.00 : 136.00
Diisopropyl ether	TM289	88.0 64.00 : 136.00
Ethanol	TM289	139.0 60.84 : 141.13
Ethylbenzene	TM289	100.0 64.00 : 136.00
o-Xylene	TM289	102.5 64.00 : 136.00
p/m-Xylene	TM289	102.25 71.56 : 125.03
tert Butanol	TM289	106.0 70.51 : 143.48
tert-amyl methyl ether	TM289	90.5 61.37 : 145.66
tert-butyl ethyl ether	TM289	89.0 71.10 : 132.36
tert-butyl methyl ether	TM289	91.5 72.87 : 135.34
Toluene	TM289	102.5 64.00 : 136.00

Total Organic Carbon



CERTIFICATE OF ANALYSIS

SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

Total Organic Carbon

Component	Method Code	QC 44
Total Organic Carbon	TM132	114.37 112.23 : 144.85

VOC MS (S)

Component	Method Code	QC 48
1,1,1,2-tetrachloroethane	TM116	93.4 79.70 : 131.43
1,1,1-Trichloroethane	TM116	98.4 65.91 : 140.05
1,1,2-Trichloroethane	TM116	102.2 88.70 : 147.24
1,1-Dichloroethane	TM116	105.0 69.50 : 147.71
1,2-Dichloroethane	TM116	104.0 72.54 : 154.14
1,4-Dichlorobenzene	TM116	94.0 68.76 : 143.94
2-Chlorotoluene	TM116	108.2 83.88 : 169.64
4-Chlorotoluene	TM116	107.0 63.90 : 187.23
Benzene	TM116	102.8 68.68 : 145.95
Carbon Disulphide	TM116	93.6 54.38 : 132.45
Carbontetrachloride	TM116	91.8 73.36 : 139.36
Chlorobenzene	TM116	99.0 81.53 : 130.33
Chloroform	TM116	100.4 69.66 : 148.03
Chloromethane	TM116	53.0 34.85 : 197.27
Cis-1,2-Dichloroethene	TM116	96.4 64.50 : 137.05
Dibromomethane	TM116	82.4 65.13 : 138.40
Dichloromethane	TM116	107.2 70.67 : 150.15
Ethylbenzene	TM116	97.6 70.86 : 132.33
Hexachlorobutadiene	TM116	149.6 34.74 : 187.69
Isopropylbenzene	TM116	83.2 53.42 : 123.07
Naphthalene	TM116	113.0 76.11 : 139.72
o-Xylene	TM116	90.6 64.33 : 127.08



CERTIFICATE OF ANALYSIS

SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

VOC MS (S)

		QC 48
p/m-Xylene	TM116	96.0 69.99 : 132.19
Sec-Butylbenzene	TM116	88.6 33.32 : 159.06
Tetrachloroethene	TM116	100.0 78.08 : 139.93
Toluene	TM116	97.0 65.92 : 140.08
Trichloroethene	TM116	97.2 67.45 : 143.34
Trichlorofluoromethane	TM116	107.2 73.22 : 143.68
Vinyl Chloride	TM116	108.8 53.84 : 178.24

VOC MS (W)

Component	Method Code	QC 41
1,1,1,2-Tetrachloroethane	TM208	119.0 83.54 : 132.23
1,1,1-Trichloroethane	TM208	121.5 82.96 : 136.07
1,1-Dichloroethane	TM208	135.0 80.52 : 149.86
1,2-Dichloroethane	TM208	115.0 83.41 : 142.43
2-Chlorotoluene	TM208	119.0 83.27 : 124.81
4-Chlorotoluene	TM208	116.5 69.11 : 146.84
Benzene	TM208	126.0 71.02 : 150.91
Bromomethane	TM208	112.5 74.81 : 152.06
Carbontetrachloride	TM208	122.5 89.01 : 128.83
Chlorobenzene	TM208	119.0 83.22 : 132.38
Chloroform	TM208	118.0 87.05 : 137.77
Chloromethane	TM208	117.5 41.86 : 190.65
Cis-1,2-Dichloroethene	TM208	120.5 85.61 : 132.48
Dichloromethane	TM208	122.5 84.09 : 138.20
Ethylbenzene	TM208	119.0 80.29 : 125.75
Hexachlorobutadiene	TM208	113.0 80.23 : 142.99
o-Xylene	TM208	117.0 83.08 : 123.04
p/m-Xylene	TM208	119.5 68.12 : 144.74



SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

VOC MS (W)

		QC 41
Tert-butyl methyl ether	TM208	118.0 64.23 : 136.92
Tetrachloroethene	TM208	119.5 82.62 : 128.11
Toluene	TM208	120.0 81.51 : 132.12
Trichloroethene	TM208	119.0 86.30 : 128.88
Vinyl Chloride	TM208	148.5 56.71 : 166.83

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: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

Chromatogram

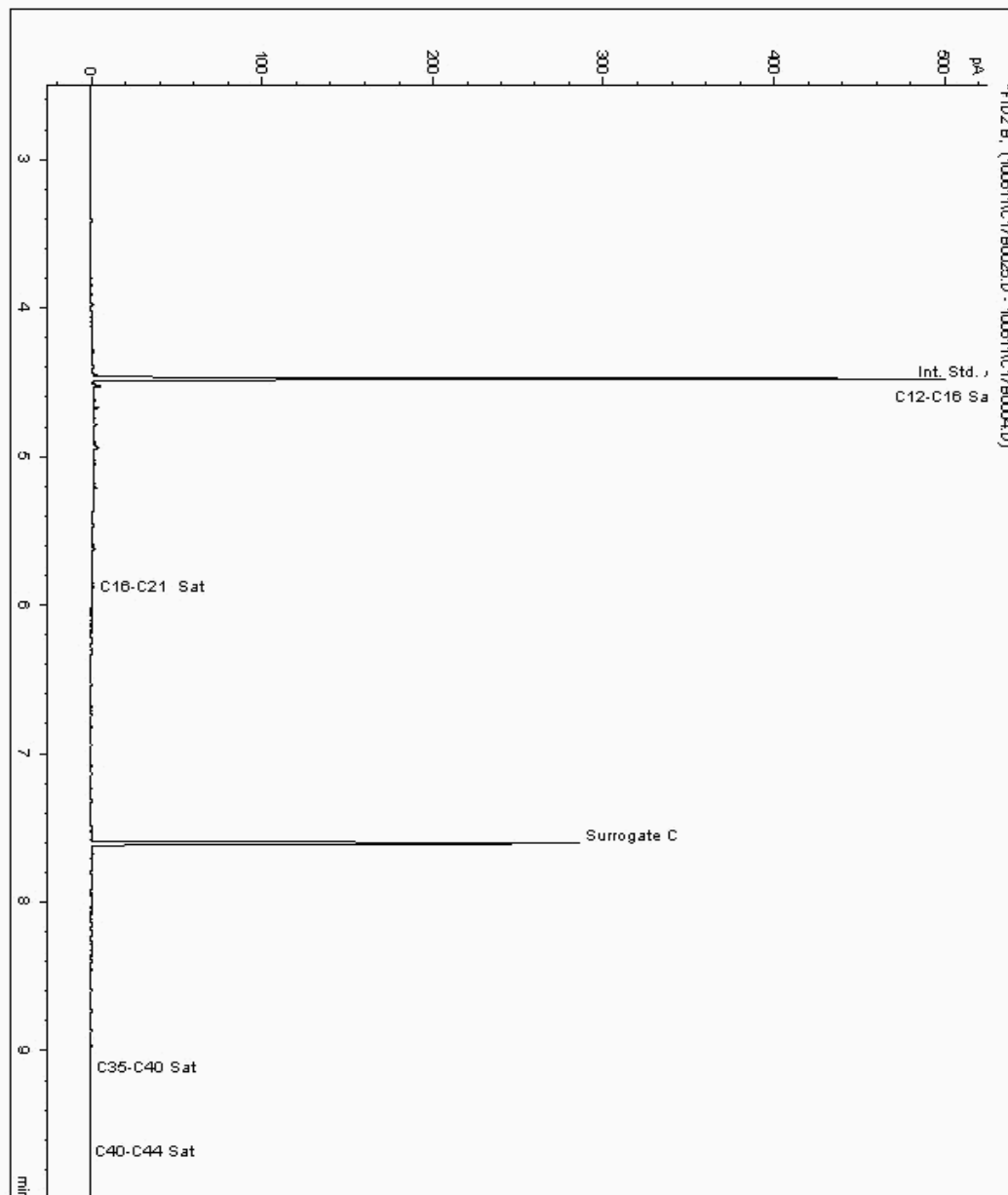
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4437714
Sample ID : BH101

Depth : 5.40

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

Sample Identity: 4399396-4437714
Date Acquired : 06/10/11 14:23:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.027





CERTIFICATE OF ANALYSIS

SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

Chromatogram

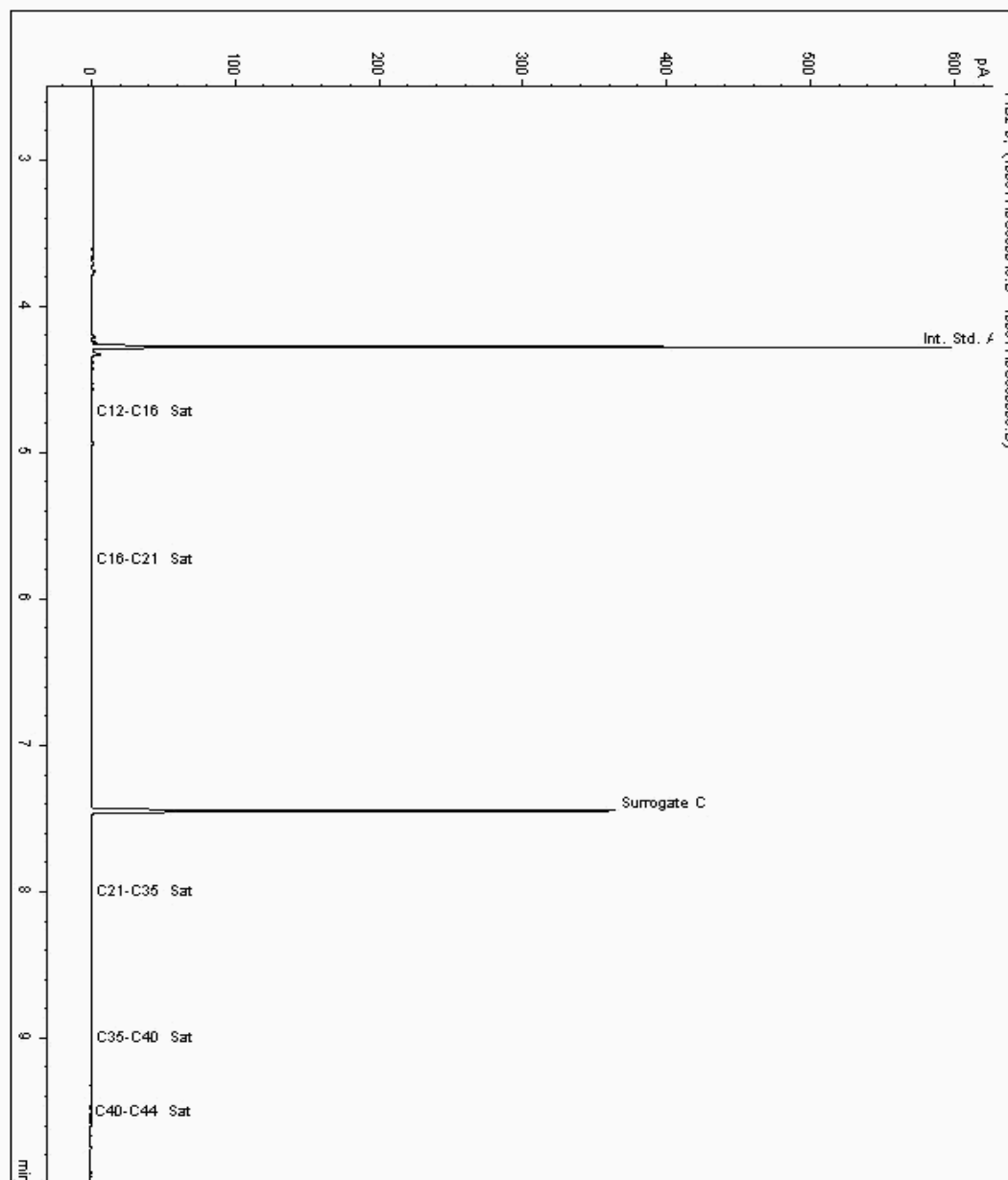
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4448196
Sample ID : BH101

Depth : 5.40

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

Sample Identity: 4399405-4448196
Date Acquired : 07/10/11 13:46:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

Chromatogram

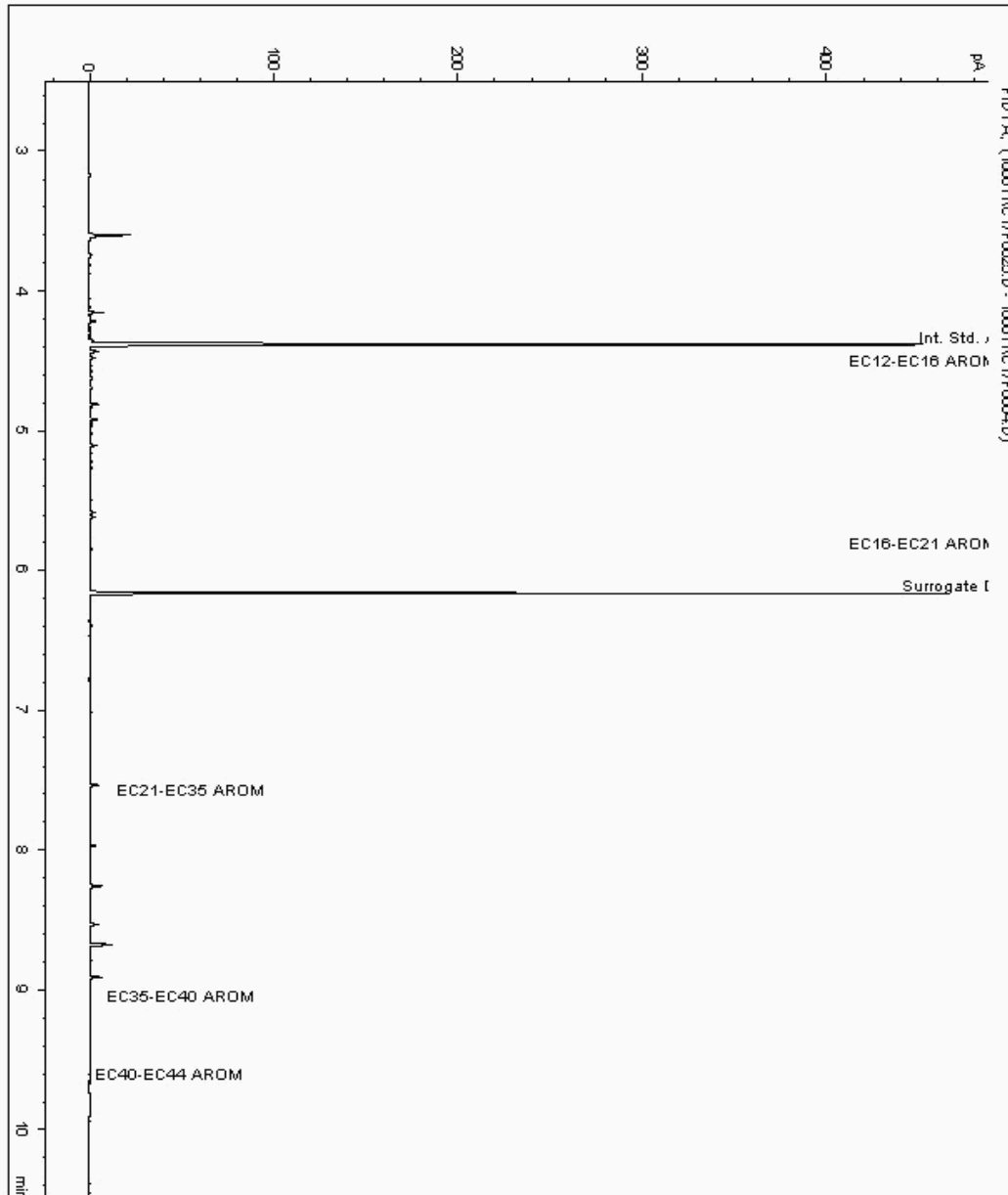
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4437714
Sample ID : BH101

Depth : 5.40

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

Sample Identity: 4399397-4437714
Date Acquired : 06/10/11 14:23:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.027





SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 153992
Superseded Report:

Chromatogram

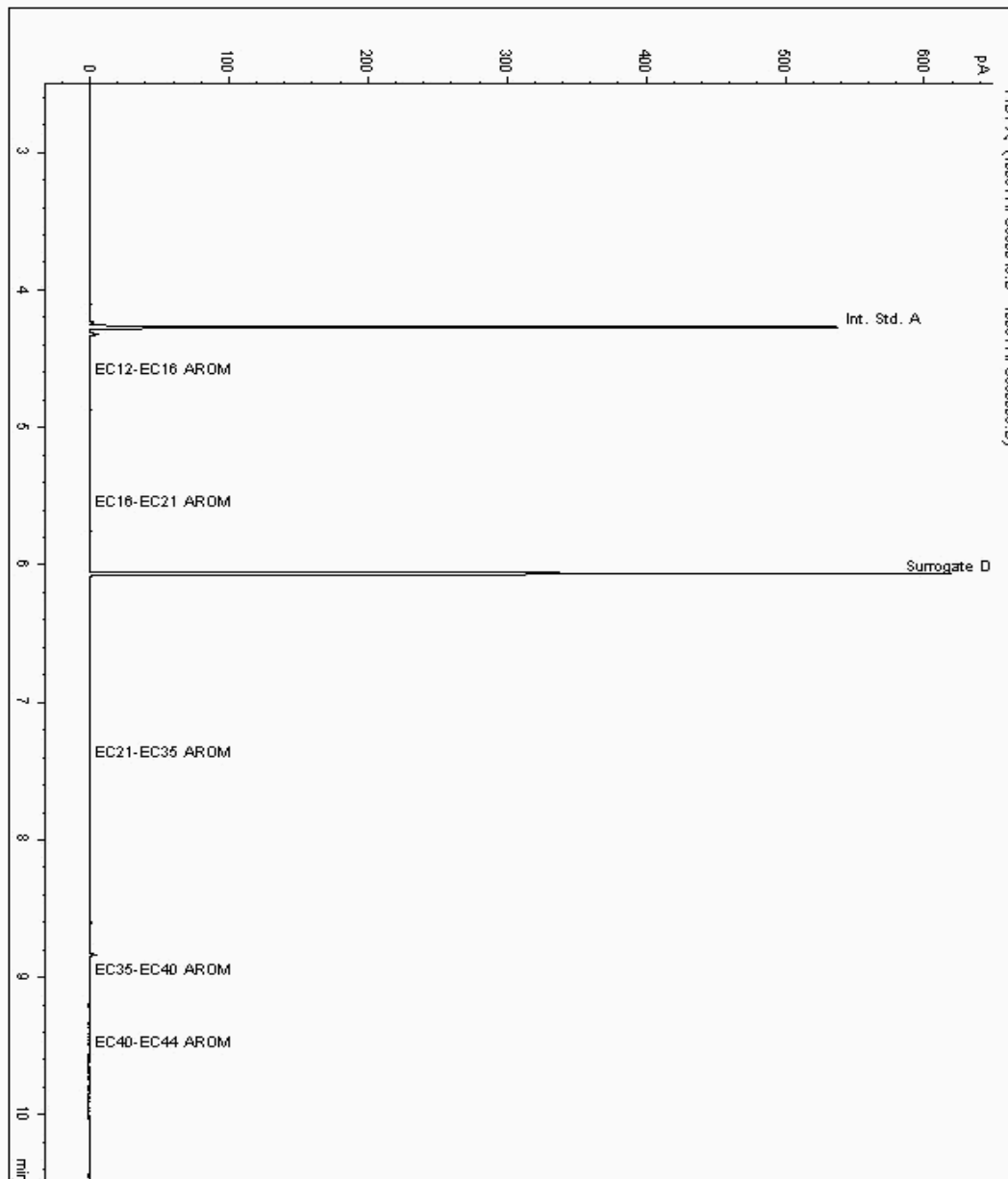
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4448196
Sample ID : BH101

Depth : 5.40

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

Sample Identity: 4399406-4448196
Date Acquired : 07/10/11 13:46:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

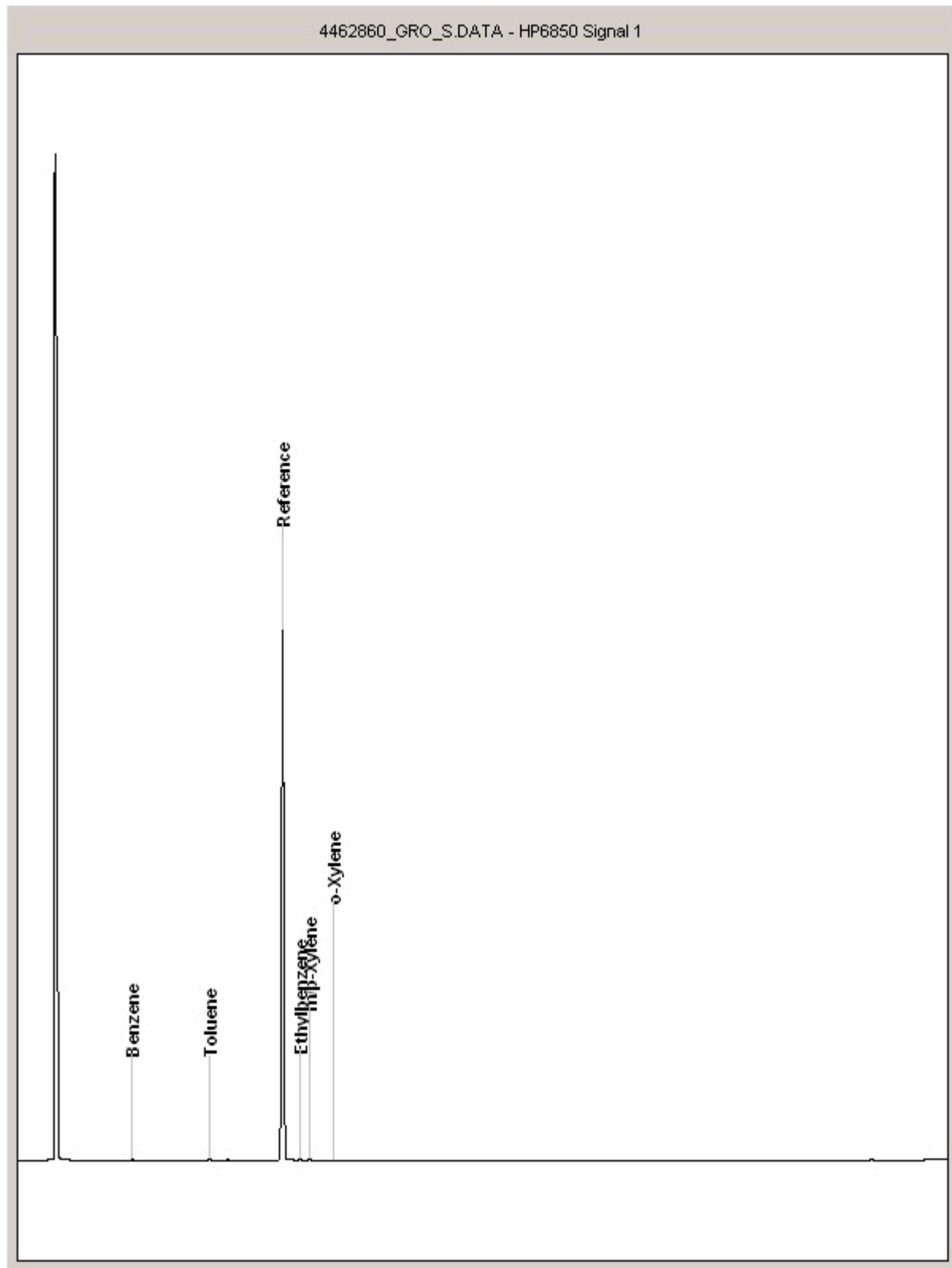
Order Number:
Report Number: 153992
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4462860
Sample ID : BH101

Depth : 5.40





SDG: 111004-9
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

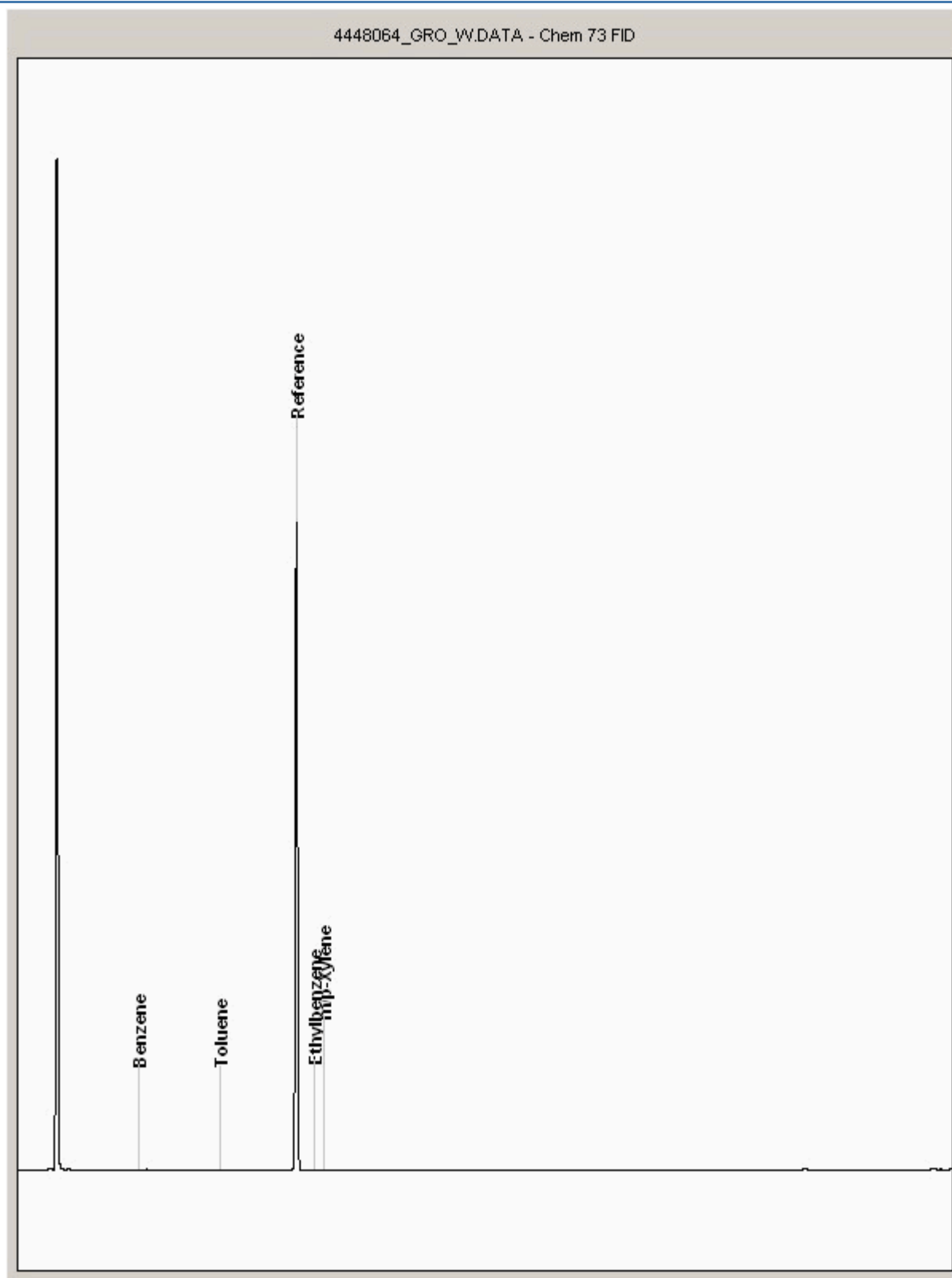
Order Number:
Report Number: 153992
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4448064
Sample ID : BH101

Depth : 5.40





CERTIFICATE OF ANALYSIS

SDG:	111004-9	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	153992
Client Reference:	46370079	Attention:	Jocelyn Thomas	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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 themajor 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 C4 -C10 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRI by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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



Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Wednesday, October 5, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : October 5, 2011 6:00

Instructions Received : October 5, 2011 6:00

Laboratory SDG No : 111005-27

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☐ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 11, 2011

Coolbox Temperature (°C) : 15.4
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 1 SOLID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	111005-27	Customer	URS Corporation Limited		Location	Shell Hitchin	Date Received	October 5, 2011 6:00
-------------------	-----------	-----------------	-------------------------	--	-----------------	---------------	----------------------	----------------------

Sample Type : SOLID				Fraction Organic Carbon (FOC)	LAB-07 (S)	LAB-10 (S)
Legend						
Test X						
Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled			
4433452	BH106	3.90	04/10/2011	X	X	X

SDG Number	111005-27	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	October 5, 2011 6:00
-------------------	-----------	-----------------	-------------------------	-----------------	---------------	----------------------	----------------------

Sample Type : CEN 2:1

Legend

Test



Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	LAB-51 (W)	LAB-54 (W)	WAC-A (W)
---------------	---------------------	-----------	--------------	------------	------------	-----------

4433452	BH106	3.90	04/10/2011	X	X	X
---------	-------	------	------------	---	---	---

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
---------------	---------------------	-----------	--------------	----------------

Sample Type :

No Records

SDG Number	111005-27	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	October 5, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 11, 2011			
Sample Type	SOLID			
LAB-07 (S)		5	1	
LAB-10 (S)		5	1	
Fraction Organic Carbon (FOC)		5	1	

SDG Number	111005-27	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	October 5, 2011	6:00
Description		T/A	No. Scheduled	
Requested Due	October 11, 2011			
Sample Type	CEN 2:1			
LAB-51 (W)		5	1	
LAB-54 (W)		5	1	
WAC-A (W)		5	1	

SDG Number	111005-27	Location	Shell Hitchin		
Customer	URS Corporation Limited	Date Received	October 5, 2011 6:00		
Analysis / Suite	No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type :	SOLID				
LAB-07 (S)					
	1	Aliphatics >C12-C16		GC	<100 µg/kg
	1	Aliphatics >C16-C21		GC	<100 µg/kg
	1	Aliphatics >C21-C35		GC	<100 µg/kg
	1	Aliphatics >C35-C44		GC	<100 µg/kg
	1	Aromatics >EC12-EC16		GC	<100 µg/kg
	1	Aromatics >EC16-EC21		GC	<100 µg/kg
	1	Aromatics >EC21-EC35		GC	<100 µg/kg
	1	Aliphatics >C10-C12		GC	<10 µg/kg
	1	Aliphatics >C5-C6		GC	<10 µg/kg
	1	Aliphatics >C6-C8		GC	<10 µg/kg
	1	Aliphatics >C8-C10		GC	<10 µg/kg
	1	Aromatics >EC10-EC12		GC	<10 µg/kg
	1	Aromatics >EC5-EC7		GC	<10 µg/kg
	1	Aromatics >EC7-EC8		GC	<10 µg/kg
	1	Aromatics >EC8-EC10		GC	<10 µg/kg
	1	GRO Surrogate % recovery**		GC	
LAB-10 (S)					
	1	Benzene	#M	GCMS	<9 µg/kg
	1	Diisopropyl ether		GCMS	<1 µg/kg
	1	Ethanol		GCMS	<50 µg/kg
	1	Ethylbenzene	#M	GCMS	<4 µg/kg
	1	Methyl Tertiary Butyl Ether	#M	GCMS	<11 µg/kg
	1	o-Xylene	#M	GCMS	<10 µg/kg
	1	p/m-Xylene	#	GCMS	<14 µg/kg
	1	tert Butanol		GCMS	<10 µg/kg
	1	Tert-amyl methyl ether		GCMS	<15 µg/kg
	1	tert-butyl ethyl ether		GCMS	<1 µg/kg
	1	Toluene	#M	GCMS	<5 µg/kg
	1	Toluene-d8**		GCMS	
Total Organic Carbon					
	1	Fraction Organic Carbon (FOC)	#	IR	<0.002 -

SDG Number		111005-27		Location		Shell Hitchin	
Customer		URS Corporation Limited		Date Received		October 5, 2011 6:00	
Analysis / Suite		No.	Component		UKAS (#) MCerts (M)	Method	LoD
Sample Type :		CEN 2:1					
LAB-51 (W)							
	1		Aliphatics >C12-C16 (aq)			GC	<10 µg/l
	1		Aliphatics >C16-C21 (aq)			GC	<10 µg/l
	1		Aliphatics >C21-C35 (aq)			GC	<10 µg/l
	1		Aromatics >EC12-EC16 (aq)			GC	<10 µg/l
	1		Aromatics >EC16-EC21 (aq)			GC	<10 µg/l
	1		Aromatics >EC21-EC35 (aq)			GC	<10 µg/l
	1		Aliphatics >C10-C12			GC	<10 µg/l
	1		Aliphatics >C5-C6			GC	<10 µg/l
	1		Aliphatics >C6-C8			GC	<10 µg/l
	1		Aliphatics >C8-C10			GC	<10 µg/l
	1		Aromatics >EC10-EC12			GC	<10 µg/l
	1		Aromatics >EC5-EC7			GC	<10 µg/l
	1		Aromatics >EC7-EC8			GC	<10 µg/l
	1		Aromatics >EC8-EC10			GC	<10 µg/l
	1		GRO Surrogate % recovery**			GC	
LAB-54 (W)							
	1		Benzene			GCMS	<1 µg/l
	1		Diisopropyl ether			GCMS	<1 µg/l
	1		Ethanol			GCMS	<50 µg/l
	1		Ethylbenzene			GCMS	<1 µg/l
	1		m,p-Xylene			GCMS	<1 µg/l
	1		Methyl tertiary butyl ether (MTBE)			GCMS	<1 µg/l
	1		o-Xylene			GCMS	<1 µg/l
	1		tert Butanol			GCMS	<10 µg/l
	1		tert-Amyl methyl ether (TAME)			GCMS	<1 µg/l
	1		tert-butyl ethyl ether			GCMS	<1 µg/l
	1		Toluene			GCMS	<1 µg/l
	1		Toluene-d8**			GCMS	
WAC-A (W)							
	1		Carbon, Organic (diss.filt)			IR	<3 mg/l
	1		Antimony (diss.filt)			ICPMS	<0.16 µg/l
	1		Arsenic (diss.filt)			ICPMS	<0.12 µg/l
	1		Barium (diss.filt)			ICPMS	<0.03 µg/l
	1		Cadmium (diss.filt)			ICPMS	<0.1 µg/l
	1		Chromium (diss.filt)			ICPMS	<0.22 µg/l
	1		Copper (diss.filt)			ICPMS	<0.85 µg/l
	1		Lead (diss.filt)			ICPMS	<0.02 µg/l
	1		Mercury (diss.filt)			AFS	<0.01 µg/l
	1		Molybdenum (diss.filt)			ICPMS	<0.24 µg/l
	1		Nickel (diss.filt)			ICPMS	<0.15 µg/l
	1		Selenium (diss.filt)			ICPMS	<0.39 µg/l
	1		Zinc (diss.filt)			ICPMS	<0.41 µg/l
	1		Chloride			SPECTROPHOTOMETRIC	<2 mg/l
	1		Dissolved solids, Total (meter)			METER	<5 mg/l
	1		Fluoride			SPECTROPHOTOMETRIC	<0.5 mg/l
	1		Sulphate			SPECTROPHOTOMETRIC	<2 mg/l
	1		Phenols, Total Detected monohydric			HPLC	<0.016 mg/l

Disclaimers

Please Note :

1. Following reviews by UKAS on the use of correct containers for analysis, we will no longer accredit volatile samples that are not received in the correct containers. We would like to highlight that best practice for sampling volatiles is to take every sample (soils and waters) in duplicate vials or volatile jars with **no headspace**. This will include analysis for the following parameters: VOC, Dissolved gases, VFA, Alcohols, TEL, GRO or TPH CWG.
2. The recommended storage temperature for water and soil samples is 5°C +/- 3°C (MCERTS for Waters July 2008).
3. When an analysis has been requested on an inappropriate bottle (this includes unpreserved bottles for a preserved analysis) and the analysis goes ahead, it will not conform to our Quality Management System, and may not be accredited.
4. We are accredited to MCERTS for sand, clay and loam/topsoil. This also includes naturally occurring soil profiles and fill/made ground where 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.
5. It is assumed that detection limits for samples scheduled are below the critical level of interest required for the project, if they are not or you would like to receive clarification of these, please contact the laboratory.

Surcharges :

6. Surcharges will be applied for accelerated turnaround times where these are requested based on the relevant contract or quotation prices. If the requested rapid turnaround fails but the report still meets rapid turnaround criteria an appropriate surcharge will still be applied. Surcharges are not subject to any discount.

Purchase Orders :

7. If these are used by your company, then data cannot be released unless we have received a copy of the purchase order.

Sample Disposal :

8. If sufficient soil/water sample (tubs, bottles and 250g jars) is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed).
9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
10. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions for sample disposal.
11. For extended storage periods, a storage charge of £1 (or € equivalent) per sample per month will be applied for each month or part thereof until the customer cancels the request for sample storage.
12. ALcontrol Laboratories reserve the right to charge £3 (or € equivalent) for samples received and stored but not analysed.

Subcontracted Analysis :

13. Please note that any analyses marked with an asterisk (*) will be subcontracted to an approved laboratory. Please note turnaround times for subcontracted analysis may sometimes be in excess of the turnaround requested and for some analyses can be up to 15-20 days. If this is unacceptable please contact us immediately as you may prefer to subcontract the work yourselves. Subcontracted samples will be disposed of by the subcontracted laboratory and are therefore not covered under the ALcontrol terms and conditions of sample disposal.

Asbestos :

14. When requested the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces.
15. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025, and no analysis will be undertaken on the remaining samples. At no point is the fibre content of the soil sample determined.
16. Where no asbestos containing material is found this will be reported as "No ACM detected".



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

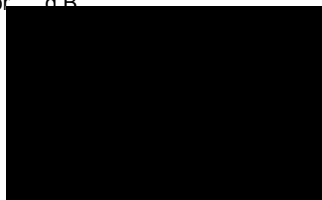
Date: 12 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 111005-27
Your Reference: 46370079
Location: Shell Hitchin
Report No: 154409

We received 1 sample on Wednesday October 05, 2011 and 1 of these samples were scheduled for analysis which was completed on Wednesday October 12, 2011. 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 McWhann

Operations Manager





SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)		4433452
	Customer Sample Reference		BH106
	AGS Reference		
	Depth (m)		3.90
	Container		60g VOC (ALE215) 250g Amber Jar (AL) 1kg TUB
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X
CEN Readings	All	NDPs: 0 Tests: 1	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1	X
Fluoride	All	NDPs: 0 Tests: 1	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1	X
Mercury Dissolved	All	NDPs: 0 Tests: 1	X
Oxygenates (S)	All	NDPs: 0 Tests: 1	X
Oxygenates (W)	All	NDPs: 0 Tests: 1	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X

SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

SOLID

Results Legend



Test



No Determination Possible

Lab Sample No(s)

4433452

**Customer
Sample Reference**

BH106

AGS Reference

Depth (m)

3.90

Container

60g VOC (ALE215)
250g Amber Jar (AL
1kg TUB

Sample description	All	NDPs: 0 Tests: 1				X
Total Dissolved Solids	All	NDPs: 0 Tests: 1			X	
Total Organic Carbon	All	NDPs: 0 Tests: 1				X
VOC MS (S)	All	NDPs: 0 Tests: 1				X
VOC MS (W)	All	NDPs: 0 Tests: 1			X	



SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	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
Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2		
4433452	BH106	3.90	Light Brown	Sandy Clay Loam	0.1 - 2 mm	None	None		

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:
Report Number: 154409
Superseded Report:

Page 5 of 28

Order Number:
Report Number: 154409
Superseded Report:

Page 6 of 28

Order Number:
Report Number: 154409
Superseded Report:

Page 7 of 28

Order Number:
Report Number: 154409
Superseded Report:

Page 8 of 28

Order Number:
Report Number: 154409
Superseded Report:

Page 9 of 28



CERTIFICATE OF ANALYSIS

SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.208	Moisture Content Ratio (%)	19.1
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.0
Particle Size <4mm	>95%		

Case			
SDG	111005-27		
Lab Sample Number(s)	4433452		
Sampled Date	04-Oct-2011		
Customer Sample Ref.	BH106		
Depth (m)	3.90		
Solid Waste Analysis			
Total Organic Carbon (%)	<0.200	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	Result	Limit of Detection	Result	Limit of Detection			
Arsenic	0.000276	<0.00012	0.000552	<0.0012	0.5	2	25
Barium	0.00924	<0.00003	0.0185	<0.0003	20	100	300
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	0.04	1	5
Chromium	0.00251	<0.00022	0.00502	<0.0022	0.5	10	70
Copper	<0.00085	<0.00085	<0.0017	<0.0085	2	50	100
Mercury Dissolved (CVAf)	0.0000119	<0.00001	0.0000238	<0.0001	0.01	0.2	2
Molybdenum	0.000274	<0.00024	0.000548	<0.0024	0.5	10	30
Nickel	0.000771	<0.00015	0.00154	<0.0015	0.4	10	40
Lead	0.000484	<0.00002	0.000968	<0.0002	0.5	10	50
Antimony	0.000168	<0.00016	0.000336	<0.0016	0.06	0.7	5
Selenium	<0.00039	<0.00039	<0.00078	<0.0039	0.1	0.5	7
Zinc	<0.00041	<0.00041	<0.00082	<0.0041	4	50	200
Chloride	8.5	<2	17	<2	800	15000	25000
Fluoride	<0.5	<0.5	<1	<0.5	10	150	500
Sulphate (soluble)	11.8	<2	23.6	<2	1000	20000	50000
Total Dissolved Solids	160	<5	320	<5	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.032	<0.016	1	-	-
Dissolved Organic Carbon	3.67	<3	7.34	<3	500	800	1000

Leach Test Information

Date Prepared	05-Oct-2011
pH (pH Units)	6.84
Conductivity (µS/cm)	190.00
Temperature (°C)	21.40
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
12/10/2011 14:25:40



SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
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Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.0
Particle Size <4mm	>95%		

Case			
SDG	111005-27		
Lab Sample Number(s)	4433452		
Sampled Date	04-Oct-2011		
Customer Sample Ref.	BH106		
Depth (m)	3.90		

Solid Waste Analysis

Total Organic Carbon (%)	<0.200			
Loss on Ignition (%)	-			
Sum of BTEX (mg/kg)	<24.0			
Sum of 7 PCBs (mg/kg)	-			
Mineral Oil (mg/kg)	-			
PAH Sum of 17 (mg/kg)	-			
pH (pH Units)	-			
ANC to pH 6 (mol/kg)	-			
ANC to pH 4 (mol/kg)	-			

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Ethanol	<0.05	<0.05	<0.1	<0.5	-
tert Butanol	<0.01	<0.01	<0.02	<0.1	-
Diisopropyl ether	<0.001	<0.001	<0.002	<0.01	-
tert-butyl ethyl ether	<0.001	<0.001	<0.002	<0.01	-

TPH CWG (W)					
Surrogate Recovery	-	-	-	-	-
Aliphatics C5-C6	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C6-C8	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C8-C10	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C10-C12	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C12-C16	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C16-C21	<0.01	<0.01	<0.02	<0.1	-
Aliphatics >C21-C35	<0.01	<0.01	<0.02	<0.1	-
Aromatics C6-C7	<0.01	<0.01	<0.02	<0.1	-
Aromatics >C7-C8	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC8 -EC10	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC10-EC12	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC12-EC16	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC16-EC21	<0.01	<0.01	<0.02	<0.1	-
Aromatics >EC21-EC35	<0.01	<0.01	<0.02	<0.1	-

VOC MS (W)					
Toluene-d8	-	-	-	-	-
Tert-butyl methyl ether	<0.001	<0.001	<0.002	<0.01	-
Benzene	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	05-Oct-2011
pH (pH Units)	6.84
Conductivity (µS/cm)	190.00
Temperature (°C)	21.40
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
12/10/2011 14:25:40



CERTIFICATE OF ANALYSIS

SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

CEN 2:1 STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/1

Client Reference		Site Location	Shell Hitchin
Mass Sample taken (kg)	0.208	Moisture Content Ratio (%)	19.1
Mass of dry sample (kg)	0.175	Dry Matter Content Ratio (%)	84.0
Particle Size <4mm	>95%		

Case			
SDG	111005-27		
Lab Sample Number(s)	4433452		
Sampled Date	04-Oct-2011		
Customer Sample Ref.	BH106		
Depth (m)	3.90		
Solid Waste Analysis			
Total Organic Carbon (%)	<0.200	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	<24.0	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc ⁿ in 2:1 eluate (mg/l)		2:1 conc ⁿ leached (mg/kg)		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
VOC MS (W)					
Toluene	<0.001	<0.001	<0.002	<0.01	-
Ethylbenzene	<0.001	<0.001	<0.002	<0.01	-
p/m-Xylene	<0.001	<0.001	<0.002	<0.01	-
o-Xylene	<0.001	<0.001	<0.002	<0.01	-
Tert-amyl methyl ether	<0.001	<0.001	<0.002	<0.01	-

Leach Test Information

Date Prepared	05-Oct-2011
pH (pH Units)	6.84
Conductivity (µS/cm)	190.00
Temperature (°C)	21.40
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation
Mcerts Certification does not apply to leachates
12/10/2011 14:25:40



SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10⁻⁷

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM114		Leaching Procedure for CEN Two Stage Batch Test 2:1/8:1 Cumulative		
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step		
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	4433452
Customer Sample Ref.	BH106
AGS Ref.	
Depth	3.90
Type	SOLID

Anions by Kone (w)	08-Oct-2011
CEN 2:1 Leachate (1 Stage)	05-Oct-2011
CEN Readings	07-Oct-2011
Dissolved Metals by ICP-MS	10-Oct-2011
Dissolved Organic/Inorganic Carbon	09-Oct-2011
EPH CWG (Aliphatic) Aqueous GC (W)	10-Oct-2011
EPH CWG (Aliphatic) GC (S)	07-Oct-2011
EPH CWG (Aromatic) Aqueous GC (W)	10-Oct-2011
EPH CWG (Aromatic) GC (S)	07-Oct-2011
Fluoride	07-Oct-2011
GRO by GC-FID (S)	10-Oct-2011
GRO by GC-FID (W)	10-Oct-2011
Mercury Dissolved	07-Oct-2011
Oxygenates (S)	08-Oct-2011
Oxygenates (W)	08-Oct-2011
Phenols by HPLC (W)	10-Oct-2011
Sample description	05-Oct-2011
Total Dissolved Solids	07-Oct-2011
Total Organic Carbon	07-Oct-2011
TPH CWG (W)	10-Oct-2011
VOC MS (S)	12-Oct-2011
VOC MS (W)	11-Oct-2011



SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 40
Chloride	TM184	102.0 97.70 : 105.47
Nitrite as NO2	TM184	101.0 92.92 : 105.47
Phosphate (Ortho as PO4)	TM184	95.74 : 105.80
Sulphate (soluble)	TM184	102.0 95.09 : 105.03
TON as NO3	TM184	98.0 93.27 : 107.89

Dissolved Metals by ICP-MS

Component	Method Code	QC 45
Aluminium	TM152	97.6 89.70 : 116.91
Antimony	TM152	93.87 88.52 : 115.10
Arsenic	TM152	100.27 88.01 : 113.65
Barium	TM152	101.87 91.77 : 114.85
Beryllium	TM152	100.13 87.52 : 117.84
Bismuth	TM152	97.33 90.09 : 110.23
Boron	TM152	90.27 77.85 : 119.29
Cadmium	TM152	102.8 80.87 : 123.01
Chromium	TM152	97.6 90.69 : 114.98
Cobalt	TM152	96.4 89.85 : 118.62
Copper	TM152	96.0 88.90 : 115.48
Lead	TM152	101.47 92.73 : 112.77
Lithium	TM152	94.13 85.81 : 117.65
Manganese	TM152	98.93 91.72 : 115.43
Molybdenum	TM152	98.93 88.15 : 117.50
Nickel	TM152	97.47 87.49 : 114.30
Phosphorus	TM152	95.6 88.00 : 118.02
Selenium	TM152	100.53 87.24 : 114.84
Silver	TM152	96.8 86.39 : 109.81



SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

Dissolved Metals by ICP-MS

		QC 45
Strontium	TM152	100.8 91.27 : 118.05
Tellurium	TM152	102.53 84.92 : 124.22
Thallium	TM152	103.07 92.67 : 112.05
Tin	TM152	99.07 90.73 : 113.66
Titanium	TM152	96.53 90.67 : 115.98
Uranium	TM152	99.73 90.75 : 112.74
Vanadium	TM152	97.2 88.95 : 119.67
Zinc	TM152	97.6 85.94 : 115.27

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 43
Dissolved Inorganic Carbon	TM090	96.0 86.42 : 108.17
Dissolved Organic Carbon	TM090	103.5 90.00 : 113.28

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 43
Total Aliphatics >C12-C35	TM173	83.96 63.33 : 106.07

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 43
Total Aromatics >EC12-EC35	TM173	92.0 67.63 : 106.82

Fluoride

Component	Method Code	QC 41
Fluoride	TM104	98.67 93.42 : 106.23



SDG: 111005-27
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Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
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Superseded Report:

GRO by GC-FID (S)

Component	Method Code	QC 49
Benzene by GC (Moisture Corrected)	TM089	91.5 80.47 : 112.02
Ethylbenzene by GC (Moisture Corrected)	TM089	90.5 77.65 : 114.82
m & p Xylene by GC (Moisture Corrected)	TM089	91.75 77.43 : 115.19
MTBE GC-FID (Moisture Corrected)	TM089	99.5 79.00 : 121.00
o Xylene by GC (Moisture Corrected)	TM089	91.5 78.07 : 118.52
QC	TM089	73.02 : 108.70
Toluene by GC (Moisture Corrected)	TM089	104.0 78.05 : 115.14

GRO by GC-FID (W)

Component	Method Code	QC 48
Benzene by GC	TM245	104.5 74.18 : 120.19
Ethylbenzene by GC	TM245	105.5 68.50 : 123.48
m & p Xylene by GC	TM245	106.25 66.97 : 125.40
MTBE GC-FID	TM245	102.5 75.54 : 119.85
o Xylene by GC	TM245	104.5 67.51 : 121.24
QC	TM245	97.88 67.60 : 116.92
Toluene by GC	TM245	105.0 71.27 : 123.09

Mercury Dissolved

Component	Method Code	QC 46
Mercury Dissolved (CVAf)	TM183	105.0 85.87 : 123.88

Oxygenates (S)

Component	Method Code	QC 42
Benzene raw	TM288	104.25 76.41 : 116.38
Diisopropyl ether raw	TM288	96.25 78.68 : 128.65
Ethanol raw	TM288	89.0 29.57 : 198.54
Ethylbenzene raw	TM288	107.0 75.93 : 132.30



SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
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Superseded Report:

Oxygenates (S)

		QC 42
o-Xylene raw	TM288	100.5 67.81 : 123.00
p/m-Xylene raw	TM288	104.38 76.41 : 125.53
tert Butanol raw	TM288	109.5 75.64 : 168.91
tert-amyl methyl ether raw	TM288	95.75 64.00 : 136.00
tert-butyl ethyl ether raw	TM288	96.75 64.00 : 136.00
tert-butyl methyl ether raw	TM288	98.75 83.50 : 129.91
Toluene raw	TM288	93.25 71.50 : 107.70

Oxygenates (W)

Component	Method Code	QC 48
Benzene	TM289	103.5 64.00 : 136.00
Diisopropyl ether	TM289	88.0 64.00 : 136.00
Ethanol	TM289	139.0 60.84 : 141.13
Ethylbenzene	TM289	100.0 64.00 : 136.00
o-Xylene	TM289	102.5 64.00 : 136.00
p/m-Xylene	TM289	102.25 71.56 : 125.03
tert Butanol	TM289	106.0 70.51 : 143.48
tert-amyl methyl ether	TM289	90.5 61.37 : 145.66
tert-butyl ethyl ether	TM289	89.0 71.10 : 132.36
tert-butyl methyl ether	TM289	91.5 72.87 : 135.34
Toluene	TM289	102.5 64.00 : 136.00

Phenols by HPLC (W)

Component	Method Code	QC 41
2,3,5 Trimethyl-Phenol by HPLC (W)	TM259	100.0 93.62 : 109.26
2-Isopropyl Phenol by HPLC (W)	TM259	102.0 95.28 : 108.84
Cresols by HPLC (W)	TM259	97.33 92.31 : 106.08
Napthol by HPLC (W)	TM259	91.0 85.04 : 105.90
Phenol by HPLC (W)	TM259	99.0 93.02 : 105.72



SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Phenols by HPLC (W)

		QC 41
Xylenols by HPLC (W)	TM259	97.67 94.65 : 107.41

Total Dissolved Solids

Component	Method Code	QC 42
Total Dissolved Solids	TM123	99.9 97.22 : 102.24

Total Organic Carbon

Component	Method Code	QC 49
Total Organic Carbon	TM132	121.56 112.23 : 144.85

VOC MS (S)

Component	Method Code	QC 46
1,1,1,2-tetrachloroethane	TM116	98.4 80.75 : 134.87
1,1,1-Trichloroethane	TM116	107.0 84.19 : 134.57
1,1,2-Trichloroethane	TM116	122.0 91.60 : 151.72
1,1-Dichloroethane	TM116	113.6 85.08 : 141.06
1,2-Dichloroethane	TM116	116.4 90.28 : 129.77
1,4-Dichlorobenzene	TM116	104.2 80.34 : 130.56
2-Chlorotoluene	TM116	133.2 88.26 : 165.36
4-Chlorotoluene	TM116	133.2 84.89 : 151.49
Benzene	TM116	110.2 85.95 : 133.16
Carbon Disulphide	TM116	99.2 62.46 : 128.58
Carbontetrachloride	TM116	108.2 76.98 : 135.83
Chlorobenzene	TM116	102.6 78.76 : 126.20
Chloroform	TM116	115.4 89.60 : 133.62
Chloromethane	TM116	254.0 54.23 : 194.35
Cis-1,2-Dichloroethene	TM116	115.2 81.21 : 131.85



SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

VOC MS (S)

		QC 46
Dibromomethane	TM116	106.8 83.63 : 143.96
Dichloromethane	TM116	120.4 85.94 : 142.25
Ethylbenzene	TM116	105.8 77.81 : 125.24
Hexachlorobutadiene	TM116	121.0 36.10 : 224.99
Isopropylbenzene	TM116	87.8 58.17 : 114.25
Naphthalene	TM116	109.8 82.96 : 141.95
o-Xylene	TM116	96.6 70.79 : 120.57
p/m-Xylene	TM116	101.0 75.73 : 125.60
Sec-Butylbenzene	TM116	106.6 48.48 : 143.01
Tetrachloroethene	TM116	109.4 85.00 : 144.27
Toluene	TM116	100.8 77.44 : 123.88
Trichloroethene	TM116	106.6 83.82 : 129.72
Trichlorofluoromethane	TM116	112.0 84.99 : 140.63
Vinyl Chloride	TM116	105.8 55.95 : 182.21

VOC MS (W)

Component	Method Code	QC 46
1,1,1,2-Tetrachloroethane	TM208	92.0 78.44 : 132.60
1,1,1-Trichloroethane	TM208	94.5 82.89 : 127.03
1,1-Dichloroethane	TM208	97.0 77.09 : 139.26
1,2-Dichloroethane	TM208	98.5 76.92 : 137.00
2-Chlorotoluene	TM208	94.5 71.51 : 138.58
4-Chlorotoluene	TM208	93.5 71.36 : 140.30
Benzene	TM208	99.0 75.59 : 136.08
Bromomethane	TM208	110.0 75.78 : 148.00
Carbontetrachloride	TM208	93.5 80.59 : 133.93
Chlorobenzene	TM208	93.5 80.31 : 128.02
Chloroform	TM208	104.0 83.42 : 132.37



SDG: 111005-27
Job: H_URS_WIM-108
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Location: Shell Hitchin
Customer: URS Corporation Limited
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Order Number:
Report Number: 154409
Superseded Report:

VOC MS (W)

		QC 46
Chloromethane	TM208	58.5 65.92 : 179.80
Cis-1,2-Dichloroethene	TM208	100.5 79.85 : 133.15
Dichloromethane	TM208	102.5 75.54 : 141.85
Ethylbenzene	TM208	92.5 79.89 : 124.59
Hexachlorobutadiene	TM208	100.0 55.77 : 158.25
o-Xylene	TM208	94.5 74.49 : 131.29
p/m-Xylene	TM208	92.5 79.11 : 123.92
Tert-butyl methyl ether	TM208	95.5 72.42 : 136.24
Tetrachloroethene	TM208	96.0 74.98 : 135.52
Toluene	TM208	95.5 80.34 : 126.47
Trichloroethene	TM208	93.5 80.68 : 127.52
Vinyl Chloride	TM208	102.0 66.04 : 159.76

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.



CERTIFICATE OF ANALYSIS

SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

Chromatogram

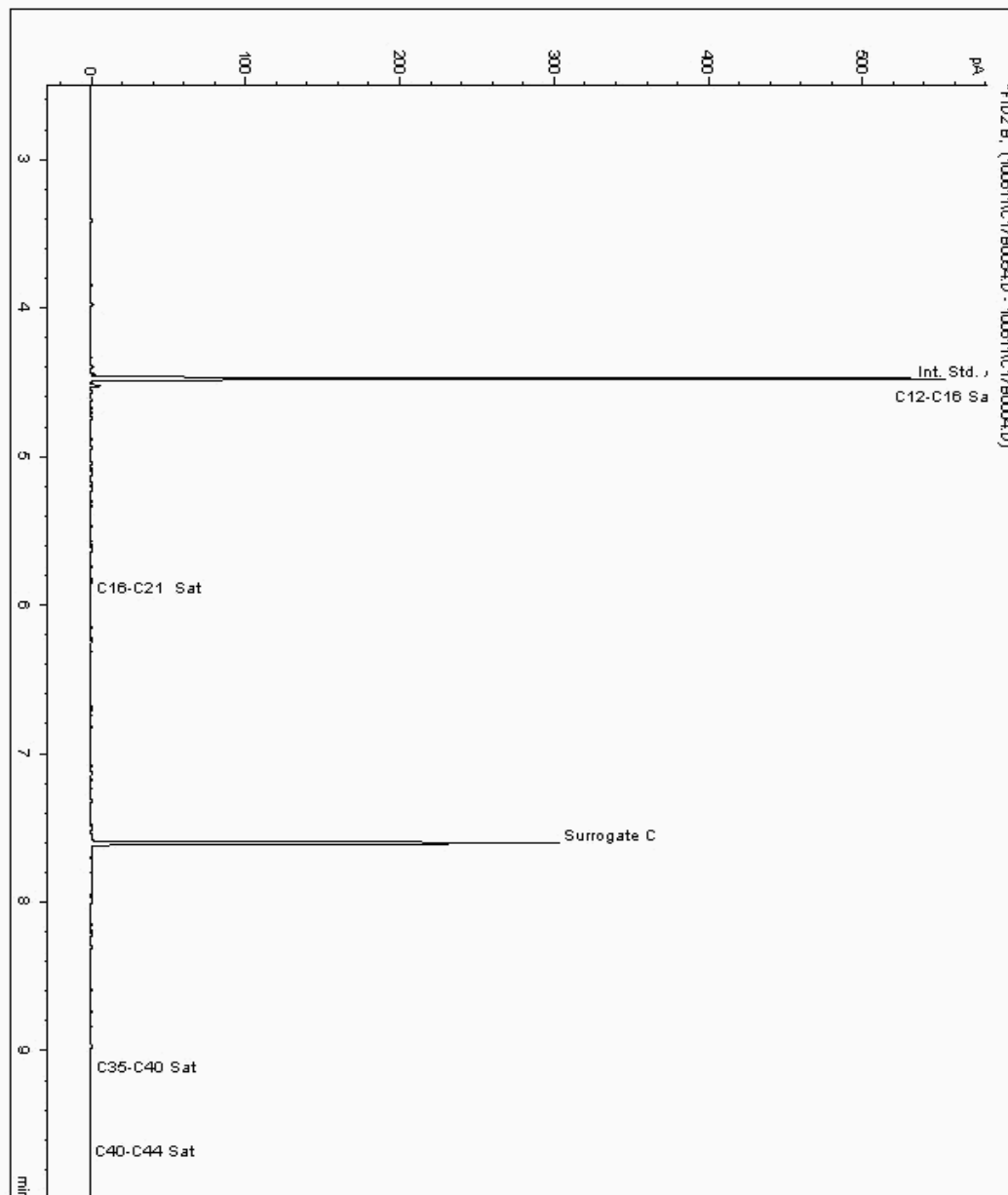
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 4442011
Sample ID : BH106

Depth : 3.90

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

Sample Identity: 4408024-4442011
Date Acquired : 07/10/11 07:56:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960





CERTIFICATE OF ANALYSIS

SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

Chromatogram

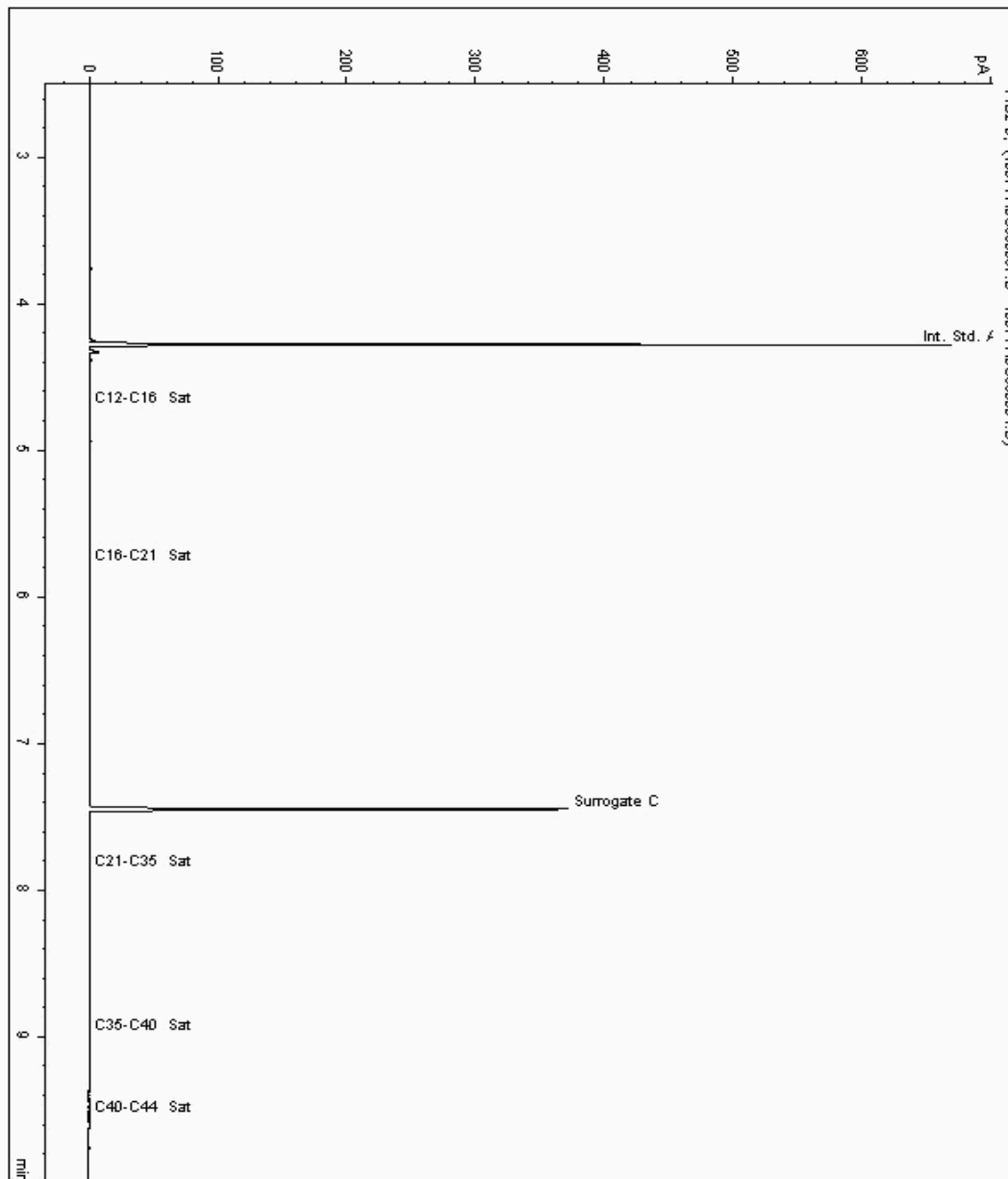
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4453868
Sample ID : BH106

Depth : 3.90

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

Sample Identity: 4408040-4453868
Date Acquired : 08/10/11 13:27:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

Chromatogram

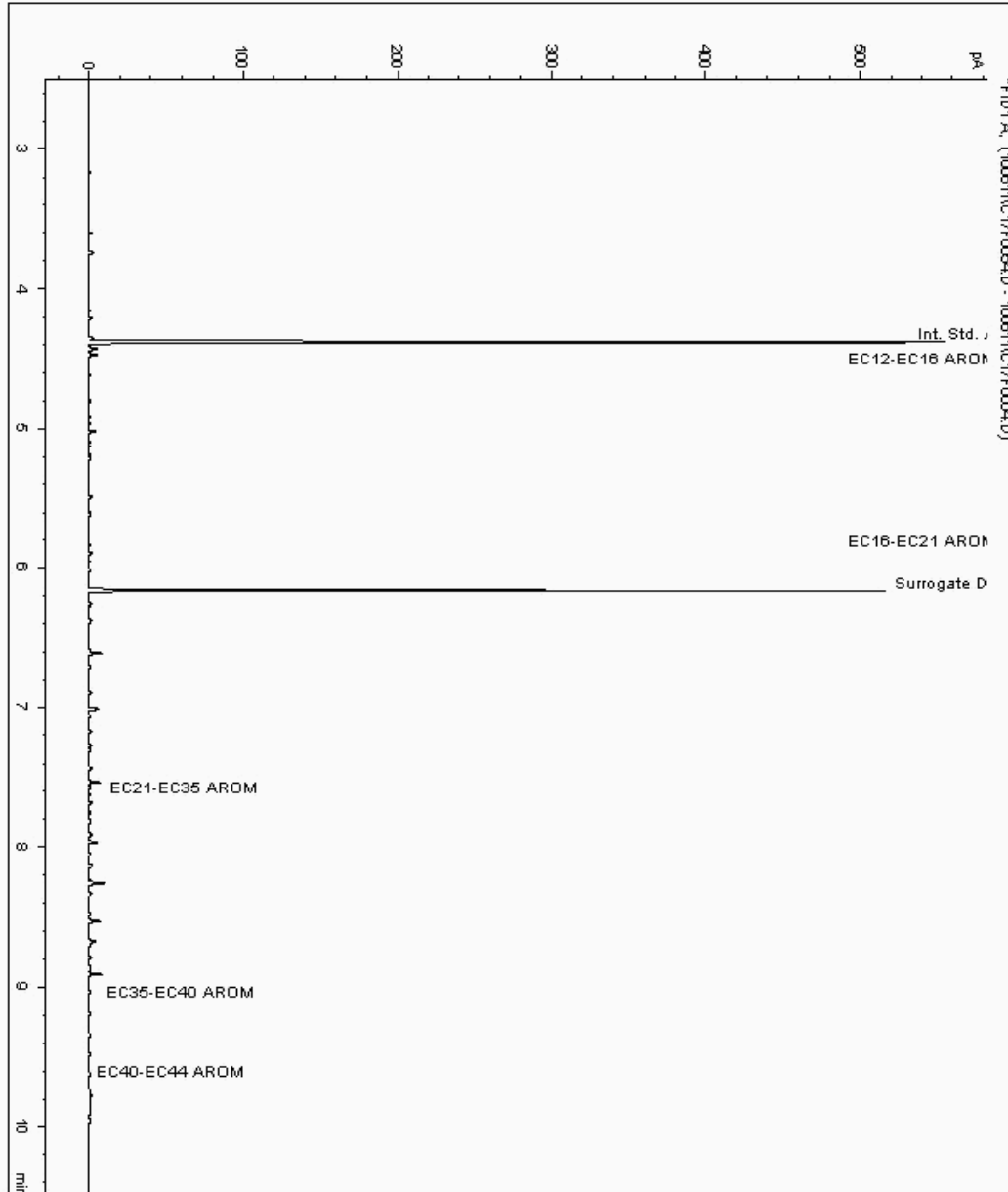
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 4442011
Sample ID : BH106

Depth : 3.90

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

Sample Identity: 4408025-4442011
Date Acquired : 07/10/11 07:56:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960





SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 154409
Superseded Report:

Chromatogram

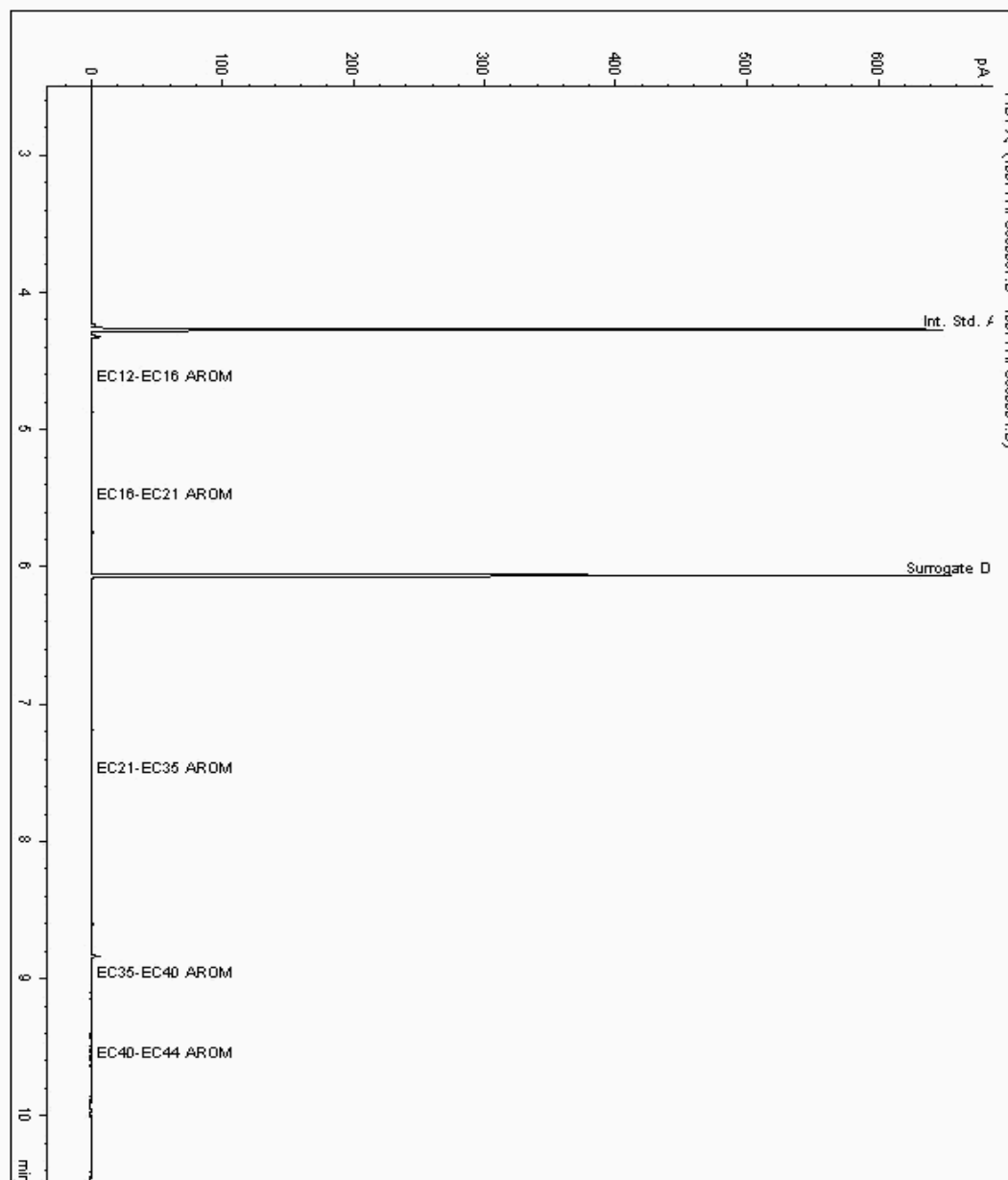
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4453868
Sample ID : BH106

Depth : 3.90

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

Sample Identity: 4408041-4453868
Date Acquired : 08/10/11 13:27:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

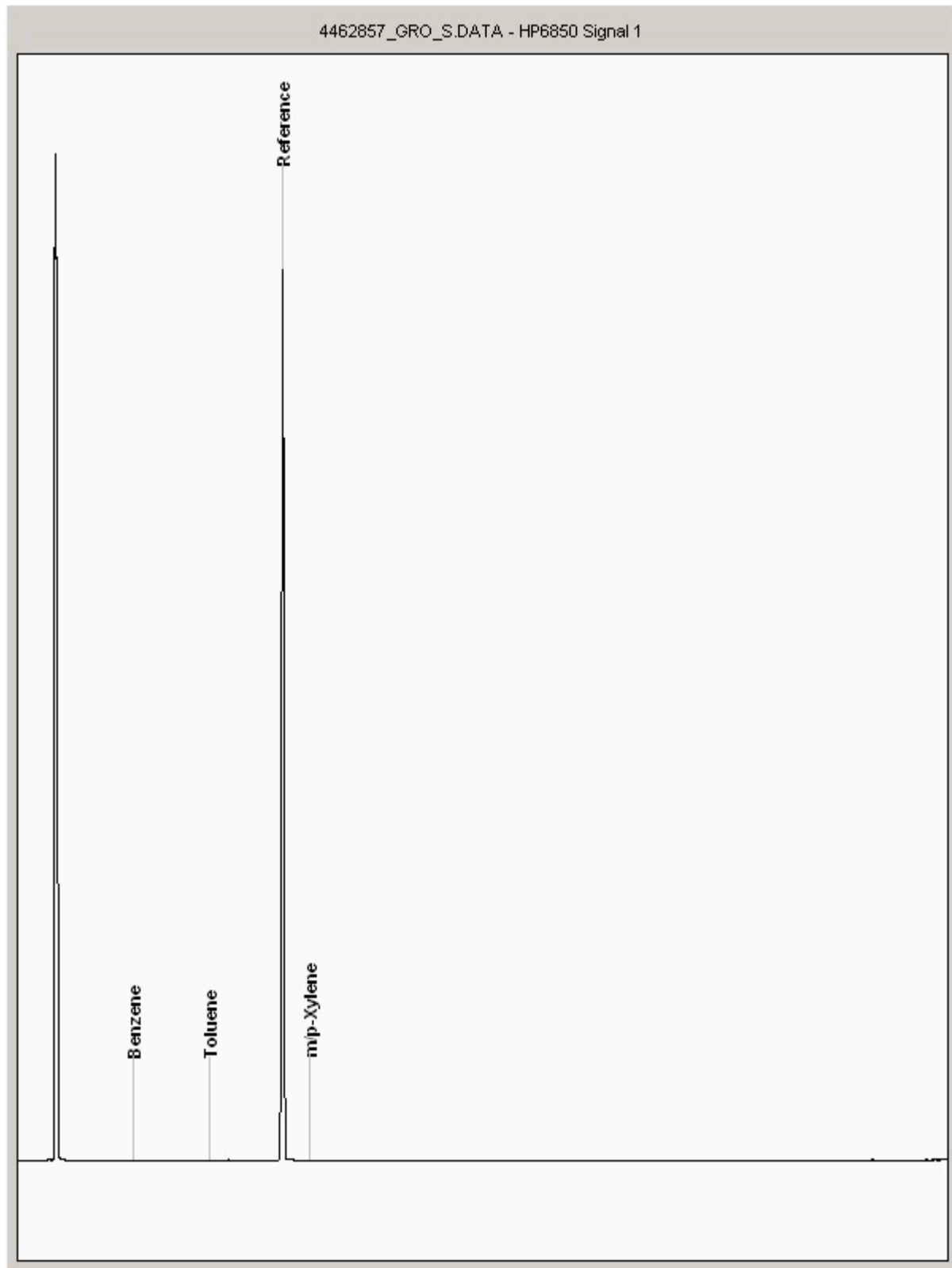
Order Number:
Report Number: 154409
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 4462857
Sample ID : BH106

Depth : 3.90





CERTIFICATE OF ANALYSIS

SDG: 111005-27
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

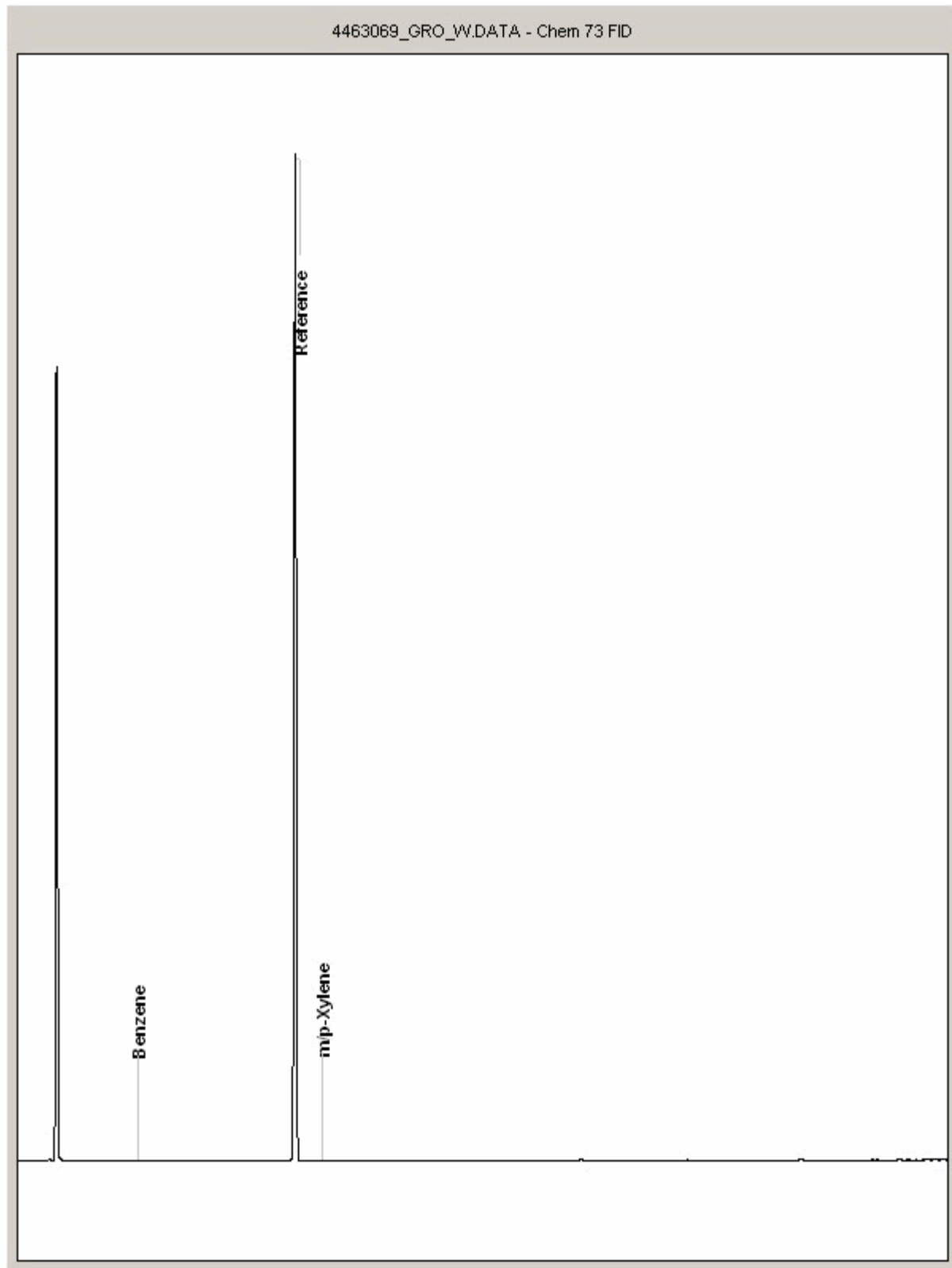
Order Number:
Report Number: 154409
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4463069
Sample ID : BH106

Depth : 3.90





CERTIFICATE OF ANALYSIS

SDG:	111005-27	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	154409
Client Reference:	46370079	Attention:	Jocelyn Thomas	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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 themajor 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 C4 -C10 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/21/11 01:52
Acq. Method File UST 624
Sample Name 111017-39 VP103
Misc Info 7459
Sample Multiplier 0.33333

Ret Time	Name	Amount	Units
0.00	MTBE	0.00	µg/m3
3.44	Hexane	107.10	µg/m3
0.00	DIPE	0.00	µg/m3
0.00	ETBE	0.00	µg/m3
4.82	Benzene	5.80	µg/m3
0.00	TAME	0.00	µg/m3
6.57	Toluene	32.78	µg/m3
6.69	Octane	56.44	µg/m3
8.05	Ethylbenzene	3.00	µg/m3
8.16	p/m-Xylene	7.05	µg/m3
8.57	o-Xylene	2.30	µg/m3
9.54	Decane	12.27	µg/m3
10.25	1,2,3-Trimethylbenzene	0.52	µg/m3
11.52	Dodecane	1.09	µg/m3
12.09	Naphthalene	0.48	µg/m3
13.11	1-Methylnaphthalene	0.31	µg/m3

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/21/11 01:25
Acq. Method File UST 624
Sample Name 111017-39 VP102
Misc Info 6823
Sample Multiplier 0.33333

Ret Time	Name	Amount	Units
0.00	MTBE	0.00	µg/m3
3.44	Hexane	159.33	µg/m3
0.00	DIPE	0.00	µg/m3
0.00	ETBE	0.00	µg/m3
4.82	Benzene	4.16	µg/m3
0.00	TAME	0.00	µg/m3
6.57	Toluene	48.72	µg/m3
6.69	Octane	188.76	µg/m3
8.05	Ethylbenzene	5.83	µg/m3
8.16	p/m-Xylene	14.20	µg/m3
8.57	o-Xylene	4.69	µg/m3
9.53	Decane	100.52	µg/m3
10.26	1,2,3-Trimethylbenzene	1.06	µg/m3
11.52	Dodecane	10.34	µg/m3
12.09	Naphthalene	0.68	µg/m3
13.11	1-Methylnaphthalene	0.57	µg/m3

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/21/11 00:56
Acq. Method File UST 624
Sample Name 111017-39 VP101
Misc Info 15
Sample Multiplier 0.33333

Ret Time	Name	Amount	Units
0.00	MTBE	0.00	µg/m3
3.44	Hexane	30.06	µg/m3
0.00	DIPE	0.00	µg/m3
0.00	ETBE	0.00	µg/m3
4.82	Benzene	5.66	µg/m3
0.00	TAME	0.00	µg/m3
6.57	Toluene	57.72	µg/m3
6.69	Octane	235.31	µg/m3
8.05	Ethylbenzene	6.04	µg/m3
8.16	p/m-Xylene	16.21	µg/m3
8.57	o-Xylene	5.53	µg/m3
9.53	Decane	82.99	µg/m3
10.25	1,2,3-Trimethylbenzene	1.12	µg/m3
11.52	Dodecane	7.40	µg/m3
12.09	Naphthalene	0.48	µg/m3
13.11	1-Methylnaphthalene	0.49	µg/m3

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/21/11 00:02
Acq. Method File UST 624
Sample Name 111017-39 Trip Blank
Misc Info 786
Sample Multiplier 1

Ret Time	Name	Amount	Units
0.00	MTBE	0.00	ng
3.44	Hexane	4.41	ng
0.00	DIPE	0.00	ng
0.00	ETBE	0.00	ng
4.82	Benzene	4.63	ng
0.00	TAME	0.00	ng
6.57	Toluene	1.04	ng
0.00	Octane	0.00	ng
8.04	Ethylbenzene	0.32	ng
8.16	p/m-Xylene	0.61	ng
0.00	o-Xylene	0.00	ng
0.00	Decane	0.00	ng
0.00	1,2,3-Trimethylbenzene	0.00	ng
11.51	Dodecane	0.41	ng
12.09	Naphthalene	1.10	ng
13.11	1-Methylnaphthalene	0.54	ng

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/20/11 23:35
Acq. Method File UST 624
Sample Name Lab Blank
Misc Info 3966
Sample Multiplier 1

Ret Time	Name	Amount	Units
0.00	MTBE	0.00	ng
3.44	Hexane	4.23	ng
0.00	DIPE	0.00	ng
0.00	ETBE	0.00	ng
4.82	Benzene	7.23	ng
0.00	TAME	0.00	ng
6.57	Toluene	1.17	ng
0.00	Octane	0.00	ng
8.04	Ethylbenzene	0.27	ng
8.16	p/m-Xylene	1.01	ng
8.56	o-Xylene	0.22	ng
0.00	Decane	0.00	ng
10.26	1,2,3-Trimethylbenzene	0.16	ng
11.52	Dodecane	0.36	ng
12.08	Naphthalene	1.19	ng
13.11	1-Methylnaphthalene	0.75	ng

Total VOC C6-C12

Lab Code: LAB-90

Calibration

Petrol Conc'n	Area	RF
900	146798562	6.13085E-06
9000	1280089346	7.03076E-06
18000	2512730815	7.16352E-06
27000	3769146413	7.16343E-06
36000	4870755181	7.39105E-06
Average		6.97592E-06

RF RSD
7.0%

SDG 111017-39

Results

Sample	Area	ng	Multiplier	µg/m3
AQC 20000ng	3741461067	26100		
Lab Blank	15650606	109		
Trip Blank	17745125	124		
Environment	253660270	1770	0.33333	590
VP101	1989626441	13879	0.33333	4626
VP102	1690584045	11793	0.33333	3931
VP103	1281196495	8938	0.33333	2979

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/21/11 00:29
Acq. Method File UST 624
Sample Name 111017-39 Environment
Misc Info 27
Sample Multiplier 0.33333

Ret Time	Name	Amount	Units
0.00	MTBE	0.00	µg/m3
3.44	Hexane	17.35	µg/m3
0.00	DIPE	0.00	µg/m3
0.00	ETBE	0.00	µg/m3
4.82	Benzene	9.99	µg/m3
0.00	TAME	0.00	µg/m3
6.57	Toluene	59.34	µg/m3
6.69	Octane	3.10	µg/m3
8.05	Ethylbenzene	10.53	µg/m3
8.16	p/m-Xylene	32.14	µg/m3
8.57	o-Xylene	12.34	µg/m3
9.53	Decane	3.59	µg/m3
10.25	1,2,3-Trimethylbenzene	1.92	µg/m3
11.52	Dodecane	1.37	µg/m3
12.08	Naphthalene	0.83	µg/m3
13.11	1-Methylnaphthalene	0.32	µg/m3



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Date : Thursday, October 13, 2011

Customer Services Tel : 01244 528777

Customer Services Fax : 01244 528701

Customer Services Email : customerservices@alcontrol.com

Customer Services Advisor : Kim Harrison

Confirmation that your samples have been received and registered for the analyses shown on the following pages.

Please check this to ensure we have interpreted your request correctly. If you do not contact us within 24 hours we will assume that this schedule (including the Sample IDs) is correct. If you have any queries relating to this schedule please do not hesitate to contact us.

Date Samples Received : October 13, 2011 6:00

Instructions Received : October 13, 2011 6:00

Laboratory SDG No : 111013-17

Requested Turnarounds : ☐ 1-3 Days ☒ 4-5 Days ☐ 6-7 Days ☐ 8+ Days
(Please see the Analysis Summary page for the breakdown by analysis)

Requested Final Due Date : October 19, 2011

Coolbox Temperature (°C) : 11.8
(MCERTS recommended temperature for waters 5°C +/- 3°C)

Samples Registered : 7 LIQUID SAMPLES

Customer : URS Corporation Limited

Customer Phone No :

Customer Email : jocelyn.thomas@urs.com

F.A.O. : Jocelyn Thomas

Site Name : Shell Hitchin

Client Reference : 46370079

Purchase Order No : -

Quote / Contract No : 27004

CoC No :

Customer Project : 46370079

SDG Number	111013-17	Customer	URS Corporation Limited	Location	Shell Hitchin	Date Received	October 13, 2011 6:00
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Sample Type : LIQUID

Legend

Test



Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	PAH Spec MS - Aqueous (W)	LAB-51 (W)	LAB-52 (W)	LAB-54 (W)
4491073	BH101		12/10/2011	X	X		X
4491074	BH102		12/10/2011	X	X		X
4491076	BH103		12/10/2011	X	X		X
4491077	BH105		12/10/2011	X	X		X
4491078	DO1		12/10/2011	X	X		X
4491079	EQUIPMENT BLANK		12/10/2011	X	X		X
4491080	TRIP BLANK		12/10/2011			X	

Samples Exceptions Report

Lab Sample ID	Customer Sample Ref	Depth (m)	Date Sampled	Exception Type
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Sample Type :

No Records

SDG Number	111013-17	Location	Shell Hitchin	
Customer	URS Corporation Limited	Date Received	October 13, 2011 6:00	
Description		T/A	No. Scheduled	
Requested Due	October 19, 2011			
Sample Type	LIQUID			
LAB-51 (W)		5	6	
LAB-52 (W)		5	1	
LAB-54 (W)		5	6	
PAH Spec MS - Aqueous (W)		5	6	

SDG Number	111013-17	Location	Shell Hitchin			
Customer	URS Corporation Limited	Date Received	October 13, 2011 6:00			
Analysis / Suite		No.	Component	UKAS (#) MCerts (M)	Method	LoD
Sample Type :		LIQUID				
LAB-51 (W)						
	6		Aliphatics >C12-C16 (aq)		GC	<10 µg/l
	6		Aliphatics >C16-C21 (aq)		GC	<10 µg/l
	6		Aliphatics >C21-C35 (aq)		GC	<10 µg/l
	6		Aromatics >EC12-EC16 (aq)		GC	<10 µg/l
	6		Aromatics >EC16-EC21 (aq)		GC	<10 µg/l
	6		Aromatics >EC21-EC35 (aq)		GC	<10 µg/l
	6		Aliphatics >C10-C12		GC	<10 µg/l
	6		Aliphatics >C5-C6		GC	<10 µg/l
	6		Aliphatics >C6-C8		GC	<10 µg/l
	6		Aliphatics >C8-C10		GC	<10 µg/l
	6		Aromatics >EC10-EC12		GC	<10 µg/l
	6		Aromatics >EC5-EC7		GC	<10 µg/l
	6		Aromatics >EC7-EC8		GC	<10 µg/l
	6		Aromatics >EC8-EC10		GC	<10 µg/l
	6		GRO Surrogate % recovery**		GC	
LAB-52 (W)						
	1		EPH Band >C35-C40 (aq)		GC	<10 µg/l
	1		EPH Range >C10 - C40 (aq)	#	GC	<46 µg/l
	1		Benzene	#	GCMS	<1 µg/l
	1		Ethylbenzene	#	GCMS	<1 µg/l
	1		m,p-Xylene	#	GCMS	<1 µg/l
	1		Methyl tertiary butyl ether (MTBE)	#	GCMS	<1 µg/l
	1		o-Xylene	#	GCMS	<1 µg/l
	1		Toluene	#	GCMS	<1 µg/l
	1		Toluene-d8**		GCMS	
LAB-54 (W)						
	6		Benzene	#	GCMS	<1 µg/l
	6		Diisopropyl ether		GCMS	<1 µg/l
	6		Ethanol		GCMS	<50 µg/l
	6		Ethylbenzene	#	GCMS	<1 µg/l
	6		m,p-Xylene	#	GCMS	<1 µg/l
	6		Methyl tertiary butyl ether (MTBE)	#	GCMS	<1 µg/l
	6		o-Xylene	#	GCMS	<1 µg/l
	6		tert Butanol		GCMS	<10 µg/l
	6		tert-Amyl methyl ether (TAME)	#	GCMS	<1 µg/l
	6		tert-butyl ethyl ether		GCMS	<1 µg/l
	6		Toluene	#	GCMS	<1 µg/l
	6		Toluene-d8**		GCMS	
PAH Spec MS - Aqueous (W)						
	6		PAH 16 Speciated by GCMS (W)	#	GCMS	VARIOUS



Disclaimers

Please Note :

1. Following reviews by UKAS on the use of correct containers for analysis, we will no longer accredit volatile samples that are not received in the correct containers. We would like to highlight that best practice for sampling volatiles is to take every sample (soils and waters) in duplicate vials or volatile jars with **no headspace**. This will include analysis for the following parameters: VOC, Dissolved gases, VFA, Alcohols, TEL, GRO or TPH CWG.
2. The recommended storage temperature for water and soil samples is 5°C +/- 3°C (MCERTS for Waters July 2008).
3. When an analysis has been requested on an inappropriate bottle (this includes unpreserved bottles for a preserved analysis) and the analysis goes ahead, it will not conform to our Quality Management System, and may not be accredited.
4. We are accredited to MCERTS for sand, clay and loam/topsoil. This also includes naturally occurring soil profiles and fill/made ground where 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.
5. It is assumed that detection limits for samples scheduled are below the critical level of interest required for the project, if they are not or you would like to receive clarification of these, please contact the laboratory.

Surcharges :

6. Surcharges will be applied for accelerated turnaround times where these are requested based on the relevant contract or quotation prices. If the requested rapid turnaround fails but the report still meets rapid turnaround criteria an appropriate surcharge will still be applied. Surcharges are not subject to any discount.

Purchase Orders :

7. If these are used by your company, then data cannot be released unless we have received a copy of the purchase order.

Sample Disposal :

8. If sufficient soil/water sample (tubs, bottles and 250g jars) is received a sub sample will be retained free of charge for 30 days after analysis is completed (emailed).
9. All material removed during a fibre screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date.
10. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions for sample disposal.
11. For extended storage periods, a storage charge of £1 (or € equivalent) per sample per month will be applied for each month or part thereof until the customer cancels the request for sample storage.
12. ALcontrol Laboratories reserve the right to charge £3 (or € equivalent) for samples received and stored but not analysed.

Subcontracted Analysis :

13. Please note that any analyses marked with an asterisk (*) will be subcontracted to an approved laboratory. Please note turnaround times for subcontracted analysis may sometimes be in excess of the turnaround requested and for some analyses can be up to 15-20 days. If this is unacceptable please contact us immediately as you may prefer to subcontract the work yourselves. Subcontracted samples will be disposed of by the subcontract laboratory and are therefore not covered under the ALcontrol terms and conditions of sample disposal.
- Asbestos :**
14. When requested the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces.
 15. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025, and no analysis will be undertaken on the remaining samples. At no point is the fibre content of the soil sample determined.
 16. Where no asbestos containing material is found this will be reported as "No ACM detected".



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

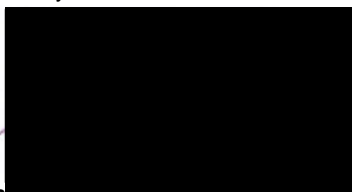
Date: 19 October 2011
Customer: H_URS_WIM
Sample Delivery Group (SDG): 111013-17
Your Reference: 46370079
Location: Shell Hitchin
Report No: 155477

We received 7 samples on Thursday October 13, 2011 and 7 of these samples were scheduled for analysis which was completed on Wednesday October 19, 2011. 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

Operations Manager





SDG:	111013-17	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	155477
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4491073	BH101			12/10/2011
4491074	BH102			12/10/2011
4491076	BH103			12/10/2011
4491077	BH105			12/10/2011
4491078	DO1			12/10/2011
4491079	EQUIPMENT BLANK			12/10/2011
4491080	TRIP BLANK			12/10/2011

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

Order Number:
Report Number: 155477
Superseded Report:

Page 4 of 36

Order Number:
Report Number: 155477
Superseded Report:

Page 5 of 36



CERTIFICATE OF ANALYSIS

SDG:	111013-17	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	155477
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample R	BH101	BH102	BH103	DO1	EQUIPMENT BLANK	
#	ISO17025 accredited.							
M	mCERTS accredited.							
S	Deviating sample.							
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							
Component	LOD/Units	Method						
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	
					</			

Order Number:
Report Number: 155477
Superseded Report:

Page 7 of 36

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Order Number:
Report Number: 155477
Superseded Report:

[illegible]

Order Number:
Report Number: 155477
Superseded Report:

Page 9 of 36

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Order Number:
Report Number: 155477
Superseded Report:

[illegible]

Order Number:
Report Number: 155477
Superseded Report:

Page 11 of 36



SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Container with Headspace provided for volatiles analysis
4517243	BH105		LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	Benzene	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	Ethylbenzene	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	m,p-Xylene	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	o-Xylene	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	Toluene	Container with Headspace provided for volatiles analysis
4517295	BH105		LIQUID	VOC MS (W)	Toluene-d8**	Container with Headspace provided for volatiles analysis

Note : Test results may be compromised



SDG:	111013-17	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	155477
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Notification of NDPs (No determination possible)

Date Received : 13/10/2011 08:43:14

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
4491077	BH105		PAH Spec MS - Aqueous (W)	Insufficient Sample
4491077	BH105		TPH CWG (W)	Insufficient Sample



SDG:	111013-17	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	155477
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10 ⁻⁷							
NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



CERTIFICATE OF ANALYSIS

Validated

SDG:	111013-17	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	155477
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	4491073	4491074	4491076	4491077	4491078	4491079	4491080
Customer Sample Ref.	BH101	BH102	BH103	BH105	DO1	EQUIPMENT BLANK	TRIP BLANK
AGS Ref.							
Depth							
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH (DRO) (C10-C40) Aqueous (W)							19-Oct-2011
EPH CWG (Aliphatic) Aqueous GC (W)	18-Oct-2011	18-Oct-2011	18-Oct-2011		18-Oct-2011	18-Oct-2011	
EPH CWG (Aromatic) Aqueous GC (W)	18-Oct-2011	18-Oct-2011	18-Oct-2011		18-Oct-2011	18-Oct-2011	
GRO by GC-FID (W)	17-Oct-2011	17-Oct-2011	17-Oct-2011	18-Oct-2011	17-Oct-2011	17-Oct-2011	
Oxygenates (W)	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011	
PAH Spec MS - Aqueous (W)	19-Oct-2011	19-Oct-2011	19-Oct-2011		19-Oct-2011	18-Oct-2011	
TPH CWG (W)	18-Oct-2011	18-Oct-2011	18-Oct-2011		18-Oct-2011	18-Oct-2011	
VOC MS (W)	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011	18-Oct-2011



SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

ASSOCIATED AQC DATA

EPH (DRO) (C10-C40) Aqueous (W)

Component	Method Code	QC 41
EPH (DRO) (C10-C40)	TM172	76.0 38.50 : 139.00

GRO by GC-FID (W)

Component	Method Code	QC 49	QC 47
Benzene by GC	TM245	105.5 70.73 : 117.15	109.0 70.73 : 117.15
Ethylbenzene by GC	TM245	106.0 67.94 : 118.86	109.5 67.94 : 118.86
m & p Xylene by GC	TM245	105.75 70.91 : 116.72	109.0 70.91 : 116.72
MTBE GC-FID	TM245	105.0 77.43 : 113.45	109.0 77.43 : 113.45
o Xylene by GC	TM245	106.0 70.52 : 120.41	110.0 70.52 : 120.41
QC	TM245	98.83 66.61 : 111.92	98.16 66.61 : 111.92
Toluene by GC	TM245	107.0 74.45 : 115.83	110.5 74.45 : 115.83

Oxygenates (W)

Component	Method Code	QC 47
Benzene	TM289	101.0 64.00 : 136.00
Diisopropyl ether	TM289	94.5 64.00 : 136.00
Ethanol	TM289	111.0 60.84 : 141.13
Ethylbenzene	TM289	99.5 64.00 : 136.00
o-Xylene	TM289	101.0 64.00 : 136.00
p/m-Xylene	TM289	100.75 71.56 : 125.03
tert Butanol	TM289	108.0 70.51 : 143.48
tert-amyl methyl ether	TM289	98.5 61.37 : 145.66
tert-butyl ethyl ether	TM289	96.5 71.10 : 132.36
tert-butyl methyl ether	TM289	98.5 72.87 : 135.34
Toluene	TM289	101.0 64.00 : 136.00

PAH Spec MS - Aqueous (W)



SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 48	QC 46
Acenaphthene by GCMS	TM178	99.5 82.69 : 106.11	97.0 85.48 : 106.23
Acenaphthylene by GCMS	TM178	89.5 82.16 : 104.82	93.5 80.12 : 106.77
Anthracene by GCMS	TM178	95.5 77.85 : 105.75	87.0 77.85 : 105.75
Benz(a)anthracene by GCMS	TM178	87.5 75.32 : 108.18	87.5 78.50 : 107.21
Benzo(a)pyrene by GCMS	TM178	96.0 86.69 : 118.58	89.5 82.45 : 122.13
Benzo(b)fluoranthene by GCMS	TM178	94.5 87.25 : 114.25	93.5 87.25 : 114.25
Benzo(ghi)perylene by GCMS	TM178	93.5 82.05 : 112.05	98.0 82.05 : 112.05
Benzo(k)fluoranthene by GCMS	TM178	109.5 87.20 : 122.40	96.0 87.20 : 122.40
Chrysene by GCMS	TM178	101.0 83.22 : 112.82	92.5 85.32 : 108.58
Dibenzo(ah)anthracene by GCMS	TM178	94.0 72.40 : 118.55	95.5 72.40 : 118.55
Fluoranthene by GCMS	TM178	97.0 87.00 : 105.75	96.5 87.00 : 105.75
Fluorene by GCMS	TM178	98.0 83.12 : 110.71	91.5 83.15 : 107.63
Indeno(123cd)pyrene by GCMS	TM178	92.5 82.25 : 114.75	97.5 82.25 : 114.75
Naphthalene by GCMS	TM178	99.5 84.07 : 108.07	88.5 84.63 : 104.92
Phenanthrene by GCMS	TM178	99.0 86.79 : 108.29	92.0 86.86 : 107.20
Pyrene by GCMS	TM178	98.0 84.55 : 108.55	96.0 84.55 : 108.55

VOC MS (W)

Component	Method Code	QC 42	QC 42	QC 41
1,1,1,2-Tetrachloroethane	TM208	103.0 78.44 : 132.60	109.0 78.44 : 132.60	93.5 78.44 : 132.60
1,1,1-Trichloroethane	TM208	105.5 82.89 : 127.03	116.0 82.89 : 127.03	104.0 82.89 : 127.03
1,1-Dichloroethane	TM208	110.0 77.09 : 139.26	123.5 77.09 : 139.26	112.5 77.09 : 139.26
1,2-Dichloroethane	TM208	102.0 76.92 : 137.00	122.0 76.92 : 137.00	102.0 76.92 : 137.00
2-Chlorotoluene	TM208	102.5 71.51 : 138.58	111.5 71.51 : 138.58	95.0 71.51 : 138.58
4-Chlorotoluene	TM208	103.0 71.36 : 140.30	114.0 71.36 : 140.30	94.5 71.36 : 140.30
Benzene	TM208	110.0 75.59 : 136.08	124.5 75.59 : 136.08	111.0 75.59 : 136.08
Bromomethane	TM208	96.5 75.78 : 148.00	116.0 75.78 : 148.00	103.5 75.78 : 148.00
Carbontetrachloride	TM208	106.0 80.59 : 133.93	117.5 80.59 : 133.93	102.5 80.59 : 133.93



SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

VOC MS (W)

		QC 42	QC 42	QC 41
Chlorobenzene	TM208	104.5 80.31 : 128.02	112.5 80.31 : 128.02	96.0 80.31 : 128.02
Chloroform	TM208	104.0 83.42 : 132.37	118.0 83.42 : 132.37	103.5 83.42 : 132.37
Chloromethane	TM208	108.0 65.92 : 179.80	65.0 65.92 : 179.80	125.0 65.92 : 179.80
Cis-1,2-Dichloroethene	TM208	100.0 79.85 : 133.15	112.5 79.85 : 133.15	97.0 79.85 : 133.15
Dichloromethane	TM208	101.0 75.54 : 141.85	118.0 75.54 : 141.85	97.5 75.54 : 141.85
Ethylbenzene	TM208	101.0 79.89 : 124.59	106.0 79.89 : 124.59	94.5 79.89 : 124.59
Hexachlorobutadiene	TM208	107.5 55.77 : 158.25	117.0 55.77 : 158.25	92.0 55.77 : 158.25
o-Xylene	TM208	104.0 74.49 : 131.29	109.5 74.49 : 131.29	96.0 74.49 : 131.29
p/m-Xylene	TM208	101.25 79.11 : 123.92	107.25 79.11 : 123.92	93.25 79.11 : 123.92
Tert-butyl methyl ether	TM208	94.5 72.42 : 136.24	103.5 72.42 : 136.24	94.0 72.42 : 136.24
Tetrachloroethene	TM208	104.5 74.98 : 135.52	113.0 74.98 : 135.52	90.0 74.98 : 135.52
Toluene	TM208	105.0 80.34 : 126.47	114.5 80.34 : 126.47	97.0 80.34 : 126.47
Trichloroethene	TM208	105.0 80.68 : 127.52	115.5 80.68 : 127.52	97.5 80.68 : 127.52
Vinyl Chloride	TM208	94.5 66.04 : 159.76	110.0 66.04 : 159.76	106.5 66.04 : 159.76

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.



CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

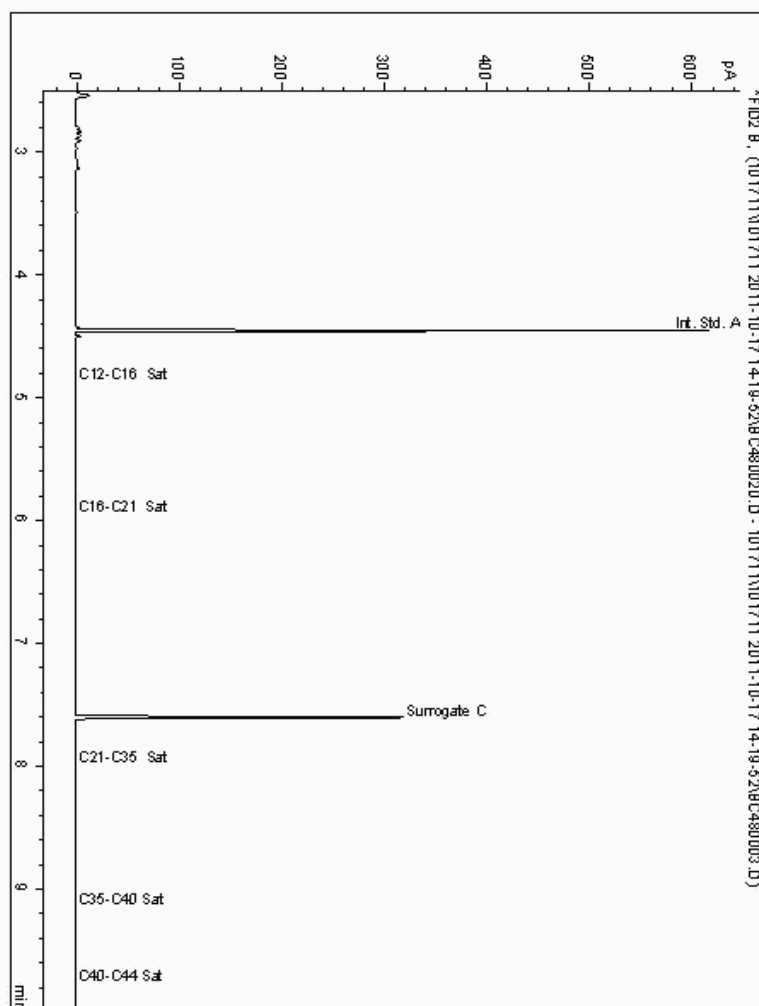
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4500253
Sample ID : BH102

Depth :

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

Sample Identity: 4458968-4500253
Date Acquired : 17/10/11 20:16:32
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

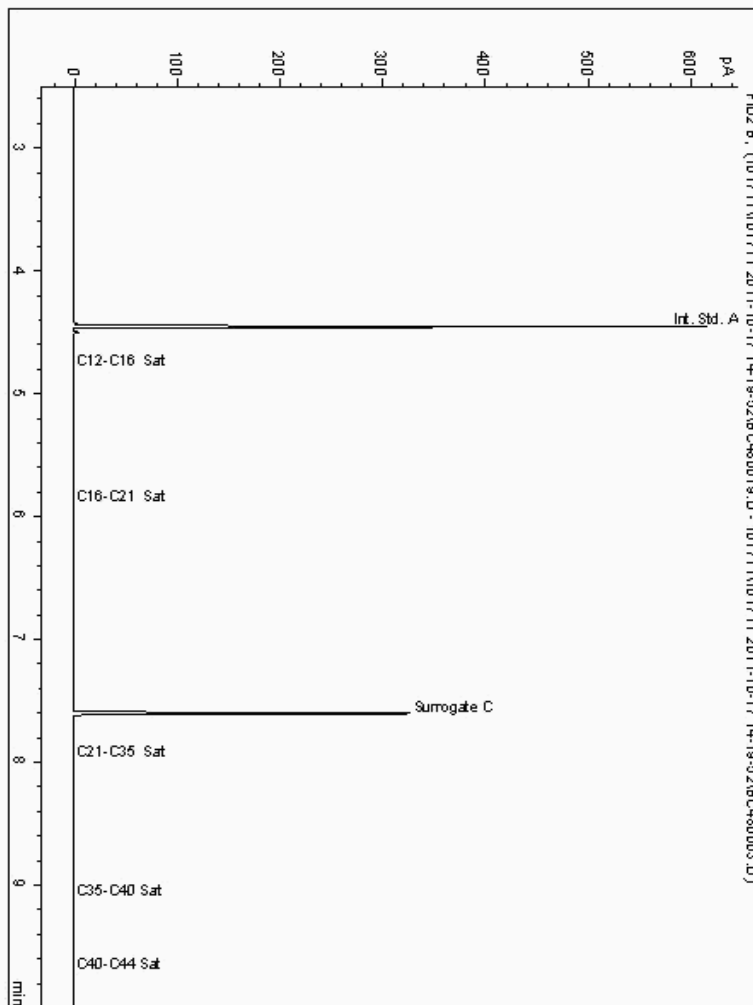
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4500277
Sample ID : BH101

Depth :

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

Sample Identity: 4458960-4500277
Date Acquired : 17/10/11 19:57:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

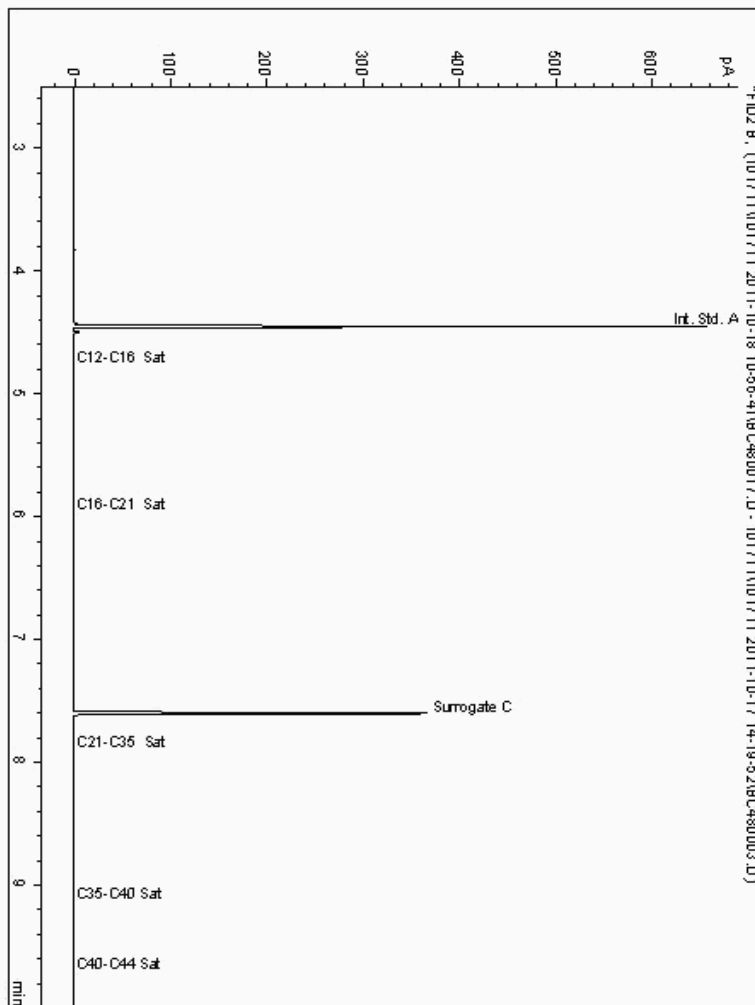
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4500299
Sample ID : BH103

Depth :

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

Sample Identity: 4458976-4500299
Date Acquired : 18/10/11 11:05:29
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

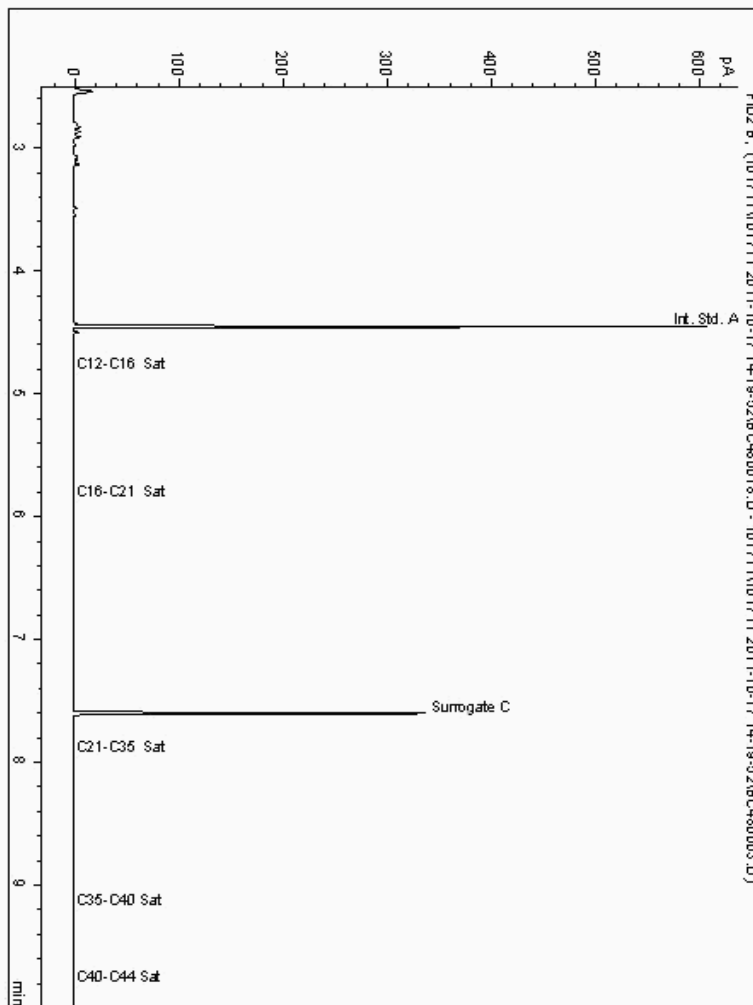
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4500376
Sample ID : DO1

Depth :

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

Sample Identity: 4458992-4500376
Date Acquired : 17/10/11 19:39:05
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

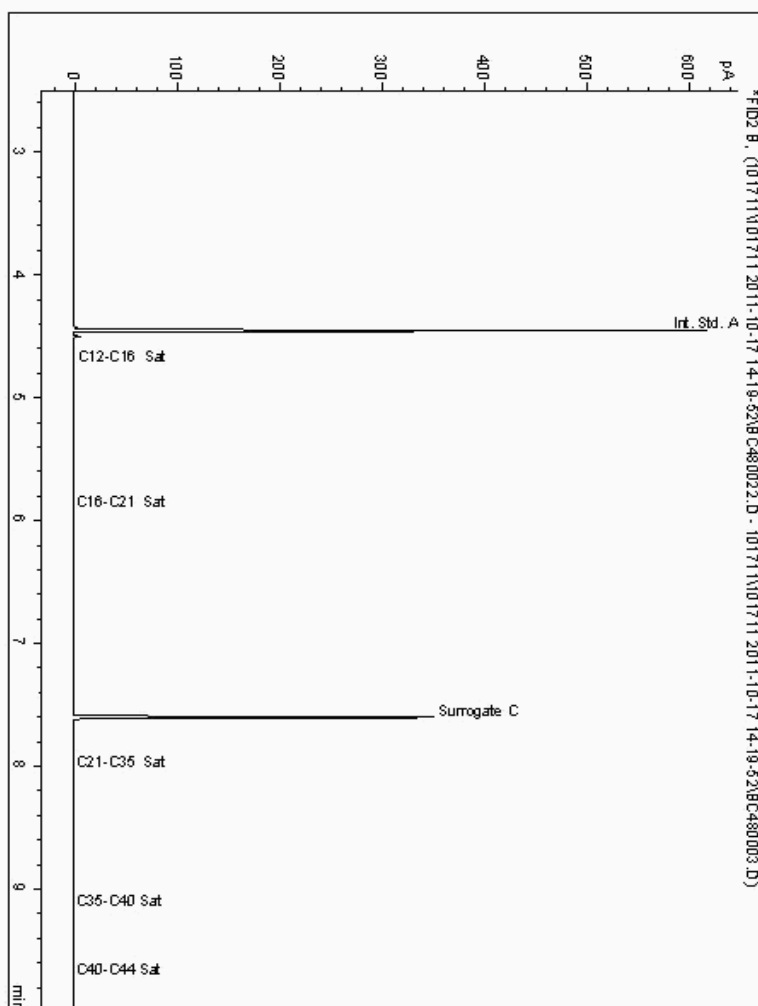
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4500391
Sample ID : EQUIPMENT BLANK

Depth :

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

Sample Identity: 4459003-4500391
Date Acquired : 17/10/11 20:54:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

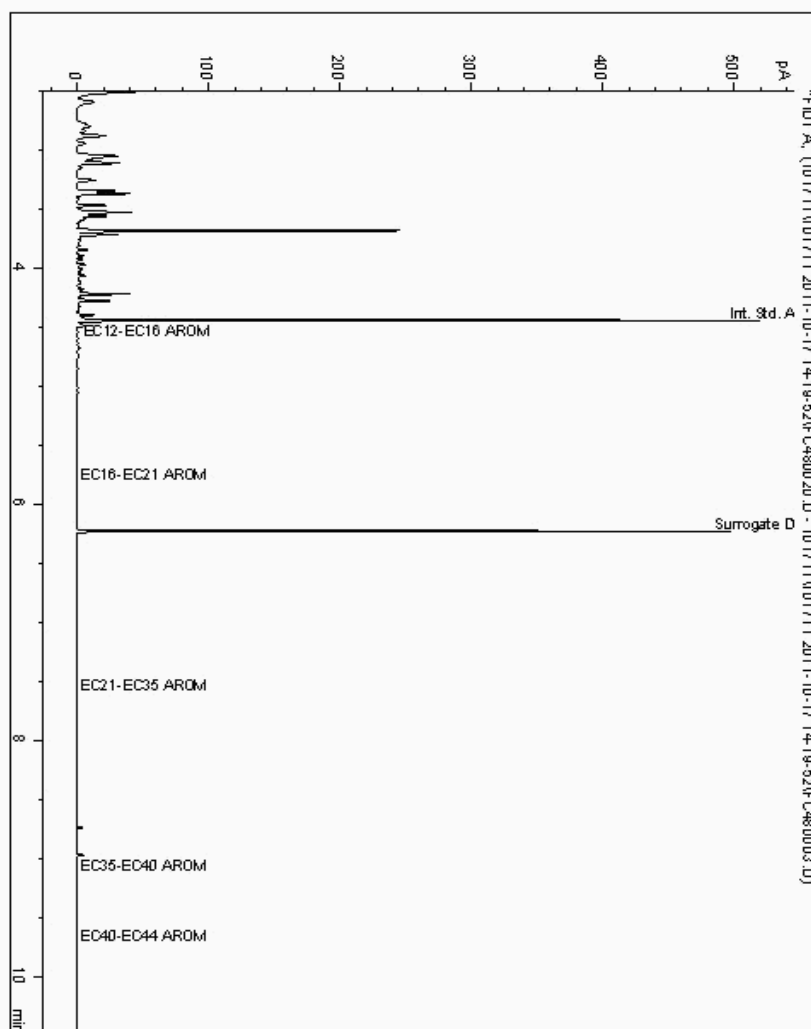
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4500253
Sample ID : BH102

Depth :

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

Sample Identity: 4458969-4500253
Date Acquired : 17/10/11 20:16:32
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

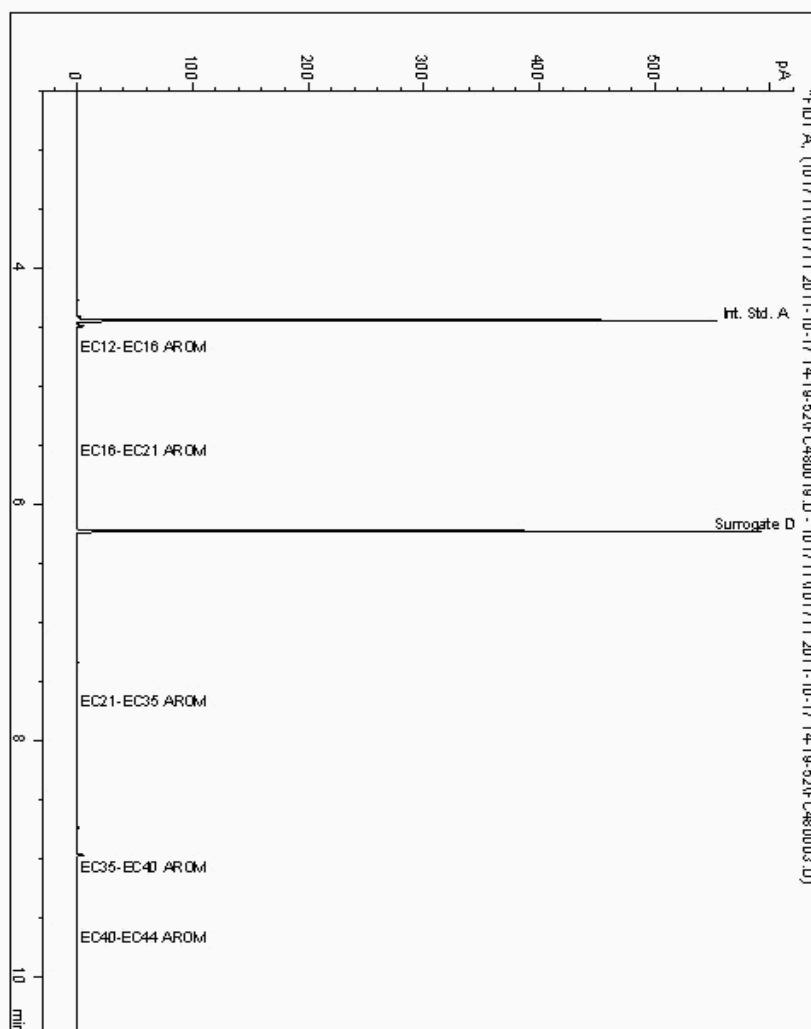
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4500277
Sample ID : BH101

Depth :

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

Sample Identity: 4458961-4500277
Date Acquired : 17/10/11 19:57:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

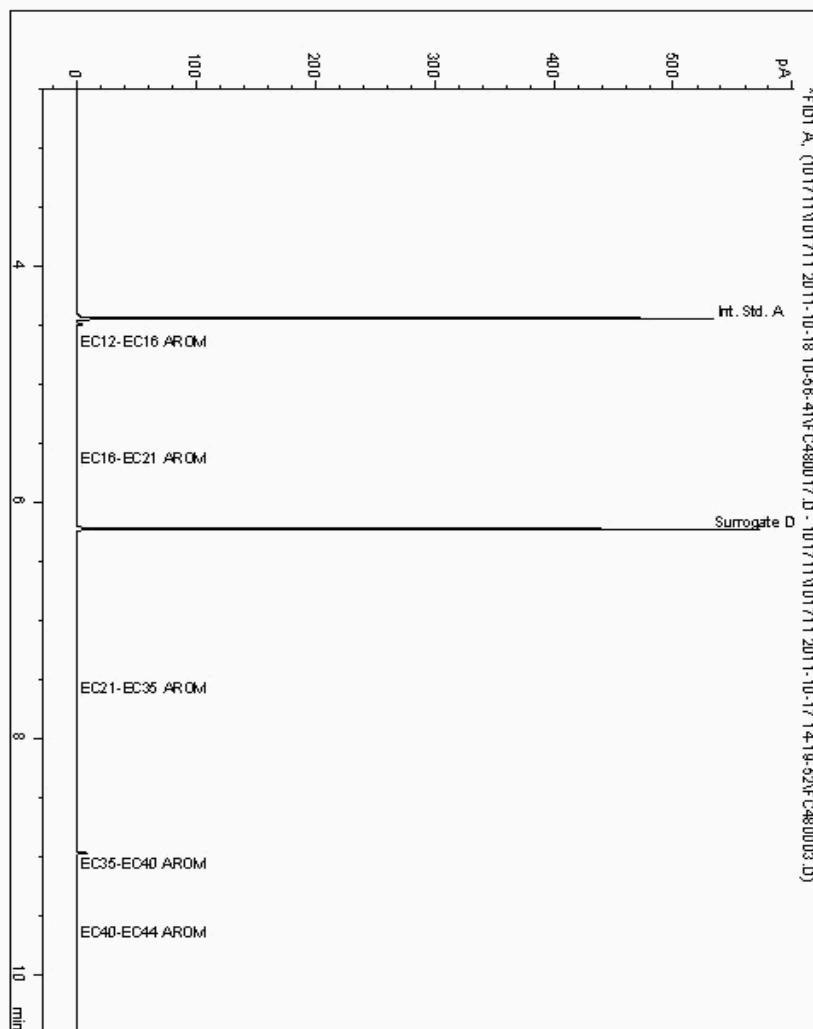
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4500299
Sample ID : BH103

Depth :

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

Sample Identity: 4458977-4500299
Date Acquired : 18/10/11 11:05:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

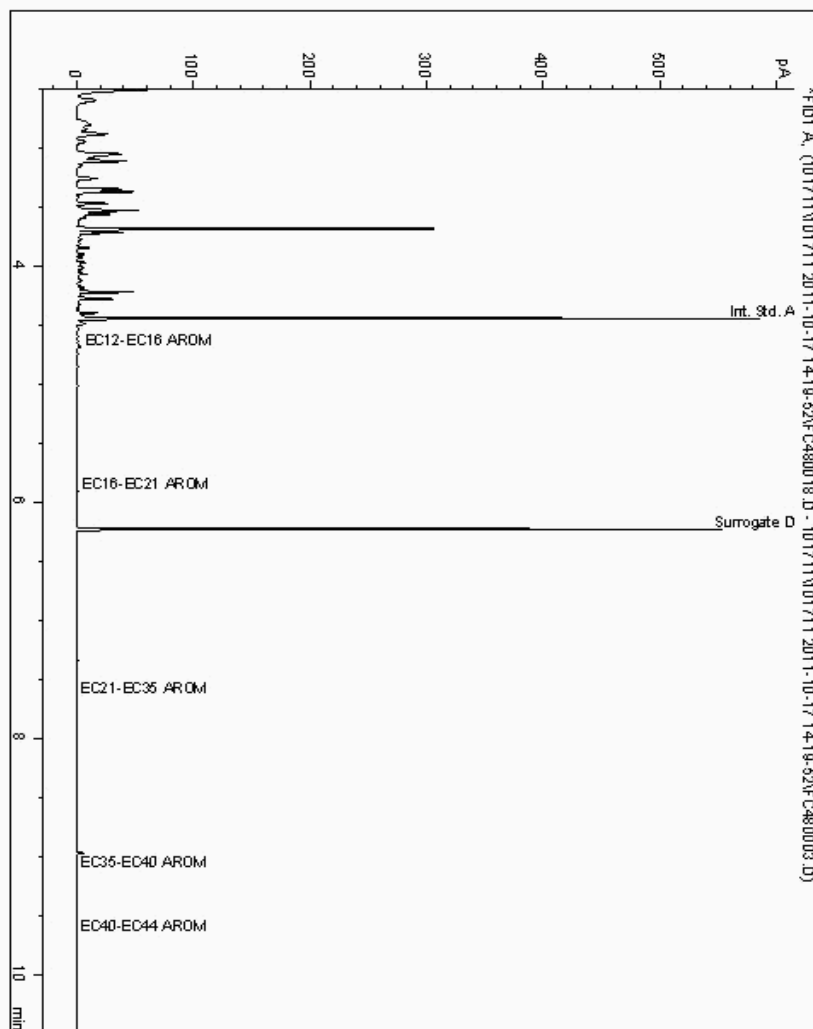
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4500376
Sample ID : DO1

Depth :

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

Sample Identity: 4458993-4500376
Date Acquired : 17/10/11 19:39:05
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

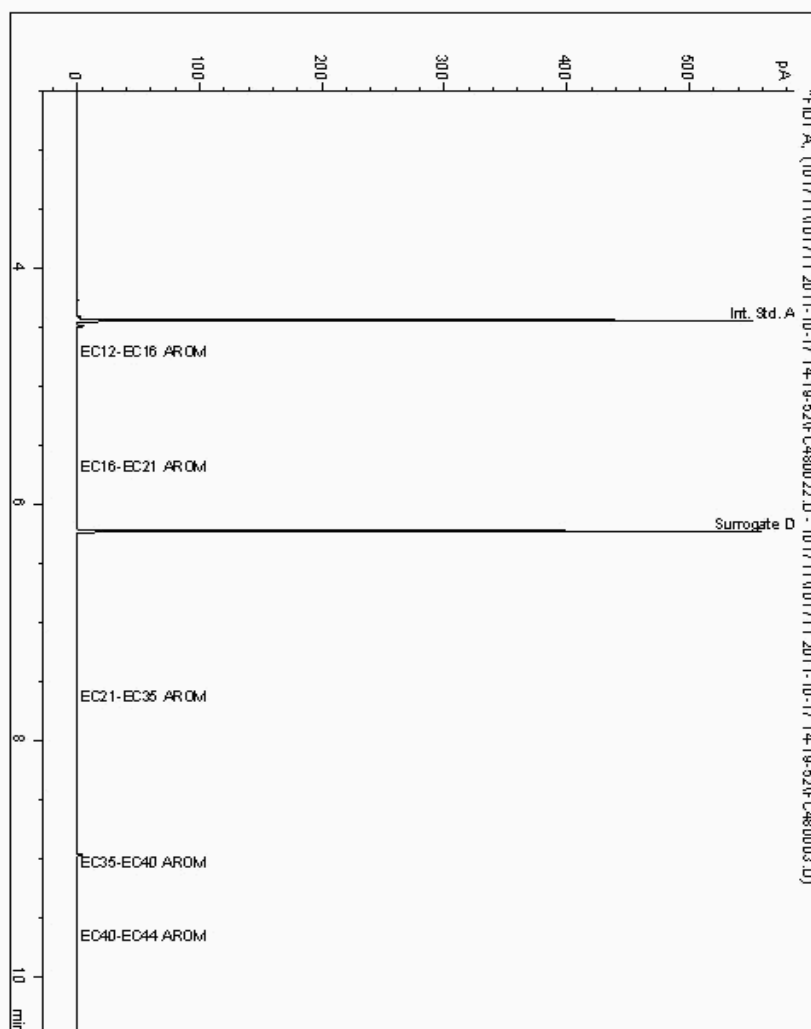
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4500391
Sample ID : EQUIPMENT BLANK

Depth :

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

Sample Identity: 4459004-4500391
Date Acquired : 17/10/11 20:54:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

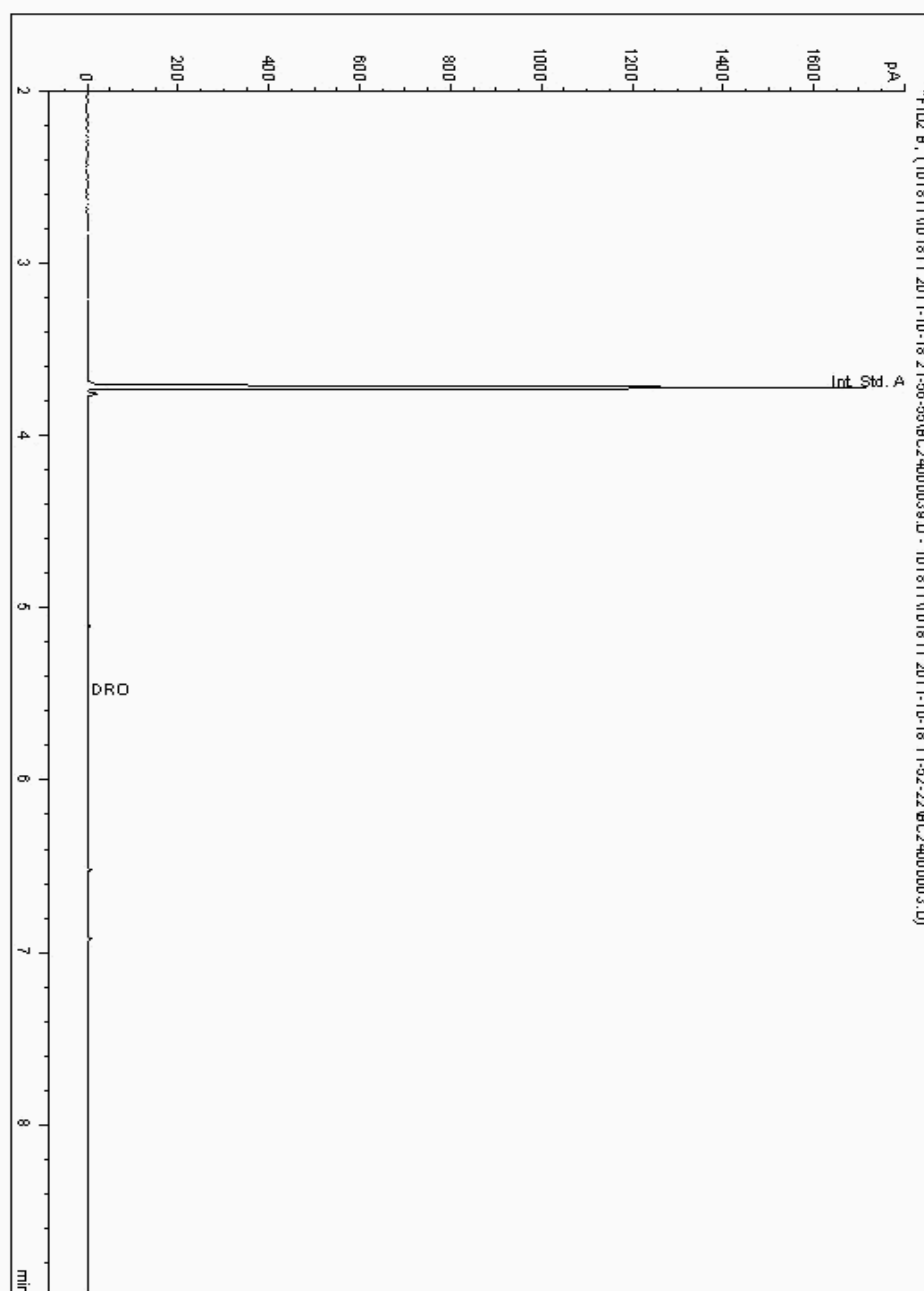
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 4516506
Sample ID : TRIP BLANK

Depth :

Alcontrol Analytical Services
EPH Range Organics (C10 - C40)

Sample Identity: 4459009-4516506
Date Acquired : 19/10/11 02:08:35 AM
Units :
Sample Volume: 0 ml's
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

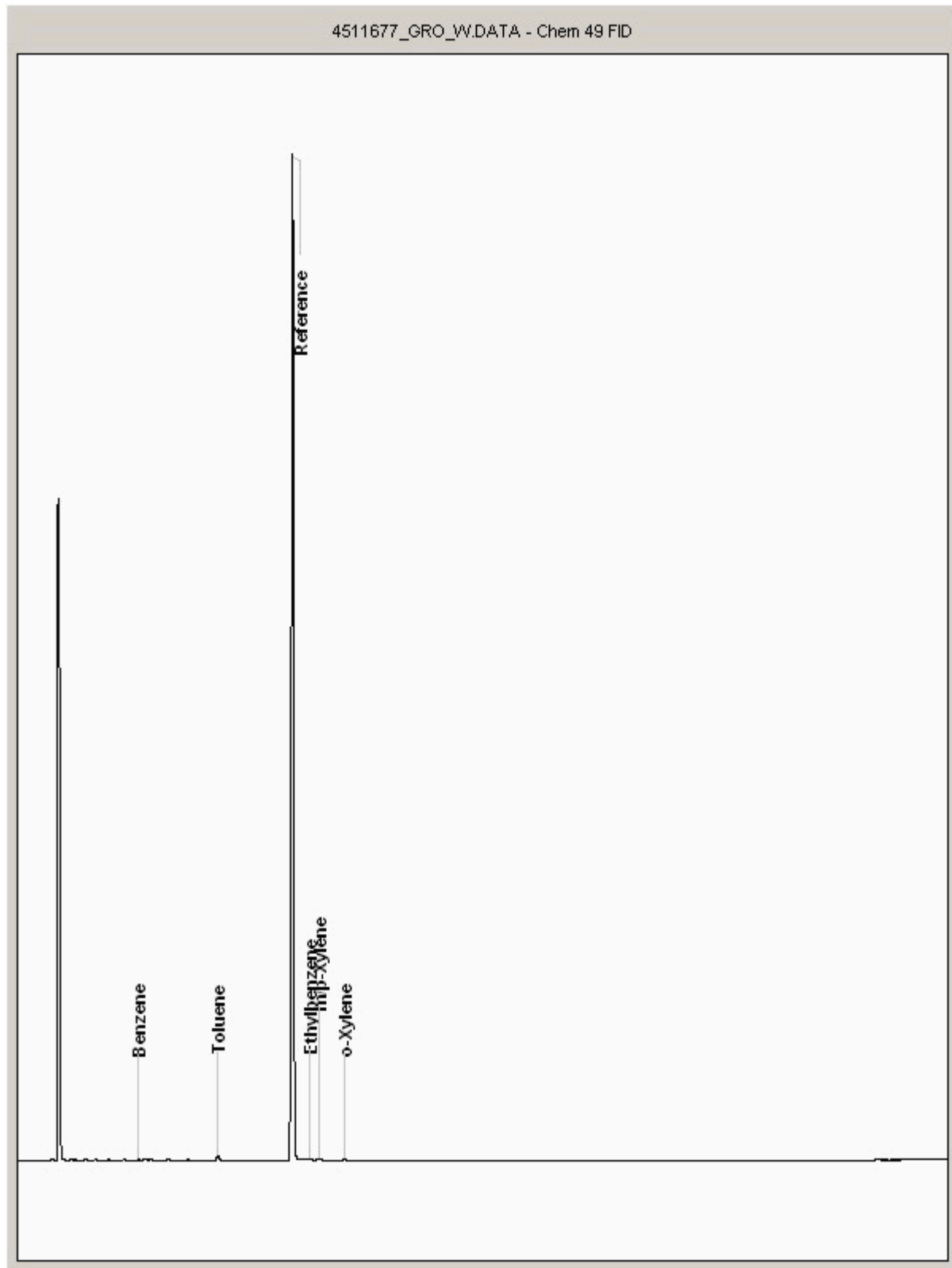
Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4511677
Sample ID : BH101

Depth :





SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

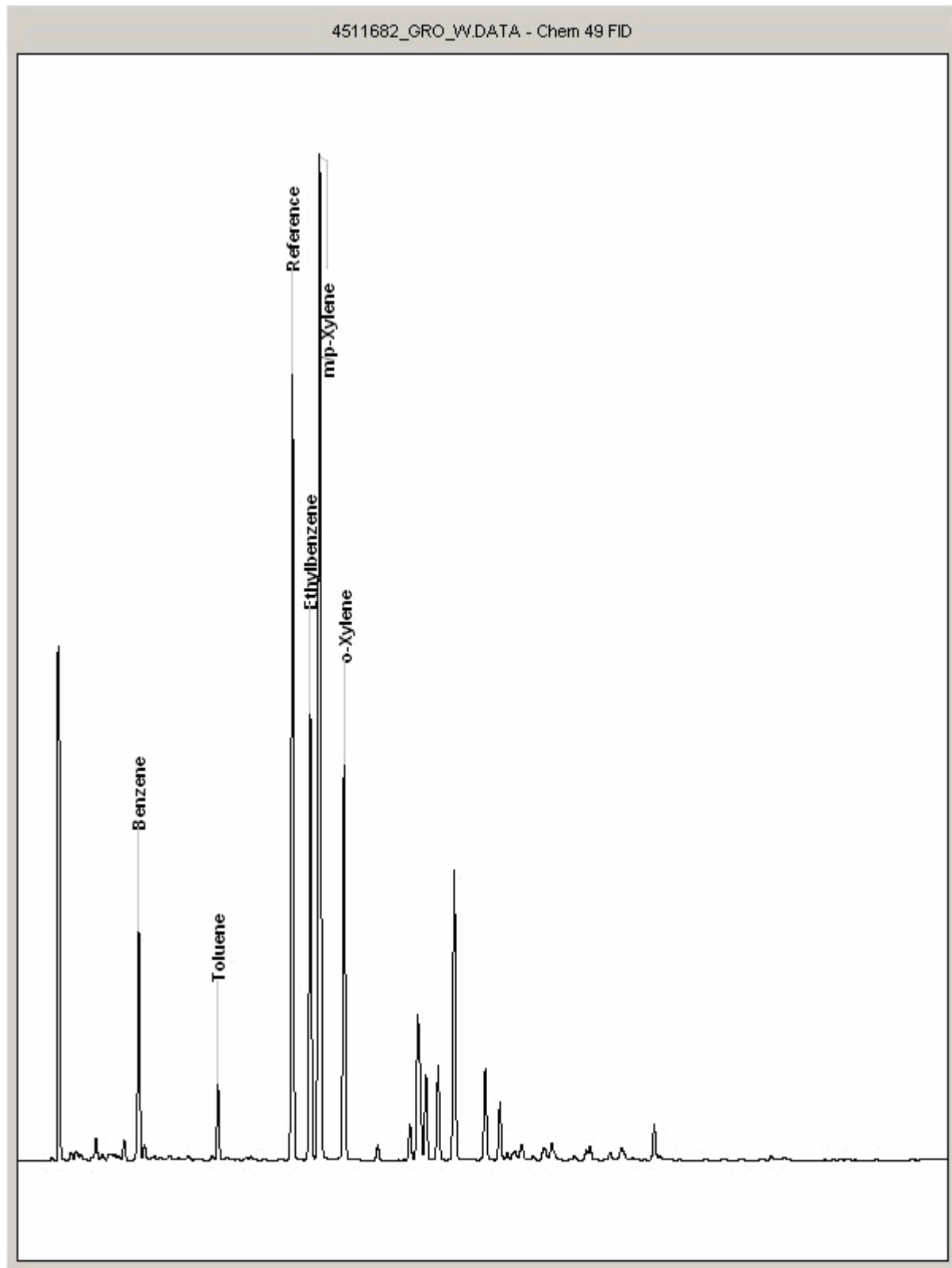
Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4511682
Sample ID : BH102

Depth :





SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

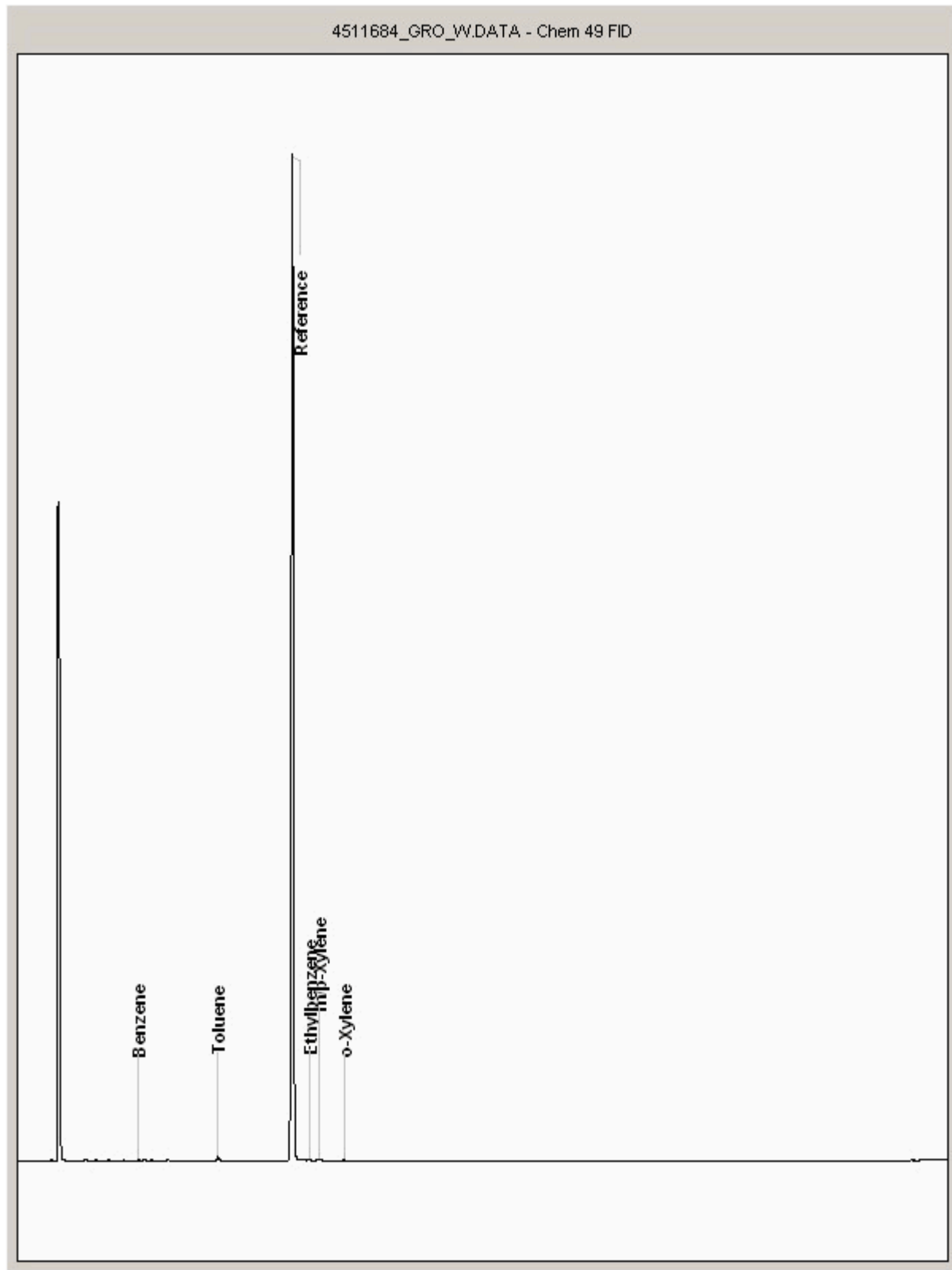
Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4511684
Sample ID : BH103

Depth :





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

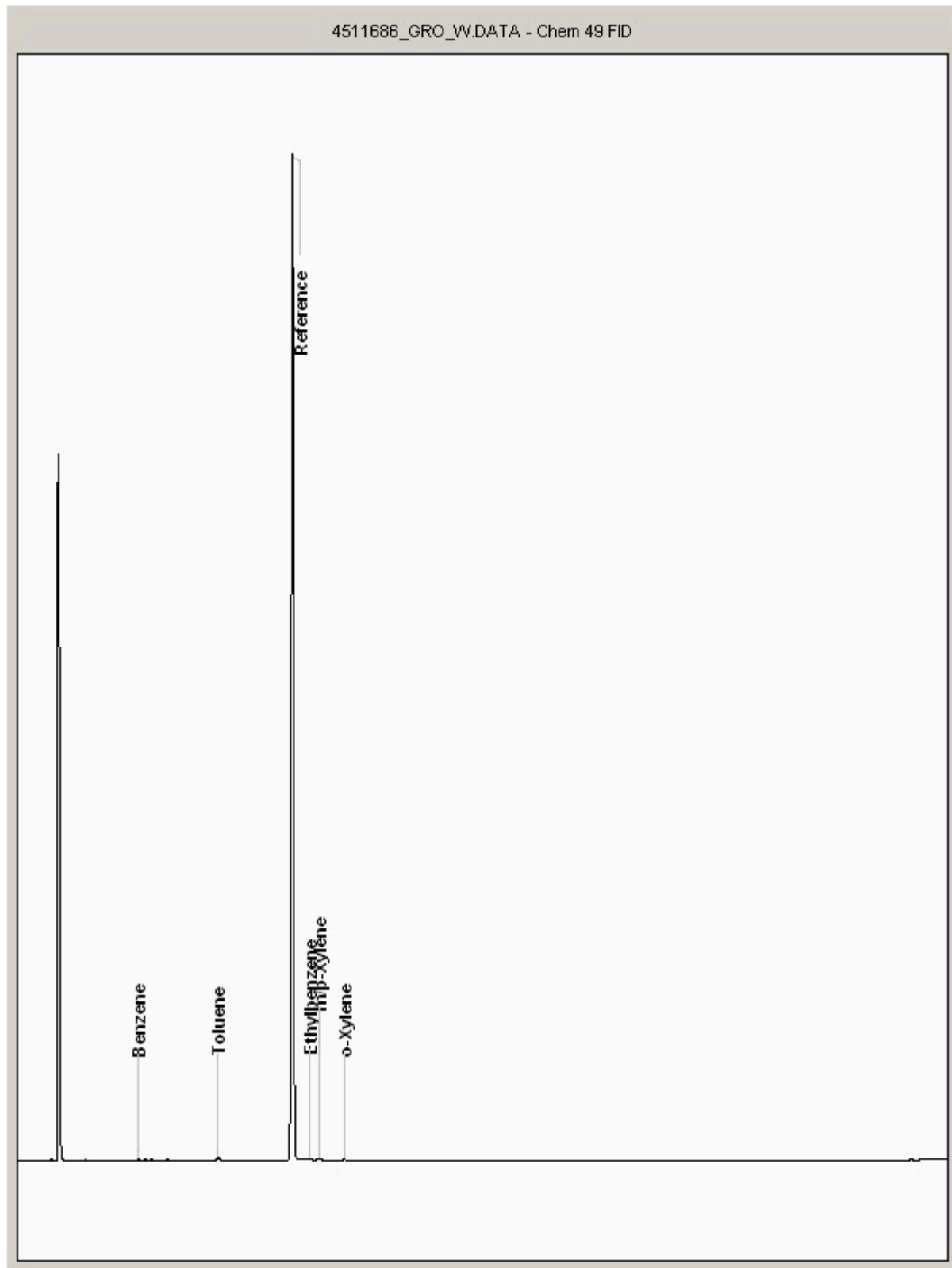
Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4511686
Sample ID : EQUIPMENT BLANK

Depth :





CERTIFICATE OF ANALYSIS

SDG: 111013-17
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

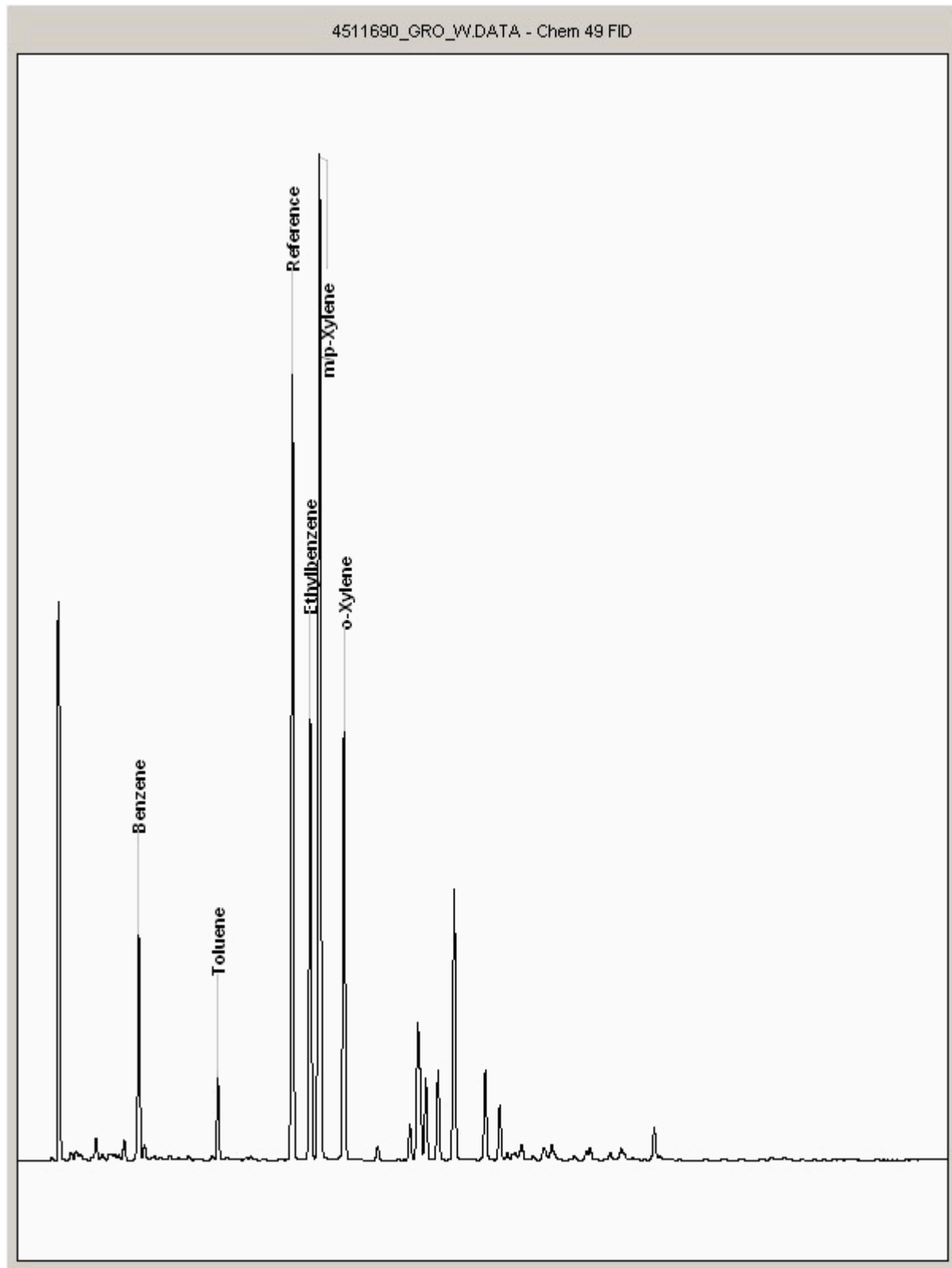
Order Number:
Report Number: 155477
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

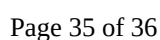
Sample No : 4511690
Sample ID : DO1

Depth :



Order Number:
Report Number: 155477
Superseded Report:

Depth :





CERTIFICATE OF ANALYSIS

SDG:	111013-17	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	155477
Client Reference:	46370079	Attention:	Jocelyn Thomas	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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 themajor 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 C4 -C10 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRIPLY INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL BY IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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



URS Corporation Limited
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Jocelyn Thomas

CERTIFICATE OF ANALYSIS

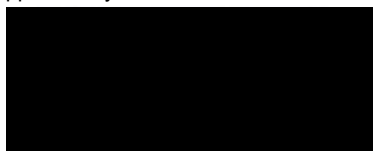
Date:	23 November 2011
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	111117-21
Your Reference:	46370079
Location:	Shell Hitchin
Report No:	160968

We received 2 samples on Thursday November 17, 2011 and 2 of these samples were scheduled for analysis which was completed on Wednesday November 23, 2011. 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:	111117-21	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	160968
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4712041	ACTIVE 01			15/11/2011
4712042	STATIC 01			15/11/2011

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



CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

LIQUID**Results Legend**

Test

No Determination
Possible**Lab Sample No(s)**4712041
4712042**Customer
Sample Reference**ACTIVE 01
STATIC 01**AGS Reference****Depth (m)****Container**1l green glass bottle
Vial (ALE297)
1l green glass bottle
Vial (ALE297)

EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 2	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 2	X	X
Oxygenates (W)	All	NDPs: 0 Tests: 2	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 2	X	X
VOC MS (W)	All	NDPs: 0 Tests: 2	X	X

Order Number:
Report Number: 160968
Superseded Report:

Page 4 of 21

Order Number:
Report Number: 160968
Superseded Report:

Page 5 of 21

Order Number:
Report Number: 160968
Superseded Report:

Page 6 of 21

Order Number:
Report Number: 160968
Superseded Report:

Page 7 of 21



CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample R	ACTIVE 01	STATIC 01				
#	ISO17025 accredited.							
M	mCERTS accredited.							
S	Deviating sample.							
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							
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	<0.1	<0.1				
Acenaphthene (aq)	<0.015 µg/l	TM178	<0.015	<0.015				
Acenaphthylene (aq)	<0.011 µg/l	TM178	<0.011	<0.011				
Fluoranthene (aq)	<0.017 µg/l	TM178	<0.017	<0.017				
Anthracene (aq)	<0.015 µg/l	TM178	<0.015	<0.015				
Phenanthrene (aq)	<0.022 µg/l	TM178	<0.022	0.0225				
Fluorene (aq)	<0.014 µg/l	TM178	<0.014	<0.014				
Chrysene (aq)	<0.013 µg/l	TM178	<0.013	<0.013				
Pyrene (aq)	<0.015 µg/l	TM178	<0.015	<0.015				
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	<0.017	<0.017				
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	<0.023	<0.023				
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	<0.027	<0.027				
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	<0.009	<0.009				
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	<0.016	<0.016				
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	<0.016	<0.016				
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	<0.014	<0.014				
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178	<0.247	<0.247				



CERTIFICATE OF ANALYSIS

SDG:	111117-21	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	160968
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

VOC MS (W)

Results Legend		Customer Sample R	ACTIVE 01	STATIC 01				
#	ISO17025 accredited.							
M	mCERTS accredited.							
S	Deviating sample.							
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							
Component	LOD/Units	Method						
Toluene-d8**	%	TM208	101	101				
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	<1				
Benzene	<1 µg/l	TM208	<1	<1				
Toluene	<1 µg/l	TM208	<1	<1				
Ethylbenzene	<1 µg/l	TM208	<1	<1				
m,p-Xylene	<1 µg/l	TM208	<1	<1				
o-Xylene	<1 µg/l	TM208	<1	<1				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1				



SDG:	111117-21	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	160968
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10 ⁻⁷							
NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



SDG:	111117-21	Location:	Shell Hitchin	Order Number:	
Job:	H_URS_WIM-108	Customer:	URS Corporation Limited	Report Number:	160968
Client Reference:	46370079	Attention:	Jocelyn Thomas	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	4712041	4712042
Customer Sample Ref.	ACTIVE 01	STATIC 01
AGS Ref.		
Depth		
Type	LIQUID	LIQUID

EPH CWG (Aliphatic) Aqueous GC (W)	23-Nov-2011	23-Nov-2011
EPH CWG (Aromatic) Aqueous GC (W)	23-Nov-2011	23-Nov-2011
GRO by GC-FID (W)	18-Nov-2011	18-Nov-2011
Oxygenates (W)	22-Nov-2011	22-Nov-2011
PAH Spec MS - Aqueous (W)	21-Nov-2011	21-Nov-2011
TPH CWG (W)	23-Nov-2011	23-Nov-2011
VOC MS (W)	21-Nov-2011	21-Nov-2011



SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 47
Total Aliphatics >C12-C35	TM174	83.33 69.51 : 106.01

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 41
Total Aromatics >EC12-EC35	TM174	88.0 66.67 : 126.67

GRO by GC-FID (W)

Component	Method Code	QC 41
Benzene by GC	TM245	107.5 70.73 : 117.15
Ethylbenzene by GC	TM245	108.5 67.94 : 118.86
m & p Xylene by GC	TM245	108.5 70.91 : 116.72
MTBE GC-FID	TM245	106.0 77.43 : 113.45
o Xylene by GC	TM245	109.0 70.52 : 120.41
QC	TM245	66.61 : 111.92
Toluene by GC	TM245	107.5 74.45 : 115.83

Oxygenates (W)

Component	Method Code	QC 47
Benzene	TM289	98.5 76.63 : 133.70
Diisopropyl ether	TM289	99.5 72.91 : 124.47
Ethanol	TM289	97.2 60.84 : 141.13
Ethylbenzene	TM289	96.0 76.16 : 122.57
o-Xylene	TM289	98.0 77.08 : 124.38
p/m-Xylene	TM289	96.25 79.43 : 122.39
tert Butanol	TM289	101.0 70.51 : 143.48
tert-amyl methyl ether	TM289	101.5 61.37 : 145.66



SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

Oxygenates (W)

		QC 47
tert-butyl ethyl ether	TM289	101.0 71.10 : 132.36
tert-butyl methyl ether	TM289	103.5 72.87 : 135.34
Toluene	TM289	97.0 79.08 : 122.51

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 41
Acenaphthene by GCMS	TM178	100.0 85.48 : 106.23
Acenaphthylene by GCMS	TM178	100.0 80.12 : 106.77
Anthracene by GCMS	TM178	99.0 77.85 : 105.75
Benz(a)anthracene by GCMS	TM178	100.5 78.50 : 107.21
Benzo(a)pyrene by GCMS	TM178	106.0 83.62 : 111.69
Benzo(b)fluoranthene by GCMS	TM178	106.0 87.25 : 114.25
Benzo(ghi)perylene by GCMS	TM178	102.5 82.05 : 112.05
Benzo(k)fluoranthene by GCMS	TM178	111.0 87.20 : 122.40
Chrysene by GCMS	TM178	98.5 85.32 : 108.58
Dibenzo(ah)anthracene by GCMS	TM178	108.0 72.40 : 118.55
Fluoranthene by GCMS	TM178	102.5 87.00 : 105.75
Fluorene by GCMS	TM178	98.0 83.15 : 107.63
Indeno(123cd)pyrene by GCMS	TM178	107.0 82.25 : 114.75
Naphthalene by GCMS	TM178	100.5 84.63 : 104.92
Phenanthrene by GCMS	TM178	102.0 86.86 : 107.20
Pyrene by GCMS	TM178	103.0 84.55 : 108.55

VOC MS (W)

Component	Method Code	QC 47
1,1,1,2-Tetrachloroethane	TM208	97.0 78.44 : 132.60
1,1,1-Trichloroethane	TM208	97.0 82.89 : 127.03
1,1-Dichloroethane	TM208	98.0 77.09 : 139.26
1,2-Dichloroethane	TM208	93.5 76.92 : 137.00



CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

VOC MS (W)

		QC 47
2-Chlorotoluene	TM208	96.5 71.51 : 138.58
4-Chlorotoluene	TM208	96.5 71.36 : 140.30
Benzene	TM208	96.5 75.59 : 136.08
Bromomethane	TM208	86.0 75.78 : 148.00
Carbontetrachloride	TM208	98.0 80.59 : 133.93
Chlorobenzene	TM208	94.5 80.31 : 128.02
Chloroform	TM208	95.5 83.42 : 132.37
Chloromethane	TM208	88.5 65.92 : 179.80
Cis-1,2-Dichloroethene	TM208	89.0 79.85 : 133.15
Dichloromethane	TM208	86.5 75.54 : 141.85
Ethylbenzene	TM208	95.0 79.89 : 124.59
Hexachlorobutadiene	TM208	96.5 55.77 : 158.25
o-Xylene	TM208	94.0 74.49 : 131.29
p/m-Xylene	TM208	94.0 79.11 : 123.92
Tert-butyl methyl ether	TM208	87.0 72.42 : 136.24
Tetrachloroethene	TM208	98.0 74.98 : 135.52
Toluene	TM208	95.5 80.34 : 126.47
Trichloroethene	TM208	98.0 80.68 : 127.52
Vinyl Chloride	TM208	85.0 66.04 : 159.76

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: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

Chromatogram

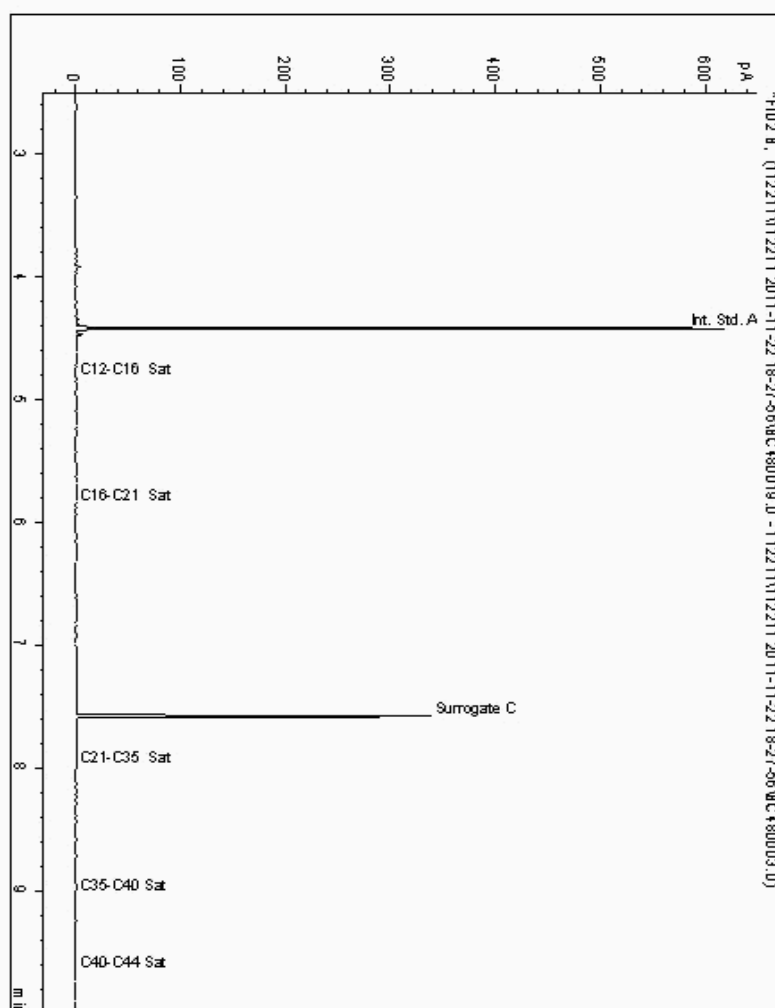
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4715004
Sample ID : ACTIVE 01

Depth :

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

Sample Identity: 4652478-4715004
Date Acquired : 23/11/11 00:03:33
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

Chromatogram

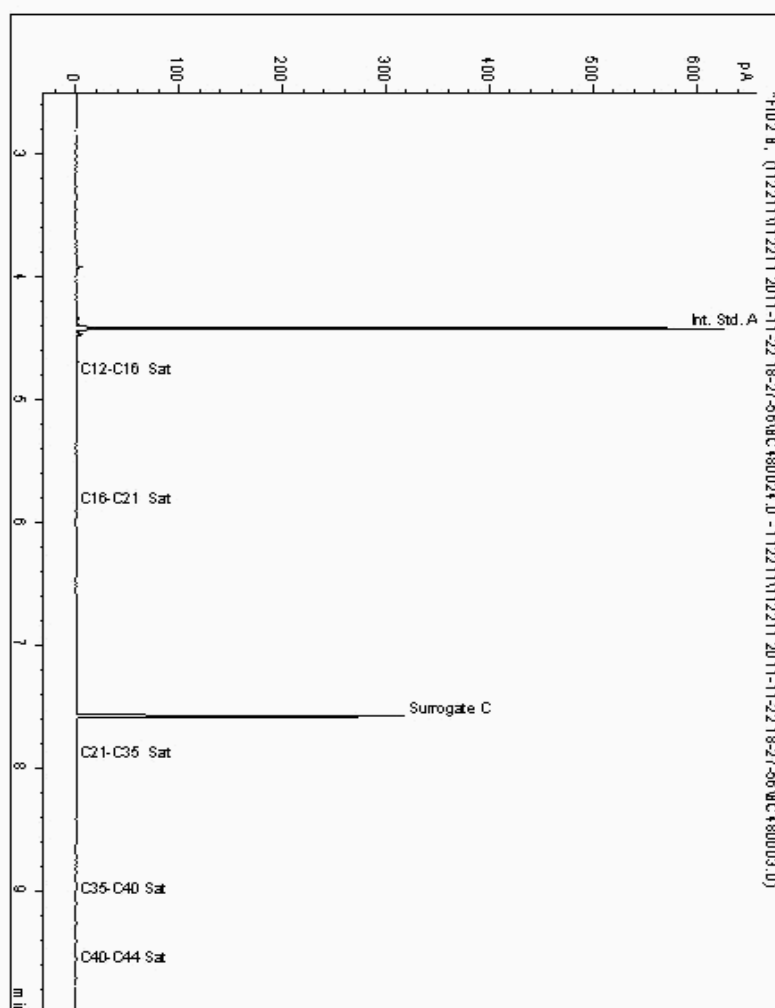
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 4715028
Sample ID : STATIC 01

Depth :

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

Sample Identity: 4652505-4715028
Date Acquired : 23/11/11 01:38:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

Chromatogram

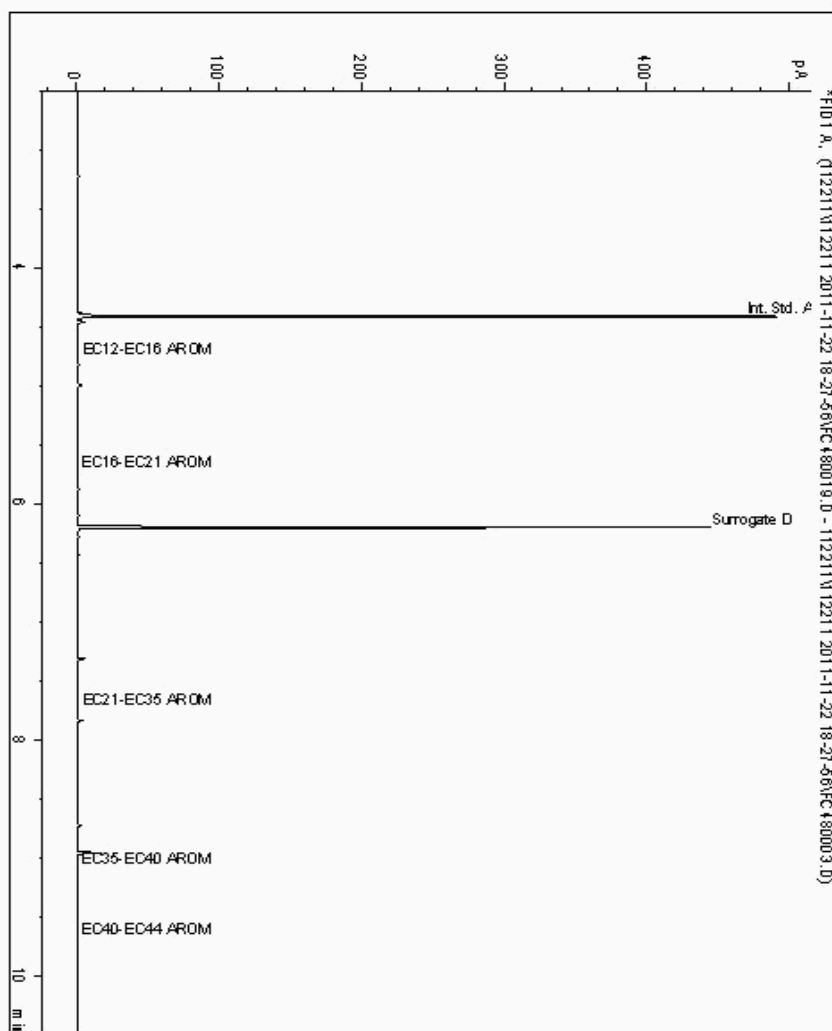
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4715004
Sample ID : ACTIVE 01

Depth :

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

Sample Identity: 4652479-4715004
Date Acquired : 23/11/11 00:03:32
Units :
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
Superseded Report:

Chromatogram

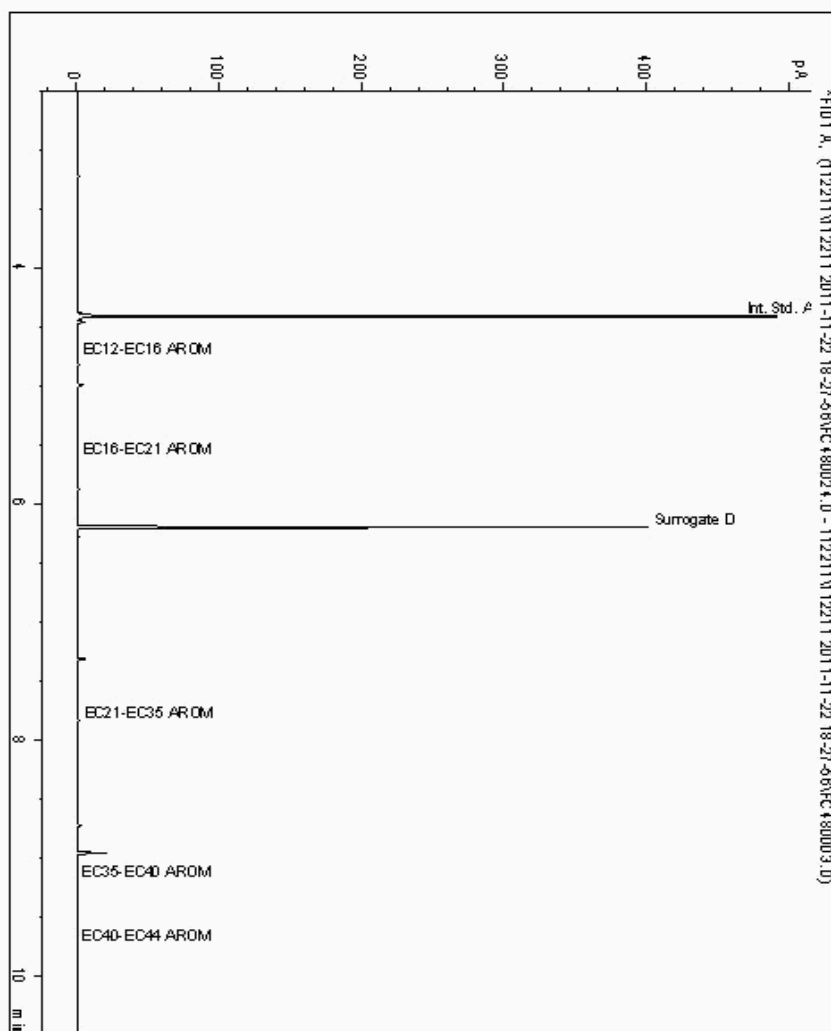
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 4715028
Sample ID : STATIC 01

Depth :

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

Sample Identity: 4652506-4715028
Date Acquired : 23/11/11 01:38:09
Units :
Dilution :
CF : 1
Multiplier : 0.008





SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

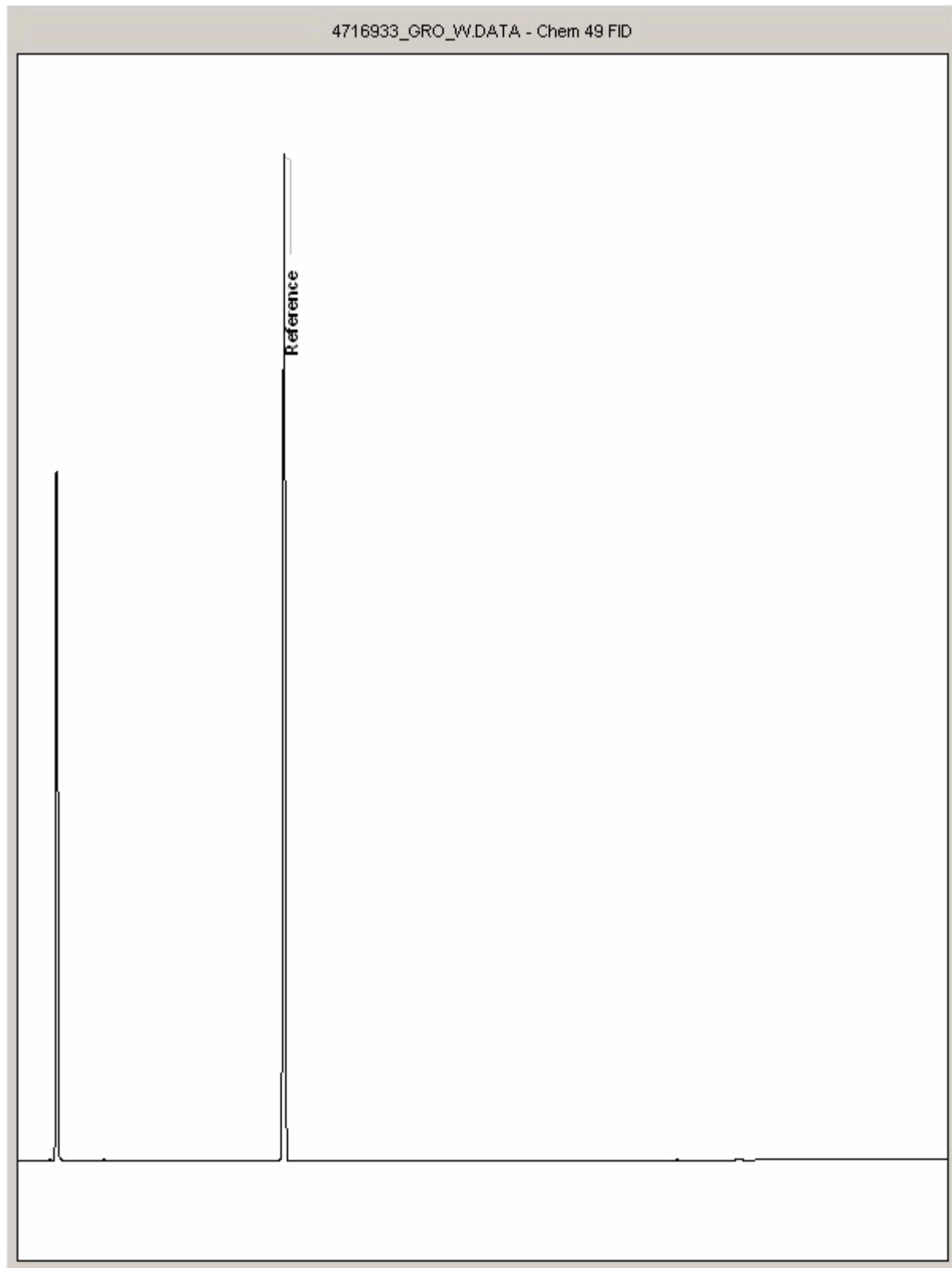
Order Number:
Report Number: 160968
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4716933
Sample ID : ACTIVE 01

Depth :





CERTIFICATE OF ANALYSIS

SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

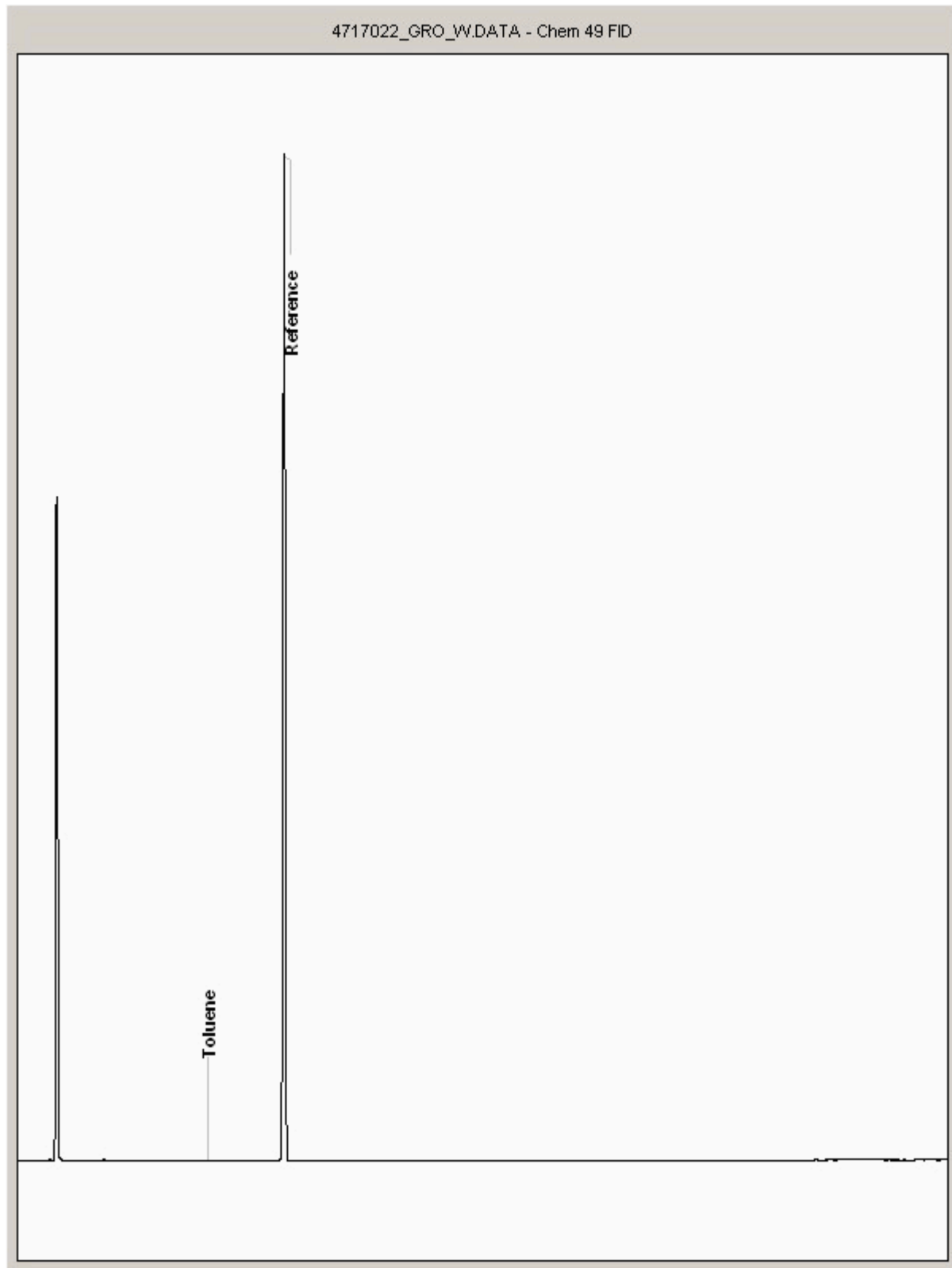
Order Number:
Report Number: 160968
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4717022
Sample ID : STATIC 01

Depth :





SDG: 111117-21
Job: H_URS_WIM-108
Client Reference: 46370079

Location: Shell Hitchin
Customer: URS Corporation Limited
Attention: Jocelyn Thomas

Order Number:
Report Number: 160968
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 Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened 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). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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 for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

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.

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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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 C₄-C₁₀ 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.

SOLID MATRICES EXTRACTION SUMMARY				
ANALYSIS	DC OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANE/ACETONE	SOX THERM	GCMS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCBTOT/PCB CON	D&C	HEXANE/ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C8/C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM/ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST COC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TRIPLY INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL BY R	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description 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).

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.

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

GAS ANALYSIS REPORT

Lab Code LAB-89
Date Acquired 10/20/11 19:54
Acq. Method File UST 624
Sample Name 500ng UST AQC
Misc Info 708
Sample Multiplier 1

Ret Time	Name	Amount	Units
3.18	MTBE	509.97	ng
3.43	Hexane	515.37	ng
3.61	DIPE	507.44	ng
3.92	ETBE	517.04	ng
4.82	Benzene	513.92	ng
4.92	TAME	511.44	ng
6.57	Toluene	510.10	ng
6.69	Octane	509.96	ng
8.04	Ethylbenzene	511.72	ng
8.16	p/m-Xylene	985.65	ng
8.57	o-Xylene	497.76	ng
9.53	Decane	515.83	ng
10.25	1,2,3-Trimethylbenzene	493.85	ng
11.52	Dodecane	508.71	ng
12.08	Naphthalene	497.20	ng
13.11	1-Methylnaphthalene	501.92	ng



ANALYTICAL TEST REPORT

Contract no: 43568
Contract name: Shell Hitchin
Client reference: PSL11/2641
Clients name: Professional Soils Laboratory
Clients address: 5-7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 11 October 2011

Analysis started: 11 October 2011

Analysis completed: 14 October 2011

Report issued: 17 October 2011

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd were not responsible for sampling.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:



Karan Campbell
Director

John Campbell
Director

Chemtech Environmental Limited

SOILS

Lab number			43568-1	43568-2	43568-3	43568-4	43568-5	43568-6
Sample id			BH 103	BH 103	BH 103	BH 106	BH 106	BH 106
Depth (m)			2.00	4.00	6.00	2.00	4.00	6.00
Test	Method	Units						
Sulphate (2:1 water soluble)	CE049 ^U	g/l SO ₄	0.02	0.02	<0.01	0.02	0.04	0.02

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE049	Sulphate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	0.01	g/l SO ₄



LABORATORY REPORT



4043

Contract Number: PSL11/2641

Client's Reference:

Report Date: 18 October 2011

Client Name: URS
St Georges House
5 St Georges Road
Wimbledon
London
SW19 4DR

For the attention of: Jocelyn Thomas

Contract Title: Shell Hitchin

Date Received: 07-October-11

Date Commenced: 07-October-11

Date Completed: 14-October-11

Notes: Observations and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

M Beastall
(Laboratory Manager)

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

Professional Soils Laboratory

SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

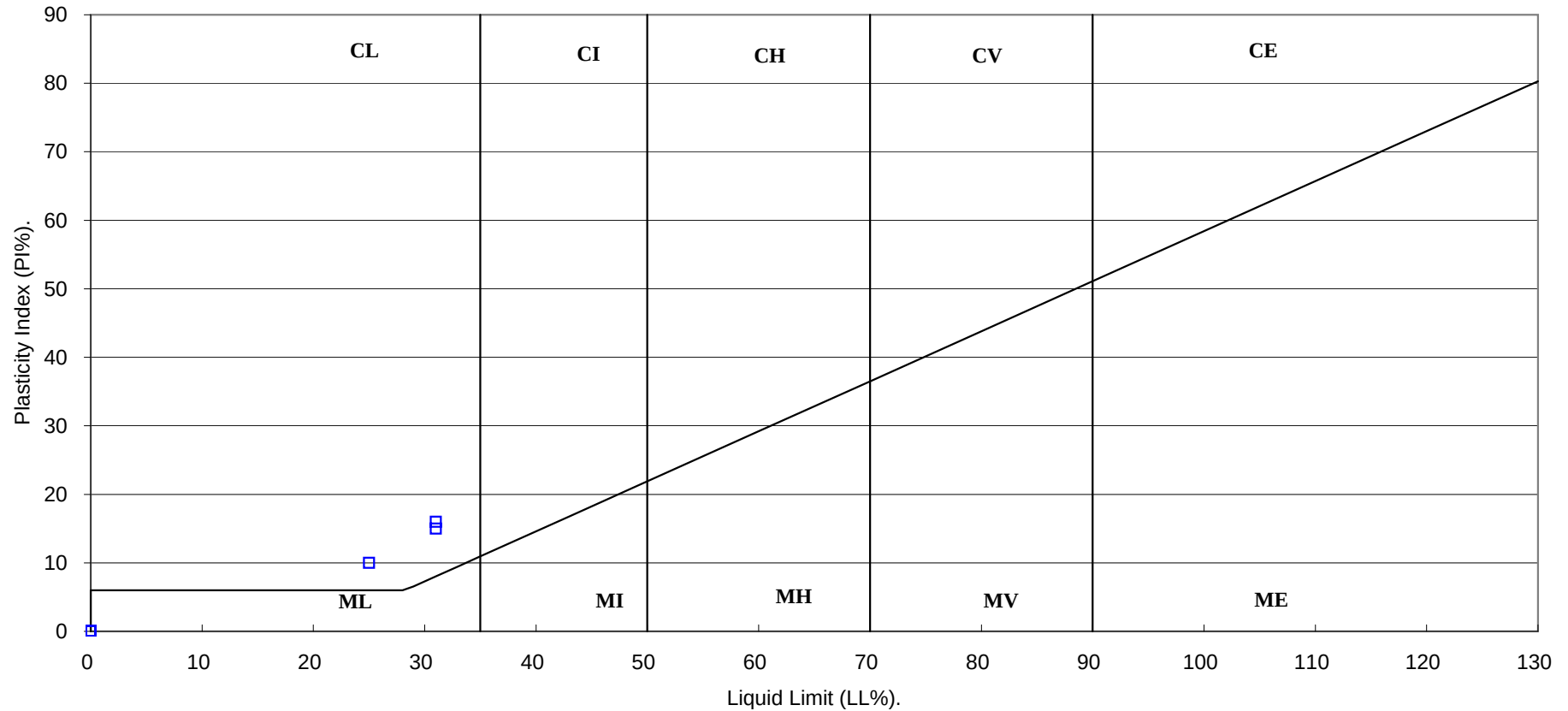
*** : Liquid Limit and Plastic Limit Wet Sieved.**



Professional Soils Laboratory

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



PSL

Professional Soils Laboratory

Particle Size Distribution Test

BS1377 : Part 2 : 1990

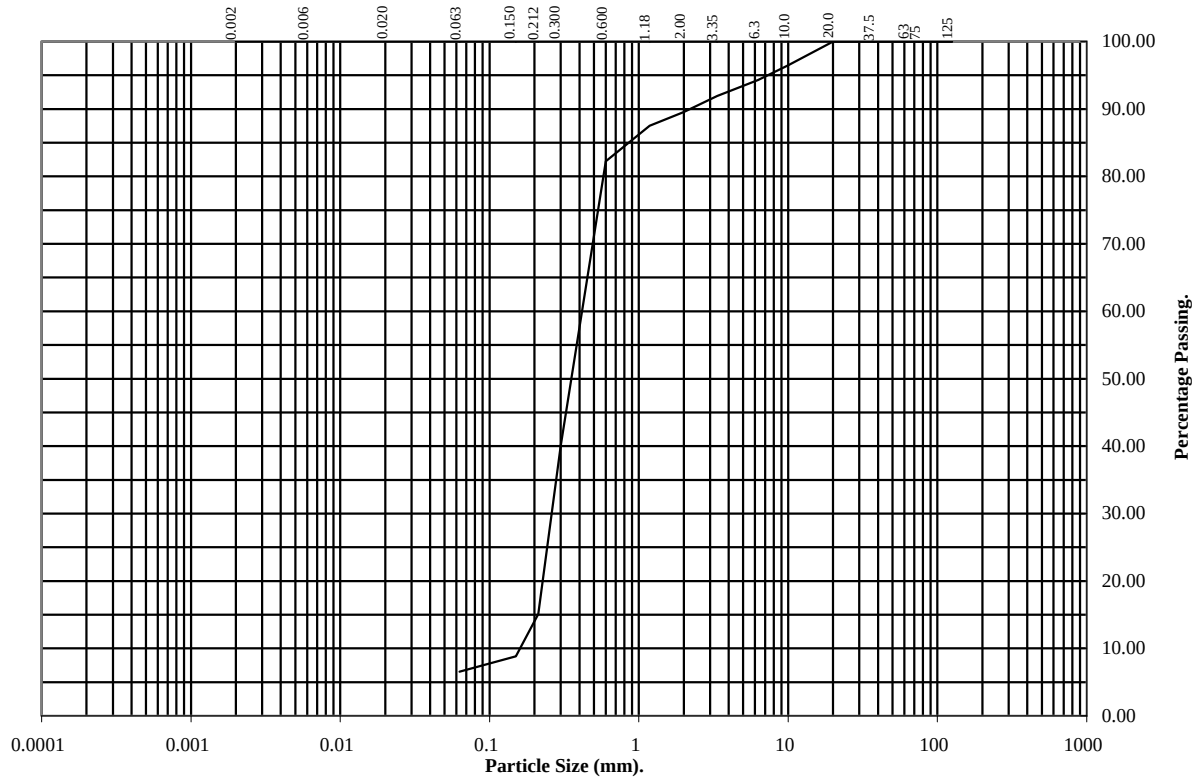
Wet Sieve, Clause 9.2

Hole Number: BH103

Depth (m): 2.00

Date of Sampling: 29/09/11

Sample Type:



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	94
3.35	92
2	90
1.18	88
0.6	82
0.3	40
0.212	15
0.15	9
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	83
Silt / Clay	7

Remarks:
See summary of soil descriptions.

Checked By	Date	Approved By	Date
------------	------	-------------	------

Particle Size Distribution Test

BS1377 : Part 2 : 1990

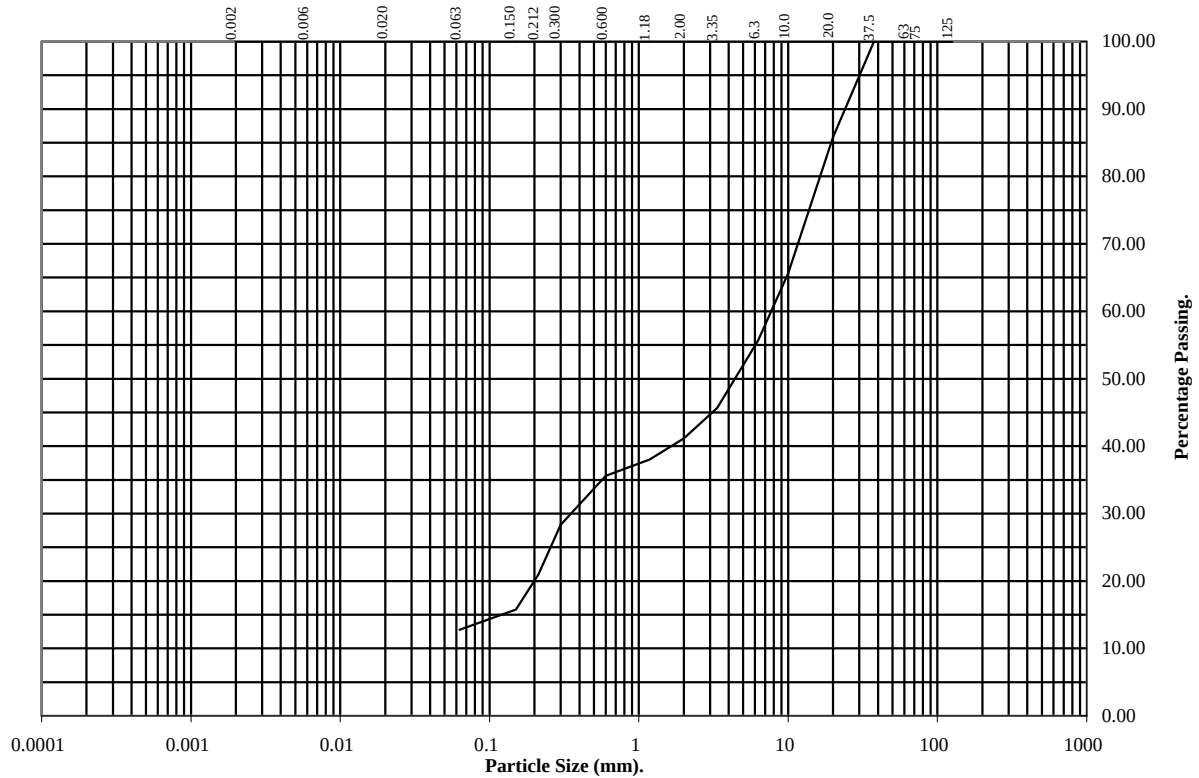
Wet Sieve, Clause 9.2

Hole Number: BH103

Depth (m): 4.00

Date of Sampling: 29/09/11

Sample Type:

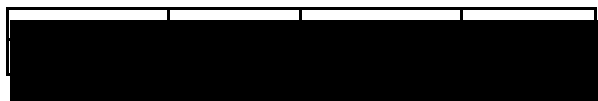


BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	86
10	66
6.3	56
3.35	46
2	41
1.18	38
0.6	36
0.3	28
0.212	21
0.15	16
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	59
Sand	28
Silt / Clay	13

Remarks:

See summary of soil descriptions.



PSL Professional Soils Laboratory	SHELL HITCHIN.	Contract No.: PSL11/2641
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Particle Size Distribution Test

BS1377 : Part 2 : 1990

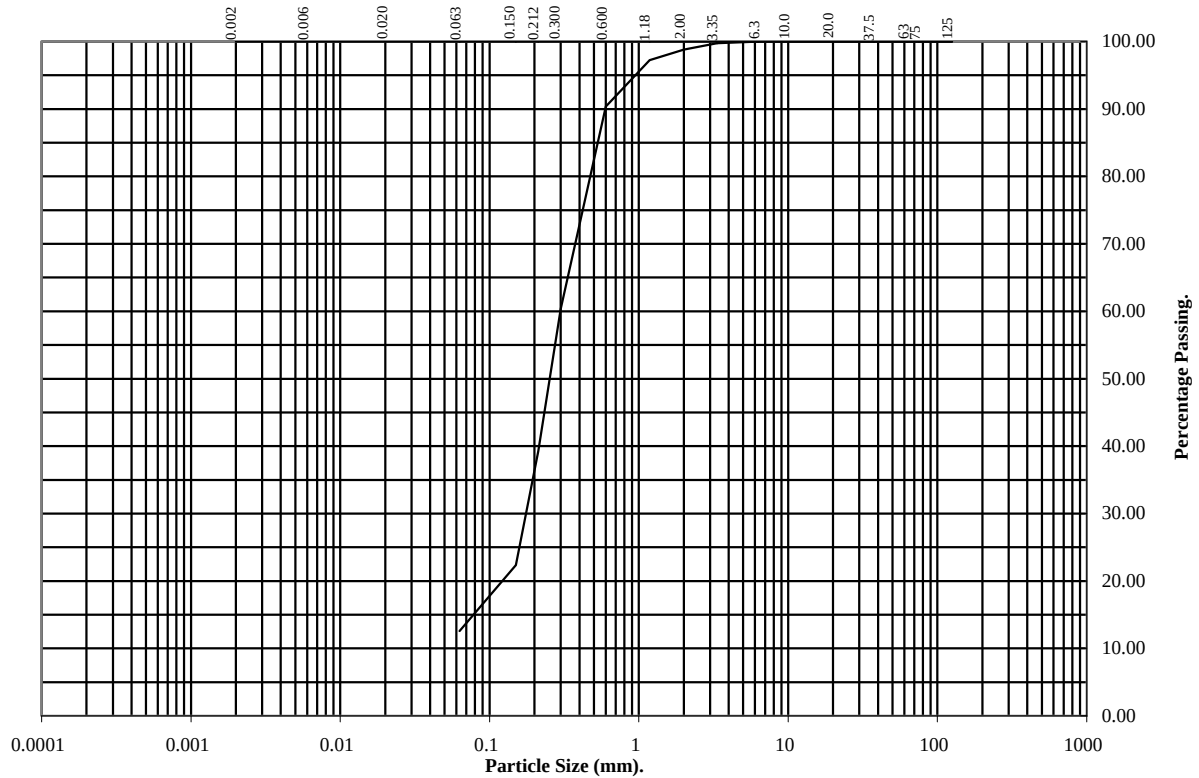
Wet Sieve, Clause 9.2

Hole Number: BH103

Depth (m): 6.00

Date of Sampling: 29/09/11

Sample Type:



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	97
0.6	90
0.3	60
0.212	39
0.15	22
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	86
Silt / Clay	13

Remarks:

See summary of soil descriptions.



Particle Size Distribution Test

BS1377 : Part 2 : 1990

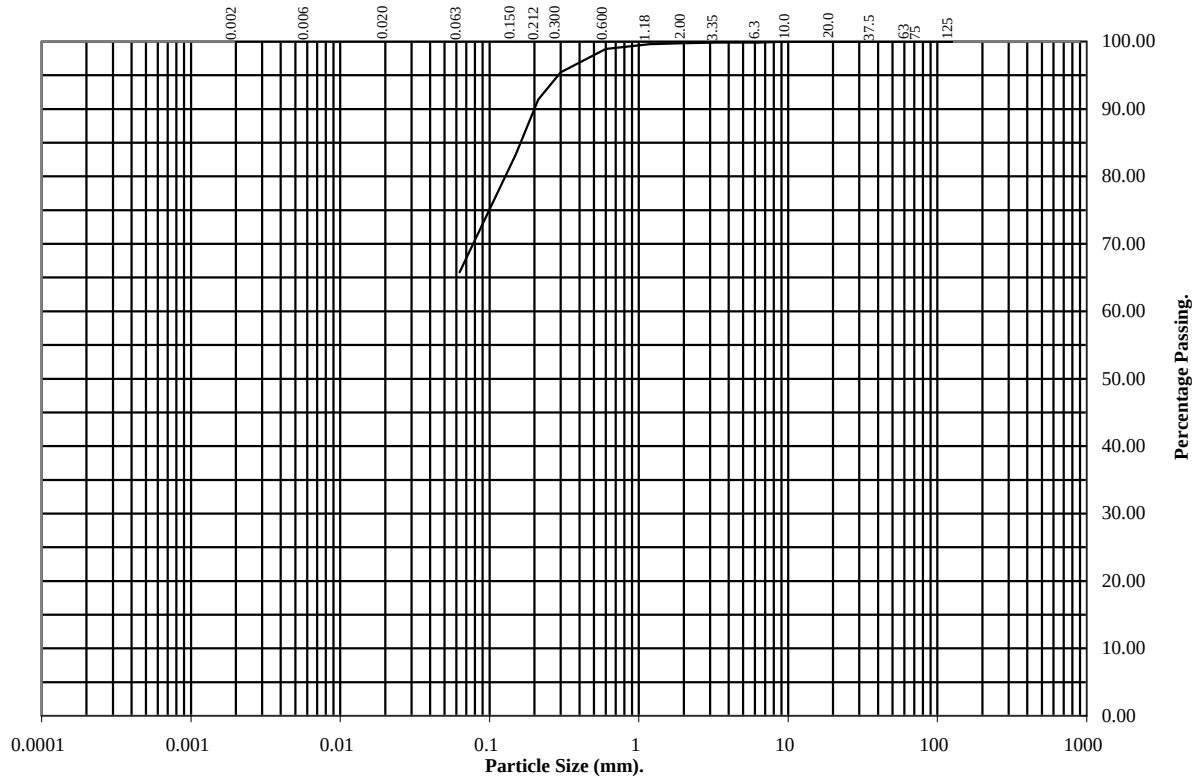
Wet Sieve, Clause 9.2

Hole Number: BH106

Depth (m): 2.00

Date of Sampling: 04/10/11

Sample Type:

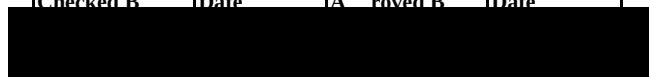


BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	95
0.212	91
0.15	83
0.063	66

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	34
Silt / Clay	66

Remarks:
See summary of soil descriptions.

Checked By: _____ Date: _____ Approved By: _____ Date: _____



PSL Professional Soils Laboratory	SHELL HITCHIN.	Contract No.: PSL11/2641
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Particle Size Distribution Test

BS1377 : Part 2 : 1990

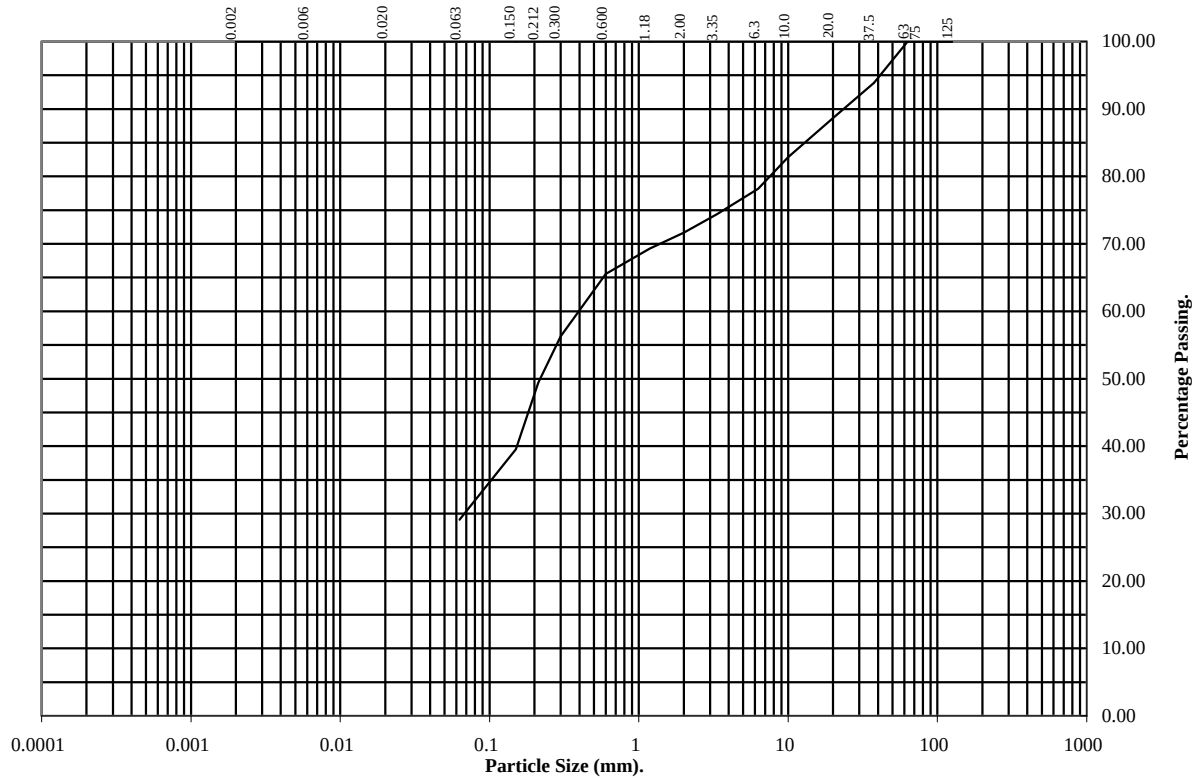
Wet Sieve, Clause 9.2

Hole Number: BH106

Depth (m): 4.00

Date of Sampling: 04/10/11

Sample Type:



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	94
20	89
10	83
6.3	78
3.35	74
2	72
1.18	69
0.6	66
0.3	56
0.212	49
0.15	40
0.063	29

Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	43
Silt / Clay	29

Remarks:
See summary of soil descriptions.



Particle Size Distribution Test

BS1377 : Part 2 : 1990

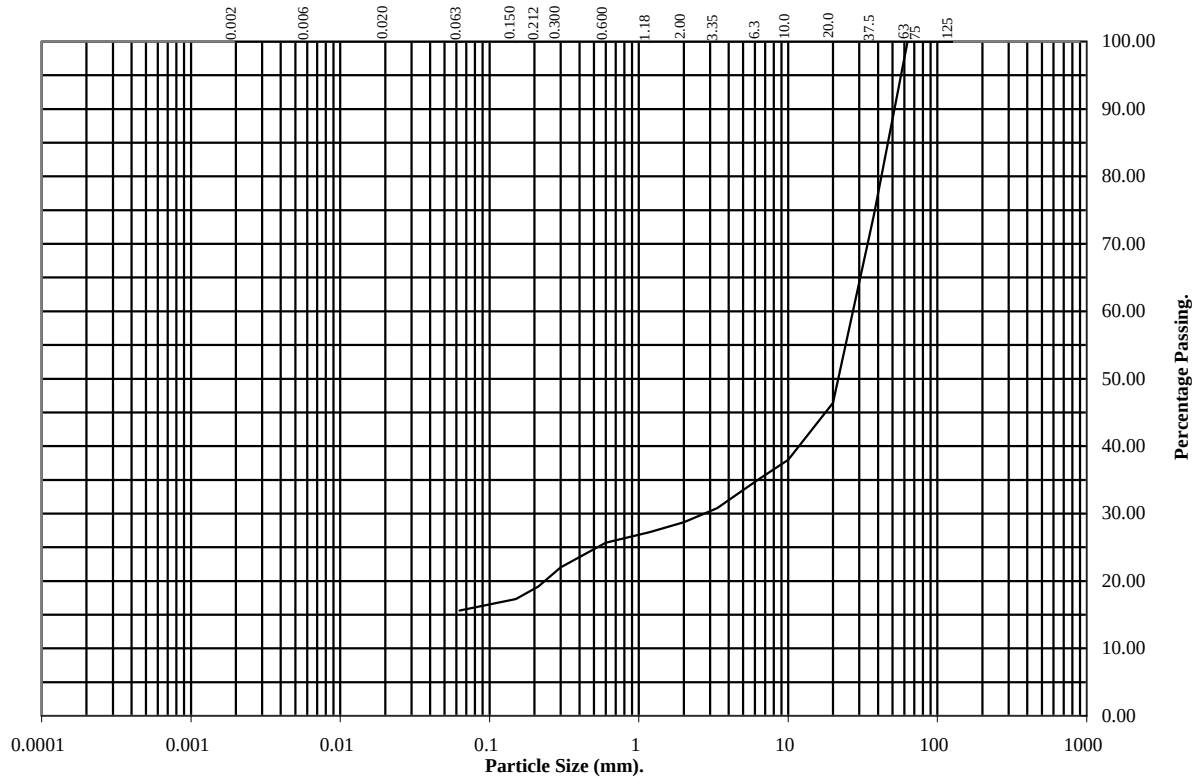
Wet Sieve, Clause 9.2

Hole Number: BH106

Depth (m): 6.00

Date of Sampling: 04/10/11

Sample Type:



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	74
20	46
10	38
6.3	35
3.35	31
2	29
1.18	27
0.6	26
0.3	22
0.212	19
0.15	17
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	71
Sand	13
Silt / Clay	16

Remarks:

See summary of soil descriptions.



PSL Professional Soils Laboratory	SHELL HITCHIN.	Contract No.: PSL11/2641
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ANALYTICAL TEST REPORT

Contract no: 43568
Contract name: Shell Hitchin
Client reference: PSL11/2641
Clients name: Professional Soils Laboratory
Clients address: 5-7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 11 October 2011

Analysis started: 11 October 2011

Analysis completed: 14 October 2011

Report issued: 17 October 2011

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
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Methods, procedures and performance data are available on request.
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Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by:

Karan Campbell
Director

John Campbell
Director

Chemtech Environmental Limited

SOILS

Lab number			43568-1	43568-2	43568-3	43568-4	43568-5	43568-6
Sample id			BH 103	BH 103	BH 103	BH 106	BH 106	BH 106
Depth (m)			2.00	4.00	6.00	2.00	4.00	6.00
Test	Method	Units						
Sulphate (2:1 water soluble)	CE049 ^U	g/l SO ₄	0.02	0.02	<0.01	0.02	0.04	0.02

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE049	Sulphate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	0.01	g/l SO ₄

Appendix F - Quality Assurance/ Quality Control (QA/QC)

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385970

10019011_BH101 0.8

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
CHRYSENE	PAH	GCMS	83.8	OK
ACENAPHTHENE	PAH	GCMS	89.5	OK
NAPHTHALENE	PAH	GCMS	90.5	OK
PHENANTHRENE	PAH	GCMS	87.9	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	87.3	OK
TPH_GRO	TPH	VOLATILES	101	OK
TPH_GRO	TPH	LEACH2	91	OK
TPH_GRO	TPH	VOLATILES	79	LOW
TPH_GRO	TPH	LEACH2	55	LOW
TPH_GRO	TPH	VOLATILES	108	OK

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385968

10019011_BH102 0.8

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	111	OK
GRO SURROGATE	TPH	VOLATILES	145	HIGH
TPH_GRO	TPH	VOLATILES	117	OK

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385422

10019011_BH103 1

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
PHENANTHRENE	PAH	GCMS	94.6	OK
ACENAPHTHENE	PAH	GCMS	95.7	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	97.3	OK
CHRYSENE	PAH	GCMS	91.7	OK
NAPHTHALENE	PAH	GCMS	97.1	OK
TPH_GRO	TPH	LEACH2	94	OK
TPH_GRO	TPH	VOLATILES	104	OK
TPH_GRO	TPH	VOLATILES	134	HIGH
TPH_GRO	TPH	LEACH2	108	OK
TPH_GRO	TPH	VOLATILES	122	HIGH

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385418

10019011_BH105 0.6

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
NAPHTHALENE	PAH	GCMS	98.5	OK
ACENAPHTHENE	PAH	GCMS	99.4	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	90.4	OK
PHENANTHRENE	PAH	GCMS	101	OK
CHRYSENE	PAH	GCMS	83.8	OK
TPH_GRO	TPH	LEACH2	94	OK
TPH_GRO	TPH	VOLATILES	61	LOW
TPH_GRO	TPH	VOLATILES	124	HIGH
TPH_GRO	TPH	LEACH2	107	OK
TPH_GRO	TPH	VOLATILES	110	OK

Surrogate Recovery Data

Hitchin October 2011

SDG:

4401779

10019011_BH106

0.5

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
CHRYSENE	PAH	GCMS	81.7	OK
NAPHTHALENE	PAH	GCMS	94.7	OK
PHENANTHRENE	PAH	GCMS	94.9	OK
ACENAPHTHENE	PAH	GCMS	93	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	87.3	OK
TPH_GRO	TPH	LEACH2	101	OK
TPH_GRO	TPH	VOLATILES	108	OK
TPH_GRO	TPH	VOLATILES	148	HIGH
TPH_GRO	TPH	LEACH2	95	OK

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4491079	
10019011_EQUIP	W	WATER	%		
Analyte	Chem Class		Method	Result	Pass/Fail
TPH_GRO	TPH		VOLATILES	118	OK

4491079

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	118	OK

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4401777	
10019011_UP101	0.6	SOIL	%		
Analyte	Chem Class		Method		Pass/Fail
TPH_GRO	TPH		VOLATILES		135
					HIGH

4401777

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	135	HIGH

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4385423	
10019011_VP102	0.4	SOIL	%		
Analyte	Chem Class		Method		Result
TPH_GRO	TPH		VOLATILES		103
					OK

4385423

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	103	OK

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4385419	
10019011_VP103	0.7	SOIL	%		
Analyte	Chem Class		Method		Pass/Fail
TPH_GRO	TPH		VOLATILES		73
					LOW

4385419

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	73	LOW

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4401785	
10019011_WAC01	W	SOIL	%		
Analyte	Chem Class		Method		Pass/Fail
TPH_GRO	TPH		VOLATILES		HIGH

4401785

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	140	HIGH

Surrogate Recovery Data

Hitchin October 2011

SDG:

4401786

10019011_WAC02 W

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	138	HIGH

Surrogates are organic compounds chemically similar to the target compounds that are spiked in each sample at a known concentration prior to sample preparation. The percentage recovery of the surrogate can then be evaluated. The criteria for evaluation are typically developed by the laboratory and/or based upon published values provided for related methods by the US EPA. As detailed in the US EPA CLP Functional guidelines, *the evaluation of the results of these surrogate spikes is not necessarily straightforward. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the evaluation and review of data based on specific sample results is frequently subjective and demands analytical experience and professional judgment.*

Nonetheless, the data reviewer should;

- Check that surrogate data are presented for all GC/MS analyses.
- If the laboratory provides criteria then check that surrogate recoveries are within these stipulated criteria. If any recoveries fall outside the criteria, use professional judgement to evaluate whether there is a potential matrix effect, in discussion with the laboratory and if so, whether this needs to be identified in the interpretation of the data.
- If the laboratory provides no criteria and the surrogate recovery falls below 10% then contact the laboratory for an explanation. This may also potentially be the result of a matrix effect and the data may not be usable.

PM Comments

Project Manager:

Date:

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385970

10019011_BH101 0.8

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
CHRYSENE	PAH	GCMS	83.8	OK
ACENAPHTHENE	PAH	GCMS	89.5	OK
NAPHTHALENE	PAH	GCMS	90.5	OK
PHENANTHRENE	PAH	GCMS	87.9	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	87.3	OK
TPH_GRO	TPH	VOLATILES	101	OK
TPH_GRO	TPH	LEACH2	91	OK
TPH_GRO	TPH	VOLATILES	79	LOW
TPH_GRO	TPH	LEACH2	55	LOW
TPH_GRO	TPH	VOLATILES	108	OK

Surrogate Recovery Data

Hitchin October 2011
10019011_BH102 0.8 SOIL % SDG: 4385968

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	111	OK
GRO SURROGATE	TPH	VOLATILES	145	HIGH
TPH_GRO	TPH	VOLATILES	117	OK

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385422

10019011_BH103 1

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
PHENANTHRENE	PAH	GCMS	94.6	OK
ACENAPHTHENE	PAH	GCMS	95.7	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	97.3	OK
CHRYSENE	PAH	GCMS	91.7	OK
NAPHTHALENE	PAH	GCMS	97.1	OK
TPH_GRO	TPH	LEACH2	94	OK
TPH_GRO	TPH	VOLATILES	104	OK
TPH_GRO	TPH	VOLATILES	134	HIGH
TPH_GRO	TPH	LEACH2	108	OK
TPH_GRO	TPH	VOLATILES	122	HIGH

Surrogate Recovery Data

Hitchin October 2011

SDG:

4385418

10019011_BH105 0.6

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
NAPHTHALENE	PAH	GCMS	98.5	OK
ACENAPHTHENE	PAH	GCMS	99.4	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	90.4	OK
PHENANTHRENE	PAH	GCMS	101	OK
CHRYSENE	PAH	GCMS	83.8	OK
TPH_GRO	TPH	LEACH2	94	OK
TPH_GRO	TPH	VOLATILES	61	LOW
TPH_GRO	TPH	VOLATILES	124	HIGH
TPH_GRO	TPH	LEACH2	107	OK
TPH_GRO	TPH	VOLATILES	110	OK

Surrogate Recovery Data

Hitchin October 2011

SDG:

4401779

10019011_BH106

0.5

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
CHRYSENE	PAH	GCMS	81.7	OK
NAPHTHALENE	PAH	GCMS	94.7	OK
PHENANTHRENE	PAH	GCMS	94.9	OK
ACENAPHTHENE	PAH	GCMS	93	OK
BENZO_G_H_I_PERYLENE	PAH	GCMS	87.3	OK
TPH_GRO	TPH	LEACH2	101	OK
TPH_GRO	TPH	VOLATILES	108	OK
TPH_GRO	TPH	VOLATILES	148	HIGH
TPH_GRO	TPH	LEACH2	95	OK

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4491079	
10019011_EQUIP	W	WATER	%		
Analyte	Chem Class		Method	Result	Pass/Fail
TPH_GRO	TPH		VOLATILES	118	OK

4491079

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	118	OK

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4401777	
10019011_UP101	0.6	SOIL	%		
Analyte	Chem Class		Method		Pass/Fail
TPH_GRO	TPH		VOLATILES		135
					HIGH

4401777

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	135	HIGH

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4385423	
10019011_VP102	0.4	SOIL	%		
Analyte	Chem Class		Method		Result
TPH_GRO	TPH		VOLATILES		103
					OK

4385423

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	103	OK

Surrogate Recovery Data

Hitchin October 2011
10019011_VP103 0.7 SOIL % SDG: 4385419

Analyte		Chem Class	Method	Result	Pass/Fail
TPH_GRO		TPH	VOLATILES	73	LOW

Surrogate Recovery Data					
Hitchin October 2011			SDG:	4401785	
10019011_WAC01	W	SOIL	%		
Analyte	Chem Class		Method		Pass/Fail
TPH_GRO	TPH		VOLATILES		HIGH

4401785

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	140	HIGH

Surrogate Recovery Data

Hitchin October 2011

SDG:

4401786

10019011_WAC02 W

SOIL

%

Analyte	Chem Class	Method	Result	Pass/Fail
TPH_GRO	TPH	VOLATILES	138	HIGH

Surrogates are organic compounds chemically similar to the target compounds that are spiked in each sample at a known concentration prior to sample preparation. The percentage recovery of the surrogate can then be evaluated. The criteria for evaluation are typically developed by the laboratory and/or based upon published values provided for related methods by the US EPA. As detailed in the US EPA CLP Functional guidelines, *the evaluation of the results of these surrogate spikes is not necessarily straightforward. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the evaluation and review of data based on specific sample results is frequently subjective and demands analytical experience and professional judgment.*

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PM Comments

Project Manager:

Date:

Sample Type: GAS
Site: Hitchin

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Extraction Date	Holding Time (Days)
10019011_VP101	0	TAME	4515249	13/10/2011	21/10/2011	8
10019011_VP103	0	TOTAL_VOC_C6_12	4515254	13/10/2011	21/10/2011	8
10019011_VP102	0	TOTAL_VOC_C6_12	4515253	13/10/2011	21/10/2011	8
10019011_VP102	0	HEXANE	4515253	13/10/2011	21/10/2011	8
10019011_VP101	0	MTBE	4515249	13/10/2011	21/10/2011	8
10019011_VP101	0	TOTAL_VOC_C6_12	4515249	13/10/2011	21/10/2011	8
10019011_VP103	0	A_1_METHYLNAPHTHALENE	4515254	13/10/2011	21/10/2011	8
10019011_VP101	0	NAPHTHALENE	4515249	13/10/2011	21/10/2011	8
10019011_VP103	0	NAPHTHALENE	4515254	13/10/2011	21/10/2011	8
10019011_VP101	0	A_1_METHYLNAPHTHALENE	4515249	13/10/2011	21/10/2011	8
10019011_VP103	0	A_1_2_3_TRIMETHYLBENZE	4515254	13/10/2011	21/10/2011	8
10019011_VP102	0	A_1_METHYLNAPHTHALENE	4515253	13/10/2011	21/10/2011	8
10019011_VP102	0	NAPHTHALENE	4515253	13/10/2011	21/10/2011	8
10019011_VP102	0	A_1_2_3_TRIMETHYLBENZE	4515253	13/10/2011	21/10/2011	8
10019011_VP103	0	DODECANE	4515254	13/10/2011	21/10/2011	8
10019011_VP102	0	DIPE	4515253	13/10/2011	21/10/2011	8
10019011_VP103	0	O_XYLENE	4515254	13/10/2011	21/10/2011	8
10019011_VP102	0	O_XYLENE	4515253	13/10/2011	21/10/2011	8
10019011_VP101	0	DIPE	4515249	13/10/2011	21/10/2011	8
10019011_VP101	0	ETBE	4515249	13/10/2011	21/10/2011	8
10019011_VP102	0	MTBE	4515253	13/10/2011	21/10/2011	8
10019011_VP102	0	ETBE	4515253	13/10/2011	21/10/2011	8
10019011_VP102	0	TAME	4515253	13/10/2011	21/10/2011	8
10019011_VP103	0	MTBE	4515254	13/10/2011	21/10/2011	8
10019011_VP103	0	DIPE	4515254	13/10/2011	21/10/2011	8
10019011_VP103	0	ETBE	4515254	13/10/2011	21/10/2011	8
10019011_VP103	0	TAME	4515254	13/10/2011	21/10/2011	8
10019011_VP103	0	ETHYLBENZENE	4515254	13/10/2011	21/10/2011	8
10019011_VP102	0	BENZENE	4515253	13/10/2011	21/10/2011	8
10019011_VP101	0	A_1_2_3_TRIMETHYLBENZE	4515249	13/10/2011	21/10/2011	8

Sample Type: GAS
Site: Hitchin

Project Manager:

Date:

Holding Times >7 Days from Sample to Extraction

Sample Type: SOIL
Site: Hitchin

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Extraction Date	Holding Time (Days)
10019011_VP103	0.7	M_P_XYLENE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	ETBE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	TOLUENE_D8	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	ETHANOL	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	TAME	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	MTBE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	TBA	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	O_XYLENE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C6_C7_AROM	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C5_C6_ALI	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C8_C10_AROM	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C10_C12_AROM	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	ETHYLBENZENE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C7_C8_AROM	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C6_C8_ALI	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C10_C12_ALI	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	BENZENE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	RISK_TPH_C8_C10_ALI	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	TOLUENE	4385419	26/09/2011	04/10/2011	8
10019011_VP103	0.7	DIPE	4385419	26/09/2011	04/10/2011	8
10019011_VP102	0.4	TAME	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	ETBE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	TOLUENE_D8	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	DIPE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	ETHYLBENZENE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	M_P_XYLENE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	TOLUENE	4385423	27/09/2011	05/10/2011	8

Sample Type: SOIL
Site: Hitchin

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Extraction Date	Holding Time (Days)
10019011_VP102	0.4	MTBE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	TBA	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	BENZENE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	O_XYLENE	4385423	27/09/2011	05/10/2011	8
10019011_VP102	0.4	ETHANOL	4385423	27/09/2011	05/10/2011	8
10019011_BH106	0.5	DIPE	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C6_C8_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C6_C7_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C5_C6_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C8_C10_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C10_C12_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C8_C10_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C7_C8_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C10_C12_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C6_C7_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C5_C6_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C8_C10_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C10_C12_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C8_C10_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C7_C8_AROM	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C10_C12_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	ETHYLBENZENE	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C6_C8_ALI	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	M_P_XYLENE	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C5_C6_ALI	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C6_C7_AROM	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	DIPE	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	O_XYLENE	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	ETBE	4401779	28/09/2011	06/10/2011	8
10019011_BH106	0.5	TBA	4401779	28/09/2011	06/10/2011	8

Sample Type: SOIL
Site: Hitchin

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Extraction Date	Holding Time (Days)
10019011_UP101	0.6	TBA	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C5_C6_ALI	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	MTBE	4401777	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C6_C7_AROM	4401777	28/09/2011	06/10/2011	8
10019011_UP101	0.6	M_P_XYLENE	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	TAME	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	TAME	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	ETHANOL	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	ETHANOL	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	TOLUENE_D8	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	TOLUENE_D8	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	MTBE	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	BENZENE	4401777	28/09/2011	06/10/2011	8
10019011_UP101	0.6	ETBE	4401777	28/09/2011	06/10/2011	8
10019011_UP101	0.6	ETHYLBENZENE	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	TOLUENE	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	O_XYLENE	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	BENZENE	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C8_C10_AROM	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C10_C12_ALI	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C10_C12_ALI	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C8_C10_AROM	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C6_C8_ALI	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C7_C8_AROM	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C7_C8_AROM	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C8_C10_ALI	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C8_C10_ALI	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C10_C12_AROM	4401779	28/09/2011	06/10/2011	8
10019011_UP101	0.6	RISK_TPH_C10_C12_AROM	4401777	28/09/2011	06/10/2011	8
10019011_BH106	0.5	RISK_TPH_C6_C8_ALI	4401779	28/09/2011	06/10/2011	8

Sample Type: SOIL
Site: Hitchin

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Extraction Date	Holding Time (Days)
10019011_UP101	0.6	TOLUENE	4401777	28/09/2011	06/10/2011	8
10019011_BH106	3.9	TOLUENE	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	TOLUENE_D8	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	TAME	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	M_P_XYLENE	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	MTBE	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	O_XYLENE	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	ETHYLBENZENE	4433452	04/10/2011	12/10/2011	8
10019011_BH106	3.9	BENZENE	4433452	04/10/2011	12/10/2011	8

Project Manager:

Date:

Duplicate RPD Summary

Hitchin October 2011

Duplicate RPD Summary

Hitchin October 2011

10019011_BH102 W		WATER		µg/l		111013-17			
Chem Class	Analyte	MDL	Sample	Dup	MDL Ratio	RPD Limit	RPD Value	Comment	Pass/Fail
BTEX	BENZENE	1	1460	1730	1730	30	-16.9279	Conc >20x MDL; RPD limit = 30%	OK
BTEX	ETHYLBENZENE	1	2350	2640	2640	30	-11.6232	Conc >20x MDL; RPD limit = 30%	OK
BTEX	M_P_XYLENE	1	6480	7270	7270	30	-11.4909	Conc >20x MDL; RPD limit = 30%	OK
BTEX	O_XYLENE	1	2460	2720	2720	30	-10.0386	Conc >20x MDL; RPD limit = 30%	OK
BTEX	TOLUENE	1	465	398	465	30	15.52723	Conc >20x MDL; RPD limit = 30%	OK
PAH	Acenaphthene	0.015	0.015	0.015	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Acenaphthylene	0.011	0.011	0.011	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Anthracene	0.015	0.015	0.015	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	BENZO_A_ANTHRACENE	0.017	0.017	0.017	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	BENZO_A_PYRENE	0.009	0.009	0.009	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	BENZO_B_FLUORANTHENE	0.023	0.023	0.023	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	BENZO_G_H_I_PERYLENE	0.016	0.016	0.016	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	BENZO_K_FLUORANTHENE	0.027	0.027	0.027	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Chrysene	0.013	0.013	0.013	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	DIBENZ_A_H_ANTHRACENE	0.016	0.016	0.016	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Fluoranthene	0.017	0.017	0.017	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Fluorene	0.014	0.205	0.245	17.5	50	-17.7778	Conc >10x MDL but <20x MDL; RPD limit = 50%	OK
PAH	INDENO_1_2_3_CD_PYRENE	0.014	0.014	0.014	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Naphthalene	0.1	175	186	1860	30	-6.09418	Conc >20x MDL; RPD limit = 30%	OK
PAH	Phenanthrene	0.022	0.022	0.022	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	Pyrene	0.015	0.015	0.015	1	0	0	Conc <10x MDL; No RPD Limit	OK
PAH	TOTAL_PAH	0.247	176	186	753.036	30	-5.52486	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C10_C12_ALI	10	1510	1370	151	30	9.722222	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C10_C12_AROM	10	1010	914	101	30	9.97921	Conc >20x MDL; RPD limit = 30%	OK

Duplicate RPD Summary

Hitchin October 2011

10019011_BH102 W		WATER		µg/l		111013-17			
Chem Class	Analyte	MDL	Sample	Dup	MDL Ratio	RPD Limit	RPD Value	Comment	Pass/Fail
RISKTPH	RISK_TPH_C12_C16_ALI	10	10	10	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C12_C16_AROM	10	143	151	15.1	50	-5.44218	Conc >10x MDL but <20x MDL; RPD limit = 50%	OK
RISKTPH	RISK_TPH_C16_C21_ALI	10	10	10	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C16_C21_AROM	10	10	10	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_ALI	10	10	10	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_AROM	10	10	10	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C5_C6_ALI	10	308	295	30.8	30	4.311774	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C6_C7_AROM	10	1210	1160	121	30	4.219409	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C6_C8_ALI	10	697	632	69.7	30	9.781791	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C7_C8_AROM	10	392	400	40	30	-2.02020	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C8_C10_ALI	10	3220	2900	322	30	10.45752	Conc >20x MDL; RPD limit = 30%	OK
RISKTPH	RISK_TPH_C8_C10_AROM	10	13300	12700	1330	30	4.615385	Conc >20x MDL; RPD limit = 30%	OK
VOC	DIPE	1	1	1	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	ETBE	1	1	1	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	ETHANOL	50	50	50	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	MTBE	1	1	1	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	TAME	1	1	1	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	TBA	10	10	10	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	TOLUENE_D8	0	100	102	#Error	#Error	#Error	#Error	#Error

Duplicate RPD Summary

Hitchin October 2011

10019011_BH105 4.1		SOIL	mg/kg		110930-19				
Chem Class	Analyte	MDL	Sample	Dup	MDL Ratio	RPD Limit	RPD Value	Comment	Pass/Fail
BTEX	BENZENE	0.002	0.002	0.009	4.5	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	BENZENE	1	1	0.009	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	BENZENE	0.009	0.009	0.009	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	ETHYLBENZENE	1	1	0.004	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	ETHYLBENZENE	0.002	0.002	0.004	2	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	ETHYLBENZENE	0.004	0.004	0.004	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	M_P_XYLENE	0.014	0.014	0.014	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	M_P_XYLENE	1	1	0.014	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	M_P_XYLENE	0.002	0.002	0.014	7	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	O_XYLENE	1	1	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	O_XYLENE	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	O_XYLENE	0.002	0.002	0.01	5	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	TOLUENE	1	1	0.005	1	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	TOLUENE	0.002	0.002	0.005	2.5	0	0	Conc <10x MDL; No RPD Limit	OK
BTEX	TOLUENE	0.005	0.005	0.005	1	0	0	Conc <10x MDL; No RPD Limit	OK
MISC	Total_Organic_Carbon	0.2	0.2	0.2	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C10_C12_ALI	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C10_C12_AROM	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C12_C16_ALI	10	10	44.2	4.42	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C12_C16_ALI	0.02	0.02	44.2	2210	30	99.81909	Conc >20x MDL; RPD limit = 30%	FAIL
RISKTPH	RISK_TPH_C12_C16_ALI	0.1	7.29	44.2	442	30	43.36764	Conc >20x MDL; RPD limit = 30%	FAIL
RISKTPH	RISK_TPH_C12_C16_AROM	0.02	0.02	0.1	5	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C12_C16_AROM	0.1	0.1	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C12_C16_AROM	10	10	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK

Duplicate RPD Summary

Hitchin October 2011

10019011_BH105 4.1		SOIL	mg/kg		110930-19				
Chem Class	Analyte	MDL	Sample	Dup	MDL Ratio	RPD Limit	RPD Value	Comment	Pass/Fail
RISKTPH	RISK_TPH_C16_C21_ALI	0.1	5.6	1.98	56	30	95.51451	Conc >20x MDL; RPD limit = 30%	FAIL
RISKTPH	RISK_TPH_C16_C21_ALI	10	10	1.98	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C16_C21_ALI	0.02	0.02	1.98	99	30	96	Conc >20x MDL; RPD limit = 30%	FAIL
RISKTPH	RISK_TPH_C16_C21_AROM	10	10	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C16_C21_AROM	0.02	0.02	0.1	5	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C16_C21_AROM	0.1	0.1	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_ALI	0.02	0.02	0.1	5	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_ALI	0.1	0.1	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_ALI	10	10	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_AROM	10	10	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_AROM	0.02	0.02	0.1	5	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C21_C35_AROM	0.1	0.1	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C35_C44_ALI	0.1	0.1	0.1	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C5_C6_ALI	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C6_C7_AROM	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C6_C8_ALI	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C7_C8_AROM	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C8_C10_ALI	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
RISKTPH	RISK_TPH_C8_C10_AROM	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	DIPE	0.001	0.001	0.001	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	ETBE	0.001	0.001	0.001	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	ETHANOL	0.05	0.05	0.05	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	MTBE	0.011	0.011	0.011	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	TAME	0.002	0.002	0.015	7.5	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	TAME	0.015	0.015	0.015	1	0	0	Conc <10x MDL; No RPD Limit	OK

Duplicate RPD Summary

Hitchin October 2011

10019011_BH105 4.1		SOIL	mg/kg		110930-19				
Chem Class	Analyte	MDL	Sample	Dup	MDL Ratio	RPD Limit	RPD Value	Comment	Pass/Fail
VOC	TAME	1	1	0.015	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOC	TBA	0.01	0.01	0.01	1	0	0	Conc <10x MDL; No RPD Limit	OK
VOCSURR	TOLUENE_D8	0	104	104	#Error	#Error	#Error	#Error	#Error

A duplicate sample should be taken for every 20 samples or 1 per sampling event, if less than 20 samples are collected. It is best to avoid taking duplicates of samples that are likely to return concentrations close to the detection limit, and also samples where concentrations may be close to the solubility limit, e.g. where globules of free product are present. The duplicate must not be identified as such. Instead it should be assigned a reference number similar to the sample numbering notation such that it is unrecognisable to the laboratory as a duplicate. For example if nine boreholes, BH1 to BH9 are being sampled, and a duplicate of borehole BH5 is taken, this should be referred to as BHA and not BH5A. The lab also needs to report the duplicate sample electronically as sample_type DUP so that the S&GW database can then be used to compare results.

On receipt of the laboratory data, the following assessment should be performed.

To evaluate the precision of the data, firstly calculate the Relative Percent Difference, RPD, as follows:

$$RPD = \frac{(S - D)}{\frac{(S + D)}{2}} \times 100$$

where S = Sample Result and D = Duplicate Result

Next, compare the RPD to the Reporting Limit, which should be provided on the laboratory certificate. As a guideline:

- If the sample concentration is less than 10 times the reporting limit, the RPD is not overly critical.
- If the sample concentration is between 10 times and 20 times the reporting limit, the RPD should be less than 50%.
- If the sample concentration is greater than 20 times the reporting limit, the RPD should be less than 30%.
- If the RPD falls outside these criteria, then professional judgement should be used to evaluate the acceptability of the data using the following criteria as guidance:
- If the sample is soil there is a strong possibility that the elevated RPD relates to a matrix effect, particularly with highly heterogeneous media, or where textural characteristics make homogenisation difficult (e.g. a stiff clay). Refer to borehole logs and field notes.
- If the sample is an aqueous sample check that the well has been adequately purged or whether only a limited volume of water was recoverable – e.g. with discontinuous perched groundwater. In this case some variation between samples may be expected.
- If the sample has entrained free product – this could relate to small globules, not a distinct layer – then small differences in the amount present could result in significant variation in concentrations measured, the latter not being truly reflective of 'dissolved phase' concentrations.
- If none of these are applicable and there is no additional reason to suppose that lesser or greater losses of the compound in question took place from the sample compared to its duplicate, as a result of handling issues, then an explanation should be sought from the laboratory, with the lab QA coordinator being copied on all correspondence.

PM Comments

Project Manager:

Date:

Blank Detections

Sample Type: GAS mg/m3

BLANK Hitchin October 2011

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Amount	MDL
10019011_Environment	0	DECANE	4515255	13/10/2011	0.00359	0.001
10019011_Environment	0	A_1 METHYLNAPHTHALENE	4515255	13/10/2011	0.00032	0.003
10019011_Environment	0	NAPHTHALENE	4515255	13/10/2011	0.00003	0.001
10019011_Environment	0	DODECANE	4515255	13/10/2011	0.00137	0.002
10019011_Environment	0	OCTANE	4515255	13/10/2011	0.0031	0.002
10019011_Environment	0	TOTAL_VOC_C6_12	4515255	13/10/2011	0.59	0.022
10019011_Environment	0	BENZENE	4515255	13/10/2011	0.00999	0.002
10019011_Environment	0	TOLUENE	4515255	13/10/2011	0.00934	0.001
10019011_Environment	0	O_XYLENE	4515255	13/10/2011	0.01234	0.001
10019011_Environment	0	HEXANE	4515255	13/10/2011	0.01735	0.001
10019011_Environment	0	M_P_XYLENE	4515255	13/10/2011	0.03214	0.001
10019011_Environment	0	ETHYLBENZENE	4515255	13/10/2011	0.01053	0.001
10019011_Environment	0	A_1_2_3_TRIMETHYLBENZENE	4515255	13/10/2011	0.00102	0.002

Blank Detections

Sample Type: WATER $\mu\text{g/l}$

EQUIPMENT BLANK Hitchin October 2011

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Amount	MDL
10019011_EQUIPMENT BLANK	W	RISK_TPH_C7_C8_A ROM	4491079	12/10/2011	13	10

Blank Detections

Sample Type:

GAS

ng

TRIP BLANK

Hitchin October 2011

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Amount	MDL
10019011_Trip blank	0	TOTAL_VOC_C6_12	4515256	13/10/2011	124	67
10019011_Trip blank	0	ETHYLBENZENE	4515256	13/10/2011	0.32	2
10019011_Trip blank	0	DODECANE	4515256	13/10/2011	0.41	6
10019011_Trip blank	0	A_1_METHYLNAPHTHALENE	4515256	13/10/2011	0.54	8
10019011_Trip blank	0	M_P_XYLENE	4515256	13/10/2011	0.61	3
10019011_Trip blank	0	NAPHTHALENE	4515256	13/10/2011	1.1	4
10019011_Trip blank	0	HEXANE	4515256	13/10/2011	4.41	4
10019011_Trip blank	0	BENZENE	4515256	13/10/2011	4.63	5
10019011_Trip blank	0	TOLUENE	4515256	13/10/2011	1.04	2

The procedure for evaluating blanks should be as follows:

Confirm that blank data have been provided at the appropriate frequency as above:

- Identify whether there are any target or non-target compounds in the blank, noting that the following compounds are common laboratory contaminants:
 - Methylene chloride (Dichloromethane)
 - Chloroform (Trichloromethane)
 - Acetone
 - Cyclohexane
 - 2-butanone
 - Phthalates
- If there is a contaminant in the blank that does not occur in any of the samples, no action is required.
- If any of the above common laboratory contaminants is present in the laboratory blank, then any result that falls within 10 times the value reported in the laboratory blank should be treated as suspect and ideally reported as 'less than' this value. So for example, if 5µg/l of dichloromethane has been detected in the laboratory blank, a concentration of 45µg/l dichloromethane identified in a particular sample should be reported as <50µg/l.
- For any other compound that is present in the laboratory blank, then any result that falls within 5 times the value reported in the laboratory blank should be treated as suspect and ideally reported as 'less than' this value. So for example, if 0.5mg/l of nitrate has been detected in the laboratory blank, a concentration of 1mg/l dichloromethane identified in a particular sample should be reported as <2.5mg/l.

The tabulation of the data should therefore either report these values as <10x or <5x the blank value or, if it is preferred, indicate this as a footnote to the relevant tables:

'Due to the occurrence of dichloromethane within the blank sample at a concentration of 5µg/l, then based on USEPA CLP Functional Guidelines, concentrations below 50µg/l are not considered to represent positive identification of this compound'

There may however be instances where the elevated reporting limit falls above the initial screening criterion for a specific compound, but the actual value present in the sample falls below the latter. In such cases it is permissible in the report to refer to the reported value, in order that it may be eliminated from subsequent risk considerations, although reference should still be made to its occurrence in the blank.

A similar procedure should be adopted with regards to the trip blank, (taking the highest concentration in each of the blanks as the basis for comparison)

However in the case of the field blank, professional judgement should be used to evaluate the significance of any positive identifications and the effect on the usability and reporting of the sample data.

PM Notes

Project Manager:

Date:

Blank Detections

Sample Type: WATER $\mu\text{g/l}$

EQUIPMENT BLANK Hitchin October 2011

Sample ID	Depth (m)	Analyte	Lab Sample	Sample Date	Amount	MDL
10019011_EQUIPMENT BLANK	W	RISK_TPH_C7_C8_A ROM	4491079	12/10/2011	13	10

The procedure for evaluating blanks should be as follows:

Confirm that blank data have been provided at the appropriate frequency as above:

- Identify whether there are any target or non-target compounds in the blank, noting that the following compounds are common laboratory contaminants:
 - Methylene chloride (Dichloromethane)
 - Chloroform (Trichloromethane)
 - Acetone
 - Cyclohexane
 - 2-butanone
 - Phthalates
- If there is a contaminant in the blank that does not occur in any of the samples, no action is required.
- If any of the above common laboratory contaminants is present in the laboratory blank, then any result that falls within 10 times the value reported in the laboratory blank should be treated as suspect and ideally reported as 'less than' this value. So for example, if 5µg/l of dichloromethane has been detected in the laboratory blank, a concentration of 45µg/l dichloromethane identified in a particular sample should be reported as <50µg/l.
- For any other compound that is present in the laboratory blank, then any result that falls within 5 times the value reported in the laboratory blank should be treated as suspect and ideally reported as 'less than' this value. So for example, if 0.5mg/l of nitrate has been detected in the laboratory blank, a concentration of 1mg/l dichloromethane identified in a particular sample should be reported as <2.5mg/l.

The tabulation of the data should therefore either report these values as <10x or <5x the blank value or, if it is preferred, indicate this as a footnote to the relevant tables:

'Due to the occurrence of dichloromethane within the blank sample at a concentration of 5µg/l, then based on USEPA CLP Functional Guidelines, concentrations below 50µg/l are not considered to represent positive identification of this compound'

There may however be instances where the elevated reporting limit falls above the initial screening criterion for a specific compound, but the actual value present in the sample falls below the latter. In such cases it is permissible in the report to refer to the reported value, in order that it may be eliminated from subsequent risk considerations, although reference should still be made to its occurrence in the blank.

A similar procedure should be adopted with regards to the trip blank, (taking the highest concentration in each of the blanks as the basis for comparison)

However in the case of the field blank, professional judgement should be used to evaluate the significance of any positive identifications and the effect on the usability and reporting of the sample data.

PM Notes

Project Manager:

Date:

Appendix G - CW DQRA Model Parameters & Output



URS site-specific controlled waters risk assessment tool

designed on the principles and methodologies contained within EA Remedial Targets Methodology, 2006



MODEL INPUTS SUMMARY

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Version: CWRA, version 7.292min

Date: 13/07/2011

CONTROLLED WATERS RISK ASSESSMENT
PROJECT RECORD

Project Record

Navigation Page

Project Title

Project Site
Project Number
Project Description
Revision Number
Proposed or Current End-Use
City
Region
Country
URS Office
Industry Sector
Service Code
SF330 Code
Project Budget
QRA Budget
Currency

Country Criteria

Shell Hitchin

Service Station QRA
Rev 0

Hitchin
South East England
England
Wimbledon
1115-Downstream: Refining/Marketing
100-Planning, Consulting & Permitting
R10-Risk Analysis

£

England / Wales / NI

Filename/location stored

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jobs\hitchin\[CWRA7.292_MASTER_@RISK_SHELL - HITCHIN -
Horiz.xls]Project Record

Assessment completed by
Date created
Date modified
QC'd by
QA'd by

Stage 1 Assessment
Stage 2 Assessment

Navigation Page

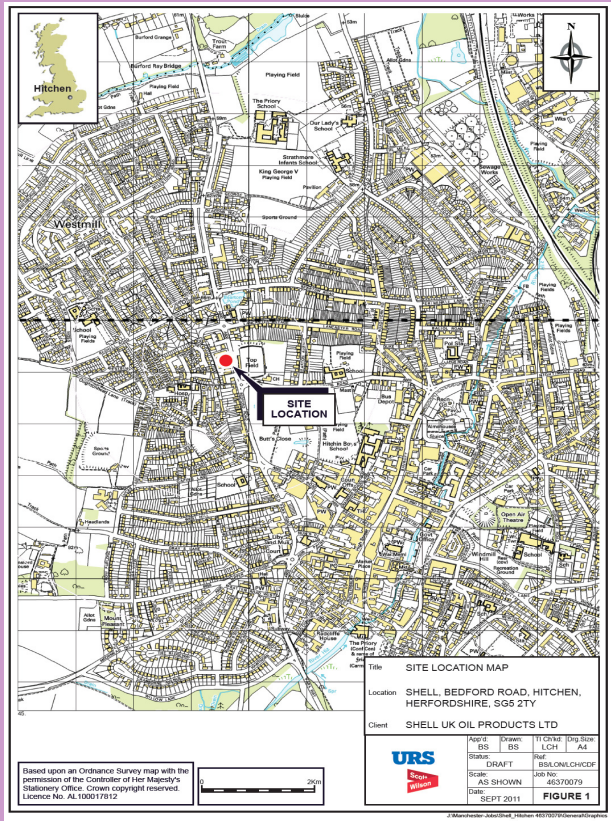
SUMMARY OF RISK ASSESSMENT OBJECTIVE

Soil and groundwater exceedances have been identified above the Stage 2 GAC. A DQRA is required to further investigate these risks.



CONTROLLED WATERS RISK ASSESSMENT PROJECT RECORD

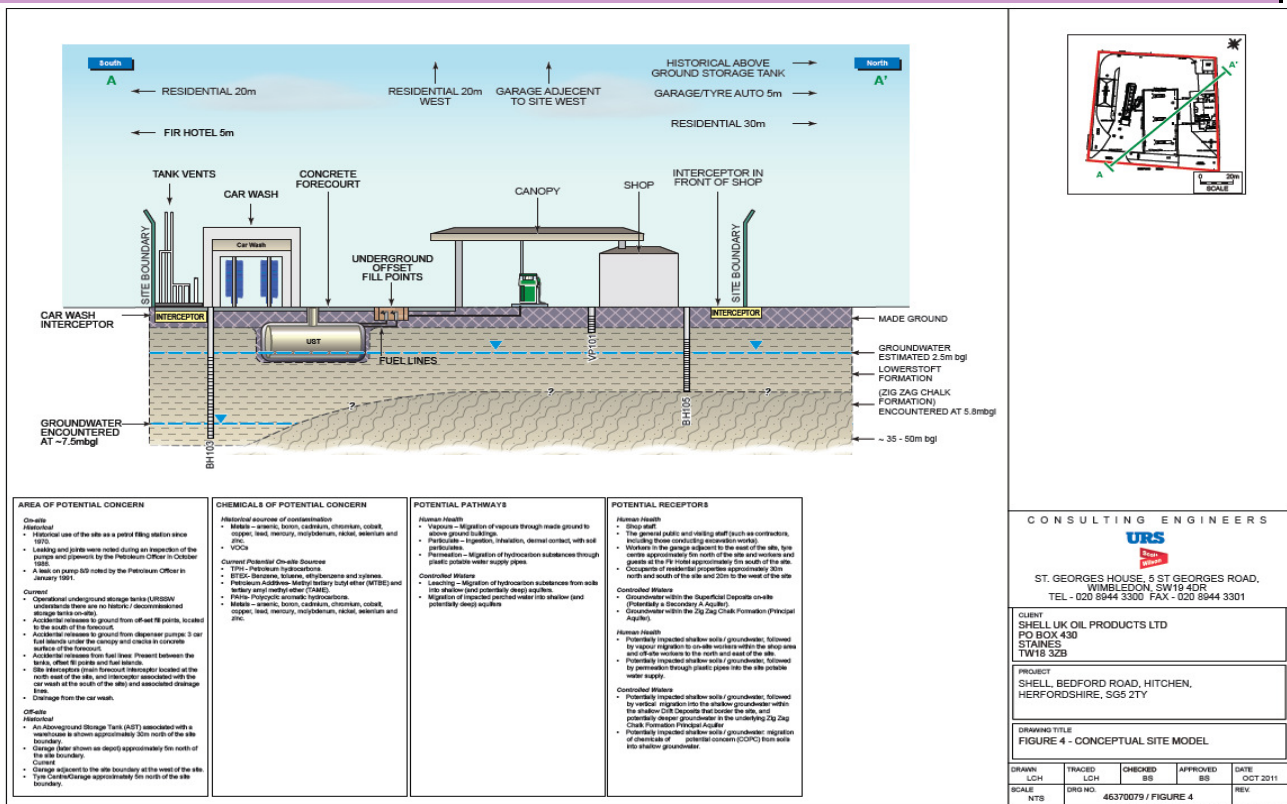
Site Location Plan



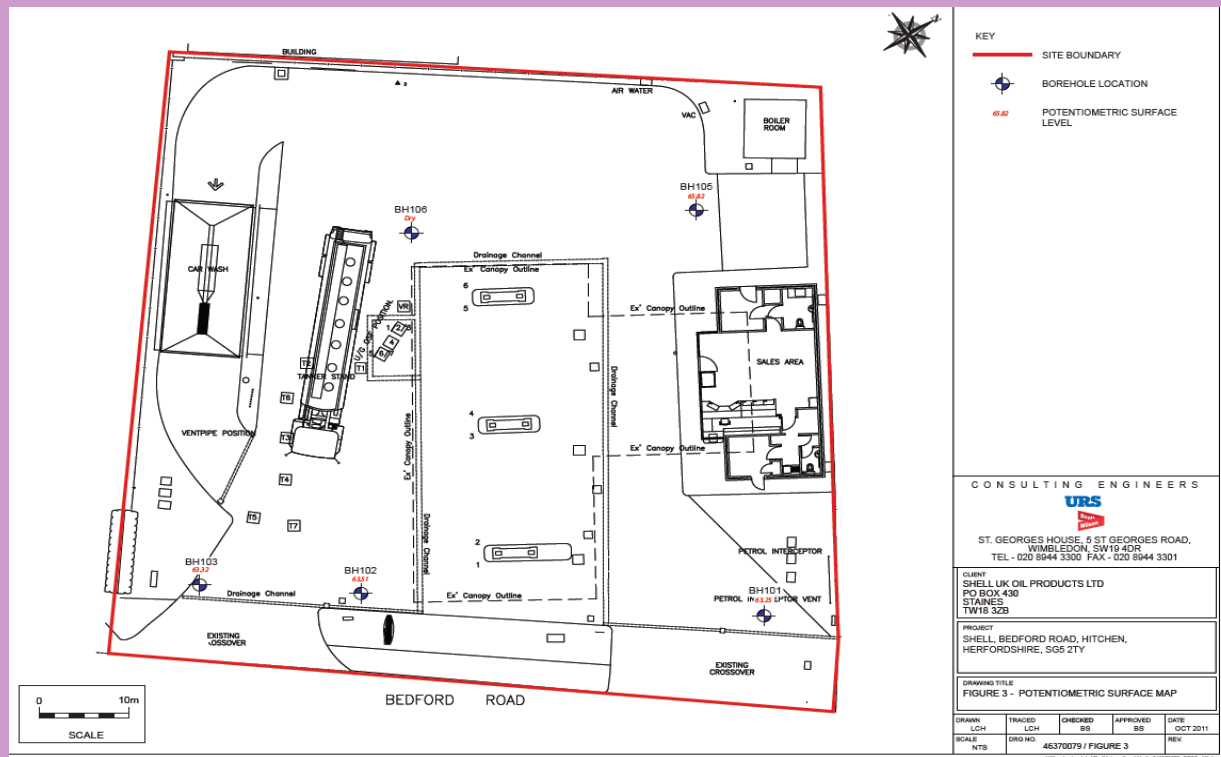
Historical Data

CONTROLLED WATERS RISK ASSESSMENT PROJECT RECORD

Schematic Section



GW Contours



**CONCEPTUAL SITE MODEL
PART 1 - SOURCE TERMS**

Conceptual Model Set-Up - PART 1, SOURCES

Navigation Page

SOURCE DIMENSIONS	SOIL			GW			COMMENTS
	1	2	3	1	2	3	
	HS1	HS2	HS3	SITE	HS1	HS2	
LENGTH (PARALLEL TO FLOW)	40	30	10	20			Metres
WIDTH (PERPENDICULAR TO FLOW)	40	25	10	10			Metres
SOURCE AREA	1600	750	100	200	0	0	m ²
BASIS FOR DIMENSIONS	a	a	a	a	a	a	See below
SOIL/LEACHATE DATA	Soil						
LEACHATE DATA TYPE	N/A						
LEACHATE DILUTION FACTOR	N/A						

NOTE: ADDITIONAL SOURCE DETAILS RELATING TO TPH COMPOSITION AND FREE PRODUCT ARE DESCRIBED ON THE PATHWAYS SHEET

HS* - Hot Spot Source

Saturated Vertical Pathway

NO

Dimensions

- (a) - Based on delineation using analytical data (e.g. distance to nearest clean data point)
- (b) - Based on known extent of site infrastructure (e.g. hotspot around tankfarm etc)
- (c) - Other, described below

DESCRIPTION OF SOURCE(S)

*Note: Information on Product and concentration data used in the assessment is covered on the pathways sheet.

Soil Sources: Multiple TPH fractions were detected in excess of the Stage 2 GAC from all sample locations across the site. A site wide source of 40m x 40m has been assumed for soil source 1. Metals and PAH compounds were found in excess of the Stage 2 GAC in BH101, BH103 and BH106. A 25m x 30m has been assumed for soil source 2. Benzene was detected in concentrations exceeding the GAC at BH105. A small 10m x 10m source zone has been assumed for Soil Source 3.

Groundwater Sources: Naphthalene, BTEX and multiple TPH bands were reported at concentrations exceeding the Stage 2 GAC from groundwater sampled from BH102. A source zone of 10m x 20m has been assumed for groundwater source 1.

Key to Data Worksheets

All cells on the user data worksheets ("name" Data) are colour coded as follows.

User Values		These worksheet cells can be edited directly and are specifically for adding comments.
User Values		These worksheet cells can be edited directly and are specifically for values
Calculated Values		These worksheet cells contain calculated values and are protected. User values should not be entered directly into these cells.
User Values		These worksheet cells have been edited from the default formula. Justification to be provided.



SCHEMATIC CONCEPTUAL SITE MODEL

SOURCE AREAS

Source Area	
Soil to Groundwater Attenuation:	NO
Soil or Leachate:	Soil
Free Product:	NO
Product Type:	-
Product Input:	-
Ground Type:	Hard-Standing

Source Dimensions				
	Width	Length	Area	Age
	m	m	m2	Yrs
	40	40	1600	
	25	30	750	
	10	10	100	
	10	20	200	
	0	0	0	
	0	0	0	

SOIL MAX

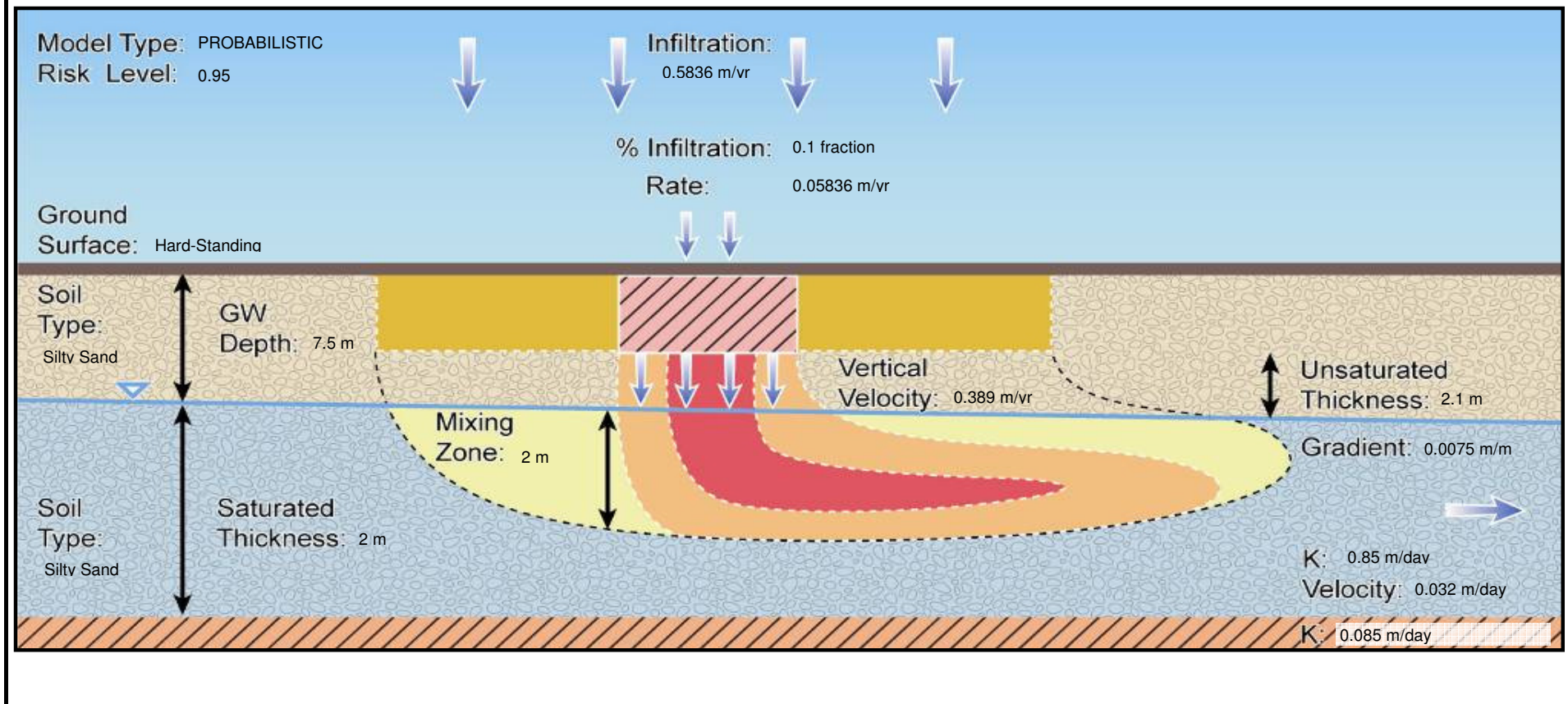
GROUNDWATER MAX

INSERT SITE PLAN AND OVERLAY SOURCE AREA POLYGONS

SCHEMATIC CONCEPTUAL SITE MODEL

PATHWAYS

Unsaturated Zone	Saturated Zone	Saturated Zone	Saturated Zone
Bulk Density: 1.62 g/cm ³ Water Filled Porosity: 0.15 fraction Air Filled Porosity: 0.24 fraction Foc: 0.73 % Ph n/a pH units Decay Type: No Decay	Dilution in GW: YES Attenuation Vertical: NO Attenuation Horizontal: YES Bulk Density: 1.62 g/cm ³ Effective Porosity: 0.2 fraction	Foc: 0.27 % GW Ph: 7.59 pH units GW Eh: 205 mV Aquifer Condition: Aerobic Decay Type: Default Decay	Phases: All Phases Longitudinal Dispersivity: 0.1 fraction Lateral Dispersivity: 0.01 fraction Vertical Dispersivity: 0.001 fraction Dispersion Type: Pickens & Grisak (Flow Path)



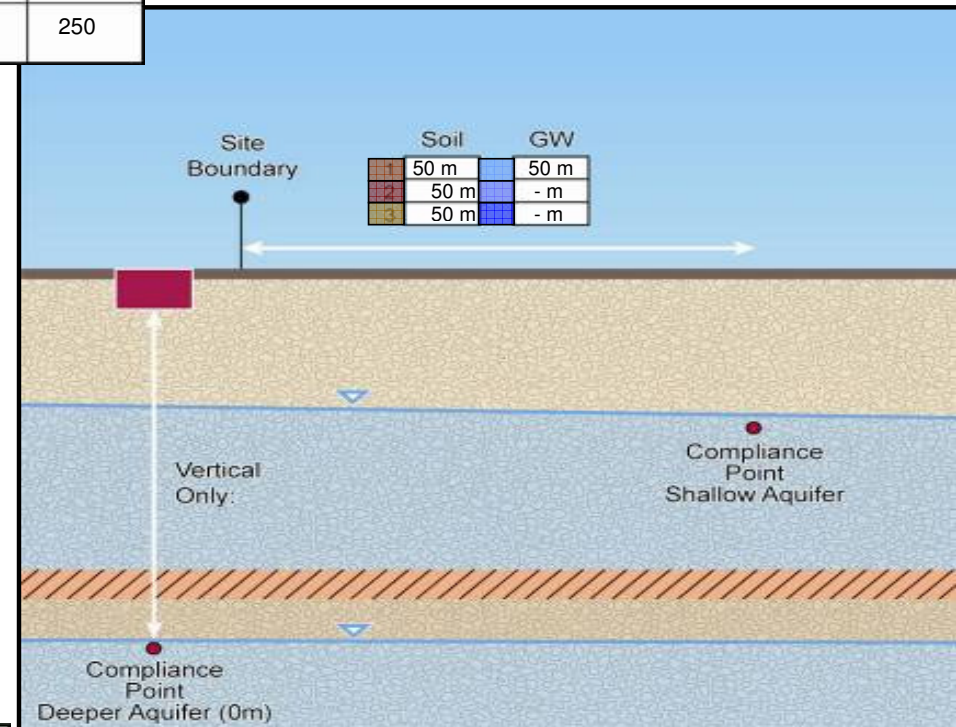
SCHEMATIC CONCEPTUAL SITE MODEL

RECEPTORS

Distance Summary (m)								
	1	2	3	4	5	6	7	8
Soil 1	5	12.5	25	37.5	50	75	100	250
2	5	12.5	25	37.5	50	75	100	250
3	5	12.5	25	37.5	50	75	100	250
GW 1	5	12.5	25	37.5	50	75	100	250
2	5	12.5	25	37.5	50	75	100	250
3	5	12.5	25	37.5	50	75	100	250

Distance to receptor from source area

Target Criteria	
Compliance Point Type:	Groundwater Secondary Aquifer
Target Criteria:	DWS



Time Period (Years)							
1	2	3	4	5	6	7	8
1	2	5	10	50	100	1000	10000

Steady State Time Period

**CONCEPTUAL SITE MODEL
PART 2 - PATHWAYS**

Conceptual Model Set-Up - PART 2, PATHWAYS

Navigation Page

PATHWAYS	ACTIVE	COMMENTS
MODEL TYPE	P	P - Probabilistic or D - Deterministic
RISK LEVEL	0.95	Risk Level for Probabilistic Output. Needs to be a decimal between 0 and 1. For Deterministic model set to 1.
FREE PRODUCT IDENTIFIED	NO	If free product has been identified the model can use Raoult's Law to assess input concentrations. Select Yes if product model required. Input concentrations are limited to BTEX/TPH.
PRODUCT TYPE (if present)	None	If the product has not been analysed for composition select the product type from the list to assess typical proportions of constituents
INPUT DATA FOR PRODUCT	None	Select either solubility limits or fraction specific data
SOIL SOLUBILITY LIMITATION	ON	Choose whether to limit soil leaching and mixing within groundwater (Stage 2 soil) to solubility limits. This reduction is not applied at Stage 1a/1b as it is assumed that free phase product can exist in pore spaces.
GROUNDWATER SOLUBILITY LIMITATION	ON	Choose whether to limit groundwater concentration inputs to the solubility limit (as referenced on the physchem database sheet and corrected for temperature).
LEACHATE SOLUBILITY LIMITATION	ON	Choose whether to limit reported leachate concentration inputs to the solubility limit (as referenced on the physchem database sheet and corrected for temperature). Note that due to dilution effects in the test procedure the Limit has been set at 10 x Solubility Limit.
ATTENUATION SOIL TO GROUNDWATER (UNSATURATED VERTICAL)	NO	Applies degradation of contaminants during leaching from soil to groundwater. Set to No if soil contamination reaches GW table or if free product identified. This should be set to No if the soil type has a grain size lower than a silty clay.
ATTENUATION ALONG VERTICAL (SATURATED)	NO	Only one of horizontal/vertical flow should be simulated. If horizontal flow set to YES then vertical should be set to NO.
ATTENUATION ALONG HORIZONTAL (SATURATED)	YES	Degradation of Contaminants along horizontal flow Path.
DILUTION WITHIN GROUNDWATER for List I & II Substances	YES	Dilution should not be applied to List I Substances if no groundwater contamination is present and the site is located in a GPZ (see note below).
EVIDENCE FOR SOURCE DEPLETION	N/A	<u>Justification required</u>
DECLINING SOURCE TERM	NO	Uses Bioscreen solutions (First Order and Instantaneous Reaction source depletion) and Consim based Leaching solution (interpreted as an equivalent first order decay rate)
PULSE SOURCE TERM	NO	Uses superposition to calculate results based on off-set steady state solutions (+ive and -ve contributions separated by pulse duration) to represent a pulse of contamination
DURATION OF PULSE SOURCE		Used to adjust the time element for the pulse solution. Time intervals may need to be changed on a contaminant by contaminant basis to review all of the graphical output
ASSESS ALL TPH SAMPLES	YES	Please review TPH data on the TPH Review sheets and select the most representative TPH composition for the site based on TPH properties and overall composition
CONCENTRATION DATA SOIL SOURCE 1	MAX	<u>Justification</u>
CONCENTRATION DATA SOIL SOURCE 2	MAX	<u>Justification</u>
CONCENTRATION DATA SOIL SOURCE 3	MAX	<u>Justification</u>
CONCENTRATION DATA GW SOURCE 1	MAX	<u>Justification</u>
CONCENTRATION DATA GW SOURCE 2	N/A	<u>Justification</u>
CONCENTRATION DATA GW SOURCE 3	N/A	<u>Justification</u>
DILUTION AT RECEPTOR	N/A	<u>Justification</u> - Only to be used with guidance / approval
DISPERSIVITY	Pickens & Grisak (Flow Path)	Pickens and Grisak, 1981 based on 10% of the flow path length (Default for short flow path). Other options should be considered to limit the effect of dispersion; - Neuman, 1990 based on $0.0175 \cdot L^{1.46}$ - Xu and Eckstein, 1995 based on $Mx \cdot [\text{Log } L] \cdot \text{Mexp}$

Note: Dilution in Aquifer

Allowing the dilution of List I contaminants, within a major or minor aquifer, could contravene the groundwater regulations, 1998. However, this is considered impractical in most cases and would only really be considered applicable if there was no groundwater contamination observed beneath the soil source (i.e. no groundwater contamination had yet occurred) and the site was located within designated groundwater protection zones. Therefore, when these conditions are not present the effect of dilution is included in the Stage 3 assessment. The pore water is mixed into the aquifer, based on a mass balance approach. This gives a dilution factor by which the leaching pore water is diluted.



**CONCEPTUAL SITE MODEL
PART 3 - RECEPTORS**

Conceptual Model Set-Up - PART 3, RECEPTORS

Navigation Page

SOURCE DIMENSIONS	SOIL			GW			Comments
	1	2	3	1	2	3	
	HS1	HS2	HS3	SITE	HS1	HS2	
SOURCE PRESENT	YES	YES	YES	YES	NO	NO	
DISTANCES FOR PLOTS - 1	5	5	5	5			Minimum distance should not be <5m or 10% distance to Compliance Point, whichever is larger.
DISTANCES FOR PLOTS - 2	12.5	12.5	12.5	12.5			Can be adjusted
DISTANCES FOR PLOTS - 3	25	25	25	25			Can be adjusted
DISTANCES FOR PLOTS - 4	37.5	37.5	37.5	37.5			Can be adjusted
COMPLIANCE POINT	50	50	50	50			Main assessment point
DISTANCES FOR PLOTS - 6	75	75	75	75			Can be adjusted
DISTANCES FOR PLOTS - 7	100	100	100	100			Can be adjusted
DISTANCES FOR PLOTS - 8	250	250	250	250			Can be adjusted
COMPLIANCE POINT TYPE	Groundwater Secondary Aquifer (A/B Undifferentiated)						Select from List
TARGET CRITERIA	DWS						Rationale
RECEIVING WATER HARDNESS*							mg/l as CaCO3.
RECEIVING WATER FISH TYPE							Criteria for EQS Metals
WATER TYPE							Select from List
DATA SOURCE FOR RECEIVING WATER HARDNESS AND TYPE							Add Comment

STAGE 3 SOIL HORIZONTAL AND GROUNDWATER DISPERSION FACTORS

LONGITUDINAL DISPERSION FACTOR	0.1	0.1	0.1	0.1			
LATERAL DISPERSION FACTOR	0.01	0.01	0.01	0.01			
VERTICAL DISPERSION FACTOR	0.001	0.001	0.001	0.001			
LONGITUDINAL DISPERSION	5	5	5	5			
LATERAL DISPERSION	0.5	0.5	0.5	0.5			
VERTICAL DISPERSION	0.05	0.05	0.05	0.05			
TRANSVERSE DISPERSION REDUCTION FACTOR 1	1.0000	1.0000	1.0000	1.0000			
TRANSVERSE DISPERSION REDUCTION FACTOR 2	1.0000	1.0000	0.9953	0.9953			
TRANSVERSE DISPERSION REDUCTION FACTOR 3	1.0000	0.9996	0.8427	0.8427			
TRANSVERSE DISPERSION REDUCTION FACTOR 4	0.9998	0.9816	0.6542	0.6542			
TRANSVERSE DISPERSION REDUCTION FACTOR 5	0.9953	0.9229	0.5205	0.5205			
TRANSVERSE DISPERSION REDUCTION FACTOR 6	0.9407	0.7614	0.3626	0.3626			
TRANSVERSE DISPERSION REDUCTION FACTOR 7	0.8427	0.6232	0.2763	0.2763			
TRANSVERSE DISPERSION REDUCTION FACTOR 8	0.4284	0.2763	0.1125	0.1125			

HS* - Hot Spot Source

* Default hardness should be set to 0 unless site/receptor data is available

Dimensions

- (a) - Based on delineation using analytical data (e.g. distance to nearest clean data point)
- (b) - Based on known extent of site infrastructure (e.g. hotspot around tankfarm etc)
- (c) - Other, described below

DESCRIPTION OF RECEPTORS

The principal controlled waters receptor for the site is the underlying Zig Zag Chalk Principle Aquifer and Superficial Deposits that border the site boundary. Other potential receptors include surface water features in the vicinity of the site which consist Bearton Pond approximately 200m north of the site. The closest surface water feature is the Bearton Pond Located approximately 200 m north of the site. The River Oughton is located 1km north of the site, the River Punwell is located approximately 1.2km north-east of the site and the River Hiz is located approximately 1.8km north/north-east of the site. The local groundwater flow is currently unknown at the site. Considering the presence of permeable geology (mainly silty sand) in the surrounding areas and beneath the site, it is considered that a plausible receptor for COPC may be present.

The Principle Aquifer beneath the site has been selected as the primary Compliance Point for this assessment. An arbitrary Compliance Point of 50m is also selected based on the draft guidance issued by the Environment Agency, 'Selecting Compliance Points for use in Land Contamination Risk Assessments', which states that 'the distance to a set of receptors should be the distance to the nearest receptor'. The surface water features are considered secondary potential receptors and have not been modelled separately. The lik

Use Alt+Enter to get a new line

Key to Data Worksheets

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**CONCEPTUAL SITE MODEL
PART 4 - DILUTION**

Conceptual Model Set-Up - PART 4, DILUTION

Navigation Page

DILUTION: N/A

NOTES FOR DILUTION FACTORS

Dilution should only be considered when the following have been met;

The impact of groundwater contamination on the aquifer between source and receptor has been assessed

The impact does not prevent current or future use of the aquifer

The predicted impact at the receptor does not result in any measurable deterioration in water quality

The predicted impact at the receptor does not result in any exceedence of environmental standards

Needs to be supported by cost-benefit assessment

Dilution may not be suitable when;

No impact has been identified between the source and receptor

the aquifer has a high resource value

the current level of groundwater or surface water contamination is unacceptable

For dilution in streams the calculations should use low flow conditions (Q95 flow) and in addition;

needs to consider the total contaminant loading to the stream

whether impact would be detectable

upstream surface water quality

Consideration of potential impacts from other sources with subsequent reduction in target concentration

Currently assumes no attenuation of contaminants in river sediments

Dilution is site specific and needs to be treated with caution

Dilution at an abstraction well MUST NOT be used to back calculate remedial targets as the degree of risk

may increase in the future if abstraction rates change. It is therefore only a qualitative indication of

whether the current observed conditions present a significant risk

General Notes on Dilution



MODEL INPUT PARAMETER SUMMARY



[Navigation Page](#)

MODEL MODE:	PROBABILISTIC	0.95
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GEOLOGY SUMMARY	The site consists of made ground underlain by Lowestoft Formation. This formation forms an extensive sheet of chalky till, together with outwash sands and gravels, silts and clays. The till is characterised by its chalk and flint content. The carbonate content The Bedrock Geology of the site is reported to be the Zig Zag Chalk Formation. This consists of mostly firm, pale grey to off-white blocky chalk with a lower part characterised by rhythmic alternations of marls and marly chalks with firm white chalk. Thin gritty
HYDROGEOLOGY SUMMARY	The Environment Agency website classifies the superficial Lowestoft formation as Unproductive Strata. These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. The Environment Agency Website classifies the Zig Zag Chalk Formation as a Principal Aquifer. These are layers of rock or drift deposits that have high inter-granular and/or fracture permeability - meaning they usually provide a high level of water storage. T designated as major aquifer.
SURROUNDING LAND-USE AND SITE DESCRIPTION/HISTORY	North: STS Tyre Pros (Tyre Dealers) is situated approximately 5m north of the site beyond an access road. A three story apartment block with surrounding garden lies approximately 30m north of the site. South: The Fir Hotel lies approximately 5m south of the site beyond a small car parking area. Residential properties are situated approximately 30m south of the site. East: The site is bounded to the east by the A550 Bedford Road. Hitchin Town FC football ground is approximately 20m east of the site. West: The site is bounded to the west by a Garage and car park. Residential properties with gardens lie approximately 20m west the site.
DISTRIBUTIONS/JUSTIFICATION	Describe rationale for distribution choice if it differs from the defaults recommended in TGN04.
ATTENUATION AND COMPLIANCE POINT JUSTIFICATION AND PRODUCT SUMMARY	

Model Parameter	Minimum Value 5%	Expected Value 50%	Maximum Value 95%	Truncate Min	Truncate Max	Distribution Type	Stochastic Input	Units	
UNSATURATED ZONE PARAMETERS									
Soil Type at Source	Silty Sand							4	Type Database sheet to define site specific
Soil Type Description									Brief summary of soil type
Unsaturated Zone Dry Bulk Density	1.54	1.6200	1.70	1.539	1.701	Triangular	1.62	g/cm ³	selected soil type. User specified values can be
Water Filled Porosity	0.14	0.1500	0.16	0.143	0.158	Triangular	0.15	fraction	selected soil type. User specified values can be
Air Filled Porosity	0.23	0.2400	0.25	0.228	0.252	Triangular	0.24	fraction	selected soil type. User specified values can be
Vertical Velocity (Stage 1b)	0.37	0.3891	0.41	0.370	0.409	Triangular	0.39	m/yr	Calculated
Organic Carbon - Unsaturated Zone	0.37	0.73	1.10	0.365	1.095	Triangular	0.73	%	Use site specific unsaturated zone data where available. Organic carbon should be adjusted for TPH content
Unsaturated Zone Thickness below Source	1.05	2.10	4.20	1.05	4.20	Triangular	2.45	m	Only relevant if significant thickness of clean soils identified in vadose zone
Unsaturated Zone Hydraulic Conductivity	0.68	0.90	1.13	0.675	1.125	Triangular	0.90	m/day	
Soil pH	-	n/a	-					pH units	Used for reference purposes only
Depth to Groundwater	3.75	7.50	15.00	3.75	15.00	Triangular	8.75	m	Used for reference purposes only
Soil Source Thickness	2.70	5.40	10.80	2.70	10.80	Triangular	6.30		source for isolated exceedences only
Land Use Type for Infiltration	Hard-Standing								options to determined infiltration.
%Age of Rainfall Infiltrating	0.08	0.10	0.13	0.08	0.13	Triangular	0.10	fraction	selected by default based on surface covering.
Annual Rainfall (Long-term Average)	0.44	0.584	0.73	0.44	0.73	Triangular	0.58	m/yr	Based on Met Office or other appropriate data
Infiltration Rate	0.033	0.058	0.091	0.03	0.09		0.06	m/yr	Calculated from Rainfall and recharge rate
Aquifer Conditions (see Degradation Worksheets)	Aerobic							2	For site specific degradation rates follow
Decay Type - Unsaturated Zone	No Decay							0	See Database_COOC sheet for degradation

MODEL INPUT PARAMETER SUMMARY



[Navigation Page](#)

MODEL MODE:	PROBABILISTIC	0.95
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Model Parameter	Minimum Value	Expected Value	Maximum Value	Truncate Min	Truncate Max	Distribution Type	Stochastic Input	Units	
SATURATED ZONE PARAMETERS									
	5%	50%	95%						
Soil Type in Saturated Zone	Silty Sand							4	Type Database sheet to define site specific
Soil Type Description									groundwater bearing geological unit
Organic Carbon - Saturated Zone	0.135	0.27	0.405	0.14	0.41	Triangular	0.27	%	adjusted for TPH content (10,000mg/kg = 1%) i.e. Actual TOC = measured TOC - contribution from
Saturated Zone Dry Bulk Density	1.54	1.6200	1.7	1.54	1.70	Triangular	1.62	g/cm ³	selected soil type. User specified values can be
Hydraulic Conductivity	0.17	0.9	4.3	0.17	4.25	Triangular	1.76	m/day	Hydraulic Conductivity. If site specific values are available these may supersede literature
Hydraulic Gradient	0.0038	0.008	0.0113	0.0038	0.0113	Triangular	0.0075	m/m	Hydraulic Gradient. Site specific gradients should be used wherever
Effective Porosity	0.15	0.20	0.25	0.150	0.250	Triangular	0.20	fraction	should be based on saturated geology type
Aquifer Saturated Thickness	1.50	2.00	2.50	1.500	2.500	Triangular	2.00	m	specific data should be used wherever possible.
Groundwater pH	-	7.59	-					pH units	Used for reference purposes only
Groundwater Eh	-	205.00	-					mV	Used for reference purposes only
Mixing Zone Thickness		2.00						m	TPH. This value may be overwritten with site
Groundwater Source Thickness		2.00						m	Groundwater source limited to thickness of 5m
Groundwater Horizontal Velocity	0.004	0.032	0.191	0.004	0.191	Triangular	0.08	m/day	Calculated
Dilution Factor in Aquifer		5.12						-	assessing dilution of porewater concentrations
Decay Type - Saturated Zone	Default Decay							1	See Database_COC sheet for degradation
Aquifer Conditions (see Degradation Worksheets)	Aerobic							2	For site specific degradation rates follow
Decay Phase - Saturated Zone	All Phases								assumes all phases. For user specified this may be adjusted so

VERTICAL PATHWAY NOT CONSIDERED

Model Parameter	Minimum Value	Expected Value	Maximum Value	Truncate Min	Truncate Max	Distribution Type	Stochastic Input	Units	
UNDERLYING AQUIFER - STAGE 3 VERTICAL DEGRADATION CALCULATIONS									
Underlying Geology									groundwater bearing geological unit
Vertical Conductivity in Upper Aquifer								m/day	aquiclude. Default calculated as 1/10th
Vertical Gradient across aquifers								m/m	be adjusted based on site data
Groundwater Vertical Velocity (Stage 3 vert)								m/year	on recharge or vertical permeability being 1/10th
Vertical Distance Through Saturated Aquifer								m	saturated aquifer in which vertical degradation will

Model Parameter	Minimum Value	Expected Value	Maximum Value	Truncate Min	Truncate Max	Distribution Type	Stochastic Input	Units	
UNDERLYING AQUIFER - STAGE 3 VERTICAL DILUTION CALCULATIONS									
Lower Aquifer Horizontal Hydraulic Conductivity								m/day	data or literature value if site data not available
Lower Aquifer Horizontal Hydraulic Gradient								m/m	data or topographic information if site data not
Lower Aquifer Effective Thickness								m	low value to minimise potential for over

MODEL INPUT PARAMETER SUMMARY



[Navigation Page](#)

MODEL MODE:	PROBABILISTIC	0.95
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SIMULATION PARAMETERS		Please refer to GW Horizontal Time worksheet for code for calculating breakthrough times for contaminants and if necessary to reset the Time slices below to default Note: If user specified time intervals are entered the breakthrough time element will not function.			
Time Periods	TIME SINCE RELEASE	TIME SINCE REMOVAL	PULSE CHECK	Benzene	LINK...
Pulse Duration					
Period 1	1				
Period 2	2				
Period 3	5				
Period 4	10				
Period 5	50				
Period 6	100				
Period 7	1000				
Period 8	10000				

We have adopted the pragmatic approach that there is no feasible pathway for compliance.

For non-steady state assessments the risk assessor is required to select appropriate these will need to be based on contaminant retarded velocity and compliance to present the data accordingly. The risk assessor should acknowledge that the peak concentration under these conditions will occur at different times and for different however, a Time Interval Worksheet is provided as a guide to selecting appropriate

Example:
Assume spill in 2006 for benzene. The contaminated soils were removed in 200 of 2 years. The 2 year pulse is described on the Pathways sheet. The key contaminant and phys-chem parameters for benzene it is calculated that normal breakthrough intervals sheet). To create a breakthrough curve that covers the time before and the time intervals between 0.2 and 6 years. These time intervals are then copied simulations reviewed.

WATER BALANCE CHECK		Units	
Site Length	40	m	The local high point has been set at 1km southwest of the site on the boundary of the bolder clay at Foxholes. The area is hardstanding so infiltration is 0.2.
Site Width	40	m	
Site Area	1600	m ²	
Groundwater Flow	1.05	m ³ /day	
Length of Catchment	1000	m	
Area of Groundwater Catchment	40000	m ²	
Infiltration Rate	0.10	fraction	
Rainfall	0.584	m/year	
Adjustment Factor for flow not in main aquifer unit	0.20	-	
Total recharge	1.28	m ³ /day	
Recharge Factor	1.214	ratio	

Fraction of organic carbon
Site data is preferentially used.
If a literature value is required, the following sources will be considered:
P20, ConSim 2.02 manual, Barnes (2002).

Water/Air Filled Porosity Values
PSD and borehole log data used to classify soils to a USDA soil classification category
CLEA database values then selected by default.
These values may be over-written with user defined values if other reference is available

Infiltration
Total annual rainfall measured at the closest Met Office weather station, as listed on the Met Office Website (1971 2000 annual averages) will be used to estimate infiltration. 10 % or 25 % of the annual rainfall will be used in the QRA depending on the predicted end use. The 10% value can be associated with a run-off coefficient between 0.8 and 0.9, which is a range derived to represent a hard-standing area that is 70% or greater than the total site area. Therefore, this will be assigned to commercial and high-density residential end-uses. Low-density residential end-uses will be assigned a 25% infiltration rate.

Alternative rates will require further justification. Site specific recharge rates may be calculated using MORECS data (only appropriate where there is no hard standing).

Hydraulic Conductivity
Where the saturated pathway is a documented principal or secondary aquifer, the conductivity values listed in the major aquifer properties database (Jones et al, 1997) or the minor aquifer properties database (Jones et al, 2000) will be adopted where site specific data is available. Where the saturated pathway is not available within these documents, a hydraulic conductivity value for the identified aquifer will be adopted (Fetter (1986)).
Preference will be given to site derived data (eg slug tests) for shallow aquifers. Variability in permeability will be considered including preferential flow paths.

Hydraulic Gradient
The decision process for adopting the hydraulic gradient values on site are as follows: Plotting of URS obtained groundwater elevation monitoring data conducted at each site; Examining the relevant hydrogeological maps for each site where available to determine deeper aquifer gradients, and Examination of surface topography to determine the likely flow directions within the hydrological catchment of the site and, therefore, estimate the groundwater flow directions.

Effective Porosity
Where the main saturated pathway is a major or minor aquifer, the major aquifer properties database (Allen et al, 1997) or the minor aquifer properties database (Jones et al, 2000) will be used to derive the effective porosity. Where no data is available, the effective porosity will be assumed to be equal to the specific yield and representative values will be adopted from those listed in Kruseman and de Ridder (1994, p 25, Table 3.1).

Aquifer Thickness
The aquifer thickness will be selected using the following data sources: Borehole log data, where the thickness is described in the major aquifer properties database (Allen et al, 1997) or the minor aquifer properties database (Jones et al, 2000) or the minor aquifer properties database (Jones et al, 2000) or the minor aquifer properties database (Jones et al, 2000). Where none of the above data are available the greatest saturated depth of water column present in the borehole log will be adopted.
Where none of the above data are available a default aquifer thickness of 5 m will be adopted.

Additional Notes for Site
Include any additional details regarding source/pathway/receptor assumptions and any additional observations about the data/CSM and whether specific conservative assumptions have been made in relation to the assessment.

MODEL INPUT PARAMETER SUMMARY

of the till matrix is about 30%, and tills within the underlying Happisburgh Formation have less than 20%.
y, silty chalk beds act as markers in the sequence. The thickness is typically 35-50 m bgl.
They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously
Source/Comments
Select from list. Use Soil Type Database sheet to define site specific parameters if required.
Brief summary of soil type
Default based on selected soil type. User specified values can be input and justified in the Soil Type Database. A summary of any adjustment should be entered here.
This input is correlated with the air filled porosity at a level of -0.8 (i.e. inverse correlation) and @Risk will tend towards selecting high values of air filled when low values of water filled are selected and vice-versa.
Default based on selected soil type. User specified values can be input and justified in the Soil Type Database. A summary of any adjustment should be entered here.
Calculated
Geomean of 13 samples from BH101, BH102, BH103, BH105, BH106 & VP101 - 103.
Only relevant if significant thickness of clean soils identified in vadose zone
Used for reference purposes only, not included in calculations
Used for reference purposes only
Used for reference purposes only
Depth of deepest soil exceedance at BH101 5.4m
Select from available options to determined %Infiltration.
%age Rainfall values are selected by default based on surface covering. Only over-type if justification can be provided.
Greenwich gauging station 1971-2000 - Met Office
Calculated from Rainfall and recharge rate
For site specific degradation rates follow the guidance provided. For default rates an assessment of the likely aquifer type is required using the provided worksheet and the end choice entered here.
0 - No Decay, 1 - Decay. See Database_COC sheet for degradation Rates

MODEL INPUT PARAMETER SUMMARY

Source/Comments
Select from list. Use Soil Type Database sheet to define site specific parameters if required.
Description of Main groundwater bearing geological unit
Organic carbon should be adjusted for TPH content (10,000mg/kg = 1%) i.e. Actual TOC = measured TOC - contribution from organic contamination. Environment Agency Guidance, NC/99/38/3 recommends the use of a triangular distribution. The default values can be overwritten on the basis of the analysis of the filed results.
Default based on selected soil type. User specified values can be input and justified in the Soil Type Database. A summary of any adjustment should be entered here.
Calculated from the mean of slug test data from BH101, BH102 and BH103
The gradient directly underlying the site could not be calculated. A gradient of 0.0075 has been calculated for the area surrounding the site leading to the River.
Calculated based on porosity values from Fetter 1986
See note below. Site specific data should be used wherever possible. Thin saturated zone above chalk.
Used for reference purposes only
Used for reference purposes only
Based on source term for TPH. This value may be overwritten with site specific data but must not exceed the saturated thickness. This value is generated for general information only
Groundwater source limited to thickness of 20m. Source thickness can be input directly if required to minimise vertical dispersion from a groundwater source in the aquifer.
Calculated values for general information
Used for sense check for assessing dilution of porewater concentrations within the aquifer underlying the site. Probabilistic output which can be reviewed once simulation has been run
0 - No Decay, 1 - Decay. See Database_COC sheet for degradation Rates
For site specific degradation rates follow the guidance provided. For default rates an assessment of the likely aquifer type is required using the provided worksheet and the end choice entered here.
Default degradation assumes all phases. For user specified this may be adjusted so degradation only occurs in the dissolved phase. Note this applies to all contaminants so using a mixture of rates will require user specified values to be adjusted back in line with the retardation factor. This is not automated.

Source/Comments
Description of Main groundwater bearing geological unit
Conductivity across aquiclude. Default calculated as 1/10th horizontal conductivity
Default value of 1 but can be adjusted based on site data
Minimum velocity based on recharge or vertical permeability being 1/10th horizontal permeability of upper aquifer
Thickness through saturated aquifer in which vertical degradation will occur (Stage 3 vertical model)

Source/Comments
Should be based on site data or literature value if site data not available
Should be based on site data or topographic information if site data not available
This should be kept to a low value to minimise potential for over estimating dilution

MODEL INPUT PARAMETER SUMMARY

contaminants that theoretically take more than 10,000 years to migrate from source to point of

iate timescales for the contaminants of concern. For pulse source and declining source solutions
int distance. The timescales can be re-set for each contaminant and output graphs generated to
ummary tables may only be appropriate in detail for a number of contaminants at a time (since the
fferent durations. This model is not programmed to adjust timescales for individual contaminants,
ate time intervals based on the contaminant and solution being considered.

18. Providing a soil source duration for a pulse of contamination
minant of concern is benzene. Based on the site parameters
h at the receptor would take 2 years (Time interval 4 on Time
d after source removal the time intervals sheet suggests ranging
f over to column C as the model times and the results to the

has been set at 0.1. Thickness of aquifer assumed to be greater (approx 10m) so adjustment factor of

Hydraulic Conductivity
Where the saturated pathway is a documented principal or secondary aquifer, the conductivity values listed in the major aquifer properties database (Allen et al, 1997) or the minor aquifer properties database (Jones et al, 2000) will be adopted where site specific data is unavailable. Where a classification of the saturated pathway is not available within these documents, a hydraulic conductivity value for the identified soil type or aquifer will be adopted from Fetter (1986).
Preference will be given to site derived data (eg slug tests) for shallow aquifers. Variability in permeability must be assessed for bedrock aquifers including preferential flow paths.

Aquifer Thickness
The aquifer thickness will be selected using the following data sources: Borehole log data, where the log data proves the aquifer thickness, the effective aquifer thickness' described in the major aquifer properties database (Allen et al, 1997) or the minor aquifer properties database (Jones et al, 2000). Where none of the above data are available the greatest saturated depth of water column present in the onsite boreholes will be used as the aquifer thickness,
Where none of the above data are available a default aquifer thickness of 5 m will be adopted.

3M and whether specific conservative assumptions have been made in relation to the assessment.

INPUT CONCENTRATIONS



Navigation Page

TPH:

Adjusted TPH Data Incorporated, Refer to TPH
Review Sheets for detail

Order	Group	Determinand	Select	DWS / Freshwater	PhysChem	Reported Soil Conc	Model Soil Conc	Calculated Leachate Conc	Reported Leachate Conc	Model Leachate Conc	Product Conc	Reported GW Conc	Model GW Conc	SW Conc	Comments	List 1 or 2 substance	Solubility Limit	Soil Saturation Limit	Soil Source Zone (1, 2 or 3)	GW Source Zone (1, 2 or 3)
1.01	TPH 1	TPH (>EC5-7) aromatic (1)	Y	µg/l	Present	-	-	-	-	-	-	1.21E+03	1.21E+03	-		1	µg/l	mg/kg	1	1
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	7.00E+02	Present	-	-	-	-	-	-	3.92E+02	3.92E+02	-		1	1.30E+05	208.01	1	1
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	Present	0.31	0.31	2.66E+01	-	-	-	1.33E+04	1.33E+04	-		1	6.50E+04	760.49	1	1
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	Present	0.37	0.37	1.98E+01	-	-	-	1.01E+03	1.01E+03	-		1	2.50E+04	461.00	1	1
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	Present	52.40	52.40	1.43E+03	-	-	-	1.43E+02	1.43E+02	-		1	5.80E+03	212.75	1	1
1.06	TPH 1	TPH (>EC16-21) aromatic (1)	Y	9.00E+01	Present	271.00	67.09	6.50E+02	-	-	-	-	-	-		1	6.50E+02	67.09	1	1
1.07	TPH 1	TPH (>EC21-35) aromatic (1)	Y	9.00E+01	Present	641.00	6.07	6.60E+00	-	-	-	-	-	-		1	6.60E+00	6.07	1	1
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	1.50E+04	Present	0.02	0.02	2.22E+00	-	-	-	3.08E+02	3.08E+02	-		1	3.60E+04	328.95	1	1
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	Present	0.15	0.15	4.64E+00	-	-	-	6.97E+02	6.97E+02	-		1	5.40E+03	172.21	1	1
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	Present	0.38	0.38	1.67E+00	-	-	-	3.22E+03	4.30E+02	-		1	4.30E+02	97.48	1	1
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	Present	0.55	0.55	3.11E-01	-	-	-	1.51E+03	3.40E+01	-		1	3.40E+01	59.87	1	1
1.12	TPH 1	TPH (>EC12-16) aliphatic (1)	Y	3.00E+02	Present	77.70	29.81	7.60E-01	-	-	-	-	-	-		1	7.60E-01	29.81	1	1
1.13	TPH 1	TPH (>EC16-21) aliphatic (1)	Y	1.00E+01	Present	223.00	11.52	2.50E-03	-	-	-	-	-	-		1	2.50E-03	11.52	1	1
1.14	TPH 1	TPH (>EC21-35) aliphatic (1)	Y	1.00E+01	Present	411.00	411.00	7.42E-03	-	-	-	-	-	-		1	8.91E-02	4937.03	1	1
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion	Present	1.68E+03	5.80E+02	2.14E+03	-	-	-	2.18E+04	1.75E+04	-		1	-	-	1	1
2	BTEX	Benzene	Y	1.00E+00	Present	0.00	0.00	3.68E+00	-	-	-	1.46E+03	1.46E+03	-		1	1.78E+06	1073.80	3	1
2.01	BTEX	Toluene	Y	7.00E+02	Present	0.01	0.01	7.07E+00	-	-	-	4.65E+02	4.65E+02	-		1	5.90E+05	943.31	1	1
2.02	BTEX	Ethylbenzene	Y	3.00E+02	Present	0.01	0.01	2.35E+00	-	-	-	2.35E+03	2.35E+03	-		1	1.69E+05	570.59	1	1
2.03	BTEX	Xylenes	Y	5.00E+02	Present	0.02	0.02	4.77E+00	-	-	-	6.48E+03	6.48E+03	-		1	2.00E+05	683.84	1	1
3	PAH	Acenaphthene	Y	2.20E+03	Present	20.90	20.90	1.21E+03	-	-	-	-	-	-		1	3.80E+03	65.38	2	1
3	PAH	Acenaphthylene	Y	1.00E+01	Present	1.76	1.76	1.32E+02	-	-	-	-	-	-		1	1.61E+04	215.36	2	1
3	PAH	Anthracene	Y	1.10E+04	Present	17.80	1.85	4.50E+01	-	-	-	-	-	-		1	4.50E+01	1.85	2	1
3	PAH	Benzo(a)anthracene	Y	2.90E-02	Present	23.40	2.15	3.80E+00	-	-	-	-	-	-		1	3.80E+00	2.15	2	1
3	PAH	Benzo(a)pyrene	Y	1.00E-02	Present	23.90	3.58	3.80E+00	-	-	-	-	-	-		1	3.80E+00	3.58	2	1
3	PAH	Benzo(b)fluoranthene	Y	2.50E-02	Present	26.70	1.53	2.00E+00	-	-	-	-	-	-		1	2.00E+00	1.53	2	1
3	PAH	Benzo(g,h,i)perylene	Y	2.50E-02	Present	13.70	0.79	2.60E-01	-	-	-	-	-	-		1	2.60E-01	0.79	2	1
3	PAH	Benzo(k)fluoranthene	Y	2.50E-02	Present	9.62	0.86	8.00E-01	-	-	-	-	-	-		1	8.00E-01	0.86	2	1
3	PAH	Chrysene	Y	2.90E+00	Present	17.30	0.80	2.00E+00	-	-	-	-	-	-		1	2.00E+00	0.80	2	1
3	PAH	Dibenzo(a,h)anthracene	Y	2.90E-03	Present	3.44	0.82	6.00E-01	-	-	-	-	-	-		1	6.00E-01	0.82	2	1
3	PAH	Fluoranthene	Y	2.00E-01	Present	55.60	30.58	2.30E+02	-	-	-	-	-	-		1	2.30E+02	30.58	2	1
3	PAH	Fluorene	Y	1.50E+03	Present	17.70	17.70	8.56E+02	-	-	-	2.05E-01	2.05E-01	-		1	1.90E+03	39.27	2	1
3	PAH	Indeno[1,2,3-cd]pyrene	Y	2.50E-02	Present	11.70	0.13	2.00E-01	-	-	-	-	-	-		1	2.00E-01	0.13	2	1
3	PAH	Naphthalene	Y	1.00E+00	Present	4.20	4.20	8.74E+02	-	-	-	1.75E+02	1.75E+02	-		1	1.90E+04	91.33	2	1
3	PAH	Phenanthrene	Y	1.00E+01	Present	62.70	44.23	1.10E+03	-	-	-	-	-	-		1	1.10E+03	44.23	2	1
3	PAH	Pyrene	Y	1.10E+03	Present	46.50	15.39	1.30E+02	-	-	-	-	-	-		1	1.30E+02	15.39	2	1
4	METALS	Arsenic	Y	1.00E+01		21.90	21.90	4.38E+01	-	-	-	-	-	-		2	1.70E+07	8501574.07	2	1
4	METALS	Boron	Y	1.00E+03		13.60	13.60	1.35E+03	-	-	-	-	-	-		2	5.50E+08	5550925.93	2	1
4	METALS	Cadmium	Y	5.00E+00		8.75E-01	0.88	8.74E+00	-	-	-	-	-	-		1	5.70E+08	57052777.78	2	1
4	METALS	Chromium III	Y	5.00E+01		31.10	31.10	6.48E+00	-	-	-	-	-	-		2	6.29E+08	3019258240.74	2	1
4	METALS	Cobalt	Y	1.10E+01		1.05E+01	10.50	2.33E+02	-	-	-	-	-	-		2	1.40E+07	631296.30	2	1
4	METALS	Copper	Y	2.00E+03		106.00	106.00	1.06E+03	-	-	-	-	-	-		2	8.00E+04	8007.41	2	1
4	METALS	Lead	Y	2.50E+01		128.00	128.00	3.56E+00	-	-	-	-	-	-		2	5.00E+01	1800.00	2	1
4	METALS	Molybdenum	Y	2.00E+01		0.29	0.29	1.46E+01	-	-	-	-	-	-		2	4.90E+05	9845.37	2	1
4	METALS	Nickel	Y	2.00E+01		37.50	37.50	7.50E+01	-	-	-	-	-	-		2	1.90E+05	95017.59	2	1
4	METALS	Tin	Y	2.20E+04		12.20	3.18	1.27E+01	-	-	-	-	-	-		2	1.27E+01	3.18	2	1
4	METALS	Zinc	Y	5.00E+03		230.00	230.00	6.04E+03	-	-	-	-	-	-		1	1.62E+07	617100.00	2	1

INPUT CONCENTRATIONS



[Navigation Page](#)

TPH: Adjusted TPH Data Incorporated, Refer to TPH Review Sheets for detail

Order	Group	Determinand	Select	DWS / Freshwater	PhysChem	Reported Soil Conc	Model Soil Conc	Calculated Leachate Conc	Reported Leachate Conc	Model Leachate Conc	Product Conc	Reported GW Conc	Model GW Conc	SW Conc	Comments	List 1 or 2 substance	Solubility Limit	Soil Saturation Limit	Soil Source Zone (1, 2 or 3)	GW Source Zone (1, 2 or 3)
			Y	µg/l		mg/kg	mg/kg	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l			µg/l	mg/kg		

Values in red exceed theoretical solubility or soil saturation limits

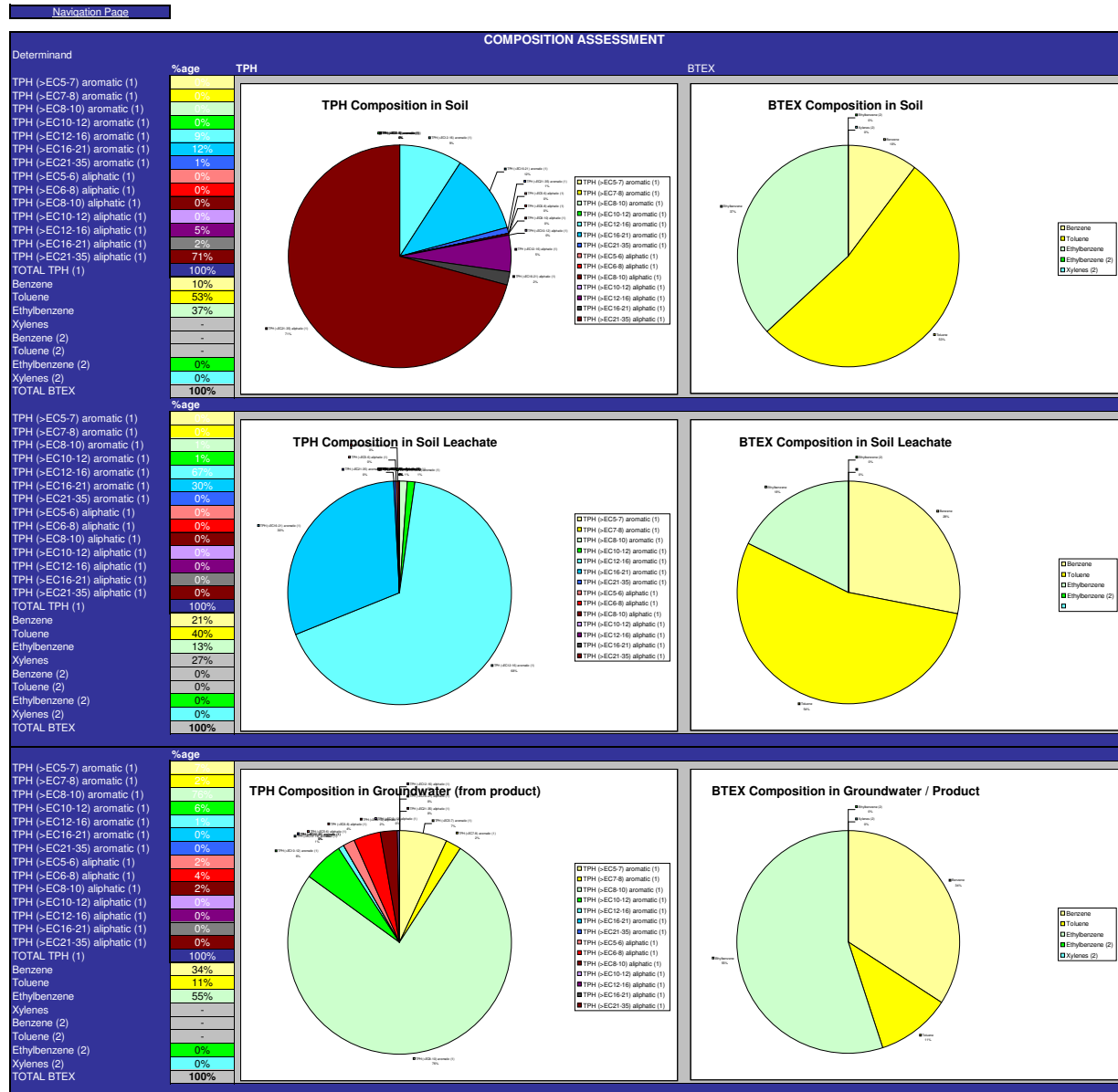
SOURCE NUMBER:	1	2	3
SOIL SOURCES AVAILABLE	YES	YES	YES
GW SOURCES AVAILABLE	YES	NO	NO

Soil leachate correction can be applied through the CSM Pathways setup and is corrected through the Stage 2 calculations to limit mixing in the aquifer to solubility limit. Exceedences of the theoretical soil saturation limit are highlighted in red above, however no correction is suggested at this stage as the concentration may represent free phase within the pore space and a correction may not be appropriate at this stage.

Groundwater concentrations can be corrected at this stage to limit them to solubility limits. This can be done manually or by selecting the groundwater solubility limit option on the CSM pathways sheet.

Values highlighted in blue should be cross-checked for appropriate screening criteria depending on country. Scottish sites should make reference to: Scotland River Basin District (Surface Water Typology, Environmental Standards, Condition Limits and Groundwater Threshold Values) Directions 2009 where the receptor is surface water

TPH AND BTEX COMPOSITION ANALYSIS





URS site-specific controlled waters risk assessment tool

designed on the principles and methodologies contained within EA Remedial Targets Methodology, 2006



PROBABILISTIC SOIL RESULTS

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Version: CWRA, version 7.292min

Date: 13/07/2011

SOIL RESULTS OUTPUT SUMMARY - PROBABILISTIC OUTPUT BY TIME

[illegible]

SOIL RESULTS OUTPUT SUMMARY

PROBABILISTIC OUTPUT BY TIME

[illegible]

SOIL RESULTS OUTPUT SUMMARY -
PROBABILISTIC OUTPUT BY DISTANCE

Navigation Page
Vert: NO
Dil: NO

RISK LEVEL 9.50E-01

DII: NO													Distance 1	Distance 2	Distance 3	Distance 4	Distance 5	Distance 6	Distance 7	Distance 8	VERTICAL			Distance 1	Distance 2	Distance 3	Distance 4	Distance 5	Distance 6	Distance 7	Distance 8
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Soil Saturation Limit	Model Soil Conc	STEADY STATE TIMES (Deterministic)								Simulated	HI	STC3	SIMULATED CONCENTRATION												
								Years	Years	Years	Years	Years	Years	Years	Years				µg/l			mg/kg	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	
1.03	TPH 1	TPH (<EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	7.60E+02	3.11E-01	5.71E+00	9.43E+00	1.35E+01	1.67E+01	1.93E+01	2.37E+01	2.74E+01	4.34E+01				7.59E-01	7.09E-02	3.74E-03	3.64E-04	4.90E-05	1.45E-06	6.88E-08	4.99E-09					
1.04	TPH 1	TPH (<EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	4.61E+02	3.65E-01	1.04E+01	1.75E+01	2.54E+01	3.13E+01	3.63E+01	4.46E+01	5.16E+01	8.18E+01				1.04E+00	1.47E-01	1.08E-02	1.53E-03	2.55E-04	1.27E-05	9.41E-07	3.90E-09					
1.05	TPH 1	TPH (<EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	2.13E+02	5.24E-01	1.54E+01	2.52E+01	3.61E+01	4.43E+01	5.13E+01	6.29E+01	7.27E+01	1.15E+02				2.01E+01	9.96E-01	2.55E-02	1.44E-03	1.15E-04	1.58E-06	5.92E-07	2.69E-07					
1.06	TPH 1	TPH (<EC16-21) aromatic (1)	Y	9.00E+01	6.50E+02	6.71E+01	6.71E-01	4.21E+01	6.87E+01	9.83E+01	1.21E+02	1.40E+02	1.71E+02	1.98E+02	3.14E+02				7.47E+00	3.69E-01	8.85E-03	4.49E-04	3.40E-05	4.09E-07	2.20E-07	1.05E-07					
1.07	TPH 1	TPH (<EC21-35) aromatic (1)	Y	9.00E+01	6.80E+00	6.07E+00	6.07E+00	2.29E+02	3.67E+02	5.20E+02	6.38E+02	7.77E+02	9.04E+02	1.04E+03	1.65E+03				2.81E-03	1.36E-05	2.63E-08	2.85E-09	2.50E-09	2.34E-09	2.09E-09	1.06E-09					
1.08	TPH 1	TPH (<EC5-8) aliphatic (1)	Y	1.50E+04	3.60E+04	3.29E+02	2.03E-02	3.58E+00	6.03E+00	8.72E+00	1.08E+01	1.25E+01	1.53E+01	1.78E+01	2.82E+01				1.13E-01	1.78E-02	1.50E-03	1.98E-04	3.55E-05	1.95E-06	1.45E-07	4.01E-10					
1.09	TPH 1	TPH (<EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	1.72E+02	1.48E-01	8.23E+00	1.32E+01	1.88E+01	2.31E+01	2.67E+01	3.27E+01	3.78E+01	5.97E+01				6.85E-03	5.91E-05	2.50E-07	3.51E-09	2.16E-09	1.87E-09	1.67E-09	8.45E-10					
1.1	TPH 1	TPH (<EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	9.75E+01	3.78E-01	2.89E+01	4.58E+01	6.48E+01	7.94E+01	9.18E+01	1.12E+02	1.30E+02	2.05E+02				4.15E-08	7.47E-10	7.26E-10	7.26E-10	7.23E-10	6.83E-10	6.12E-10	3.11E-10					
1.11	TPH 1	TPH (<EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	5.99E+01	5.47E-01	1.07E+02	1.70E+02	2.40E+02	2.94E+02	3.39E+02	4.16E+02	4.80E+02	7.59E+02				1.37E-10	1.37E-10	1.37E-10	1.37E-10	1.36E-10	1.28E-10	1.15E-10	5.85E-11					
1.12	TPH 1	TPH (<EC12-16) aliphatic (1)	Y	3.00E+02	7.60E-01	2.98E+01	2.98E+01	5.32E+02	8.41E+02	1.19E+03	1.46E+03	1.68E+03	2.06E+03	2.38E+03	3.76E+03				2.86E-10	2.86E-10	2.86E-10	2.86E-10	2.85E-10	2.69E-10	2.41E-10	1.22E-10					
1.13	TPH 1	TPH (<EC16-21) aliphatic (1)	Y	1.00E+01	2.50E-03	1.15E+01	1.15E+01	9.22E+03	1.46E+04	2.06E+04	2.52E+04	2.91E+04	3.57E+04	4.12E+04	6.52E+04				9.41E-13	9.41E-13	9.41E-13	9.40E-13	9.36E-13	8.85E-13	7.93E-13	4.03E-13					
1.14	TPH 1	TPH (<EC21-35) aliphatic (1)	Y	1.00E+01	8.91E-02	4.94E+03	4.11E+02	5.58E+04	8.82E+04	1.25E+05	1.53E+05	1.76E+05	2.16E+05	2.50E+05	3.95E+05				3.27E-12	3.27E-12	3.27E-12	3.27E-12	3.25E-12	3.07E-12	2.75E-12	1.40E-12					
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion			5.80E+02												2.71E+01	1.61E+00	6.04E-02	5.96E-03	9.10E-04	3.76E-05	2.94E-06	3.83E-07					
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.07E+03	2.22E-03	8.90E-01	1.85E+00	3.00E+00	3.88E+00	4.62E+00	5.85E+00	6.87E+00	1.12E+01				4.74E-01	3.24E-01	1.38E-01	6.67E-02	3.42E-02	1.20E-02	5.18E-03	1.01E-04					
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	9.43E+02	1.13E-02	1.55E+00	2.85E+00	4.29E+00	5.38E+00	6.28E+00	7.79E+00	9.05E+00	1.45E+01				1.27E+00	5.52E-01	1.80E-01	6.94E-02	2.98E-02	6.89E-03	1.77E-03	3.05E-06					
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	5.71E+02	7.92E-03	2.73E+00	4.86E+00	7.19E+00	8.95E+00	1.04E+01	1.29E+01	1.49E+01	2.38E+01				3.19E-01	1.13E-01	3.00E-02	9.52E-03	3.26E-03	5.32E-04	1.03E-04	5.37E-08					
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.84E+02	1.83E-02	2.76E+00	4.89E+00	7.24E+00	9.01E+00	1.05E+01	1.30E+01	1.50E+01	2.40E+01				5.86E-01	1.86E-01	4.77E-02	1.42E-02	4.81E-03	7.72E-04	1.49E-04	6.12E-08					
3	PAH	Acenaphthene	Y	2.20E+03	3.80E+03	6.54E+01	2.09E+01	1.00E+01	1.69E+01	2.45E+01	3.02E+01	3.50E+01	4.31E+01	4.98E+01	7.91E+01				5.22E+01	7.86E+00	7.04E-01	1.01E-01	1.80E-02	9.50E-04	7.12E-05	1.25E-07					
3	PAH	Acenaphthylene	Y	1.00E+01	1.61E+04	2.15E+02	1.76E+00	8.63E+00	1.48E+01	2.15E+01	2.66E+01	3.08E+01	3.80E+01	4.40E+01	6.98E+01				8.01E+00	1.75E+00	2.55E-01	4.80E-02	1.12E-02	8.71E-04	9.33E-05	1.59E-08					
3	PAH	Anthracene	Y	1.10E+04	4.50E+01	1.85E+00	1.85E+00	2.59E+01	4.42E+01	6.43E+01	7.95E+01	9.23E+01	1.14E+02	1.31E+02	2.09E+02				2.49E+00	5.12E-01	6.72E-02	1.33E-02	2.88E-03	1.85E-04	1.78E-05	4.71E-09					
3	PAH	Benzo(a)anthracene	Y	2.90E-02	3.80E+00	2.15E+00	2.15E+00	1.78E+02	2.86E+02	4.08E+02	5.00E+02	5.78E+02	7.09E+02	8.19E+02	1.30E+03				7.84E-03	1.17E-04	7.22E-07	1.32E-08	1.42E-09	9.18E-10	7.43E-10	3.27E-10					
3	PAH	Benzo(a)pyrene	Y	1.00E-02	3.80E+00	3.58E+00	3.58E+00	2.32E+02	3.71E+02	5.27E+02	6.46E+02	7.46E+02	9.15E+02	1.06E+03	1.67E+03				1.04E-03	3.93E-06	6.11E-09	1.20E-09	1.10E-09	9.01E-10	7.38E-10	3.27E-10					
3	PAH	Benzo(b)fluoranthene	Y	2.50E-02	2.00E+00	1.53E+00	1.53E+00	2.12E+02	3.40E+02	4.83E+02	5.93E+02	6.85E+02	8.40E+02	9.70E+02	1.53E+03				1.69E-03	1.17E-05	3.66E-08	8.30E-10	5.91E-10	4.74E-10	3.88E-10	1.72E-10					
3	PAH	Benzo(g,h,i)perylene	Y	2.50E-02	2.60E-01	7.91E-01	7.91E-01	4.30E+02	6.82E+02	9.66E+02	1.18E+03	1.37E+03	1.68E+03	1.93E+03	3.06E+03				3.33E-08	8.29E-11	8.09E-11	7.95E-11	7.47E-11	6.17E-11	5.05E-11	2.24E-11					
3	PAH	Benzo(k)fluoranthene	Y	2.50E-02	8.00E-01	8.64E-01	8.64E-01	2.53E+02	4.05E+02	5.74E+02	7.04E+02	8.14E+02	9.97E+02	1.15E+03	1.82E+03				1.36E-04	3.31E-07	3.77E-10	2.52E-10	2.30E-10	1.90E-10	1.55E-10	6.89E-11					
3	PAH	Chrysene	Y	2.90E+00	2.00E+00	8.03E-01	8.03E-01	1.45E+02	2.36E+02	3.36E+02	4.13E+02	4.77E+02	5.86E+02	6.77E+02	1.07E+03				1.10E-02	3.27E-04	4.95E-06	1.74E-07	9.58E-09	5.77E-10	3.93E-10	1.72E-10					
3	PAH	Dibenzo(a,h)anthracene	Y	2.90E-03	6.00E-01	8.16E-01	8.16E-01	2.85E+02	4.55E+02	6.45E+02	7.90E+02	9.13E+02	1.12E+03	1.29E+03	2.04E+03				3.82E-05	5.07E-08	2.12E-10	1.86E-10	1.72E-10	1.42E-10	1.16E-10	5.16E-11					
3	PAH	Fluoranthene	Y	1.50E+03	1.90E+03	3.93E+01	1.77E+01	1.12E+01	1.87E+01	2.69E+01	3.32E+01	3.84E+01	4.72E+01	5.46E+01	8.66E+01				3.13E+01	4.02E+00	2.91E-01	3.55E-02	5.58E-03	2.17E-04	1.32E-05	8.65E-08					
3	PAH	Indeno[1,2,3-cd]pyrene	Y	2.50E-02	2.00E-01	1.27E-01	1.27E-01	1.89E+02	3.04E+02	4.32E+02	5.30E+02	6.13E+02	7.51E+02	8.88E+02	1.37E+03				3.02E-04	3.66E-06	2.06E-08	3.07E-10	7.15E-11	4.78E-11	3.88E-11	1.72E-11					
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	9.13E+01	4.20E+00	4.42E+00	8.22E+00	1.25E+01	1.56E+01	1.83E+01	2.27E+01	2.64E+01	4.23E+01				1.34E+02	6.48E+01	2.41E+01	1.03E+01	4.45E+00	9.67E-01	2.32E-01	4.81E-04					
3	PAH	Phenanthrene	Y	1.00E+01	1.10E+03	4.42E+01	4.42E+01	2.34E+01	3.95E+01	5.71E+01	7.06E+01	8.18E+01	1.01E+02	1.16E+02	1.85E+02				4.90E+01	8.57E+00	8.22E-01	1.17E-01	2.23E-02	1.20E-03	9.25E-05	1.00E-07					
3	PAH	Pyrene	Y	1.10E+03	1.30E+02	1.54E+01	1.54E+01	6.50E+01	1.09E+02	1.57E+02	1.94E+02	2.25E+02	2.76E+02	3.19E+02	5.07E+02				5.20E+00	8.13E-01	8.06E-02	1.14E-02	1.95E-03	9.76E-05	7.32E-06	1.15E-08					
4	METALS	Arsenic	Y	1.00E+01	1.70E+07	8.50E+06	2.19E+01	1.74E+03	4.35E+03	8.70E+03	1.30E+04	1.74E+04	2.61E+04	3.48E+04	8.67E+04				1.36E+01	1.34E+01	1.28E+01	1.18E+01	1.01E+01	6.74E+00	4.19E+00	1.90E+01					
4	METALS	Boron	Y	1.00E+03	5.50E+08	5.55E+06	1.36E+01	3.52E+01	8.81E+01	1.76E+02	2.64E+02	3.52E+02	5.29E+02	7.05E+02	1.76E+03				4.20E+02	4.20E+02	4.20E+02	4.12E+02	3.87E+02	3.19E+02	2.61E+02	1.16E+02					
4	METALS	Cadmium	Y	5.00E+00	5.70E+08	5.71E+07	8.75E-01	3.49E+02	8.71E+02	1.74E+03	2.61E+03	3.48E+03	5.23E+03	6.97E+03	1.74E+04				2.72E+00	2.72E+0											

SOIL RESULTS OUTPUT SUMMARY - PROBABILISTIC OUTPUT BY DISTANCE

[illegible]

**SOIL RESULTS OUTPUT SUMMARY -
PROBABILISTIC SUMMARY (SS @ CP)**

Navigation Page																																					
Vert:	NO																	0.05	0.10	0.25	0.50	0.80	0.90	0.95	1.00	0.05	0.10	0.25	0.50	0.80	0.90	0.95	1.00				
Dil:	NO																																				
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Soil Saturation Limit	Model Soil Conc	SIMULATED CONCENTRATION								CALCULATED HAZARD INDEX																					
			Y	µg/l	µg/l	mg/kg	mg/kg	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l																						
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	7.60E+02	3.11E-01	3.60E-09	4.11E-09	5.47E-09	8.32E-09	5.07E-07	6.91E-06	4.90E-05	2.11E-03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	4.61E+02	3.65E-01	2.94E-09	3.40E-09	4.90E-09	2.99E-08	1.39E-05	9.50E-05	2.55E-04	1.19E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	2.13E+02	5.24E+01	1.80E-07	2.05E-07	2.64E-07	3.77E-07	1.16E-06	1.64E-05	1.15E-04	1.57E-01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.06	TPH 1	TPH (>EC16-21) aromatic (1)	Y	9.00E+01	6.50E+02	6.71E+01	6.71E+01	8.97E-08	9.91E-08	1.17E-07	1.58E-07	3.10E-07	3.62E-06	3.40E-05	3.13E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.07	TPH 1	TPH (>EC21-35) aromatic (1)	Y	9.00E+01	6.60E+00	6.07E+00	6.07E+00	8.76E-10	9.55E-10	1.13E-09	1.42E-09	1.92E-09	2.26E-09	2.50E-09	3.44E-08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	1.50E+04	3.60E+04	3.29E+02	2.03E-02	3.48E-10	4.00E-10	5.66E-10	1.05E-08	1.94E-06	1.31E-05	3.55E-05	1.61E-03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	1.72E+02	1.48E-01	5.70E-10	6.41E-10	7.78E-10	1.02E-09	1.45E-09	1.78E-09	2.16E-09	5.58E-06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	9.75E+01	3.78E-01	2.00E-10	2.27E-10	2.79E-10	3.64E-10	5.13E-10	6.20E-10	7.23E-10	1.33E-09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	5.99E+01	5.47E-01	3.72E-11	4.21E-11	5.19E-11	6.79E-11	9.60E-11	1.16E-10	1.36E-10	2.50E-10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.12	TPH 1	TPH (>EC12-16) aliphatic (1)	Y	3.00E+02	7.60E-01	2.98E+01	2.98E+01	1.01E-10	1.10E-10	1.30E-10	1.62E-10	2.21E-10	2.56E-10	2.85E-10	4.80E-10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.13	TPH 1	TPH (>EC16-21) aliphatic (1)	Y	1.00E+01	2.50E-03	1.15E+01	1.15E+01	3.32E-13	3.62E-13	4.27E-13	5.34E-13	7.26E-13	8.43E-13	9.36E-13	1.58E-12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.14	TPH 1	TPH (>EC21-35) aliphatic (1)	Y	1.00E+01	8.91E-02	4.94E+03	4.11E+02	8.88E-13	1.01E-12	1.24E-12	1.62E-12	2.29E-12	2.78E-12	3.25E-12	5.98E-12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion				5.80E+02	3.27E-07	3.67E-07	4.99E-07	9.73E-07	5.00E-05	2.40E-04	9.10E-04	1.74E-01																					
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.07E+03	2.22E-03	4.76E-06	3.66E-05	3.91E-04	2.63E-03	1.33E-02	2.26E-02	3.42E-02	1.34E-01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
2.01	BTEX	Toluene	Y	7.00E-02	5.90E+05	9.43E+02	1.13E-02	2.04E-09	3.49E-08	6.87E-06	2.55E-04	5.36E-03	1.77E-02	2.98E-02	1.75E-01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	5.71E+02	7.92E-03	5.13E-10	8.32E-10	6.85E-08	8.19E-06	3.28E-04	1.37E-03	3.26E-03	2.65E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.84E+02	1.63E-02	9.91E-10	1.39E-09	8.25E-08	1.39E-05	5.48E-04	2.39E-03	4.91E-03	7.65E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Acenaphthene	Y	2.20E+03	3.80E+03	6.54E+01	2.09E+01	1.33E-07	1.57E-07	2.44E-07	3.72E-06	9.12E-04	6.17E-03	1.80E-02	1.45E+00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Acenaphthylene	Y	1.00E+01	1.61E+04	2.15E+02	1.76E+00	1.48E-08	1.91E-08	3.77E-08	6.45E-06	7.13E-04	3.22E-03	1.12E-02	3.70E-01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Anthracene	Y	1.10E+04	4.50E+01	1.85E+00	1.85E+00	5.51E-09	6.44E-09	1.09E-08	1.44E-06	1.76E-04	1.04E-03	2.88E-03	9.26E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Benzo(a)anthracene	Y	2.90E-02	3.80E+00	2.15E+00	2.15E+00	3.65E-10	4.00E-10	4.77E-10	6.07E-10	8.67E-10	1.06E-09	1.42E-09	9.09E-06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Benzo(a)pyrene	Y	1.00E-02	3.80E+00	3.58E+00	3.58E+00	3.63E-10	3.97E-10	4.73E-10	5.98E-10	8.28E-10	9.76E-10	1.10E-09	5.76E-09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Benzo(b)fluoranthene	Y	2.50E-02	2.00E+00	1.53E+00	1.53E+00	1.91E-10	2.09E-10	2.50E-10	3.17E-10	4.41E-10	5.25E-10	5.91E-10	1.67E-08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Benzo(g,h,i)perylene	Y	2.50E-02	2.60E-01	7.91E-01	7.91E-01	2.48E-11	2.71E-11	3.23E-11	4.08E-11	5.66E-11	6.66E-11	7.47E-11	1.36E-10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Benzo(k)fluoranthene	Y	2.50E-02	8.00E-01	8.64E-01	8.64E-01	7.64E-11	8.35E-11	9.95E-11	1.26E-10	1.74E-10	2.05E-10	2.30E-10	4.94E-10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Chrysene	Y	2.90E+00	2.00E+00	8.03E-01	8.03E-01	1.95E-10	2.16E-10	2.58E-10	3.40E-10	5.14E-10	9.43E-10	9.58E-09	5.56E-06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Dibenzo(a,h)anthracene	Y	2.90E-03	6.00E-01	8.16E-01	8.16E-01	5.73E-11	6.26E-11	7.45E-11	9.42E-11	1.31E-10	1.54E-10	1.72E-10	3.13E-10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				
3	PAH	Fluoranthene	Y	2.00E-01	2.30E+02	3.06E+01	3.06E+01	2.35E-																													

**SOIL RESULTS OUTPUT SUMMARY -
PROBABILISTIC SUMMARY (SS @ CP)**

Navigation Page																																					
Vert:	NO																	0.05	0.10	0.25	0.50	0.80	0.90	0.95	1.00												
Dil:	NO																											RISK LEVEL									
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Soil Saturation Limit	Model Soil Conc	STC3 horizontal								STC4 Dilution	0.05	0.1	0.25	0.5	0.8	0.9	0.95	1	Dilution												
				µg/l	µg/l	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		Stage 3:	0.05	0.1	0.25	0.5	0.8	0.9	0.95	1	Stage 4 - Dilution									
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	7.60E+02	3.11E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	4.61E+02	3.65E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	2.13E+02	5.24E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.06	TPH 1	TPH (>EC16-21) aromatic (1)	Y	9.00E+01	6.50E+02	6.71E+01	6.71E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.07	TPH 1	TPH (>EC21-35) aromatic (1)	Y	9.00E+01	6.60E+00	6.07E+00	6.07E+00	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.08	TPH 1	TPH (>EC5-8) aliphatic (1)	Y	1.50E+04	3.60E+04	3.29E+02	2.03E-02	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	1.72E+02	1.48E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	9.75E+01	3.78E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	5.99E+01	5.47E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.12	TPH 1	TPH (>EC12-16) aliphatic (1)	Y	3.00E+02	7.60E-01	2.98E+01	2.98E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.13	TPH 1	TPH (>EC16-21) aliphatic (1)	Y	1.00E+01	2.50E-03	1.15E+01	1.15E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.14	TPH 1	TPH (>EC21-35) aliphatic (1)	Y	1.00E+01	8.91E-02	4.94E+03	4.11E+02	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion			5.80E+02																														
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.07E+03	2.22E-03	IR	IR	IR	IR	IR	1.67E-01	9.81E-02	6.49E-02	1.66E-02		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	9.43E+02	1.13E-02	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	5.71E+02	7.92E-03	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.84E+02	1.63E-02	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Acenaphthene	Y	2.20E+03	3.80E+03	6.54E+01	2.09E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Acenaphthylene	Y	1.00E+01	1.61E+04	2.15E+02	1.76E+00	IR	IR	IR	IR	IR	IR	IR	IR	IR	4.75E+01		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Anthracene	Y	1.10E+04	4.50E+01	1.85E+00	1.85E+00	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Benzo(a)anthracene	Y	2.90E-02	3.80E+00	2.15E+00	2.15E+00	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Benzo(a)pyrene	Y	1.00E-02	3.80E+00	3.58E+00	3.58E+00	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Benzo(b)fluoranthene	Y	2.50E-02	2.00E+00	1.53E+00	1.53E+00	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Benzo(g,h,i)perylene	Y	2.50E-02	2.60E-01	7.91E-01	7.91E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Benzo(k)fluoranthene	Y	2.50E-02	8.00E-01	8.64E-01	8.64E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Chrysene	Y	2.90E+00	2.00E+00	8.03E-01	8.03E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Dibenzo(a,h)anthracene	Y	2.90E-03	6.00E-01	8.16E-01	8.16E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Fluoranthene	Y	2.00E-01	2.30E+02	3.06E+01	3.06E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR	1.80E+02		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Fluorene	Y	1.50E+03	1.90E+03	3.93E+01	1.77E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Indeno[1,2,3-cd]pyrene	Y	2.50E-02	2.00E-01	1.27E-01	1.27E-01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	9.13E+01	4.20E+00	IR	IR	IR	8.47E+01	5.07E+00	1.71E+00	9.44E-01	1.03E-01			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
3	PAH	Phenanthrene	Y	1.00E+01	1.10E+03	4.42E+01	4.42E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR	8.79E+02		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
3	PAH	Pyrene	Y	1.10E+03	1.30E+02	1.54E+01	1.54E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
4	METALS	Arsenic	Y	1.00E+01	1.70E+07	8.50E+06	2.19E+01	IR	6.39E+02	1.27E+02	5.30E+01	3.22E+01	2.67E+01	2.16E+01	1.06E+01			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Boron	Y	1.00E+03	5.50E+08	5.55E+06	1.36E+01	1.06E+02	9.67E+01	8.12E+01	6.43E+01	4.64E+01	3.94E+01	3.51E+01	1.93E+01			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Cadmium	Y	5.00E+00	5.70E+08	5.71E+07	8.75E-01	5.40E+00	4.98E+00	4.11E+00	3.25E+00	2.35E+00	1.98E+00	1.75E+00	9.59E-01			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Chromium III	Y	5.00E+01	6.29E+08	3.02E+09	3.11E+01	IR	IR	IR	IR	IR	IR	IR	IR			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
4	METALS	Cobalt	Y	1.10E+01	1.40E+07	6.31E+05	1.05E+01	5.20E+00	4.77E+00	4.00E+00	3.17E+00	2.28E+00	1.94E+00	1.73E+00	9.50E-01		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Copper	Y	2.00E+03	8.00E+04	8.01E+03	1.06E+02	2.16E+03	1.99E+03	1.64E+03	1.30E+03	9.41E+02	7.94E+02	7.01E+02	3.83E+02		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Lead	Y	2.50E+01	5.00E+01	1.80E+03	1.28E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
4	METALS	Molybdenum	Y	2.00E+01	4.90E+05	9.85E+03	2.94E+01	4.21E+00	3.85E+00	3.23E+00	2.56E+00	1.85E+00	1.57E+00	1.40E+00	7.70E-01		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Nickel	Y	2.00E+01	1.90E+05	9.50E+04	3.75E+01	IR	1.28E+03	2.54E+02	1.06E+02	6.44E+01	5.33E+01	4.33E+01	2.12E+01		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
4	METALS	Tin	Y	2.20E+04	1.27E+01	3.18E+00	3.18E+00	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
4	METALS	Zinc	Y	5.00E+03	1.62E+07	6.17E+05	2.30E+02	1.99E+03	1.83E+03	1.53E+03	1.22E+03	8.75E+02	7.44E+02	6.63E+02	3.65E+02		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									



URS site-specific controlled waters risk assessment tool

designed on the principles and methodologies contained within EA Remedial Targets Methodology, 2006



**PROBABILISTIC
GROUNDWATER**

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Version: CWRA, version 7.292min

Date: 13/07/2011

WATER RESULTS OUTPUT SUMMARY -
PROBABILISTIC OUTPUT BY TIME

Navigation Page												RISK LEVEL		9.50E-01												VERTICAL		Year: 1	Year: 2	Year: 5	Year: 10	Year: 50	Year: 100	Year: 1000	Year: 10000	Year: 1	Year: 2	Year: 5	Year: 10	Year: 50	Year: 100	Year: 1000	Year: 10000							
Vert:	NO																											Simulated	HI	GWTC3	SIMULATED CONCENTRATION										CALCULATED HAZARD INDEX									
Dil:	NO																																																	
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Model GW Conc	Time for S/S																																											
			Y		µg/l	µg/l	Years	µg/l				µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l																														
1.01	TPH 1	TPH (<EC5-7) aromatic (1)	Y	1.00E+01	1.80E+06	1.21E+03	4.62E+00					9.79E+00	7.36E+01	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	1.24E+02	9.79E-01	7.36E+00	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01	1.24E+01																	
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	7.00E+02	1.30E+05	3.92E+02	6.29E+00					4.36E-03	5.55E-01	3.92E+00	4.22E+00	4.22E+00	4.22E+00	4.22E+00	4.22E+00	4.22E+00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																	
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	1.33E+04	1.93E+01					1.33E-05	1.33E-05	2.33E-04	2.41E-02	5.47E-02	5.47E-02	5.47E-02	5.47E-02	5.47E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																	
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	1.01E+03	3.63E+01					1.01E-06	1.01E-06	1.01E-06	9.74E-04	3.42E-02	3.42E-02	3.42E-02	3.42E-02	3.42E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																	
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	1.43E+02	5.13E+01					1.43E-07	1.43E-07	1.43E-07	1.43E-07	2.49E-05	2.49E-05	2.49E-05	2.49E-05	2.49E-05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																	
1.08	TPH 1	TPH (<EC5-6) aliphatic (1)	Y	1.50E+04	3.60E+04	3.08E+02	1.25E+01					3.08E-07	3.29E-07	3.61E-03	1.22E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	1.26E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	6.97E+02	2.67E+01					3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	4.30E+02	9.18E+01					2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	3.40E+01	3.39E+02					1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion		1.75E+04						9.79E+00	7.42E+01	1.26E+02	1.28E+02	1.28E+02	1.28E+02	1.28E+02	1.28E+02	1.28E+02	1.23E+01	9.07E+01	1.51E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02																	
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.46E+03	4.62E+00					1.23E+01	9.07E+01	1.51E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.23E+01	9.07E+01	1.51E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02	1.52E+02																	
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	4.65E+02	6.28E+00					5.83E-03	7.79E-01	4.05E+00	4.56E+00	4.56E+00	4.56E+00	4.56E+00	4.56E+00	4.56E+00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	2.35E+03	1.04E+01					2.35E-06	2.33E-02	3.08E+00	6.67E+00	6.85E+00	6.85E+00	6.85E+00	6.85E+00	6.85E+00	<0.01	<0.01	1.03E-02	2.22E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02	2.28E-02																	
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.48E+03	1.05E+01					6.48E-06	4.94E-02	8.77E+00	1.53E+01	1.57E+01	1.57E+01	1.57E+01	1.57E+01	1.57E+01	<0.01	<0.01	1.75E-02	3.07E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02	3.13E-02																	
3	PAH	Fluorene	Y	1.50E+03	1.90E+03	2.05E+01	3.84E+01					2.05E-10	2.05E-10	2.05E-10	6.11E-08	4.40E-06	4.40E-06	4.40E-06	4.40E-06	4.40E-06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	1.75E+02	1.83E+01					1.75E-07	5.28E-05	2.99E-01	1.71E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	<0.01	<0.01	2.99E-01	1.71E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00	2.29E+00																

**WATER RESULTS OUTPUT SUMMARY -
PROBABILISTIC OUTPUT BY TIME**

Navigation Page																												
Vert:	NO		RISK LEVEL		9.50E-01																							
Dil:	NO																											
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Model GW Conc	GWTC3 horizontal										GWTC4 Dilution	Vertical	TIME									
																			Stage 3: Year: 1	Stage 3: Year: 2	Stage 3: Year: 5	Stage 3: Year: 10	Stage 3: Year: 50	Stage 3: Year: 100	Stage 3: Year: 1000	Stage 3: Year: 10000	Stage 4: Dilution	
					µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l													
1.01	TPH 1	TPH (>EC5-7) aromatic (1)	Y	Y	1.00E+01	1.80E+06	1.21E+03	1.24E+03	1.64E+02	9.77E+01	9.75E+01	9.75E+01	9.75E+01	9.75E+01	9.75E+01	µg/l	Vertical	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	Y	7.00E+02	1.30E+05	3.92E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	Y	3.00E+02	6.50E+04	1.33E+04	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	Y	9.00E+01	2.50E+04	1.01E+03	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	Y	9.00E+01	5.80E+03	1.43E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	Y	1.50E+04	3.60E+04	3.08E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	Y	1.50E+04	5.40E+03	6.97E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	Y	3.00E+02	4.30E+02	4.30E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	Y	3.00E+02	3.40E+01	3.40E+01	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion		1.75E+04																						
2	BTEX	Benzene	Y	Y	1.00E+00	1.78E+06	1.46E+03	1.19E+02	1.61E+01	9.65E+00	9.59E+00	9.59E+00	9.59E+00	9.59E+00	9.59E+00		✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	
2.01	BTEX	Toluene	Y	Y	7.00E+02	5.90E+05	4.65E+02	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2.02	BTEX	Ethylbenzene	Y	Y	3.00E+02	1.69E+05	2.35E+03	IR	IR	2.29E+05	1.06E+05	1.03E+05	1.03E+05	1.03E+05	1.03E+05		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2.03	BTEX	Xylenes	Y	Y	5.00E+02	2.00E+05	6.48E+03	IR	IR	3.69E+05	2.11E+05	2.07E+05	2.07E+05	2.07E+05	2.07E+05		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	PAH	Fluorene	Y	Y	1.50E+03	1.90E+03	2.05E-01	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	PAH	Naphthalene	Y	Y	1.00E+00	1.90E+04	1.75E+02	IR	IR	5.86E+02	1.02E+02	7.63E+01	7.63E+01	7.63E+01	7.63E+01		✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	

WATER RESULTS OUTPUT SUMMARY - PROBABILISTIC OUTPUT BY DISTANCE

Navigation Page																									
Vert:	NO		RISK LEVEL		9.50E-01																				
Dil:	NO																								
						Distance 1	Distance 2	Distance 3	Distance 4	Distance 5	Distance 6	Distance 7	Distance 8	VERTICAL				Distance 12	Distance 13	Distance 14	Distance 15	Distance 16	Distance 17	Distance 18	
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Model GW Conc	STEADY STATE TIMES								Simulated	HI	GWTC3	SIMULATED CONCENTRATION							
						μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l	μg/l
1.01	TPH 1	TPH (>EC5-7) aromatic (1)	Y	1.00E+01	1.80E+06	1.21E+03	8.90E+01	1.85E+00	3.00E+00	3.88E+00	5.18E+00	5.85E+00	6.87E+00	1.12E+01	1.01E+03	7.67E+02	4.28E+02	2.25E+02	1.24E+02	4.39E+01	1.80E+01	3.63E+01			
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	7.00E+02	1.30E+05	3.92E+02	1.55E+00	2.85E+00	4.29E+00	5.38E+00	7.17E+00	7.79E+00	9.05E+00	1.45E+01	2.35E+02	1.17E+02	6.84E+01	1.17E+01	4.22E+00	7.21E+01	1.60E+01	2.33E+04			
1.03	TPH 1	TPH (>EC9-10) aromatic (1)	Y	6.50E+04	6.50E+04	1.01E+03	5.71E+00	9.43E+00	1.35E+01	1.67E+01	2.23E+01	2.37E+01	2.74E+01	4.34E+01	1.61E+03	1.59E+02	7.14E+00	3.24E+01	5.47E+02	1.20E+03	4.91E+05	1.50E+06			
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	2.50E+01	2.50E+04	1.01E+03	1.04E+01	1.75E+01	2.54E+01	3.13E+01	4.17E+01	4.46E+01	5.16E+01	8.18E+01	1.98E+02	3.02E+01	2.24E+00	2.40E+01	1.21E+01	1.26E+03	7.80E+05	1.14E+07			
1.05	TPH 1	TPH (>EC12-18) aromatic (1)	Y	9.00E+01	5.80E+03	1.43E+02	1.54E+01	2.52E+01	3.61E+01	4.43E+01	5.91E+01	6.29E+01	7.27E+01	1.15E+02	8.00E+00	4.08E+01	8.88E+03	3.77E+04	2.49E+05	2.56E+07	3.95E+08	1.61E+08			
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	1.50E+04	3.60E+04	3.08E+02	3.58E+00	6.03E+00	8.72E+00	1.08E+01	1.43E+01	1.53E+01	1.78E+01	2.82E+01	6.30E+01	1.00E+01	7.77E+01	8.59E+02	1.26E+02	4.88E+04	3.14E+05	3.46E+08			
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	6.97E+02	8.23E+00	1.32E+01	1.88E+01	2.31E+01	3.08E+01	3.27E+01	3.78E+01	5.97E+01	4.26E+00	4.06E+02	1.40E+04	1.81E+06	3.63E+07	2.53E+07	1.93E+07	7.84E+08			
1.11	TPH 1	TPH (>EC9-10) aliphatic (1)	Y	3.00E+02	4.30E+02	4.30E+02	2.89E+01	4.58E+01	6.48E+01	7.94E+01	1.06E+02	1.12E+02	1.30E+02	2.05E+02	4.80E+05	4.28E+07	3.62E+07	2.48E+07	2.24E+07	1.56E+07	1.19E+07	4.84E+08			
1.11	TPH 1	TPH (>EC9-10) aliphatic (1)	Y	3.00E+02	3.40E+01	3.40E+01	1.07E+02	1.70E+02	2.40E+02	2.94E+02	3.92E+02	4.16E+02	4.80E+02	7.59E+02	3.40E+08	3.30E+08	2.87E+08	2.22E+08	1.77E+08	1.23E+08	9.40E+09	3.82E+09			
1.12	TPH 1	TOTAL TPH (1)	Y	No Criterion		1.75E+04									2.97E+03	9.84E+02	4.65E+02	2.34E+02	1.28E+02	4.45E+01	1.81E+01	3.63E+01			
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.46E+03	8.90E+01	3.00E+00	3.88E+00	5.18E+00	5.85E+00	6.87E+00	1.12E+01	1.22E+03	9.30E+02	5.21E+02	2.75E+02	1.52E+02	5.42E+01	2.23E+01	4.61E+01				
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	4.65E+02	1.55E+00	2.85E+00	4.29E+00	5.38E+00	7.17E+00	7.79E+00	9.05E+00	1.45E+01	2.75E+02	1.35E+02	6.08E+01	1.29E+01	4.56E+00	7.59E+01	1.64E+01	2.17E+04			
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	2.35E+03	2.73E+00	4.86E+00	7.19E+00	8.95E+00	1.19E+01	1.29E+01	1.49E+01	2.38E+01	1.13E+03	4.34E+02	9.48E+01	2.38E+01	4.65E+00	8.08E+01	3.11E+01	5.11E+05			
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.48E+03	2.76E+00	4.89E+00	7.24E+00	9.01E+00	1.20E+01	1.30E+01	1.50E+01	2.40E+01	3.01E+03	1.11E+03	2.36E+02	5.62E+01	1.57E+01	1.75E+00	6.73E+01	8.84E+05			
3	PAH	Fluorene	Y	1.90E+03	1.90E+03	2.05E+01	1.12E+01	1.87E+01	3.32E+01	4.42E+01	4.72E+01	5.46E+01	8.66E+01	3.64E+02	3.04E+03	3.35E+04	3.30E+05	4.40E+06	1.45E+07	1.15E+07	2.15E+09	2.31E+11			
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	1.75E+02	4.42E+00	8.22E+00	1.25E+01	1.56E+01	2.09E+01	2.27E+01	2.64E+01	4.23E+01	1.08E+02	5.62E+01	1.83E+01	6.16E+00	2.29E+00	4.16E+01	9.68E+02	1.74E+04			

WATER RESULTS OUTPUT SUMMARY -
PROBABILISTIC OUTPUT BY DISTANCE

Navigation Page		Ver: NO		Dil: NO		RISK LEVEL		9.50E-01		Distance 1		Distance 2		Distance 3		Distance 4		Distance 5		Distance 6		Distance 7		Distance 8		Distance 1		Distance 2		Distance 3		Distance 4		Distance 5		Distance 6		Distance 7		Distance 8		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE		DISTANCE</	
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**WATER RESULTS OUTPUT SUMMARY -
PROBABILISTIC SUMMARY (SS @ CP)**

Navigation Page		RISK LEVEL 9.50E-01																				
Vert:	NO																					
Dil:	NO																					
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Model GW Conc	SIMULATED CONCENTRATION								CALCULATED HAZARD INDEX							
							0.05	0.1	0.25	0.5	0.8	0.9	0.95	1	0.05	0.1	0.25	0.5	0.8	0.9	0.95	1
			Y	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l								
1.01	TPH 1	TPH (>EC5-7) aromatic (1)	Y	1.00E+01	1.80E+06	1.21E+03	1.51E-02	1.00E-01	1.71E+00	1.29E+01	5.52E+01	9.02E+01	1.24E+02	2.57E+02	<0.01	1.00E-02	1.71E-01	1.29E+00	5.52E+00	9.02E+00	1.24E+01	2.57E+01
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	7.00E+02	1.30E+05	3.92E+02	2.04E-07	6.83E-06	1.07E-03	3.57E-02	5.98E-01	1.93E+00	4.22E+00	2.85E+01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	4.08E-02
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	1.33E+04	6.92E-06	6.92E-06	6.92E-06	6.92E-06	6.02E-04	8.46E-03	5.47E-02	1.65E+00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	1.01E+03	5.26E-07	5.26E-07	5.26E-07	3.88E-06	1.56E-03	1.00E-02	3.42E-02	9.54E-01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.06E-02
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	1.43E+02	7.44E-08	7.44E-08	7.44E-08	7.44E-08	2.84E-07	3.92E-06	2.49E-05	1.91E-02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	1.50E+04	3.60E+04	3.08E+02	1.60E-07	1.60E-07	1.60E-07	3.90E-06	6.53E-04	4.79E-03	1.26E-02	7.25E-01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	6.97E+02	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	3.63E-07	1.11E-03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	4.30E+02	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	2.24E-07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	3.40E+01	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	1.77E-08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion			1.75E+04	1.52E-02	1.04E-01	1.80E+00	1.33E+01	5.63E+01	9.25E+01	1.28E+02	2.77E+02							
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.46E+03	2.43E-02	1.70E-01	1.94E+00	1.37E+01	6.96E+01	1.15E+02	1.52E+02	2.98E+02	2.43E-02	1.70E-01	1.94E+00	1.37E+01	6.96E+01	1.15E+02	1.52E+02	2.98E+02
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	4.65E+02	2.42E-07	5.08E-06	1.05E-03	3.90E-02	8.66E-01	2.33E+00	4.56E+00	2.17E+01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3.10E-02
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	2.35E+03	1.22E-06	1.22E-06	1.69E-04	2.07E-02	8.01E-01	3.15E+00	6.85E+00	5.72E+01	<0.01	<0.01	<0.01	<0.01	<0.01	1.05E-02	2.28E-02	1.91E-01
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.48E+03	3.37E-06	3.37E-06	2.47E-04	4.19E-02	1.75E+00	7.20E+00	1.57E+01	1.99E+02	<0.01	<0.01	<0.01	<0.01	<0.01	1.44E-02	3.13E-02	3.98E-01
3	PAH	Fluorene	Y	1.50E+03	1.90E+03	2.05E-01	1.07E-10	1.07E-10	1.07E-10	3.14E-10	1.44E-07	1.04E-06	4.40E-06	2.79E-04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	1.75E+02	3.73E-07	1.02E-05	1.28E-03	3.49E-02	5.32E-01	1.38E+00	2.29E+00	1.35E+01	<0.01	<0.01	<0.01	3.49E-02	5.32E-01	1.38E+00	2.29E+00	1.35E+01

**WATER RESULTS OUTPUT SUMMARY -
PROBABILISTIC SUMMARY (SS @ CP)**

Navigation Page																													
Vert:	NO																												
Dil:	NO																												
		RISK LEVEL 9.50E-01										0.05	0.1	0.25	0.5	0.8	0.9	0.95	1										
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Model GW Conc	GWTC3 horizontal								GWTC4 Dilution	Stage 3: 0.05	Stage 3: 0.1	Stage 3: 0.25	Stage 3: 0.5	Stage 3: 0.8	Stage 3: 0.9	Stage 3: 0.95	Stage 3: 1	Stage 4 - Dilution					
							µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l											µg/l				
1.01	TPH 1	TPH (>EC5-7) aromatic (1)	Y	1.00E+01	1.80E+06	1.21E+03	IR	1.21E+05	7.08E+03	9.39E+02	2.19E+02	1.34E+02	9.75E+01	4.71E+01	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	7.00E+02	1.30E+05	3.92E+02	IR	IR	IR	IR	IR	IR	IR	9.62E+03	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	1.33E+04	IR	IR	IR	IR	IR	IR	IR	IR	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	1.01E+03	IR	IR	IR	IR	IR	IR	IR	9.53E+04	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	1.43E+02	IR	IR	IR	IR	IR	IR	IR	IR	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	1.50E+04	3.60E+04	3.08E+02	IR	IR	IR	IR	IR	IR	IR	IR	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	6.97E+02	IR	IR	IR	IR	IR	IR	IR	IR	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	4.30E+02	IR	IR	IR	IR	IR	IR	IR	IR	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	3.40E+01	IR	IR	IR	IR	IR	IR	IR	IR	IR	✓	✓	✓	✓	✓	✓	✓	✓	✓					
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion		1.75E+04										✓	✓	✓	✓	✓	✓	✓	✓	✓					
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.46E+03	6.01E+04	8.58E+03	7.52E+02	1.07E+02	2.10E+01	1.26E+01	9.59E+00	4.90E+00		✓	✓	✓	✓	✓	✓	✓	✓	✓					
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	4.65E+02	IR	IR	IR	IR	IR	IR	IR	1.50E+04		✓	✓	✓	✓	✓	✓	✓	✓	✓					
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	2.35E+03	IR	IR	IR	IR	IR	IR	2.24E+05	1.03E+05	1.23E+04	✓	✓	✓	✓	✓	✓	✓	✓	✓					
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.48E+03	IR	IR	IR	IR	IR	IR	4.50E+05	2.07E+05	1.63E+04	✓	✓	✓	✓	✓	✓	✓	✓	✓					
3	PAH	Fluorene	Y	1.50E+03	1.90E+03	2.05E-01	IR	IR	IR	IR	IR	IR	IR	IR		✓	✓	✓	✓	✓	✓	✓	✓	✓					
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	1.75E+02	IR	IR	IR	5.01E+03	3.29E+02	1.26E+02	7.63E+01	1.30E+01		✓	✓	✓	✓	✓	✓	✓	✓	✓					

SSTL SUMMARY

Navigation Page																	
Vert:	NO	RISK LEVEL		9.50E-01													
Dil:	NO								SOIL - STC3				GROUNDWATER - GWTC3				
Order	Group	Determinand	Select	DWS / Freshwater	Solubility	Soil Saturation Limit	Max Soil Conc	Model GW Conc	50 m	75 m	100 m	250 m	50 m	75 m	100 m	250 m	
			Y	µg/l	µg/l	mg/kg	mg/kg	µg/l	mg/kg	mg/kg	mg/kg	mg/kg	µg/l	µg/l	µg/l	µg/l	
1.01	TPH 1	TPH (>EC5-7) aromatic (1)	Y	1.00E+01	1.80E+06	1.12E+03	-	1.21E+03	-	-	-	-	9.75E+01	2.76E+02	6.73E+02	3.34E+04	
1.02	TPH 1	TPH (>EC7-8) aromatic (1)	Y	7.00E+02	1.30E+05	2.08E+02	-	3.92E+02	-	-	-	-	IR	IR	IR	IR	
1.03	TPH 1	TPH (>EC8-10) aromatic (1)	Y	3.00E+02	6.50E+04	7.60E+02	3.11E-01	1.33E+04	IR	IR	IR	IR	IR	IR	IR	IR	
1.04	TPH 1	TPH (>EC10-12) aromatic (1)	Y	9.00E+01	2.50E+04	4.61E+02	3.65E-01	1.01E+03	IR	IR	IR	IR	IR	IR	IR	IR	
1.05	TPH 1	TPH (>EC12-16) aromatic (1)	Y	9.00E+01	5.80E+03	2.13E+02	5.24E+01	1.43E+02	IR	IR	IR	IR	IR	IR	IR	IR	
1.06	TPH 1	TPH (>EC16-21) aromatic (1)	Y	9.00E+01	6.50E+02	6.71E+01	6.71E+01	-	IR	IR	IR	IR	-	-	-	-	
1.07	TPH 1	TPH (>EC21-35) aromatic (1)	Y	9.00E+01	6.60E+00	6.07E+00	6.07E+00	-	IR	IR	IR	IR	-	-	-	-	
1.08	TPH 1	TPH (>EC5-6) aliphatic (1)	Y	1.50E+04	3.60E+04	3.29E+02	2.03E-02	3.08E+02	IR	IR	IR	IR	IR	IR	IR	IR	
1.09	TPH 1	TPH (>EC6-8) aliphatic (1)	Y	1.50E+04	5.40E+03	1.72E+02	1.48E-01	6.97E+02	IR	IR	IR	IR	IR	IR	IR	IR	
1.1	TPH 1	TPH (>EC8-10) aliphatic (1)	Y	3.00E+02	4.30E+02	9.75E+01	3.78E-01	4.30E+02	IR	IR	IR	IR	IR	IR	IR	IR	
1.11	TPH 1	TPH (>EC10-12) aliphatic (1)	Y	3.00E+02	3.40E+01	5.99E+01	5.47E-01	3.40E+01	IR	IR	IR	IR	IR	IR	IR	IR	
1.12	TPH 1	TPH (>EC12-16) aliphatic (1)	Y	3.00E+02	7.60E-01	2.98E+01	2.98E+01	-	IR	IR	IR	IR	-	-	-	-	
1.13	TPH 1	TPH (>EC16-21) aliphatic (1)	Y	1.00E+01	2.50E-03	1.15E+01	1.15E+01	-	IR	IR	IR	IR	-	-	-	-	
1.14	TPH 1	TPH (>EC21-35) aliphatic (1)	Y	1.00E+01	8.91E-02	4.94E+03	4.11E+02	-	IR	IR	IR	IR	-	-	-	-	
1.2	TPH 1	TOTAL TPH (1)	Y	No Criterion			5.80E+02	1.75E+04									
2	BTEX	Benzene	Y	1.00E+00	1.78E+06	1.07E+03	2.22E-03	1.46E+03	6.49E-02	1.85E-01	IR	IR	9.99E+00	2.69E+01	6.54E+01	3.17E+03	
2.01	BTEX	Toluene	Y	7.00E+02	5.90E+05	9.43E+02	1.13E-02	4.65E+02	IR	IR	IR	IR	IR	IR	IR	IR	
2.02	BTEX	Ethylbenzene	Y	3.00E+02	1.69E+05	5.71E+02	7.92E-03	2.35E+03	IR	IR	IR	IR	1.03E+05	IR	IR	IR	
2.03	BTEX	Xylenes	Y	5.00E+02	2.00E+05	6.84E+02	1.63E-02	6.48E+03	IR	IR	IR	IR	2.07E+05	IR	IR	IR	
3	PAH	Acenaphthene	Y	2.20E+03	3.80E+03	6.54E+01	2.09E-01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Acenaphthylene	Y	1.00E+01	1.61E+04	2.15E+02	1.76E+00	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Anthracene	Y	1.10E+04	4.50E+01	1.85E+00	1.85E+00	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Benzo(a)anthracene	Y	2.90E-02	3.80E+00	2.15E+00	2.15E+00	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Benzo(a)pyrene	Y	1.00E-02	3.80E+00	3.58E+00	3.58E+00	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Benzo(b)fluoranthene	Y	2.50E-02	2.00E+00	1.53E+00	1.53E+00	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Benzo(g,h,i)perylene	Y	2.50E-02	2.60E-01	7.91E-01	7.91E-01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Benzo(k)fluoranthene	Y	2.50E-02	8.00E-01	8.64E-01	8.64E-01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Chrysene	Y	2.90E+00	2.00E+00	8.03E-01	8.03E-01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Dibenzo(a,h)anthracene	Y	2.90E-03	6.00E-01	8.16E-01	8.16E-01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Fluoranthene	Y	2.00E-01	2.30E+02	3.06E+01	3.06E+01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Fluorene	Y	1.50E+03	1.90E+03	3.93E+01	1.77E+01	2.05E-01	IR	IR	IR	IR	IR	IR	IR	IR	
3	PAH	Indeno[1,2,3-cd]pyrene	Y	2.50E-02	2.00E-01	1.27E-01	1.27E-01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Naphthalene	Y	1.00E+00	1.90E+04	9.13E+01	4.20E+00	1.75E+02	9.44E-01	4.34E+00	1.81E+01	IR	7.63E+01	4.21E+02	1.81E+03	IR	
3	PAH	Phenanthrene	Y	1.00E+01	1.10E+03	4.42E+01	4.42E+01	-	IR	IR	IR	IR	-	-	-	-	
3	PAH	Pyrene	Y	1.10E+03	1.30E+02	1.54E+01	1.54E+01	-	IR	IR	IR	IR	-	-	-	-	
4	METALS	Arsenic	Y	1.00E+01	1.70E+07	8.50E+06	2.19E+01	-	2.16E+01	3.25E+01	5.23E+01	1.15E+03	-	-	-	-	
4	METALS	Boron	Y	1.00E+03	5.50E+08	5.55E+06	1.36E+01	-	3.51E+01	4.26E+01	5.20E+01	1.17E+02	-	-	-	-	
4	METALS	Cadmium	Y	5.00E+00	5.70E+08	5.71E+07	8.75E-01	-	1.75E+00	2.15E+00	2.67E+00	7.24E+00	-	-	-	-	
4	METALS	Chromium III	Y	5.00E+01	6.29E+08	3.02E+09	3.11E+01	-	IR	IR	IR	IR	-	-	-	-	
4	METALS	Cobalt	Y	1.10E+01	1.40E+07	6.31E+05	1.05E+01	-	1.73E+00	2.09E+00	2.57E+00	6.08E+00	-	-	-	-	
4	METALS	Copper	Y	2.00E+03	8.00E+04	8.01E+03	1.06E+02	-	7.01E+02	8.60E+02	1.07E+03	2.90E+03	-	-	-	-	
4	METALS	Lead	Y	2.50E+01	5.00E+01	1.80E+03	1.28E+02	-	IR	IR	IR	IR	-	-	-	-	
4	METALS	Molybdenum	Y	2.00E+01	4.90E+05	9.85E+03	2.94E-01	-	1.40E+00	1.70E+00	2.07E+00	4.70E+00	-	-	-	-	
4	METALS	Nickel	Y	2.00E+01	1.90E+05	9.50E+04	3.75E+01	-	4.33E+01	6.50E+01	1.05E+02	2.31E+03	-	-	-	-	
4	METALS	Tin	Y	2.20E+04	1.27E+01	3.18E+00	3.18E+00	-	IR	IR	IR	IR	-	-	-	-	
4	METALS	Zinc	Y	5.00E+03	1.62E+07	6.17E+05	2.30E+02	-	6.63E+02	8.04E+02	9.86E+02	2.28E+03	-	-	-	-	



URS site-specific controlled waters risk assessment tool

designed on the principles and methodologies contained within EA Remedial Targets Methodology, 2006



MODEL INPUTS SUMMARY

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Version: CWRA, version 7.292min

Date: 13/07/2011

CONTROLLED WATERS RISK ASSESSMENT
PROJECT RECORD

Project Record

Navigation Page

Project Title

Project Site
Project Number
Project Description
Revision Number
Proposed or Current End-Use
City
Region
Country
URS Office
Industry Sector
Service Code
SF330 Code
Project Budget
QRA Budget
Currency

Country Criteria

Shell Hitchin

Service Station QRA
Rev 0

Hitchin
South East England
England
Wimbledon
1115-Downstream: Refining/Marketing
100-Planning, Consulting & Permitting
R10-Risk Analysis

£

England / Wales / NI

Filename/location stored

C:\Users\emmpea\1 active shell work to save to man
jobs\hitchin\CWRA7.292_MASTER_@RISK_SHELL - HITCHIN -
Vert.xls]Project Record

Assessment completed by
Date created
Date modified
QC'd by
QA'd by

Stage 1 Assessment
Stage 2 Assessment

Navigation Page

SUMMARY OF RISK ASSESSMENT OBJECTIVE

Soil and groundwater exceedances have been identified above the Stage 2 GAC. A DQRA is required to further investigate these risks.

