

Former Gasworks, Dock Road, Limerick

Quarterly Groundwater Monitoring Report – Annual Summary 2009/10

November 2010

For Bord Gais

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Mouchel has used reasonable skill, care and diligence in the design and interpretation of the ground investigation, however, the inherent variability of ground conditions allows only definition of the actual conditions at the location and depths of exploratory holes and samples/tests therefrom, while at intermediate locations conditions can only be inferred.

New information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission

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1 Introduction

Mouchel were appointed by Bord Gais Eireann, on 31st March 2009, to provide engineering consultancy services for the assessment and remediation of the former gasworks site, on Dock Road, Limerick, Ireland. Mouchel (formerly known as Mouchel Parkman) have had an involvement with the site extending over a period of some nine years having previously undertaken ground investigations at the site.

This report forms part of the larger scheme of works currently being undertaken on the site, Mouchel have been appointed to conduct groundwater quality monitoring programme to establish a baseline data-set for the site prior to the proposed remediation works.

This report presents the results of the fifth groundwater monitoring visit and provides a comparison of the groundwater quality with previous monitoring visits undertaken throughout the past year (December 2009 – October 2010).

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2 Investigation Methodology

2.1 Design Rationale and Scope

Five groundwater monitoring visits have been undertaken so far as part of the additional groundwater monitoring programme.

Visit	Date	Rationale
GW Visit 1	10 th –11 th December 2009	End of SI works
GW Visit 2	14 th –15 th January 2010	Quarterly visit 1
GW Visit 3	21 st –22 nd April 2010	Quarterly visit 2
GW Visit 4	15 th –16 th July 2010	Quarterly visit 3
GW Visit 5	20th – 21st October 2010	Quarterly visit 4

2.2 Summary of fieldwork

The main site characterisation works were undertaken between the 4th and 27th November 2009. The investigation was conducted by ISGL, who sub-contracted Boart Longyear to undertake the sonic drilling. Mouchel were responsible for monitoring the works.

The investigation was carried out in general accordance with the following standards:

- BS5930:1999 Code of practice for site investigations;
- BS10175:2001 Code of Practice for the Investigation of Potentially Contaminated Sites;
- Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination, 2001 (Environment Agency).

The details of the characterisation are presented below. The site was divided into distinct cells using a 10m x 10m grid referenced alpha-numerically; a borehole was proposed for each cell.

The exploratory hole location plan is displayed as Figure 1 (Drawing 1021927/R02/001), which also shows the alpha-numeric grid referenced cells.

Activity	Dates Undertaken	Exploratory Hole Reference	Maximum Depth
Sonic drilled boreholes	4 th November – 24 th November	132 locations referenced by alpha-numeric grid cell reference (A1, A2...)	12m bgl
Window sample holes	25 th November – 27 th November	13 locations (C12AWS, C12BWS, D12WS, E12WS, F9WS, F10WS, F12WS, L11WS, L12WS, L1WS, M1WS, N1WS, N2WS)	4.0m bgl
Trial pits	9 th November – 10 th November	3 locations (TP1, TP2, TP3)	5.0m bgl
Soak away pits	9 th November	1 location ("soakaway")	2.1m bgl

No access could be gained to the AGI site or the Shannon Foynes Port Company area, therefore no holes were positioned in these locations.

As part of the characterisation works 21 locations were installed with groundwater monitoring wells, 8 had response zones positioned in the made ground, 13 installations had response zones positioned in the limestone bedrock. The table below shows the installation details at each location.

Location	Response zone depth (m bgl)	Response zone strata
A3	3.0 - 4.5	Limestone Bedrock
A4	2.5 - 4.5	Limestone Bedrock
A11	1.9 - 2.9	Limestone Bedrock
B8	1.0 - 4.5	made ground
C7	6.0 - 7.5	Limestone Bedrock
C11	1.0 - 2.5	natural / possible made ground
D1	6.0 - 7.5	Limestone Bedrock
D5	1.0 - 3.0	made ground
E8	1.0 - 6.0	made ground

Location	Response zone depth (m bgl)	Response zone strata
F11	3.5 - 5.0	Limestone Bedrock
G2	10.0 - 11.5	Limestone Bedrock
G3	1.0 - 9.0	made ground
G4	10.0 - 12.0	Limestone Bedrock
G5	1.0 - 9.0	made ground
G8	1.0 - 2.5	Limestone Bedrock
H12	3.0 - 4.5	Limestone Bedrock
J10	1.0 - 3.0	Limestone Bedrock
K1	1.0 - 4.5	made ground
K5	1.0 - 6.0	made ground
L7	2.0 - 3.5	Limestone Bedrock
M3	5.0 - 6.5	Limestone Bedrock

2.3 Chemical Laboratory Testing

All 21 monitoring wells, installed during the 2009 site investigation, were dipped with an ATEX Dual phase dipmeter to establish the water depth and presence of Non Aqueous Phase Layers (NAPLs). Any visual and olfactory evidence of contamination was noted.

During all monitoring visits undertaken to date no water samples could be obtained from L7 as it did not contain a sufficient depth of water to collect a sample. During the 5th visit, B8 had been covered with a stockpile of waste spoil and so no sample could be obtained on that occasion.

All collected samples were stored in airtight containers suitable for the analysis to be undertaken. Containers were appropriately labelled, and transported under completed chain of custody documentation to ALcontrol laboratories, who are appropriately accredited for the works required and are an approved supplier under the Mouchel Quality Management System.

All samples were analysed for a 'Limerick Suite' of determinands. VOC analysis was conducted on samples to give a spatial coverage of the site and down and up gradient of the suspected groundwater flow direction. A summary of the analysis undertaken is listed overleaf.

Suite Reference	Analysis Suite	No. samples scheduled
Limerick Suite	Arsenic, cadmium, chromium, copper, lead, mercury, selenium, zinc, cyanide, sulphate, sulphide, ammoniacal nitrogen, speciated phenols, Total Petroleum Hydrocarbons criteria working group split (TPH CWG) (including BTEX and MTBE), Polyaromatic Hydrocarbons (PAHs)	20 (first visit) 20 (second visit) 20 (third visit) 20 (fourth visit) 20 (fifth visit) 100 (total)
VOCs	VOCs	11 (first visit) 10 (second visit) 11 (third visit) 11 (fourth visit) 10 (fifth visit) 53 (total)

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3 Hydrological Site Model

3.1 Groundwater source and flow direction

The site specific hydrogeology is discussed in depth in the 2010 Quantitative Risk Assessment, Options Appraisal and Remediation Report (QRA report), reference 1021927/R/03. The findings of the QRA report have been reviewed following completion of a years' worth of groundwater monitoring data.

The results indicate that the groundwater levels and flow direction are generally consistent all year round. The results to date suggest that there may be two sources of groundwater entering the site.

- Source 1 – Originating from the southern corner of the site from within the rock outcrop (picked up by monitoring well J10).
- Source 2 – Originating from the south east section where water is draining into the site (picked up by monitoring well K5).

These two sources seem to be partially split by the bedrock which is located at the surface around cells I10, J09, K08, K09, K10, L08, L09 and L10.

The water appears to accumulate in the quarry area and flow towards the south west (A11 / corner of Dock Road and St. Alphonsus Street) and to the west (A3 – A4 / Dock Road). Flow is therefore in an approximately westerly direction as would be expected close to the river (the angle of flow will be to the river (west north west) but with a vector in the direction of river flow, i.e. westerly).

The results indicated that location F10 was significantly influenced by heavy downpours during the monitoring. Heavy rainfall was encountered on the fourth visit (15th-16th July) which caused the water level in F10 to rise quickly to ground level.

3.2 Groundwater levels

The results of the groundwater and DNAPL levels are presented overleaf (the DNAPL depths are displayed in brackets). Groundwater contour plots for all five visits undertaken to date are presented as Appendix A.

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BH No.	Response zone strata	* Response zone depth (m Malin Head Datum) (MHD)	Water level m MHD (DNAPL level m MHD)					Annual average
			10 th -11 th Dec 2009	14 th -15 th Jan 2010	21 st -22 nd April 2010	15 th -16 th July 2010	20 th -21 st Oct 2010	
A3	Limestone bedrock	1.16 – -0.34	2.80	2.75	2.70	2.61	2.63	2.70
A4	Limestone bedrock	1.63 – -0.37	2.73	2.67	2.63	2.61	2.62	2.65
A11	Limestone bedrock	1.84 – 0.84	2.70	2.68	2.59	2.63	2.58	2.64
B8	Made ground	4.49 – 0.99	3.69 (2.24)	3.64 (2.79)	3.65 (2.85)	3.62 (2.77)	not accessible	3.65 (2.66)
C7	Limestone bedrock	-0.45 – -1.95	4.00 (-1.98)	3.75 (-1.17)	3.68 (-1.05)	3.75 (-1.05)	3.58 (-0.85)	3.75 (-1.22)
C11	Natural clay	3.36 – 1.86	3.11	3.07	3.04	3.07	3.04	3.07
D1	Limestone bedrock	1.06 – -0.44	4.26	4.06	4.01 (1.81)	4.03 (1.81)	3.96 (2.86)	4.06 (2.16)
D5	Made ground	5.8 – 3.80	5.30	5.20	5.10	5.21	5.02	5.17
E8	Made ground	4.84 – -0.16	5.04	4.84	4.78	4.88	4.79	4.87
F11	Limestone bedrock	2.72 – 1.22	5.10	5.22	5.12	6.22	5.09	5.35
G2	Limestone bedrock	-2.01 – -3.51	5.20	4.84	4.81	4.69	4.69	4.85
G3	Made ground	6.92 – -1.08	5.22	4.87	4.84	4.69	4.72	4.87
G4	Limestone bedrock	-2.55 – -4.55	5.15 (-1.55)	4.85 (-2.15)	4.88 (-2.33)	4.68 (-1.42)	4.72 (-2.17)	4.86 (-1.92)
G5	Made ground	6.24 – -1.76	5.24	4.90	4.84	4.71	4.71	4.88
G8	Limestone bedrock	6.28 – 4.78	6.94	6.95	6.66	6.85	6.56	6.79
H12	Limestone bedrock	3.76 – 2.26	5.71	5.72	5.68	5.72	5.62	5.69
J10	Limestone bedrock	5.95 – 3.95	6.87	6.85	6.25	6.85	6.38	6.64
K1	Made ground	6.96 – 3.46	6.04	5.90	5.70	5.90	5.77	5.86
K5	Made ground	7.64 – 2.64	7.87	7.67	7.64	7.84	7.69	7.74
L7	Limestone bedrock	6.65 – 5.15	<5.85**	<5.85**	5.88	<5.85**	<5.85**	<5.85
M3	Limestone bedrock	3.23 – 1.73	5.44	5.06	5.08	4.80	4.95	5.07

*Depth estimated from installation details from 2010 QRA report (1021927/R/03).

**Installation was dry during monitoring visit; the depth stated is at the base of the monitoring well.

3.3 Hydraulic gradient estimates

The results equate to the following estimates of hydraulic gradient across the site:

GW Visit 1

G8 – E8 (approximately 1.9m / 13.5m) = 0.141

G3 – A3 (approximately 2.42m / 59.9m) = 0.040

F11 – A11 (approximately 2.37m / 47.15m) = 0.050

Average across the three = 0.077

GW Visit 2

G8 – E8 (approximately 2.11m / 13.5m) = 0.156

G3 – A3 (approximately 2.12m / 59.9m) = 0.035

F11 – A11 (approximately 2.54m / 47.15m) = 0.054

Average across the three = 0.075

GW Visit 3

G8 – E8 (approximately 1.88m / 13.5m) = 0.139

G3 – A3 (approximately 2.14m / 59.9m) = 0.038

F11 – A11 (approximately 2.53m / 47.15m) = 0.054

Average across the three = 0.077

GW Visit 4

G8 – E8 (approximately 1.97m / 13.5m) = 0.146

G3 – A3 (approximately 2.08m / 59.9m) = 0.035

F11 – A11 (approximately 3.59m / 47.15m) = 0.076

Average across the three = 0.086

GW Visit 5

G8 – E8 (approximately 1.77m / 13.5m) = 0.131

G3 – A3 (approximately 2.09m / 59.9m) = 0.035

F11 – A11 (approximately 2.51m / 47.15m) = 0.053

Average across the three = 0.073

The groundwater level across the site appears to have fallen by around 30-40cm since the first groundwater monitoring visit. This is most likely attributable

to seasonal variation and the high volume of rainfall experienced towards the end of 2009. Despite the slight change in water level the hydraulic gradient has remained fairly constant throughout the year. The hydraulic gradient was significantly greater in the measurement from F11 – A11 in the fourth visit. However, this was due to heavy rainfall during the monitoring of F11 which temporarily increased the water level.

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4 Chemical distribution

4.1 Visual, olfactory and DNAPL thickness results

Whilst undertaking the groundwater monitoring programme, samples collected were inspected for any visual and olfactory evidence of contamination. This ranged from various odours, hydrocarbon sheens and the presence of DNAPL. These results have been collected from the five visits undertaken to date and have been summarised in the table below

Visit	DNAPL detected	Hydrocarbon sheen / odour	Anaerobic / hydrogen sulphide odour	No evidence of significant contamination
Visit 1	B8, C7, G4,	A3, A4, A11, B8, C7, C11, D1, G4, G5, K5	G2	D5, E8, F11, G3, G8, H12, K1, J10, L7, M3
Visit 2	B8, C7, G4,	B8, C7, G11, D1, G4, G5, K5	D1, G2	A3, A4, A11, D5, E8, F11, G3, G8, H12, K1, J10, L7, M3,
Visit 3	B8, C7, D1, G4, K5	A3, A4, B8, C7, C11, D1, D5, E8, F11, G4, G5, H12, K5,	D1, G2, G3	A11, G8, J10, K1, L7, M3,
Visit 4	B8, C7, D1, G4, K5	B8, C7, D1, E8, G4, G5, H12, K5	D1, G2	A3, A4, A11, C11, D5, F11, G3, G8, J10, K1, L7, M3,
Visit 5	D1, C7, G4, K5	A3, A4, C7, C11, D1, E8, G2, G3, G4, G5, G8, J10, K5,	F11, G2, H12,	A11, D5, K1, L7, M3,

An anaerobic odour was regularly noted from locations positioned within the former quarry area (D1 and G2).

A hydrocarbon sheen / odour was recorded intermittently along the site boundary, down flow of the predicted groundwater direction (A3, A4 and A11).

A sheen / odour was regularly noted around the former gasholders and the quarry area (B8, C7, D1, G4, G5 and K5). During visit 4 and visit 5 an orange/green colour accompanied with a strong organic / ammoniaical odour was recorded in E8.

DNAPL was recorded in B8, C7 and G4 on all visits, and in D1 and K5 on the 3rd, 4th and 5th visits. DNAPL was encountered around the former gasholders and within the deeper parts of the quarry where response zones were placed in the Limestone bedrock.

Visually the least contaminated samples were generally obtained from the southern sections of the site where the bedrock is closest to the surface (L7, M3 and K1).

4.2 Chemical results

The groundwater testing methodology and legislation is discussed in full in the 2010 QRA report (1021927/R/03). This report looks at the results obtained in the fifth groundwater monitoring visit and how they relate to the previous results. Due to the proximity of the River Shannon, and the limestone aquifer, Tier 1 groundwater screening has been carried out against Environmental Quality Standards (EQS) and Drinking Water Standards (DWS).

Generally the chemical information ties in with the visual and olfactory evidence. The locations that appeared to be the most contaminated recorded the highest concentrations of contaminants. Concentrations of contaminants varied between visits, there did not appear to be a clear difference between contaminant concentrations in the 3rd and 5th visits against concentrations in the other visits. This indicates that the differences in the visual and olfactory dataset are probably due to adverse weather conditions (rain and high winds) suppressing the odours from the various locations.

4.2.1 EQS – 5th visit results

The chemical results were screened against relevant EQS. Site wide concentrations of selenium, ammoniaical nitrogen, phenols, cyanide, TPH and PAH were detected above the EQS screening value. Several samples failed the EQS screen for arsenic, sulphate, BTEX, styrene and trichloroethene.

4.2.2 DWS – 5th visit results

The chemical results were screened against relevant DWS. Site wide concentrations of ammonium, phenols, cyanide, GRO, TPH and PAH failed the

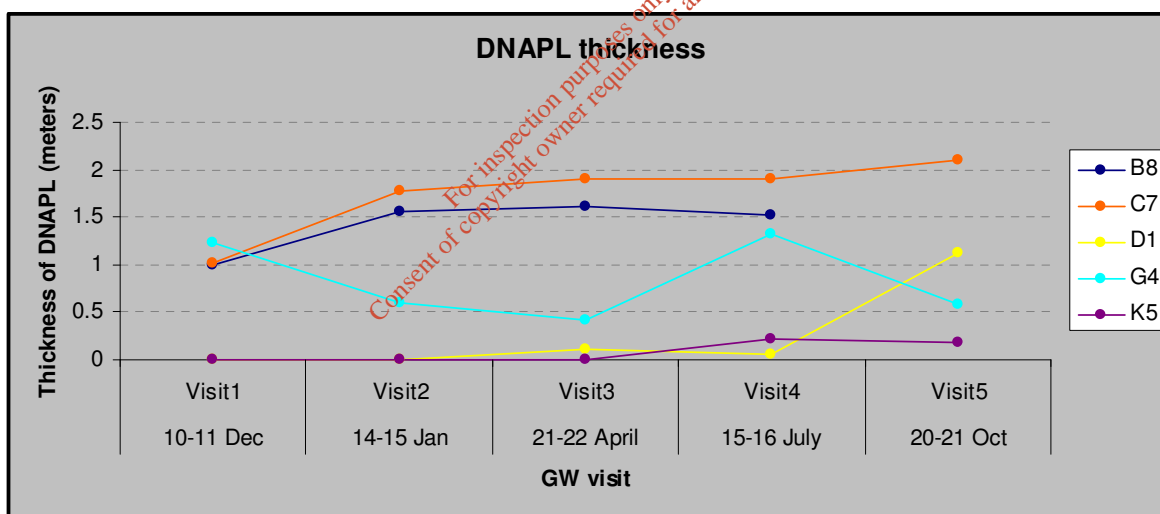
DWS screen. Several samples failed the DWS screen for arsenic, selenium, sulphate, BTEX, styrene and trichloroethene.

Chemical results from all five visits are presented as Appendix C. EQS and DWS screening tables from all five visits are presented as Appendix D. The 2003 screening results have also been included for comparison.

4.3 Seasonal pattern

The DNAPL thickness and chemical analytical data from the five visits was compared to assess any potential temporal changes and identify any seasonal patterns.

DNAPL was detected in five locations during the monitoring period. The graph below displays how the thickness in DNAPL has varied across the five visits in each location.



To further assess how contaminant concentrations changed over the monitoring period several graphs were produced and are presented as Appendix B. The graphs indicate that although there is some degree of variation there is no consistent increase or decline in contaminant concentrations over time. The only exception was K5 for TPH where concentrations in the 3rd, 4th and 5th visits were significantly higher than the 1st and 2nd visits.

5 Conclusions

5.1 Hydrology

The results indicate that the groundwater levels and flow direction are generally consistent all year round. The results to date suggest that there may be two sources of groundwater entering the site along the southern boundary.

Groundwater flow appears to be in a westerly direction, as would be expected close to the river. The angle of flow will be to the river (west north west) but with a vector in the direction of river flow, (i.e. westerly).

The average results of the five visits to date equate to an estimated hydraulic gradient across the site of 0.0776.

5.2 Chemical distribution

5.2.1 *Visual, olfactory and DNAPL thickness results*

Visual and olfactory evidence of contamination has varied slightly throughout the monitoring period. During visits 3 and 5 there appeared to be more evidence of contamination. During visits 1, 2 and 4 heavy rainfall was encountered around the time the monitoring was undertaken. This rainfall may have had an effect on the apparent contamination status by suppressing any odours.

The DNAPL thickness in B8 and C7 have steadily increased since the first monitoring period. Thicknesses in B8 and C7 now appear to have stabilised at around 1.5 and 2.0m respectively. The DNAPL thickness in G4 has varied considerably between visits ranging from around 0.5m to 1.5m. In K5 and D1, thicknesses have remained less than 0.3m, except in the 5th visit where the DNAPL thickness in D1 had increased to around 1m.

5.2.2 *Chemical results*

Several contaminants were recorded in concentrations above the EQS and DWS. A Tier 3 Groundwater QRA was undertaken in the QRA report which concluded that although a theoretical risk exists in respect to the River Shannon, this is unlikely to be realised due to the timescales required for contaminants to flow to the receptor and the presence of the wet dock and graving docks (with significant walls) impeding flow. It is also noted that

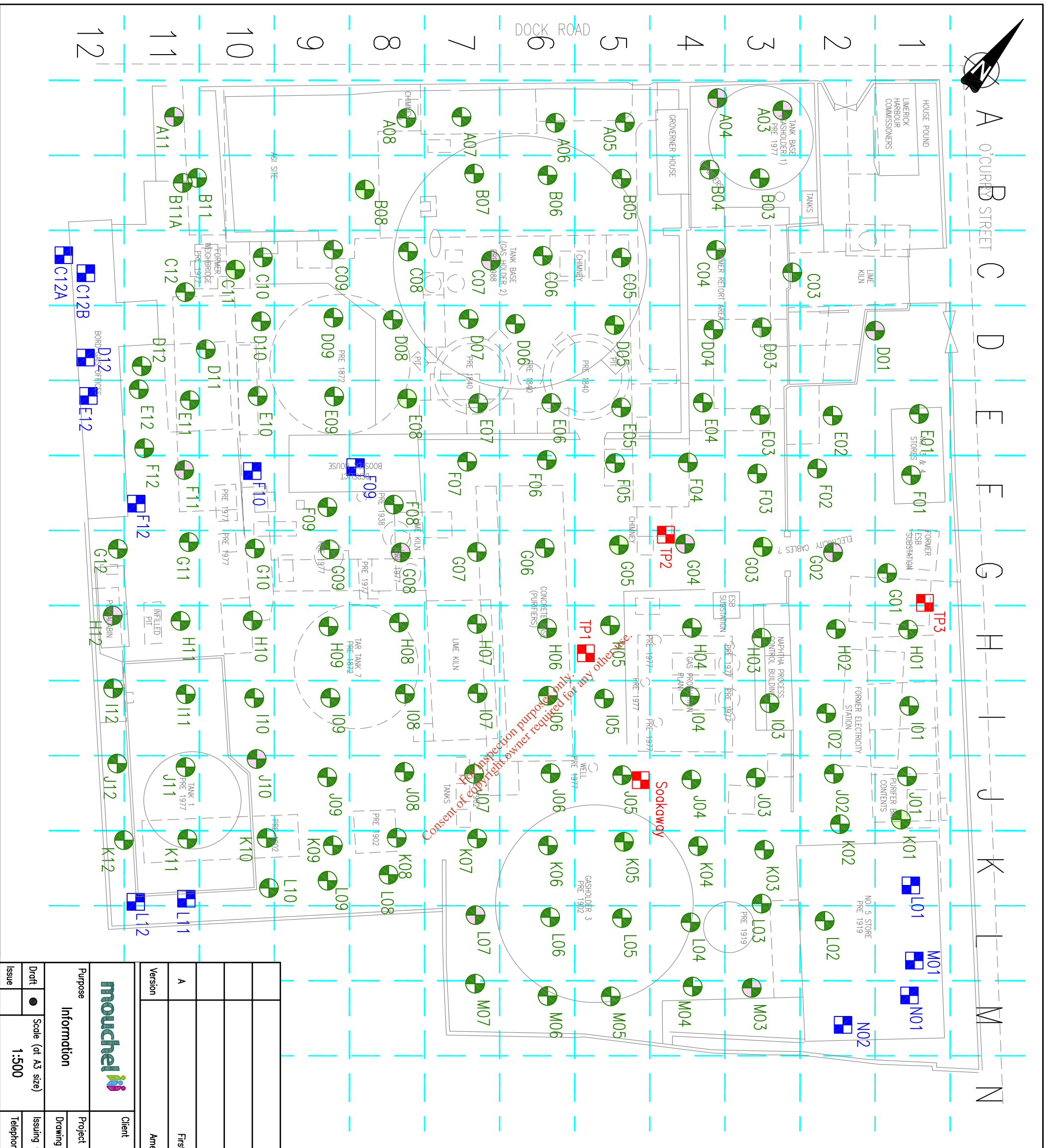
cohesive alluvial deposits may be present in the vicinity of the river further impeding any groundwater flow directly into the river.

It is concluded that the limestone aquifer is not productive due to the brackish nature of the groundwater and the thin water bearing stratum (in the near surface weathered zone). There are also no abstractions within the vicinity of the site.

5.2.3 *Seasonal Pattern*

The chemical results to date have been generally consistent throughout the monitoring period. Fluctuations in the dataset were recorded however there was no apparent increase or decrease in the contamination status throughout the monitoring period.

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Key

Approximate Location of Former Structure

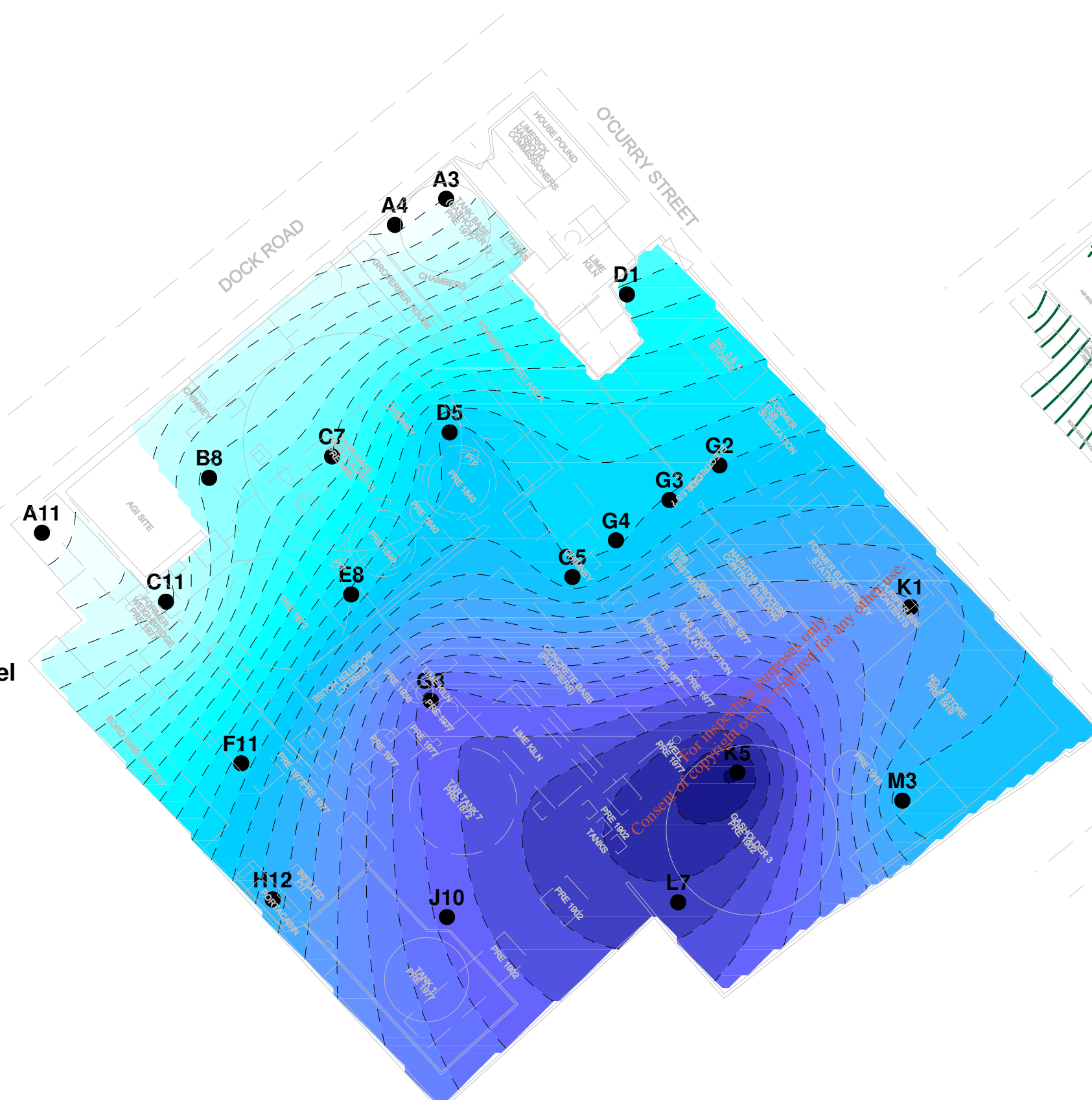
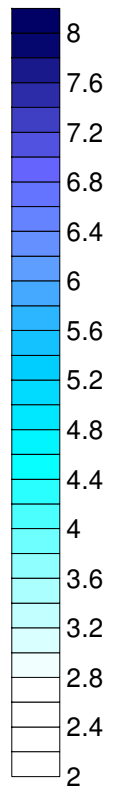
2009 Site Investigation

- Sonic Drilled Boreholes
- 10m Grid
- Window Sample Location
- Trial Pit
- Installation in made ground
- Installation in limestone rock

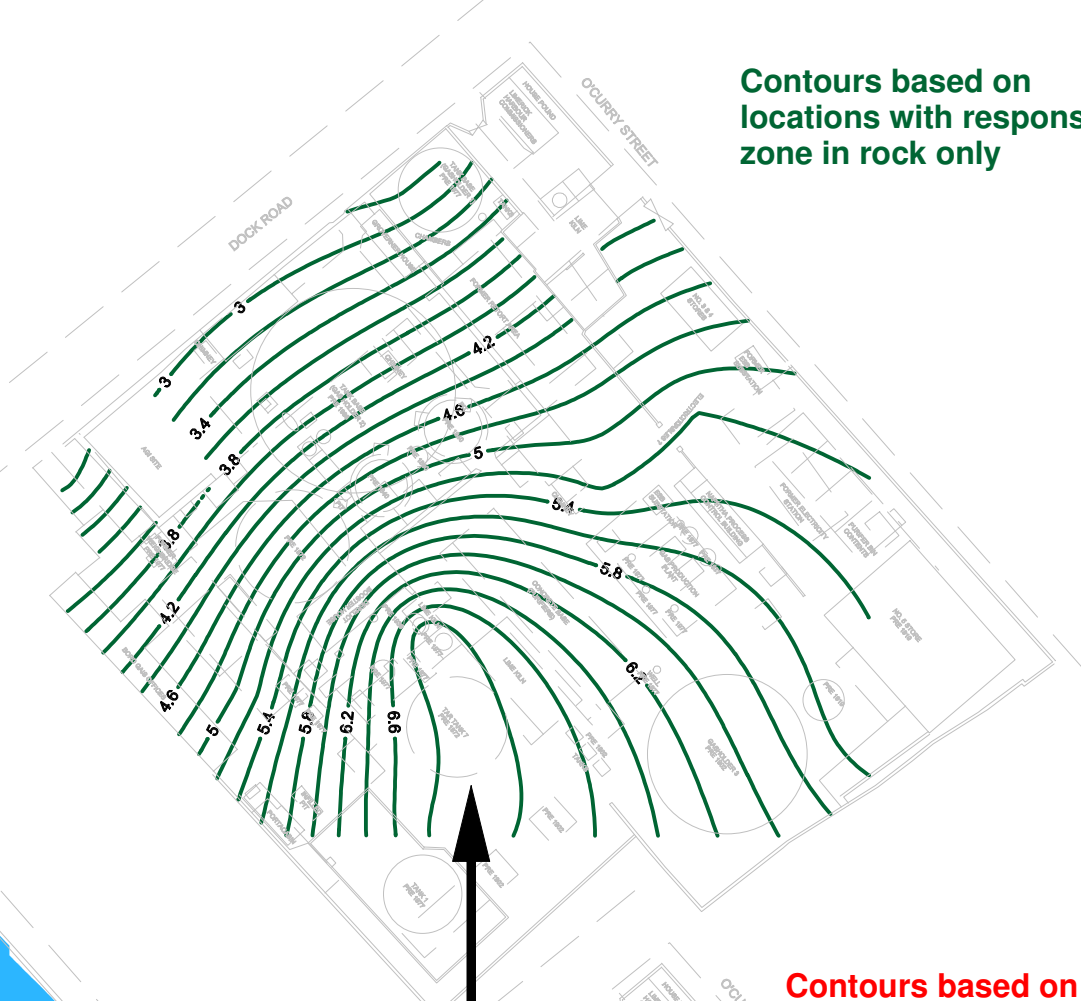
mouchel		BORD GÁIS	
Client		Limerick Gasworks	
Project		Figure 1 2009 SI - Exploratory Hole Location Plan	
Drawing Title		Issuing Office	
Version		Telephone	
Amendment		0151 356 5555	
First Issue		Drawing number	
Originated by and date		1021927/R02/001	
Checked by and date		Version	
Approved by and date		A	
Purpose		Information	
Scale (at A3 size)		1:500	
Draft		●	
Issue			



Groundwater Level
(m MHD)

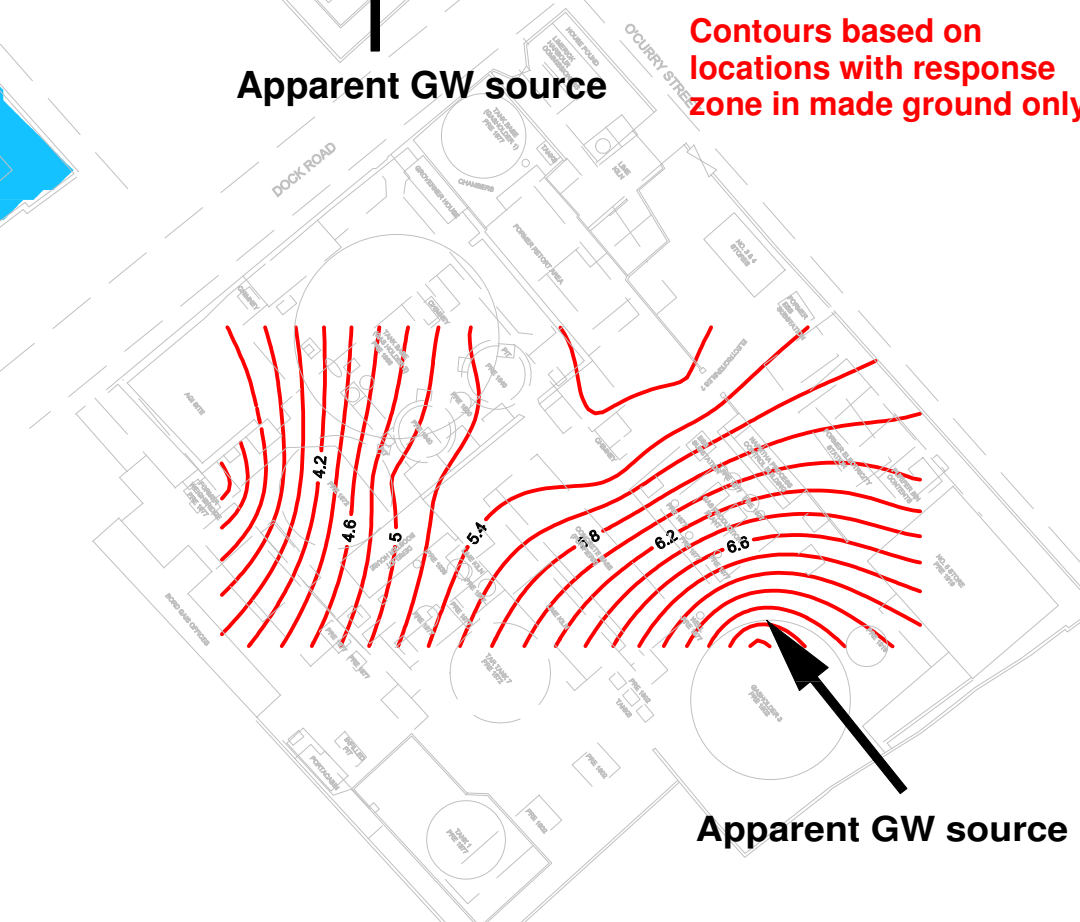


Contours based on
locations with response
zone in rock only



Apparent GW source

Contours based on
locations with response
zone in made ground only



Apparent GW source

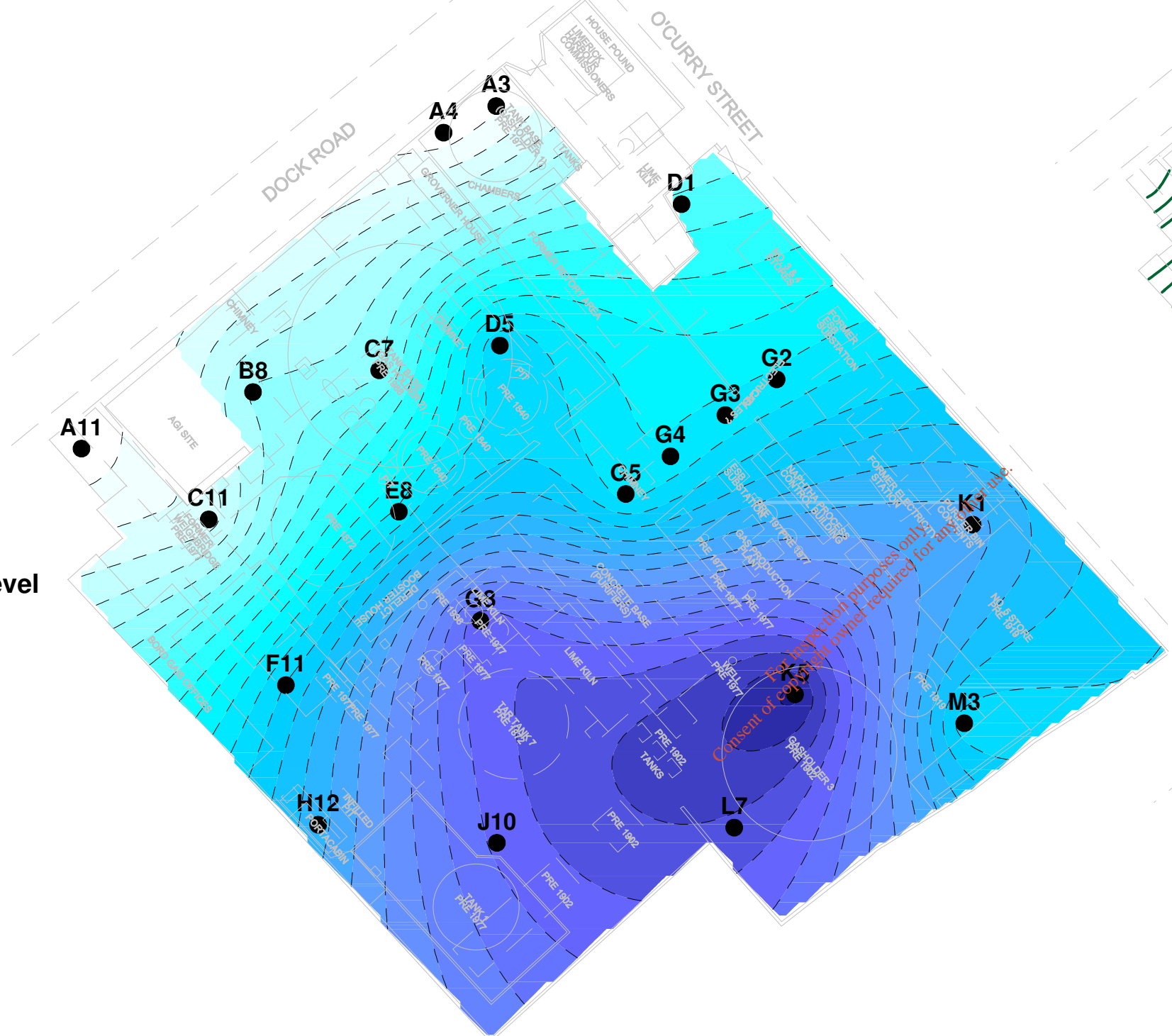
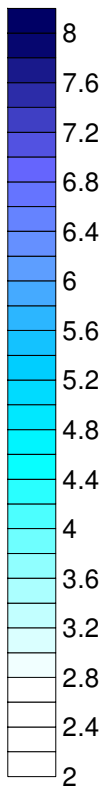
These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 10-11/12/2009. Contours were plotted using the Kriging method based upon a 1m x 1m grid

	Client	Bord Gais		
	Project	Limerick Gasworks		
Purpose	Drawing Title	Figure 6a) Groundwater levels 10-11/12/2009		
Information		Issuing Office	Drawing Number	Version
Scale	Not to scale	Ellesmere Port	102192/R03/006a	A
		Telephone	0151 356 5555	

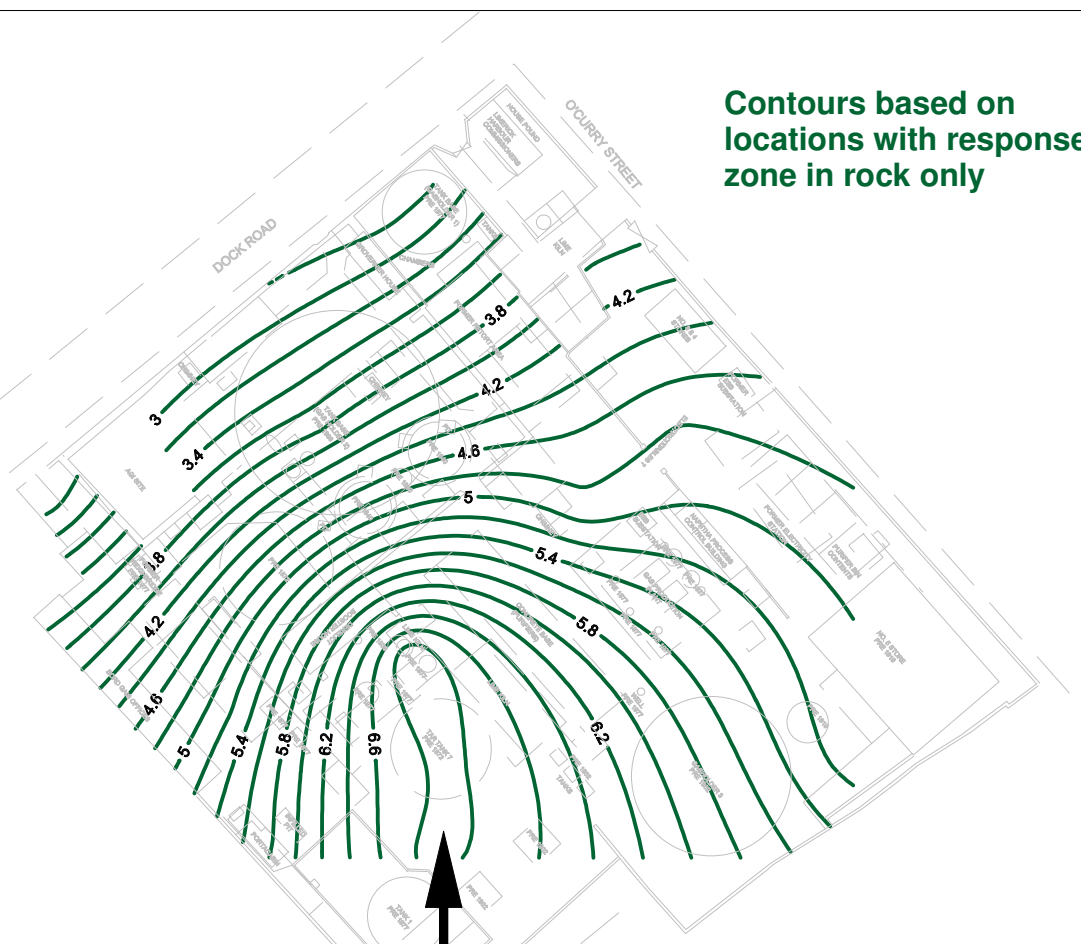
A	First Issue		DM	SD	DW
Version	Amendment	Originated	Checked	Approved	



Groundwater Level
(m MHD)

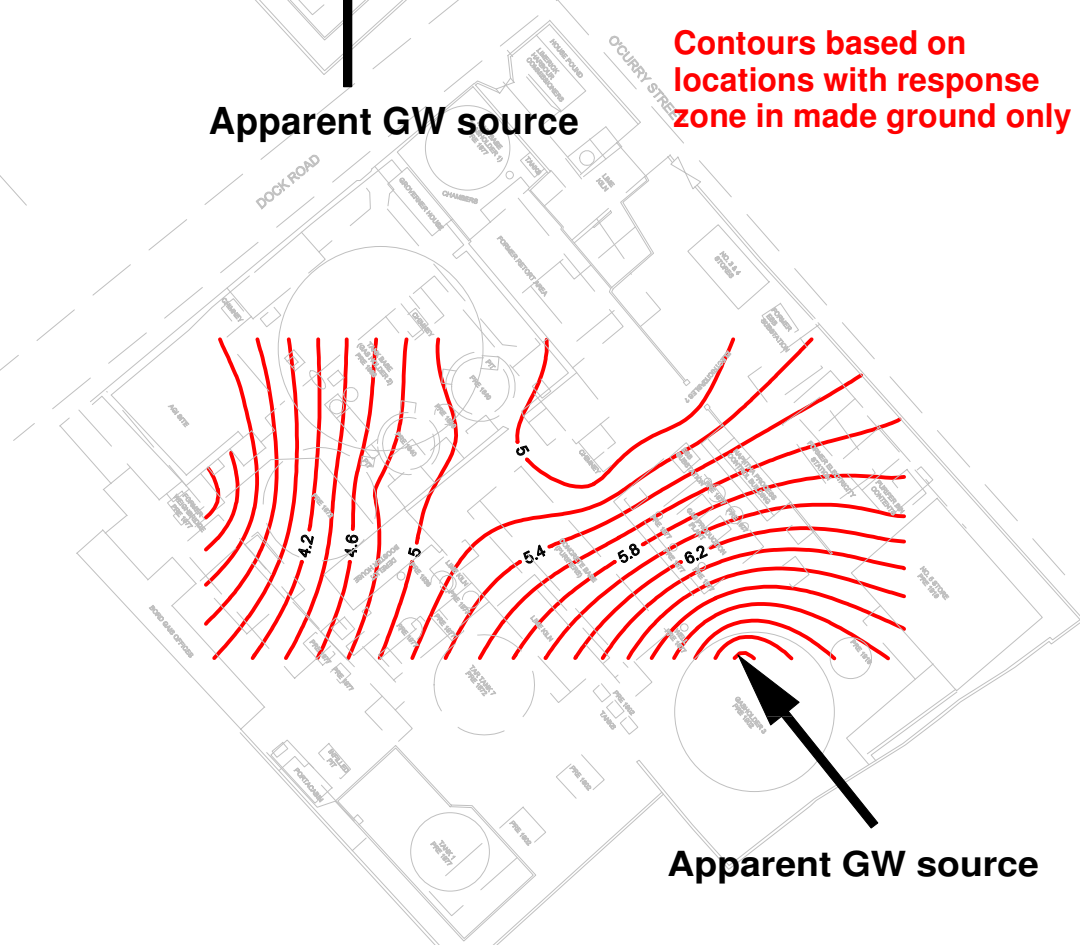


Contours based on
locations with response
zone in rock only



Apparent GW source

Contours based on
locations with response
zone in made ground only



Apparent GW source

These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 14-15/01/2009. Contours were plotted using the Kriging method based upon a 1m x 1m grid

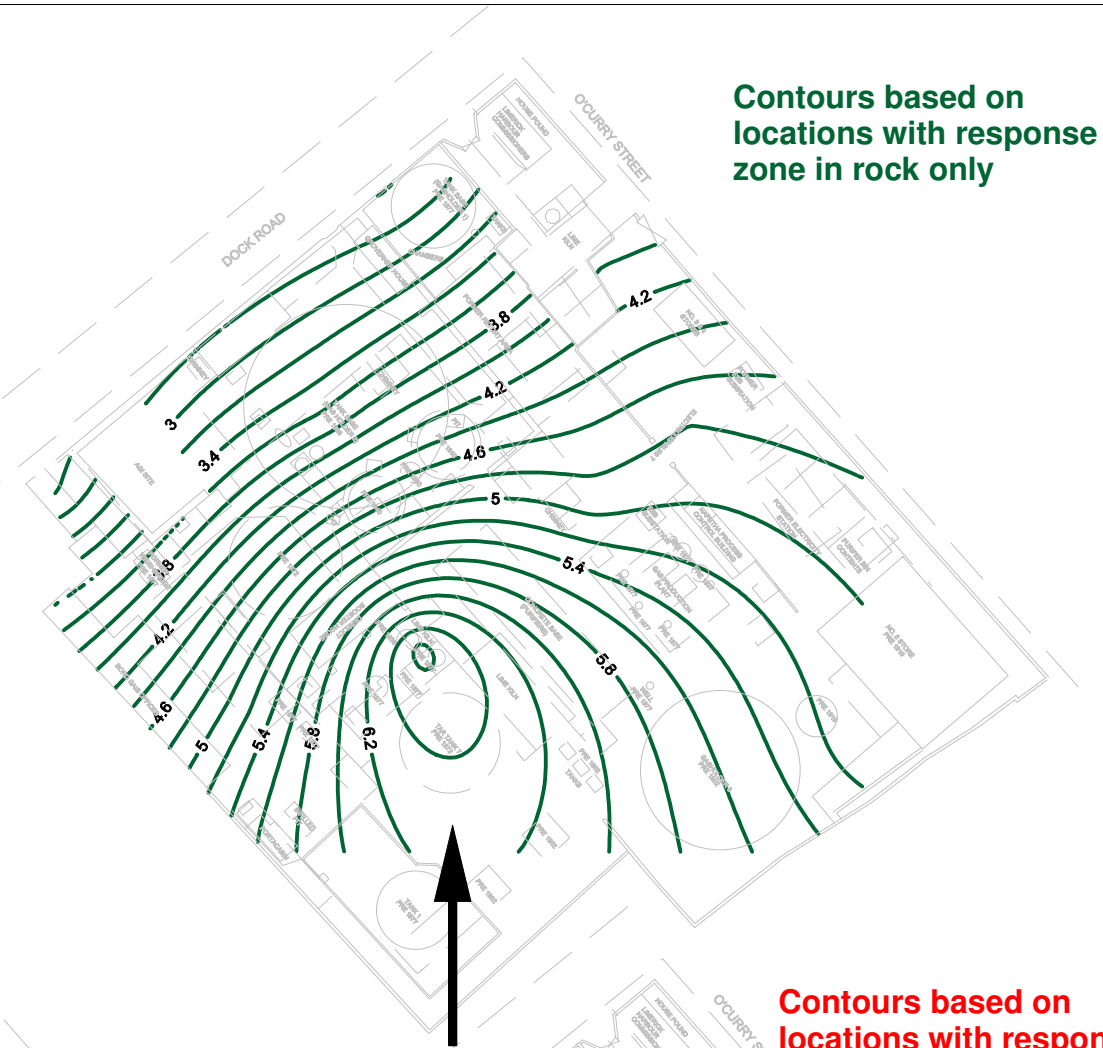
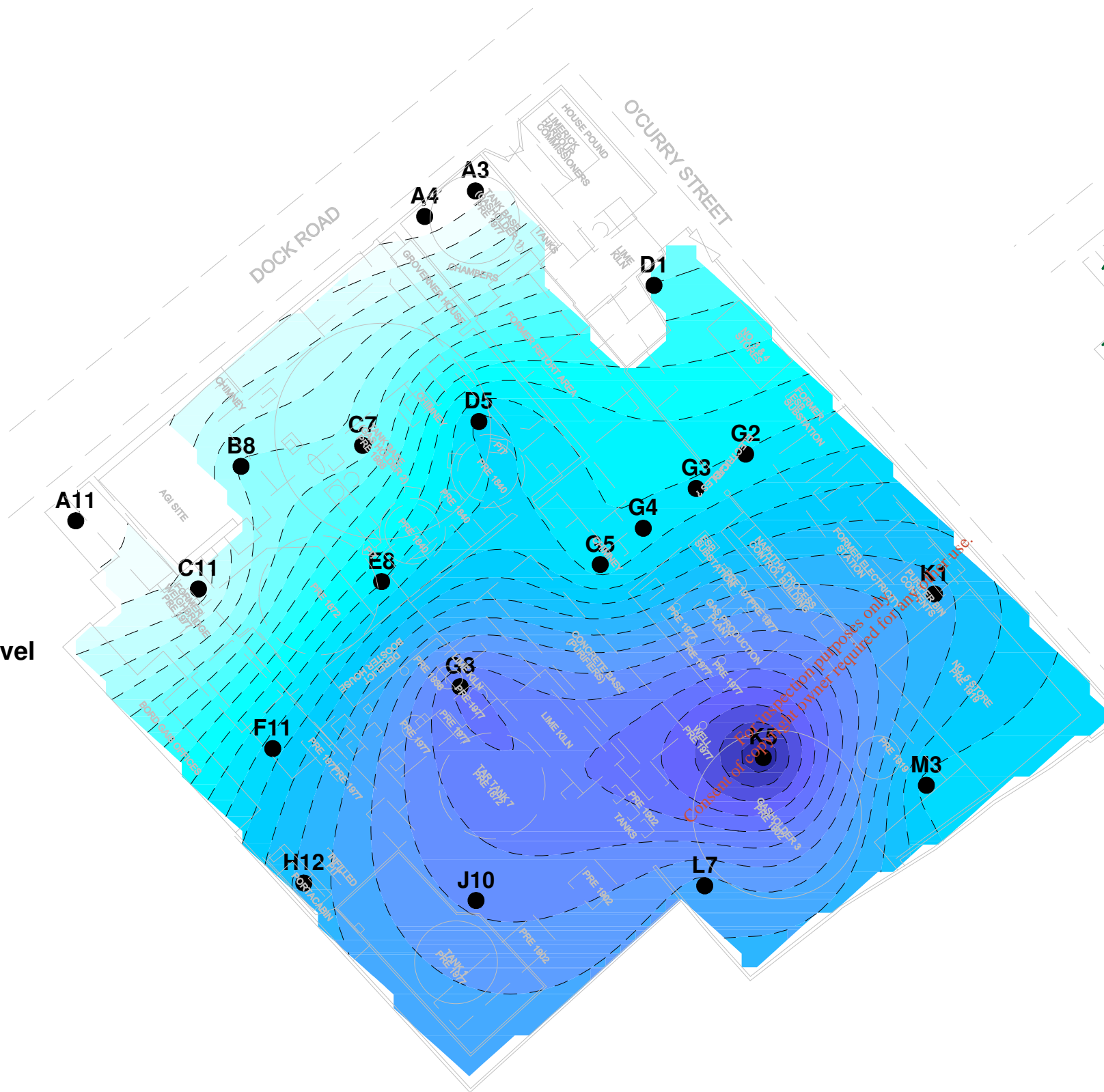
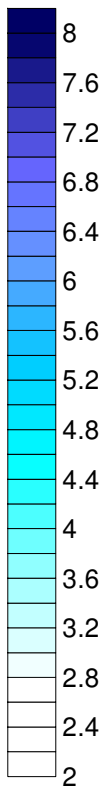


Client	Bord Gais		
Project	Limerick Gasworks		
Drawing Title	Figure 6b) Groundwater levels 14-15/01/2010		
Issuing Office	Ellesmere Port	Drawing Number	1021927/R03/006b
Telephone	0151 356 5555	Version	A

A	First Issue	DM	SD	DW
Version	Amendment	Originated	Checked	Approved

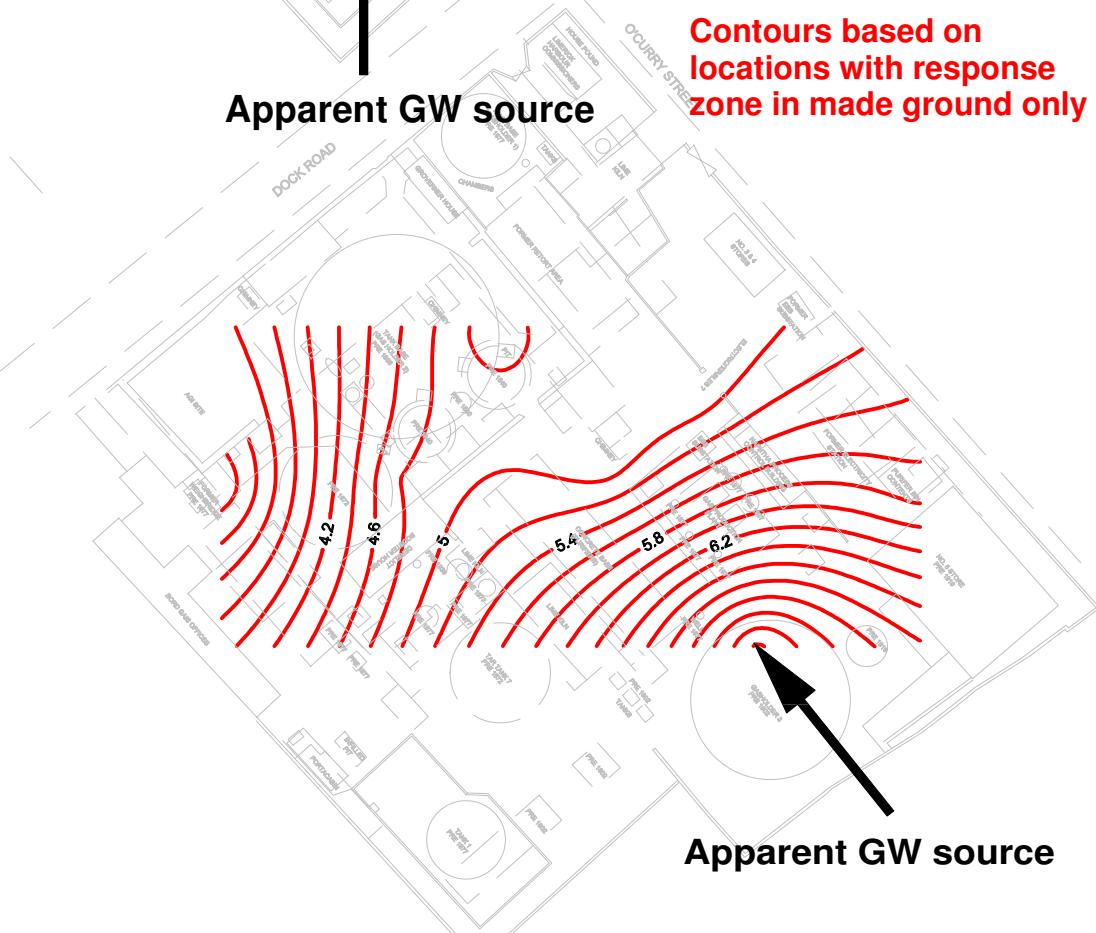


Groundwater Level
(m MHD)



Contours based on
locations with response
zone in rock only

Apparent GW source



Contours based on
locations with response
zone in made ground only

Apparent GW source

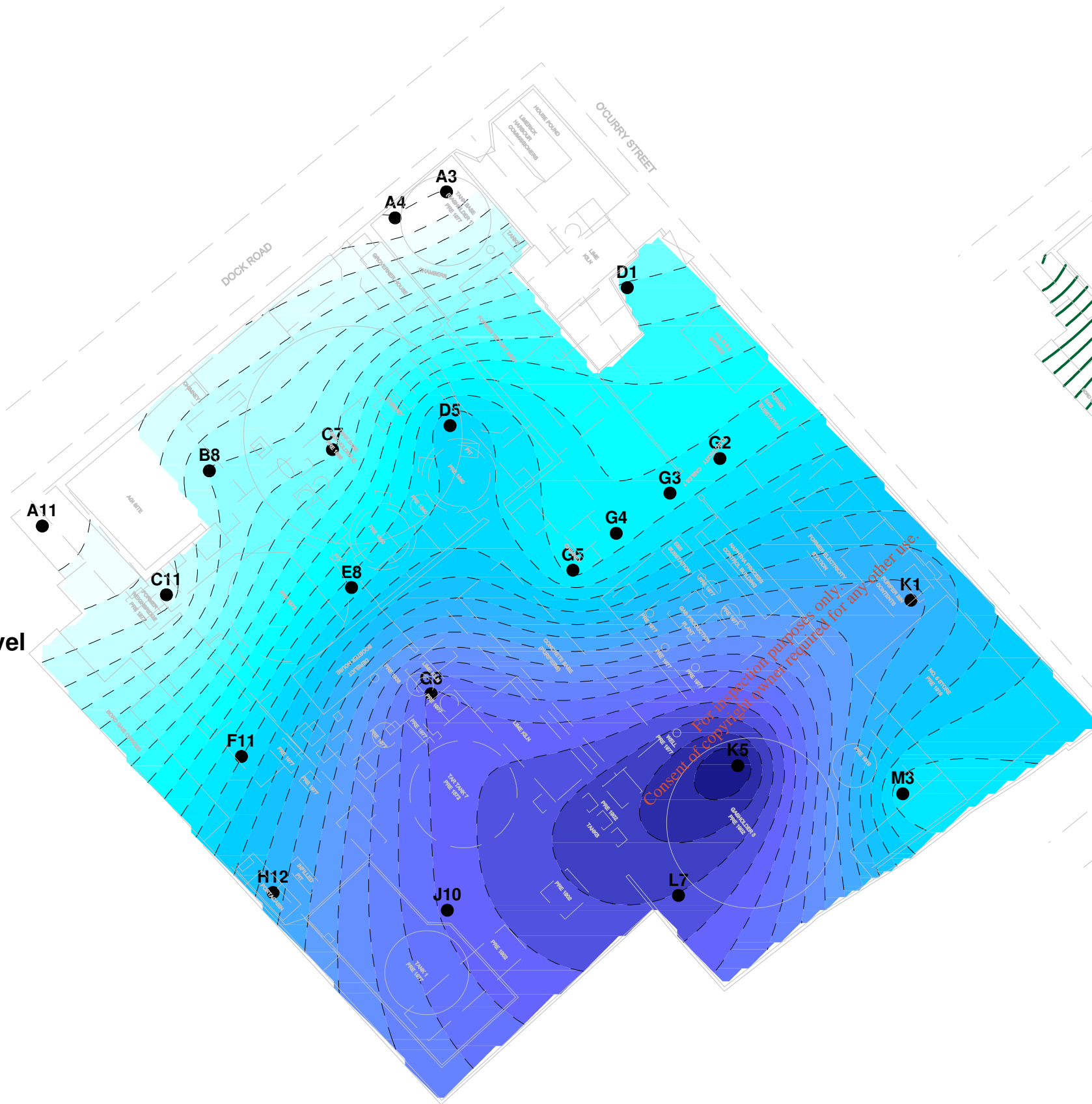
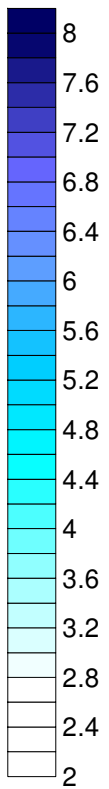
These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 21-22/04/2010. Contours were plotted using the Kriging method based upon a 1m x 1m grid

	Client	Bord Gais		
	Project	Limerick Gasworks		
Purpose	Drawing Title	Figure 1) Groundwater levels 21-22/04/2010		
Information	Issuing Office	Ellesmere Port	Drawing Number	Version
Scale	Telephone	0151 356 5555	1021927/R05/001	A
Not to scale				

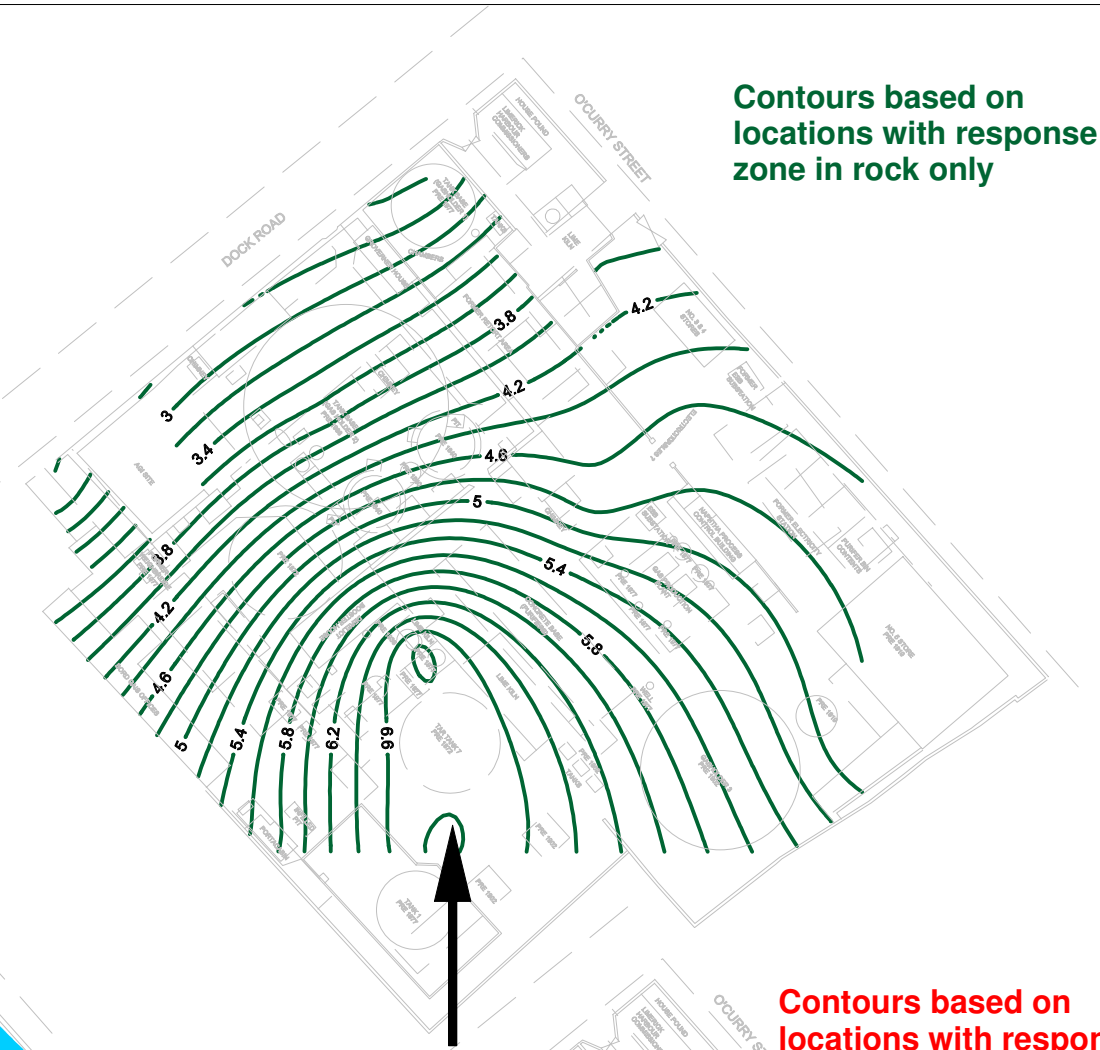
A	First Issue		DM	DM	DW
Version	Amendment		Originated	Checked	Approved



Groundwater Level
(m MHD)

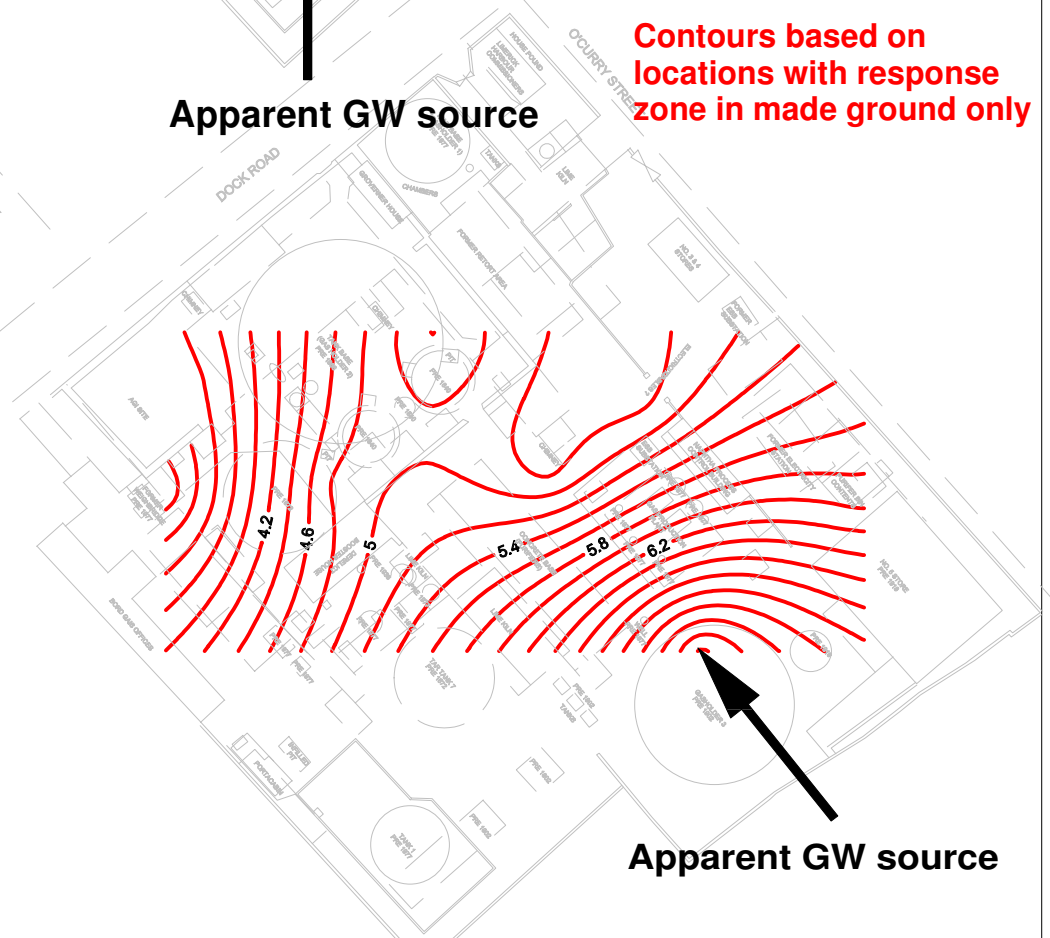


Contours based on
locations with response
zone in rock only



Apparent GW source

Contours based on
locations with response
zone in made ground only



Apparent GW source

These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 15-16/07/2010. Contours were plotted using the Kriging method based upon a 1m x 1m grid. Location F11 was removed from the model due to heavy rainfall temporarily affecting the water level monitored.



Purpose
Information

Scale
Not to scale

Client **Bord Gais**
Project **Limerick Gasworks**
Drawing Title **Figure 1) Groundwater levels 15-16/07/2010**

Issuing Office **Ellesmere Port**
Telephone **0151 356 5555**

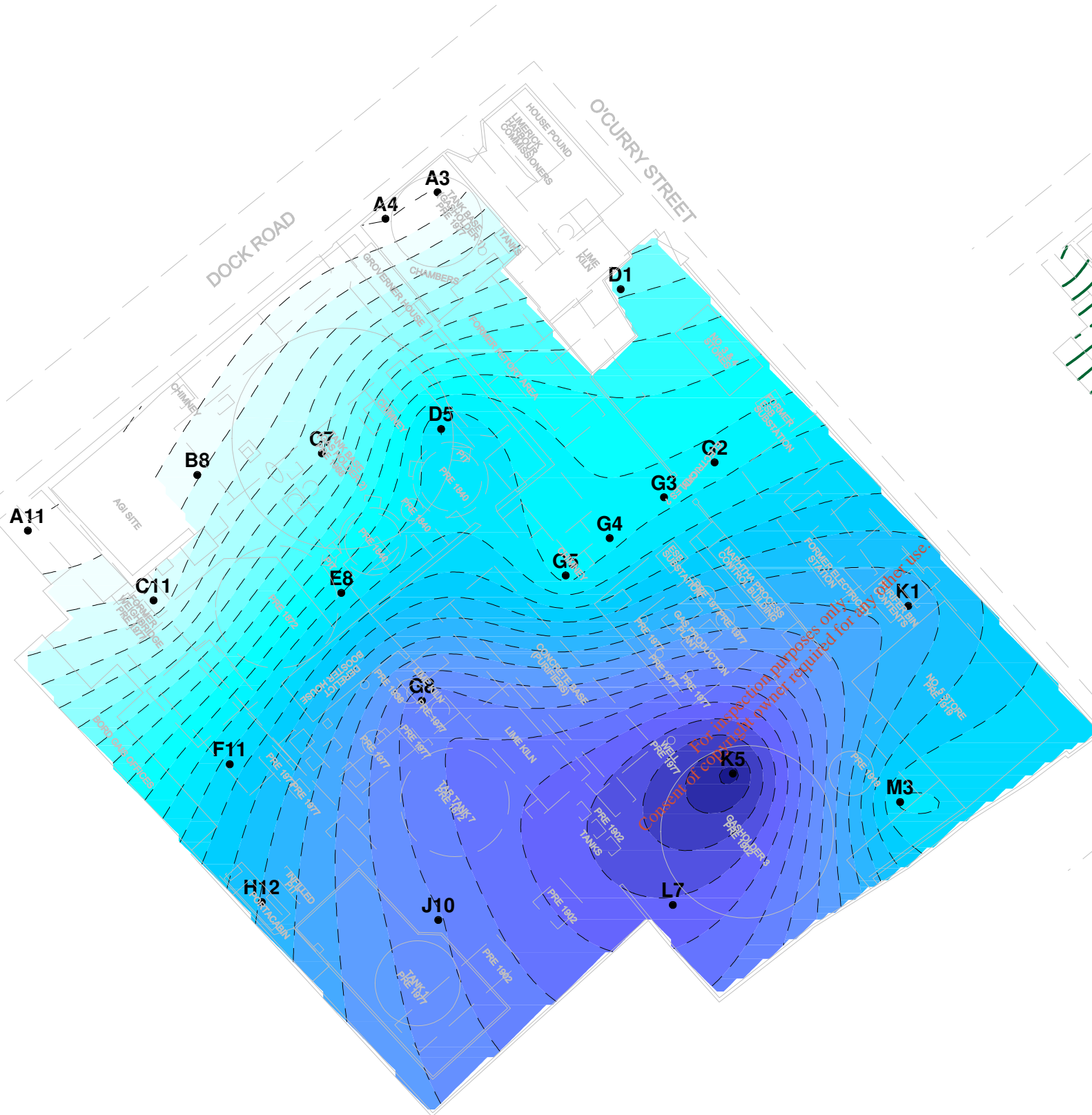
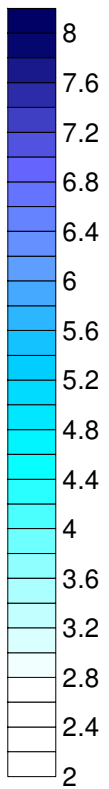
Drawing Number
1021927/R12/001

Version
A

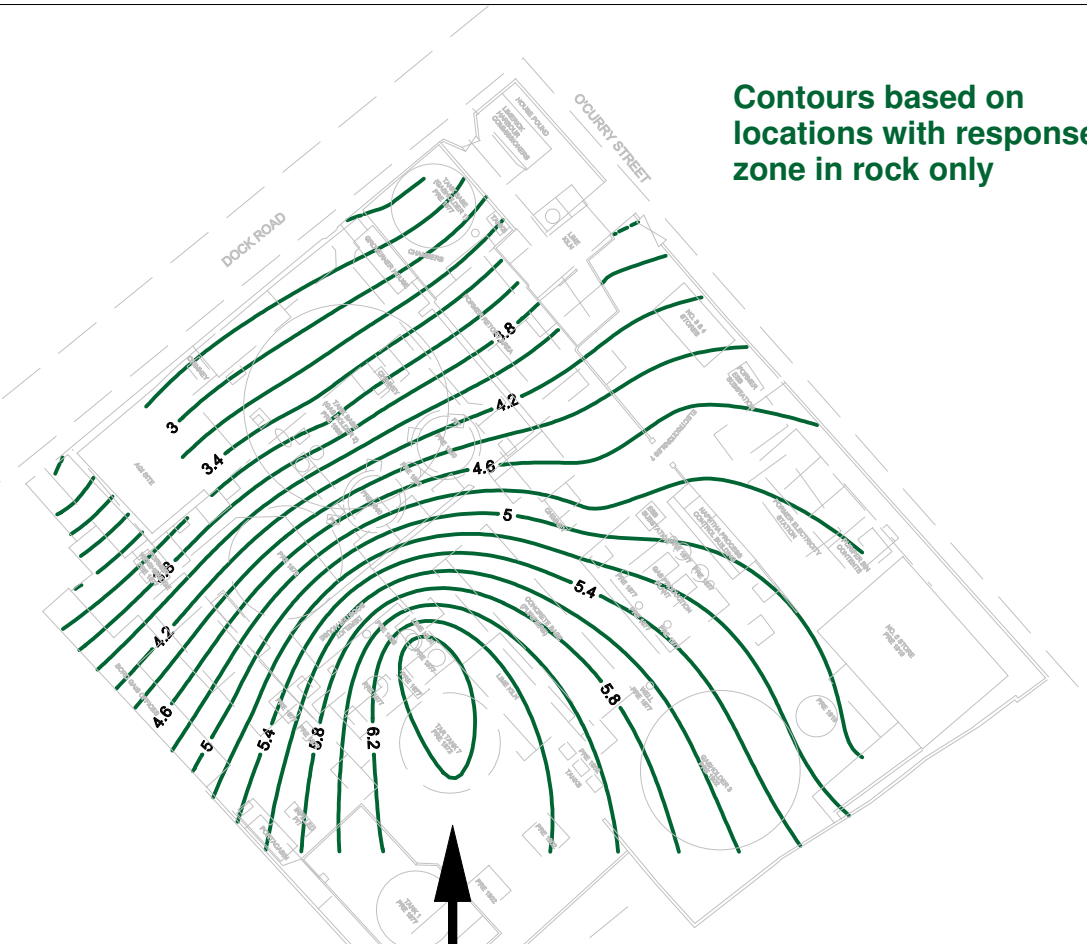
A	First Issue		DM	DM	DW
Version	Amendment	Originated	Checked	Approved	



Groundwater Level
(m MHD)

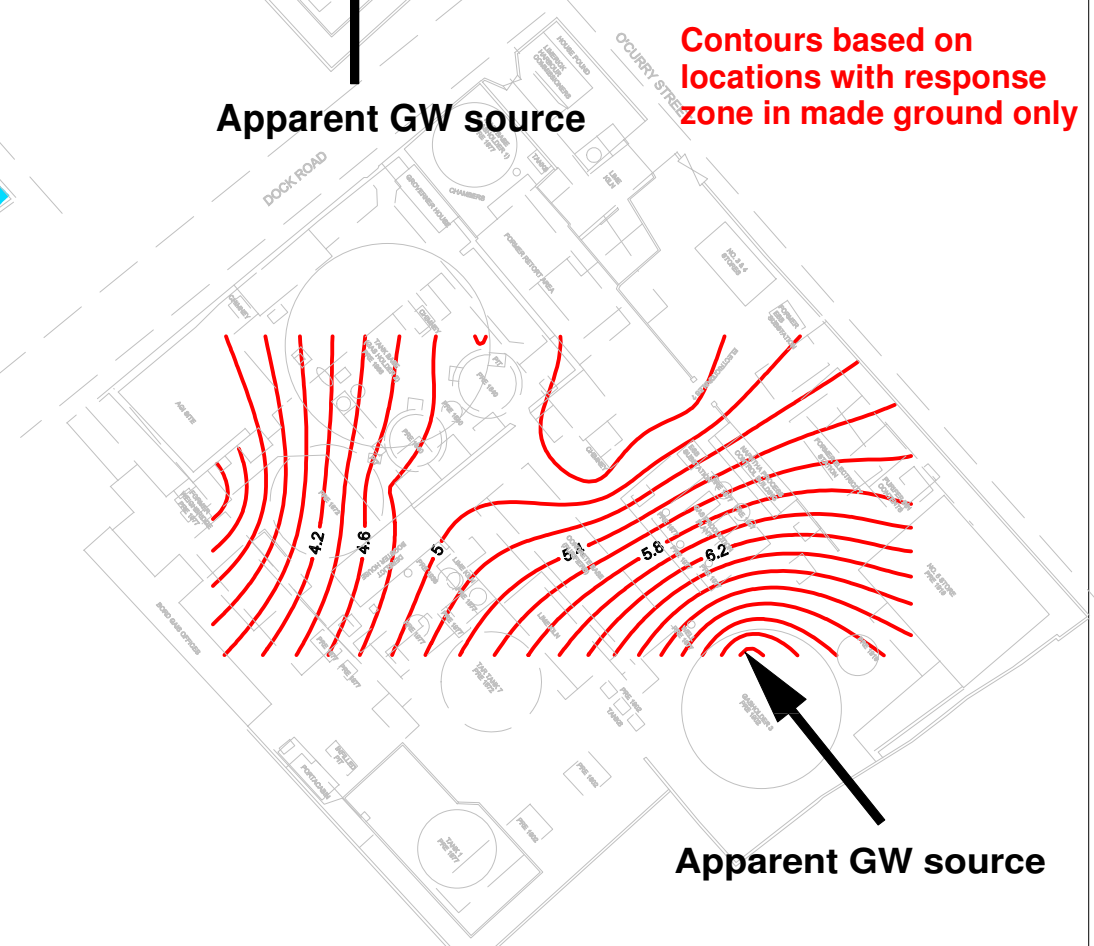


Contours based on
locations with response
zone in rock only



Apparent GW source

Contours based on
locations with response
zone in made ground only



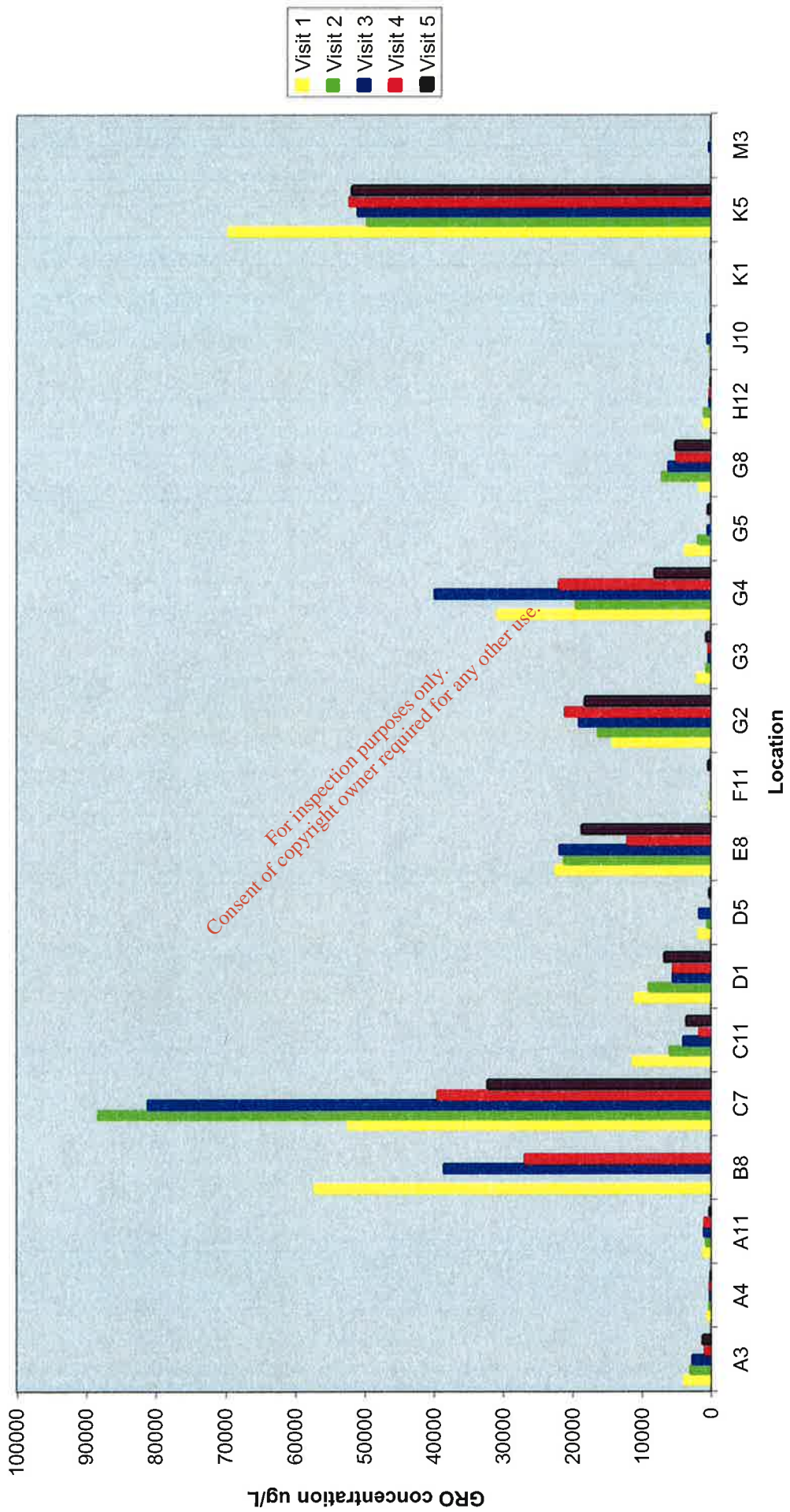
Apparent GW source

These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 20-21/10/2010. Contours were plotted using the Kriging method based upon a 1m x 1m grid.

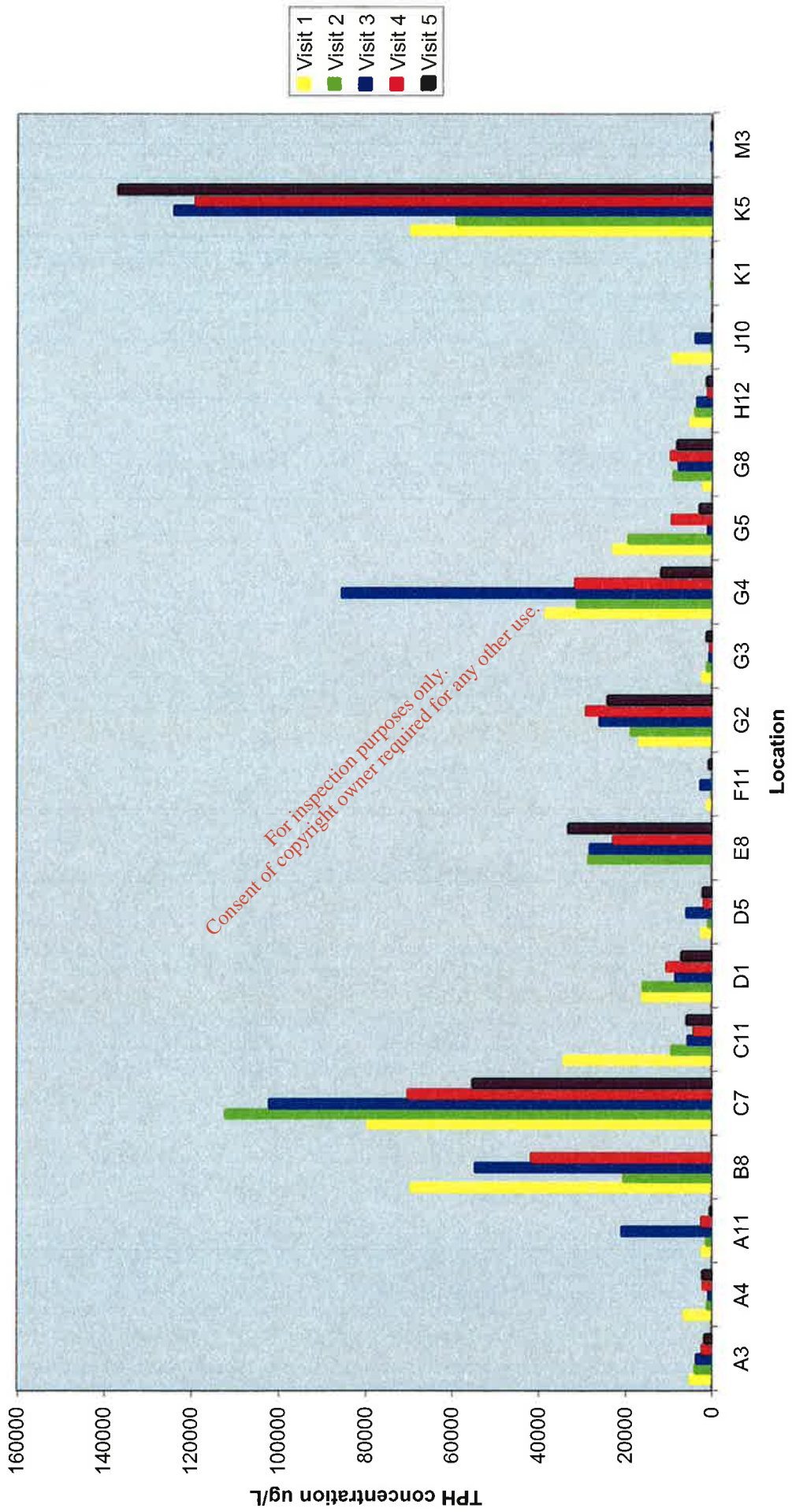
	Client	Bord Gais		
	Project	Limerick Gasworks		
Purpose	Drawing Title	Figure 1) Groundwater levels 20-21/10/2010		
Information	Issuing Office	Ellesmere Port	Drawing Number	Version
	Scale	Telephone	1021927/R14/OD/001	A
Not to scale	0151 356 5555			

A	First Issue		DM	DM	DW
Version	Amendment	Originated	Checked	Approved	

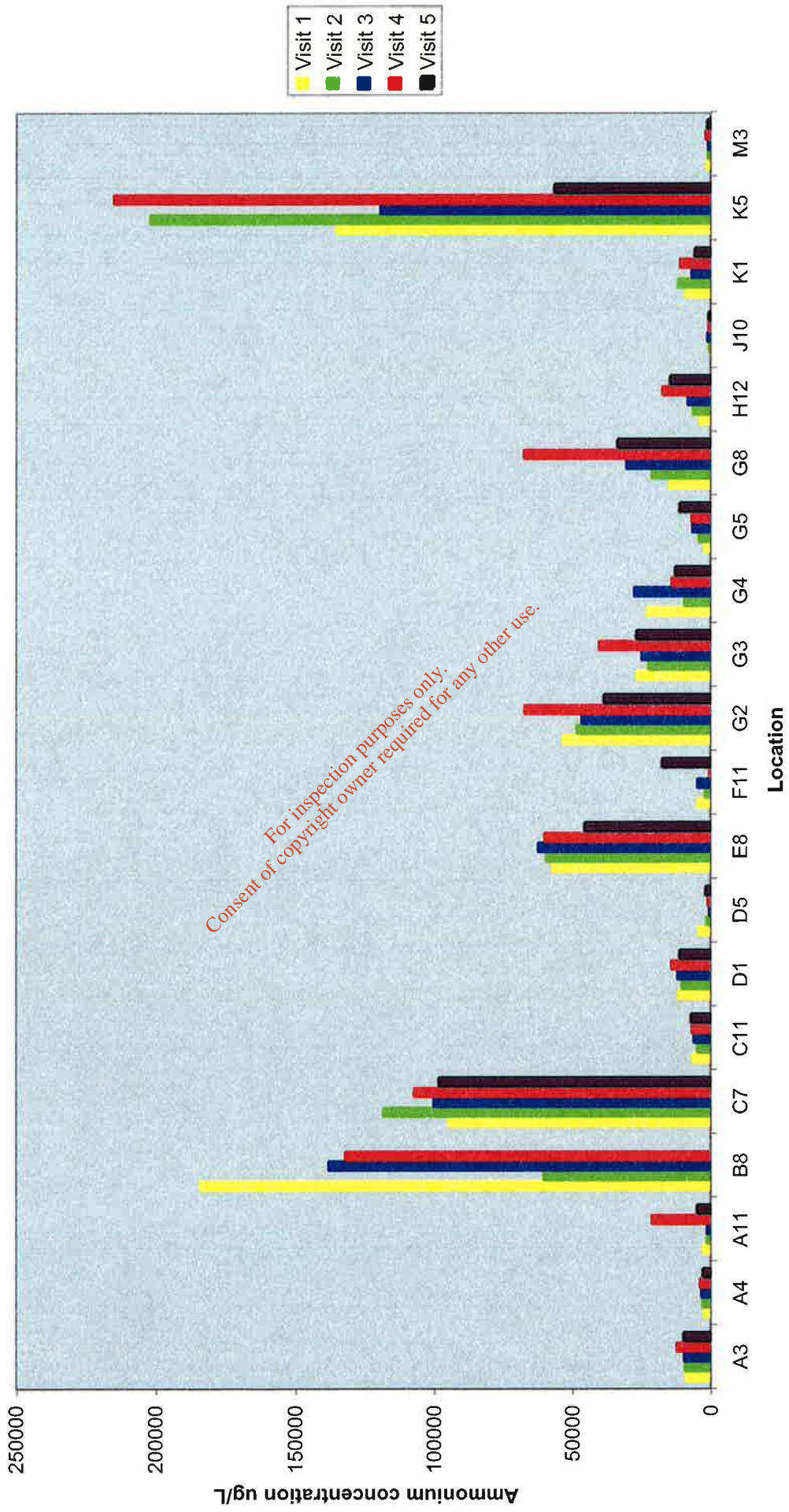
Petroleum Hydrocarbons - Gasoline Range Organics (GRO)



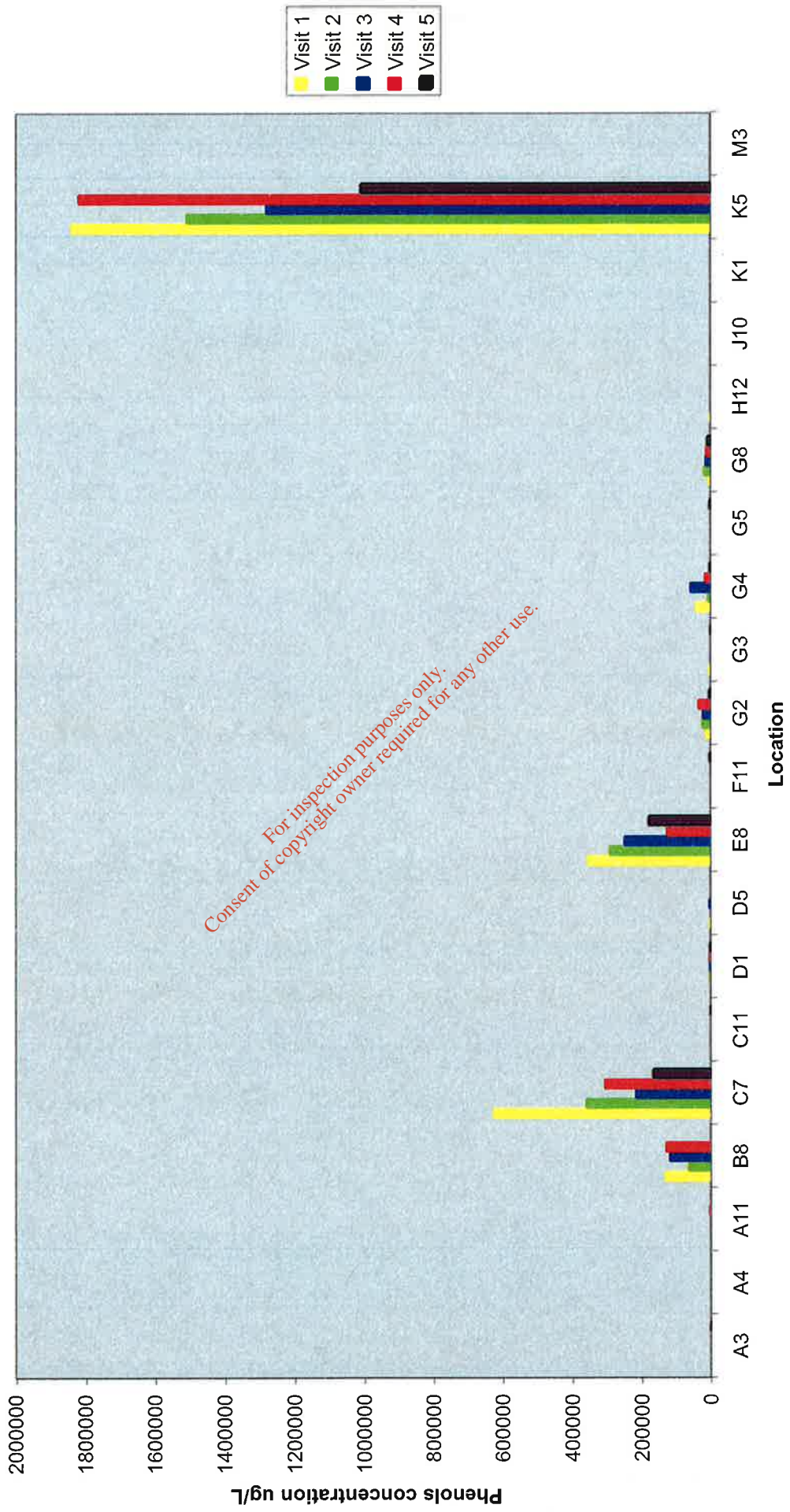
Petroleum Hydrocarbons - 'Total' Petroleum Hydrocarbons (TPH)



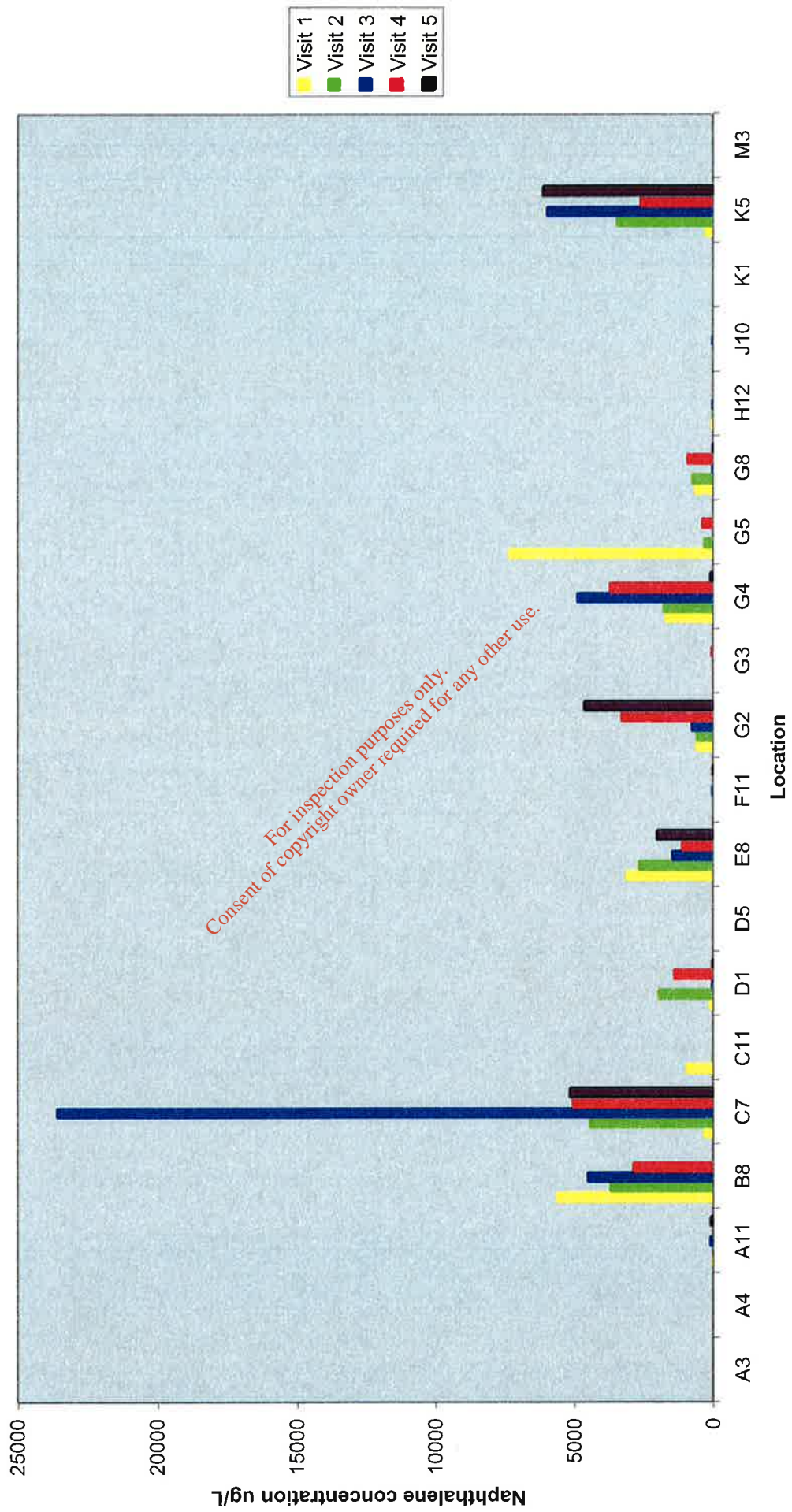
Ammonium



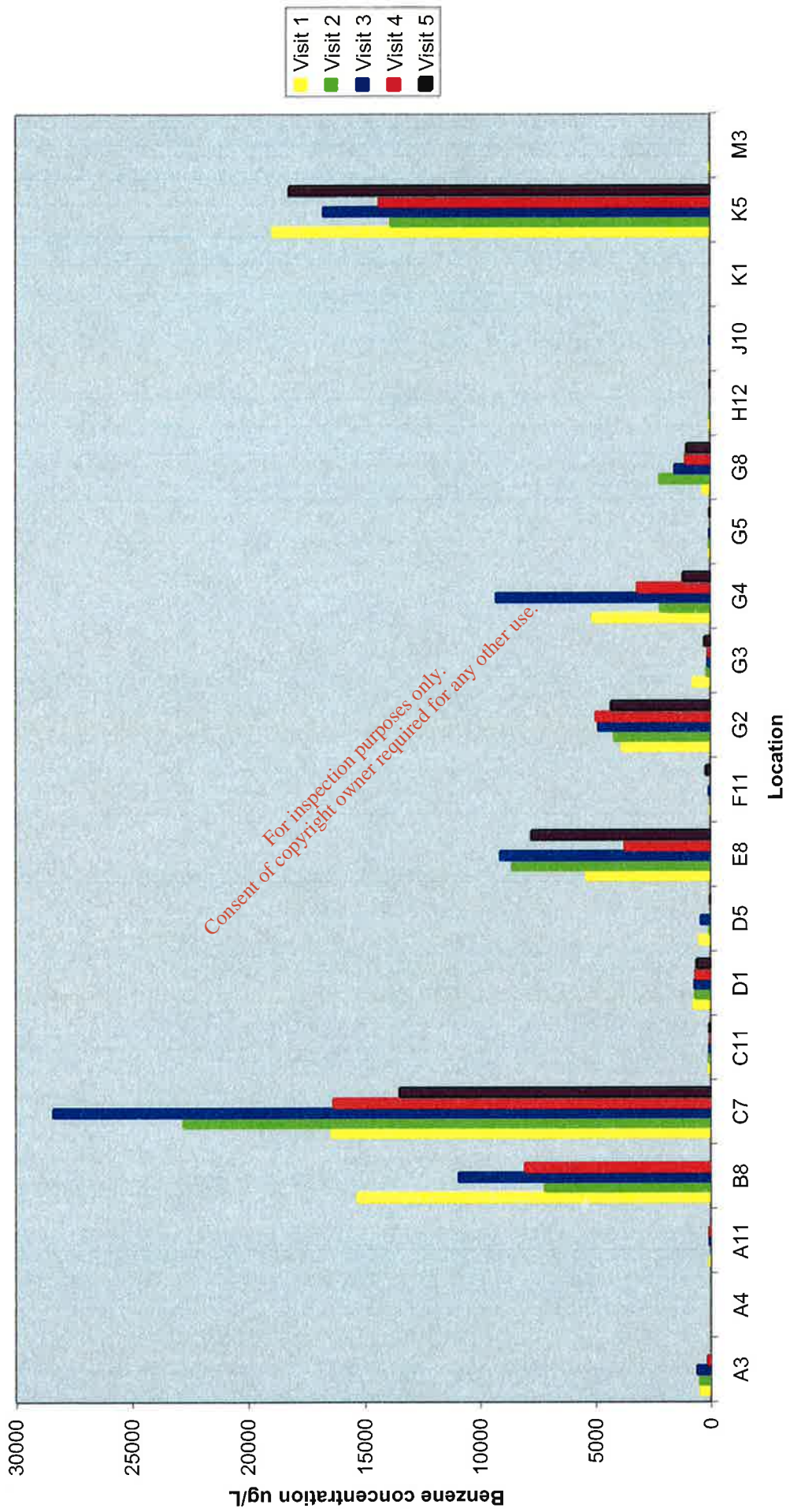
Phenols (total of 5 speciated)



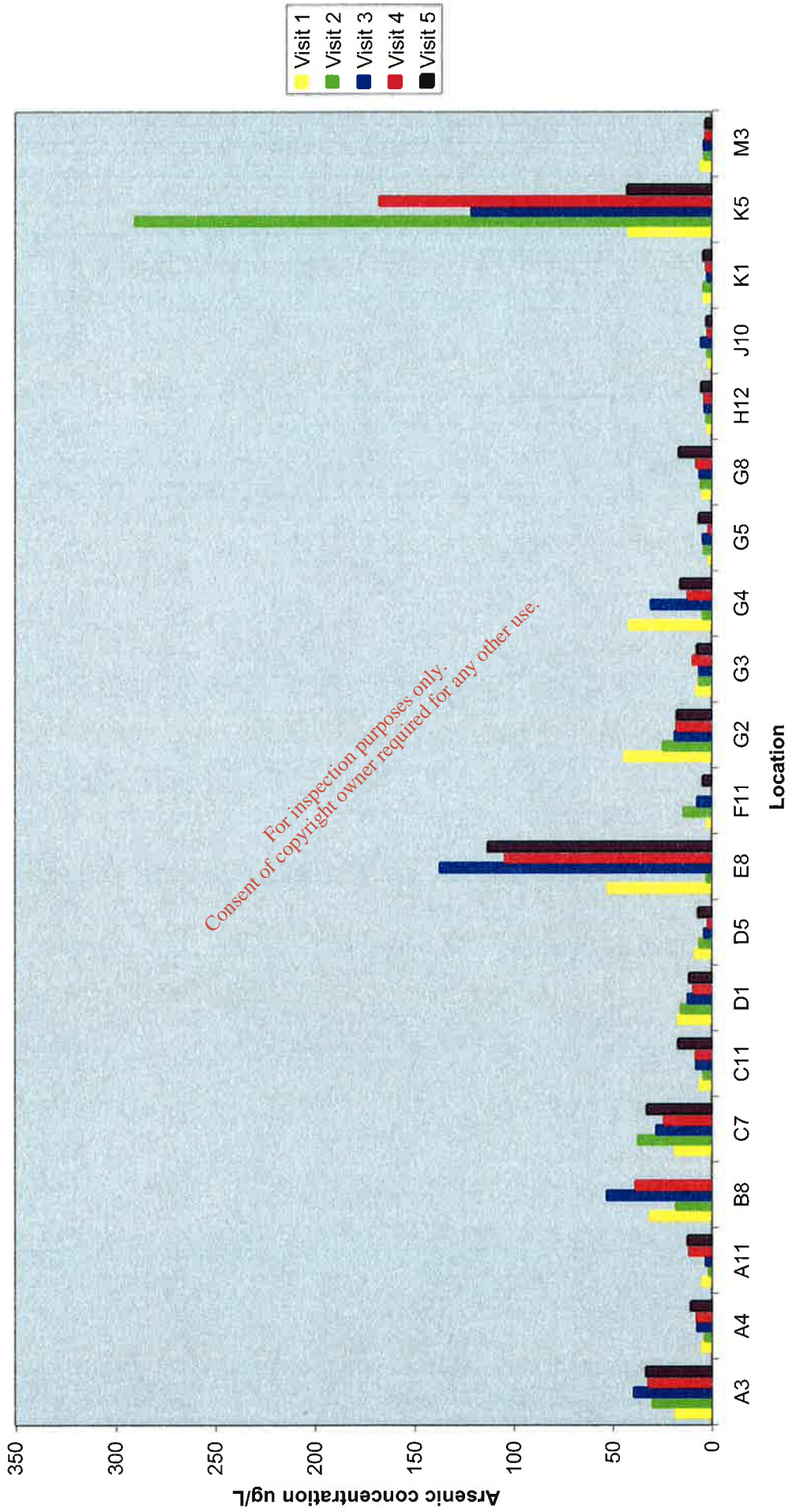
Naphthalene

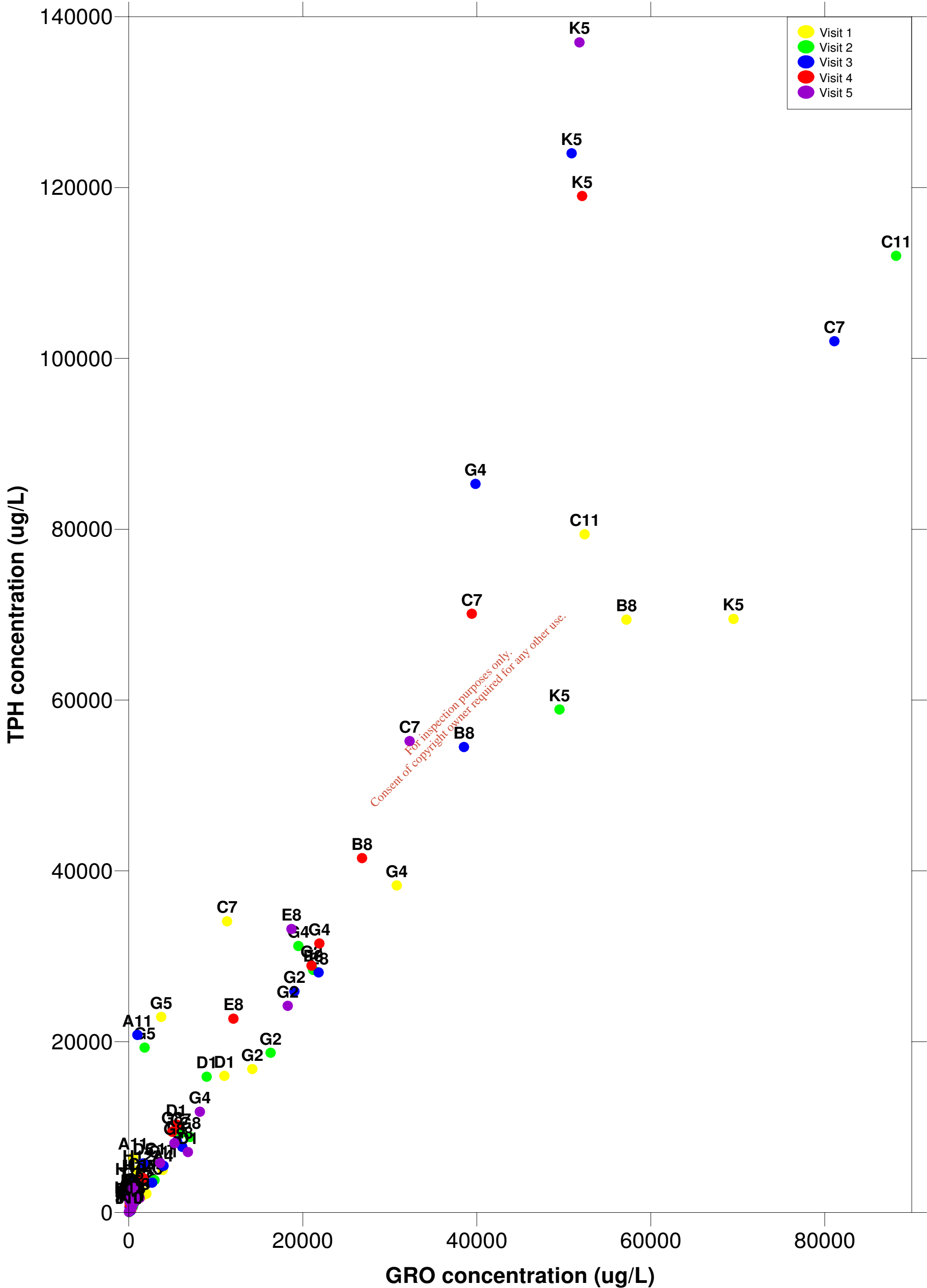



Benzene



Arsenic





	Client	Bord Gais		
	Project	Quarterly Groundwater Monitoring Report - Year end		
Purpose	Information	Drawing Title	Temporal assessment plot of GRO vs TPH	
Scale	N/A	Issuing Office	Ellesmere Port	Drawing Number
		Telephone	0151 356 5555	1021927/R14/001
				Version
				A



Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 07 January 2010
Job: D_MOUCHEL_ELE-94
Sample Delivery Group (SDG): 091215-60 **Report No.:** 68983
Your Reference: 10/12/09 11/12/09 (E8/A4/A3/A1)
Location: Limerick Gasworks

A total of 5 samples was received on Friday December 11, 2009 and completed on Thursday January 07, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



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Consent of copyright owner required for any other use.

SDG:	091215-60	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-94	Attention:	Verity Sankey
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	Order No.:	
Location:	Limerick Gasworks	Report No.:	68983

Test Completion dates

SDG reference: 091215-60

Sample ID	Depth	Type	VOC MS (W)	TPH CWG (W)	Total Metals by ICP-MS	Sulphide	Phenols by HPLC (W)	pH Value	PAH Spec MS - Aqueous (W)	Mercury Dissolved	Hexavalent Chromium (W)	GRO BTEX MTBE GC (W)	EPH CWG (Aromatic) Aqueous GC (W)	EPH CWG (Aliphatic) Aqueous GC (W)	Dissolved Metals by ICP-MS	Cyanide Comp/Free/Total/Thiocyana	Anions by Kone (W)	Ammonium
A11	1.50 - 2.50	LIQUID	23/12/2009	22/12/2009	24/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	17/12/2009	22/12/2009	21/12/2009	22/12/2009	22/12/2009	23/12/2009	21/12/2009	21/12/2009	21/12/2009
A3	1.50 - 4.50	LIQUID	23/12/2009	22/12/2009	24/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	17/12/2009	22/12/2009	21/12/2009	22/12/2009	22/12/2009	23/12/2009	21/12/2009	21/12/2009	21/12/2009
A4	1.50 - 4.00	LIQUID	23/12/2009	23/12/2009	23/12/2009	21/12/2009	22/12/2009	16/12/2009	23/12/2009	17/12/2009	22/12/2009	21/12/2009	22/12/2009	22/12/2009	23/12/2009	21/12/2009	17/12/2009	21/12/2009
D5	1.50 - 2.50	LIQUID	22/12/2009	22/12/2009	24/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	17/12/2009	22/12/2009	21/12/2009	22/12/2009	22/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009
E8	2.00 - 3.00	LIQUID	22/12/2009	22/12/2009	23/12/2009	21/12/2009	22/12/2009	16/12/2009	23/12/2009	17/12/2009	22/12/2009	21/12/2009	22/12/2009	22/12/2009	23/12/2009	21/12/2009	17/12/2009	21/12/2009

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Consent of copyright owner required

ALcontrol Laboratories Analytical Services

SDG: 091215-60
Job: D_MOUCHEL_ELE-94
Client Reference: 10/12/09 11/12/09 (E8/A4/A3/A11/D5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 68983

Results Legend			Sample Identity		A11	A3	A4	D5	E8
# ISO17025 accredited. # mCERTS accredited. # subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	Sample Type	1.50 - 2.50 Water(GW/SW)	1.50 - 4.50 Water(GW/SW)	1.50 - 4.00 Water(GW/SW)	1.50 - 2.50 Water(GW/SW)	2.00 - 3.00 Water(GW/SW)
Component	LOD/Units	Method	Date Sampled	Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	Lab Sample No.(s)	091215-60	091215-60	091215-60	091215-60	091215-60
					737876	737822	737773	737904	737682
Phenol	<0.002 mg/l	TM062			0.03 #	<0.002 #	<0.002 #	0.17 #	121 #
Cresols	<0.006 mg/l	TM062			0.07 #	0.01 #	<0.006 #	0.76 #	191 #
Xylenols	<0.008 mg/l	TM062			0.01 #	<0.008 #	<0.008 #	0.26 #	40.7 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM062			<0.003 #	<0.003 #	<0.003 #	<0.003 #	<0.12 #
2-Isopropylphenol	<0.006 mg/l	TM062			0.17 #	<0.006 #	<0.006 #	0.35 #	<0.24 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM062			0.28 #	<0.025 #	<0.025 #	1.54 #	353 #
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099			2.72 #	8.99 #	2.36 #	4.24 #	57.1 #
Sulphide	<0.1 mg/l	TM101			<0.5 #	<2.5 #	<0.5 #	<0.5 #	<0.5 #
Arsenic Dissolved	<0.75 µg/l	TM152			4.83 #	18.2 #	4.8 #	8.26 #	52.3 #
Cadmium Dissolved	<0.22 µg/l	TM152			<0.22 #	<0.22 #	<0.22 #	<0.22 #	0.275 #
Copper Dissolved	<1.6 µg/l	TM152			<1.6 #	<1.6 #	14.3 #	2.99 #	10.6 #
Lead Dissolved	<0.4 µg/l	TM152			<0.4 #	<0.4 #	0.736 #	<0.4 #	0.764 #
Nickel Dissolved	<1.5 µg/l	TM152			3.75 #	5.21 #	3.21 #	3.49 #	75.4 #
Selenium Dissolved	<1 µg/l	TM152			6.28 #	1.45 #	4.68 #	<1 #	29.3 #
Zinc Dissolved	<5 µg/l	TM152			<5 #	<5 #	7.74 #	<5 #	8.6 #
Mercury Dissolved	<0.01 µg/l	TM183			<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0238 #
Sulphate (soluble)	3 mg/l	TM184			273 #	412 #	292 #	52.6 #	525 #
Chromium (Unfiltered)	<3 µg/l	TM191			18.4 #	54.4 #	78.6 #	137 #	102 #
Total Cyanide	<0.05 mg/l	TM227			0.075 #	0.502 #	0.593 #	0.253 #	8.18 #
Hexavalent Chromium	<0.03 mg/l	TM241			<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH value	<1 pH Units	TM256			8.32 #	8.06 #	7.89 #	9.11 #	9.52 #

ALcontrol Laboratories Analytical Services

SDG: 091215-60
Job: D_MOUCHEL_ELE-94
Client Reference: 10/12/09 11/12/09 (E8/A4/A3/A11/D5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68983

TPH CWG (W)

Results Legend			Sample Identity		A11	A3	A4	D5	E8
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	Sample Type	1.50 - 2.50 Water(GW/SW)	1.50 - 4.50 Water(GW/SW)	1.50 - 4.00 Water(GW/SW)	1.50 - 2.50 Water(GW/SW)	2.00 - 3.00 Water(GW/SW)
			Date Sampled	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009	
			Date Received	091215-60	091215-60	091215-60	091215-60	091215-60	
			SDG Ref	737876	737822	737773	737904	737682	
			Lab Sample No.(s)						
Component	LOD/Units	Method							
GRO C5-C12	<42 µg/l	TM245	1080	3900	490	1770	22400	#	#
MTBE	<3 µg/l	TM245	<3	3	<3	<3	6	#	#
Benzene	<7 µg/l	TM245	57	430	<7	469	5360	#	#
Toluene	<4 µg/l	TM245	107	62	<4	226	1430	#	#
Ethyl Benzene	<5 µg/l	TM245	26	293	<5	21	95	#	#
m & p Xylene	<8 µg/l	TM245	84	117	23	111	651	#	#
o Xylene	<3 µg/l	TM245	55	84	20	72	331	#	#
Sum m&p and o Xylene	<10 µg/l	TM245	139	201	43	183	982	#	#
Sum of BTEX	<10 µg/l	TM245	329	986	43	899	7870	#	#
Aliphatics C5-C6	<10 µg/l	TM245	<10	19.2	<10	<10	132		
Aliphatics >C6-C8	<10 µg/l	TM245	34.4	116	<10	142	2910		
Aliphatics >C8-C10	<10 µg/l	TM245	79.8	208	41.5	86.7	999		
Aliphatics >C10-C12	<10 µg/l	TM245	206	904	137	205	3600		
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	<10	<10	1060	13	12		
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	<10	<10	1460	21	<10		
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	<10	<10	646	73	13		
Total Aliphatics C5-C12	<10 µg/l	TM245	320	1250	179	434	7640		
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10	<10	3160	107	25		
Aromatics C6-C7	<10 µg/l	TM245	57	430	<10	469	5360		
Aromatics >C7-C8	<10 µg/l	TM245	107	62	<10	226	1430		
Aromatics >EC8-EC10	<10 µg/l	TM245	285	806	105	334	2570		
Aromatics >EC10-EC12	<10 µg/l	TM245	309	1360	206	308	5400		
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	494	516	227	178	6980		
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	310	304	811	91	1450		
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	316	255	1710	252	502		
Total Aromatics C6-C12	<10 µg/l	TM245	758	2650	311	1340	14800		
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	1120	1080	2750	521	8930		
Surrogate Recovery %**	%	TM245	51	108	100	101	97		
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	1120	1080	5910	628	8960		
GRO (>C8-C10A)	<10 µg/l	TM245	<10	18.3	<10	<10	179		
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	320	1250	3340	541			
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	1880	3730	3060	1860			
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	2200	4980	6400	2400			

SDG: 091215-60
Job: D_MOUCHEL_ELE-94
Client Reference: 10/12/09 11/12/09 (E8/A4/A3/A11/D5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68983

VOC MS (W)

Results Legend		Sample Identity	A11	A3	A4			
# ISO17025 accredited. mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.50 - 2.50 Water(GW/SW) 11/12/2009 091215-60 737876	1.50 - 4.50 Water(GW/SW) 11/12/2009 091215-60 737822	1.50 - 4.00 Water(GW/SW) 11/12/2009 091215-60 737773			
Component	LOD/Units	Method						
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #			
Chloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #			
Vinyl Chloride	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #			
Bromomethane	<2 µg/l	TM208	<2 #	<2 #	<2 #			
Chloroethane	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #			
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #			
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #			
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #			
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6 #	<1.6 #	<1.6 #			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #	<3.8 #	<3.8 #			
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #			
Chloroform	<1.8 µg/l	TM208	<1.8 #	<1.8 #	<1.8 #			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #			
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #	<1.4 #	<1.4 #			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3 #	<3.3 #	<3.3 #			
Benzene	<1.3 µg/l	TM208	81.5 #	1.43 #	1.8 #			
Trichloroethene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #			
1,2-Dichloropropane	<3 µg/l	TM208	<3 #	<3 #	<3 #			
Dibromomethane	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #			
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #	<0.9 #	<0.9 #			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #			
Toluene	<1.4 µg/l	TM208	143 #	<1.4 #	<1.4 #			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #			
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #	<1.5 #	<1.5 #			
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #			
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #			
Ethylbenzene	<2.5 µg/l	TM208	11.4 #	10.8 #	<2.5 #			
p/m-Xylene	<2.5 µg/l	TM208	82.5 #	81.6 #	<2.5 #			
o-Xylene	<1.7 µg/l	TM208	103 #	62.9 #	<1.7 #			
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #			

SDG: 091215-60
Job: D_MOUCHEL_ELE-94
Client Reference: 10/12/09 11/12/09 (E8/A4/A3/A11/D5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68983

VOC MS (W)

Results Legend		Sample Identity		A11	A3	A4			
# ISO17025 accredited. mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m)	1.50 - 2.50	1.50 - 4.50	1.50 - 4.00				
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)				
		Date Sampled	11/12/2009	11/12/2009	11/12/2009				
		Date Received	091215-60	091215-60	091215-60				
		SDG Ref	737876	737822	737773				
Lab Sample No.(s)									
Component	LOD/Units	Method							
Bromoform	<3 µg/l	TM208	<3	<3	<3	#	#	#	
Isopropylbenzene	<1.4 µg/l	TM208	2.73	3.76	<1.4	#	#	#	
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2	<5.2				
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	<7.8	<7.8	#	#	#	
Bromobenzene	<2 µg/l	TM208	<2	<2	<2	#	#	#	
Propylbenzene	<2.6 µg/l	TM208	<2.6	<2.6	<2.6	#	#	#	
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	#	#	#	
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	17	13.5	6.63	#	#	#	
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	#	#	#	
tert-Butylbenzene	<2 µg/l	TM208	<2	<2	<2	#	#	#	
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	23.4	43.6	<1.7	#	#	#	
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	#	#	#	
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.6	<2.6	<2.6	#	#	#	
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	#	#	#	
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	<2.7	<2.7	#	#	#	
n-Butylbenzene	<2 µg/l	TM208	<2	<2	<2	#	#	#	
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7	<3.7	#	#	#	
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8	<9.8				
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	#	#	#	
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	#	#	#	
Tert-amyl methyl ether	<1 µg/l	TM208	<1	<1	<1	#	#	#	
Naphthalene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	#	#	#	
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	<3.1	<3.1	#	#	#	
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10	<10				

Table of Results - Appendix

SDG Number : 091215-60

Client : Mouchel

Client Ref : 10/12/09 11/12/09 (E8/A4//

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	

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

SDG: 091215-60
Job: D_MOUCHEL_ELE-94
Client Ref.: 10/12/09 11/12/09 (E8/A4/A3/A11/D5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68983

Chromatogram

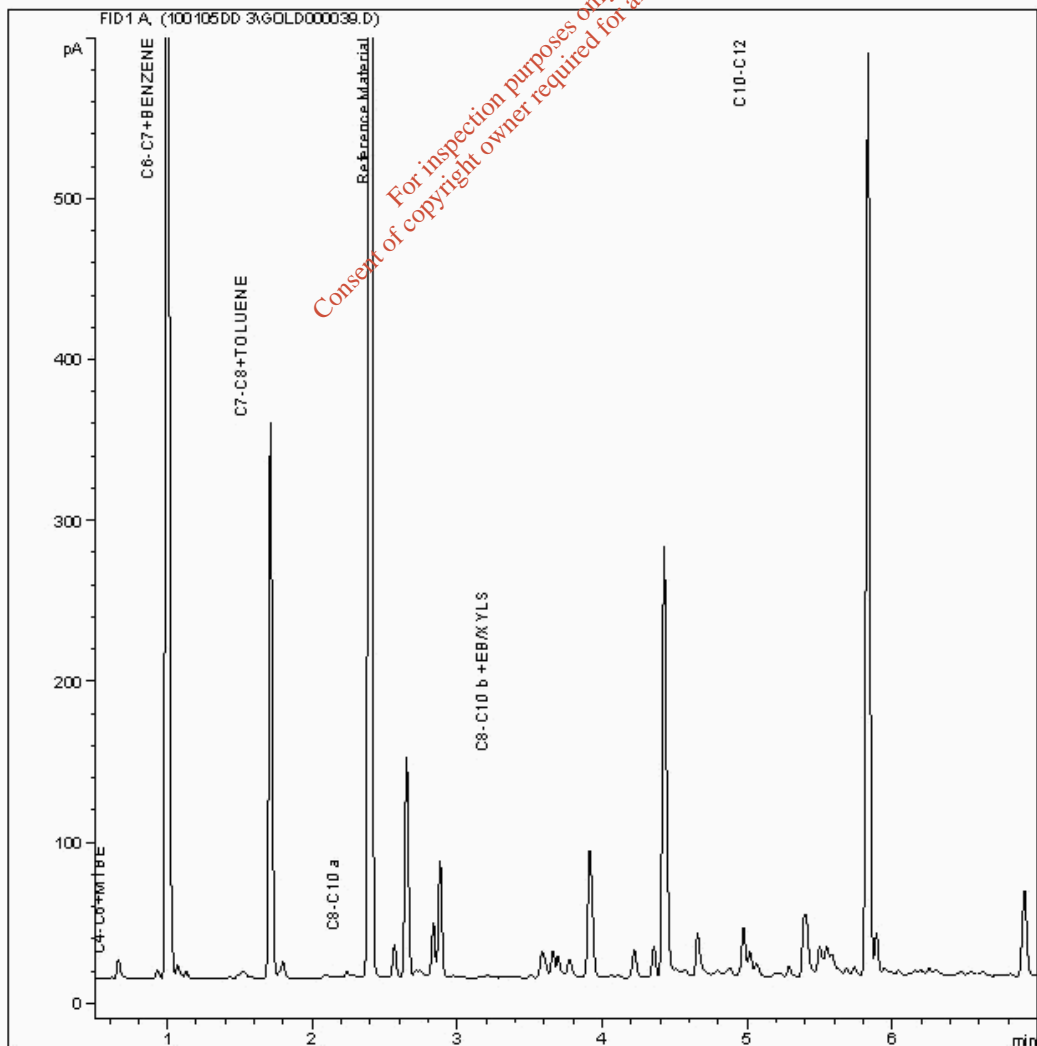
Analysis: GRO BTEX MTBE GC (W)

Sample No 737679
Sample ID E8
Depth 2.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 921662-737679
Date Acquired : 06/01/10 17:21:19
Units : ppb
Dilution : 2

#	Compound Name	Amount
1	C4-C6+MTBE	1522
2	C6-C7+BENZENE	85012
3	C7-C8+TOLUENE	26827
4	C8-C10 a	2058
5	Reference Material	50901
6	C8-C10 b +EB/XYLS	39139
7	C10-C12	103711



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 31 December 2009
Job: D_MOUCHEL_ELE-93
Sample Delivery Group (SDG): 091214-62 **Report No.:** 68463
Your Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

A total of 5 samples was received on Friday December 11, 2009 and completed on Thursday December 31, 2009. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No.: 68463

LIQUID

Results Legend	Sample ID																					
		D1	G2					G3			G4			G5								
	Depth (m)	3.00 - 5.00	3.00 - 9.00					3.00 - 8.00			2.50 - 7.00			2.00 - 8.00								
Container	1l green glass bottle	60g VOC Dublin 500ml Plastic	H ₂ SO ₄	NaOH	ZnAc (D)	1l glass bottle (D)	60g VOC Dublin 500ml Plastic	H ₂ SO ₄	NaOH	ZnAc (D)	1l glass bottle (D)	60g VOC Dublin 500ml Plastic	H ₂ SO ₄	NaOH	ZnAc (D)	1l glass bottle (D)	60g VOC Dublin 500ml Plastic	H ₂ SO ₄	NaOH	ZnAc (D)		
Ammonium	All			X				X			X			X				X				0
Anions by Kone (w)	All						X														X	5
Cyanide Comp/Free/Total/Thiocyanate	All	X				X					X										X	0
Dissolved Metals by ICP-MS	All				X				X			X				X					X	5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X				X				X			X								X	0
EPH CWG (Aromatic) Aqueous GC (W)	All	X				X				X			X								X	5
GRO BTEX MTBE GC (W)	All	X				X				X			X								X	5
Hexavalent Chromium (w)	All		X				X				X					X					X	0
Mercury Dissolved	All	X				X				X			X								X	5
PAH Spec MS - Aqueous (W)	All	X				X				X			X								X	0
pH Value	All	X				X					X										X	5
Phenols by HPLC (W)	All				X				X			X				X					X	5
Sulphide	All				X				X			X				X					X	0
Total Metals by ICP-MS	All	X				X					X				X						X	5
TPH CWG (W)	All	X				X				X			X								X	0
VOC MS (W)	All		X				X				X			X							X	5
			X				X				X			X							X	4

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SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 68463

Test Completion dates

SDG reference: 091214-62

Sample ID	Depth	Type	VOC MS (W)	TPH CWG (W)	Total Metals by ICP-MS	Sulphide	Phenols by HPLC (W)	pH Value	PAH Spec MS - Aqueous (W)	Mercury Dissolved	Hexavalent Chromium (W)	GRO BTEX MTBE GC (W)	EPH CWG (Aromatic) Aqueous GC (	EPH CWG (Aliphatic) Aqueous GC (	Dissolved Metals by ICP-MS	Cyanide Comp/Free/Total/Thiocyana	Anions by Kone (W)	Ammonium
D1	3.00 - 5.00	LIQUID	22/12/2009	23/12/2009	24/12/2009	21/12/2009	21/12/2009	18/12/2009	22/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	23/12/2009	30/12/2009	22/12/2009	22/12/2009	19/12/2009
G2	3.00 - 9.00	LIQUID	22/12/2009	23/12/2009	24/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	23/12/2009	30/12/2009	21/12/2009	22/12/2009	19/12/2009
G3	3.00 - 8.00	LIQUID	22/12/2009	23/12/2009	24/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	23/12/2009	30/12/2009	22/12/2009	22/12/2009	19/12/2009
G4	2.50 - 7.00	LIQUID	22/12/2009	23/12/2009	24/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	23/12/2009	30/12/2009	22/12/2009	22/12/2009	19/12/2009
G5	2.00 - 8.00	LIQUID	22/12/2009	23/12/2009	24/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	22/12/2009	21/12/2009	23/12/2009	23/12/2009	30/12/2009	21/12/2009	22/12/2009	19/12/2009

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SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68463

Component	LOD/Units	Method	Sample Identity		D1	G2	G3	G4	G5
			Depth (m)	Sample Type	3.00 - 5.00 Water(GW/SW)	3.00 - 9.00 Water(GW/SW)	3.00 - 8.00 Water(GW/SW)	2.50 - 7.00 Water(GW/SW)	2.00 - 8.00 Water(GW/SW)
			Date Sampled	SDG Ref	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			Lab Sample No.(s)		091214-62	091214-62	091214-62	091214-62	091214-62
					733517	733463	733402	733394	733546
Phenol	<0.002 mg/l	TM062			<0.00200	2.20	0.840	1.24	<0.00200
					#	#	#	#	#
Cresols	<0.006 mg/l	TM062			<0.00600	5.98	1.41	9.50	<0.00600
					#	#	#	#	#
Xylenols	<0.008 mg/l	TM062			<0.00800	3.48	0.800	19.7	<0.00800
					#	#	#	#	#
2,3,5-Trimethylphenol	<0.003 mg/l	TM062			<0.00300	<0.00600	<0.00300	<0.00300	<0.00300
					#	#	#	#	#
2-Isopropylphenol	<0.006 mg/l	TM062			<0.00600	<0.0120	<0.00600	11.2	<0.00600
					#	#	#	#	#
Phenols Total of 5 Speciated	<0.025 mg/l	TM062			<0.0250	11.7	3.05	41.6	<0.0250
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099			11.6	53.3	26.6	23.0	2.08
					#	#	#	#	#
Sulphide	<0.1 mg/l	TM101			5.53	3.48	<0.500	<0.500	<0.500
					#	#	#	#	#
Arsenic Dissolved	<0.75 µg/l	TM152			17.1	44.2	7.65	41.6	1.46
					#	#	#	#	#
Cadmium Dissolved	<0.22 µg/l	TM152			<0.220	<0.220	<0.220	<0.220	<0.220
					#	#	#	#	#
Copper Dissolved	<1.6 µg/l	TM152			2.14	2.34	2.03	2.01	5.02
					#	#	#	#	#
Lead Dissolved	<0.4 µg/l	TM152			<0.400	<0.400	<0.400	<0.400	<0.400
					#	#	#	#	#
Nickel Dissolved	<1.5 µg/l	TM152			4.88	5.62	11.1	5.87	9.13
					#	#	#	#	#
Selenium Dissolved	<1 µg/l	TM152			2.09	7.41	9.83	26.0	2.69
					#	#	#	#	#
Zinc Dissolved	<5 µg/l	TM152			<5.00	<5.00	<5.00	<5.00	<5.00
					#	#	#	#	#
Mercury Dissolved	<0.01 µg/l	TM183			<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
					#	#	#	#	#
Sulphate (soluble)	3 mg/l	TM184			484	595	486	385	635
					#	#	#	#	#
Chromium (Unfiltered)	<3 µg/l	TM191			108	92.8	85.1	9.30	197
					#	#	#	#	#
Total Cyanide	<0.05 mg/l	TM227			1.67	1.44	0.511	0.912	5.59
					#	#	#	#	#
Hexavalent Chromium	<0.03 mg/l	TM241			<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
					#	#	#	#	#
Chromate	<0.06 mg/l	TM241			<0.0600	<0.0600	<0.0600	<0.0600	<0.0600
					#	#	#	#	#
pH value	<1.00 pH Units	TM256			7.70	7.61	7.55	7.59	7.32
					#	#	#	#	#

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SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68463

PAH Spec MS - Aqueous (W)

Results Legend # ISO17025 accredited. mCERES accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.	Sample Identity		D1	G2	G3	G4	G5	
	Depth (m)		3.00 - 5.00	3.00 - 9.00	3.00 - 8.00	2.50 - 7.00	2.00 - 8.00	
	Sample Type		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
	Date Sampled							
	Date Received		11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009	
	SDG Ref		091214-62	091214-62	091214-62	091214-62	091214-62	
	Lab Sample No.(s)		733517	733463	733402	733394	733546	
Component	LOD/Units	Method						
Naphthalene (Aqueous)	<0.1 µg/l	TM178	104	585	1.40	1690	7330	
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	61.6	20.0	3.55	180	145	
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	164	30.8	1.69	582	546	
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	147	24.5	5.52	1120	587	
Anthracene (Aqueous)	<0.015 µg/l	TM178	64.4	5.98	1.69	517	303	
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	240	46.7	2.50	1660	984	
Fluorene (Aqueous)	<0.014 µg/l	TM178	121	13.0	1.46	612	416	
Chrysene (Aqueous)	<0.013 µg/l	TM178	32.6	4.14	1.28	240	124	
Pyrene (Aqueous)	<0.015 µg/l	TM178	97.5	15.7	4.09	738	394	
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	52.5	4.86	1.88	321	155	
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	49.7	5.30	2.03	303	155	
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	17.2	2.15	0.855	127	65.2	
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	40.6	4.22	1.50	228	119	
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	5.74	0.859	0.257	30.9	18.2	
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	22.3	2.06	0.966	129	70.4	
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	19.1	1.27	0.751	106	56.7	
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	1240	287	31.4	8580	11500	

SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68463

TPH CWG (W)

Results Legend			Sample Identity	D1	G2	G3	G4	G5				
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	3.00 - 5.00	3.00 - 9.00	3.00 - 8.00	2.50 - 7.00	2.00 - 8.00				
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)				
			Date Sampled									
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009				
			SDG Ref	091214-62	091214-62	091214-62	091214-62	091214-62				
			Lab Sample No.(s)	733517	733463	733402	733394	733546				
Component	LOD/Units	Method										
GRO C5-C12	<42 µg/l	TM245	11000	#	14200	#	2030	#	30800	#	3730	#
MTBE	<3 µg/l	TM245	18.0	#	21.0	#	11.0	#	10.0	#	7.00	#
Benzene	<7 µg/l	TM245	718	#	3810	#	744	#	5080	#	34.0	#
Toluene	<4 µg/l	TM245	591	#	2360	#	306	#	4220	#	73.0	#
Ethyl Benzene	<5 µg/l	TM245	280	#	271	#	34.0	#	367	#	32.0	#
m & p Xylene	<8 µg/l	TM245	846	#	987	#	109	#	2270	#	251	#
o Xylene	<3 µg/l	TM245	427	#	564	#	72.0	#	1010	#	98.0	#
Sum m&p and o Xylene	<10 µg/l	TM245	1270	#	1550	#	181	#	3280	#	349	#
Sum of BTEX	<10 µg/l	TM245	2860	#	7980	#	1270	#	12900	#	488	#
Aliphatics C5-C6	<10 µg/l	TM245	<10.0		<10.0		<10.0		16.3		<10.0	
Aliphatics >C6-C8	<10 µg/l	TM245	343		1100		187		2860		60.3	
Aliphatics >C8-C10	<10 µg/l	TM245	630		572		67.4		1500		235	
Aliphatics >C10-C12	<10 µg/l	TM245	2470		1460		157		4480		1040	
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	228		<10.0		<10.0		1660		915	
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	203		<10.0		55.0		919		435	
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	180		<10.0		18.0		829		386	
Total Aliphatics C5-C12	<10 µg/l	TM245	3450		2730		412		8850		1330	
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	611		<10.0		73.0		3410		1740	
Aromatics C6-C7	<10 µg/l	TM245	718		3810		744		5080		34.0	
Aromatics >C7-C8	<10 µg/l	TM245	591		2360		306		4220		73.0	
Aromatics >EC8-EC10	<10 µg/l	TM245	2500		2680		316		5890		734	
Aromatics >EC10-EC12	<10 µg/l	TM245	3710		2200		235		6730		1550	
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	1530		1930		85.0		865		5810	
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	1180		345		11.0		1190		4230	
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	1670		344		30.0		2110		7370	
Total Aromatics C6-C12	<10 µg/l	TM245	7520		11000		1600		21900		2390	
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	4380		2610		126		4160		17400	
Surrogate Recovery %**	%	TM245	93.00		103.00		109.00		119.00		62.00	
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	4990		2610		199		7560		19100	
GRO (>C8-C10A)	<10 µg/l	TM245	24.7		33.8		<10.0		79.3		10.2	
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	4060		3130		485		12300		3070	
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	11900		13700		1730		26100		19800	
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	16000		16800		2210		38300		22900	

SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68463

VOC MS (W)

Results Legend		Sample Identity	D1	G2	G4	G5		
# ISO17025 accredited. # mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.00 - 5.00 Water(GW/SW) 11/12/2009 091214-62 733517	3.00 - 9.00 Water(GW/SW) 11/12/2009 091214-62 733463	2.50 - 7.00 Water(GW/SW) 11/12/2009 091214-62 733394	2.00 - 8.00 Water(GW/SW) 11/12/2009 091214-62 733546		
Component	LOD/Units	Method						
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #		
Chloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #	<1.70 #	<1.70 #		
Vinyl Chloride	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #		
Bromomethane	<2.0 µg/l	TM208	<2.00 #	<2.00 #	<2.00 #	<2.00 #		
Chloroethane	<2.5 µg/l	TM208	<2.50 #	<2.50 #	<2.50 #	<2.50 #		
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #		
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #		
Carbon disulphide	<1.3 µg/l	TM208	<1.30 #	4.57 #	<1.30 #	<1.30 #		
Dichloromethane	<3.7 µg/l	TM208	<3.70 #	<3.70 #	<3.70 #	<3.70 #		
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.60 #	<1.60 #	<1.60 #	<1.60 #		
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #		
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #		
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.30 #	<2.30 #	<2.30 #	<2.30 #		
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.80 #	<3.80 #	<3.80 #	<3.80 #		
Bromochloromethane	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #		
Chloroform	<1.8 µg/l	TM208	<1.80 #	<1.80 #	<1.80 #	<1.80 #		
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #		
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #		
Carbontetrachloride	<1.4 µg/l	TM208	<1.40 #	<1.40 #	<1.40 #	<1.40 #		
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.30 #	<3.30 #	<3.30 #	<3.30 #		
Benzene	<1.3 µg/l	TM208	752 #	4130 #	5830 #	46.0 #		
Trichloroethene	<2.5 µg/l	TM208	<2.50 #	<2.50 #	<2.50 #	<2.50 #		
1,2-Dichloropropane	<3 µg/l	TM208	<3.00 #	<3.00 #	<3.00 #	<3.00 #		
Dibromomethane	<2.7 µg/l	TM208	<2.70 #	<2.70 #	<2.70 #	<2.70 #		
Bromodichloromethane	<0.9 µg/l	TM208	<0.900 #	<0.900 #	<0.900 #	<0.900 #		
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #		
Toluene	<1.4 µg/l	TM208	606 #	2500 #	4710 #	107 #		
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.50 #	<3.50 #	<3.50 #	<3.50 #		
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.20 #	<2.20 #	<2.20 #	<2.20 #		
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.20 #	<2.20 #	<2.20 #	<2.20 #		
Tetrachloroethene	<1.5 µg/l	TM208	<1.50 #	<1.50 #	<1.50 #	<1.50 #		
Dibromochloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #	<1.70 #	<1.70 #		
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.30 #	<2.30 #	<2.30 #	<2.30 #		
Chlorobenzene	<3.5 µg/l	TM208	<3.50 #	<3.50 #	<3.50 #	<3.50 #		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #		
Ethylbenzene	<2.5 µg/l	TM208	269 #	252 #	384 #	38.4 #		
p/m-Xylene	<2.5 µg/l	TM208	837 #	950 #	2280 #	380 #		
o-Xylene	<1.7 µg/l	TM208	438 #	543 #	980 #	149 #		
Styrene	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #		

SDG: 091214-62
Job: D_MOUCHEL_ELE-93
Client Reference: 11/12/09 (G4/G3/G2/D1/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68463

VOC MS (W)

<div style="border: 1px dashed black; padding: 2px;"> Results Legend # ISO17025 accredited. # mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery. </div>			Sample Identity	D1	G2	G4	G5
Component	LOD/Units	Method	D1	G2	G4	G5	
Bromoform	<3 µg/l	TM208	<3.00 #	<3.00 #	<3.00 #	<3.00 #	
Isopropylbenzene	<1.4 µg/l	TM208	25.3 #	17.2 #	24.2 #	7.59 #	
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.20 #	<5.20 #	<5.20 #	<5.20 #	
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.80 #	<7.80 #	<7.80 #	<7.80 #	
Bromobenzene	<2 µg/l	TM208	<2.00 #	<2.00 #	<2.00 #	<2.00 #	
Propylbenzene	<2.6 µg/l	TM208	32.9 #	16.9 #	28.0 #	10.8 #	
2-Chlorotoluene	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #	
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	111 #	55.0 #	147 #	90.1 #	
4-Chlorotoluene	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #	
tert-Butylbenzene	<2 µg/l	TM208	<2.00 #	<2.00 #	<2.00 #	<2.00 #	
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	346 #	213 #	390 #	239 #	
sec-Butylbenzene	<1.7 µg/l	TM208	<1.70 #	<1.70 #	<1.70 #	<1.70 #	
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.60 #	<2.60 #	54.4 #	<2.60 #	
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.20 #	<2.20 #	<2.20 #	<2.20 #	
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.70 #	<2.70 #	<2.70 #	<2.70 #	
n-Butylbenzene	<2 µg/l	TM208	<2.00 #	<2.00 #	<2.00 #	<2.00 #	
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.70 #	<3.70 #	<3.70 #	<3.70 #	
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.80 #	<9.80 #	<9.80 #	<9.80 #	
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.30 #	<2.30 #	<2.30 #	<2.30 #	
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.50 #	<2.50 #	<2.50 #	<2.50 #	
Tert-amyl methyl ether	<1 µg/l	TM208	<1.00 #	<1.00 #	<1.00 #	<1.00 #	
Naphthalene	<3.5 µg/l	TM208	6250 #	2140 #	10900 #	1030 #	
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.10 #	<3.10 #	<3.10 #	<3.10 #	
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10.0 #	<10.0 #	<10.0 #	<10.0 #	

Table of Results - Appendix

SDG Number : 091214-62

Client : Mouchel

Client Ref : 11/12/09 (G4/G3/G2/D1/G5)

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	

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

APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 04 January 2010
Job: D_MOUCHEL_ELE-95
Sample Delivery Group (SDG): 091215-78 **Report No.:** 68596
Your Reference: 11/12/09 (M3/K5/G8/K1/K10)
Location: Limerick Gasworks

A total of 5 samples was received on Friday December 11, 2009 and completed on Monday January 04, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG: 091215-78
 Job: D_MOUCHEL_ELE-95
 Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Verity Sankey
 Order No.:
 Report No: 68596

LIQUID

Results Legend	Sample ID	G8		K1			K10		K5		M3		Total
	Depth (m)	0.50 - 2.00		2.00 - 4.00			0.10 - 2.00		1.50 - 4.00		3.00 - 6.00		
	Container	1l green glass bottle	60g VOC Dublin 500ml Plastic	H2SO4	ZnAc	60g VOC Dublin 500ml Plastic	H2SO4	NaOH	ZnAc	1l green glass bottle	60g VOC Dublin 500ml Plastic	H2SO4		ZnAc
Ammonium	All			X			X		X			X	0
Anions by Kone (w)	All					X			X			X	5
Cyanide Comp/Free/Total/Thiocyanate	All		X					X			X		0
Dissolved Metals by ICP-MS	All	X					X			X			5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X			X					X			0
EPH CWG (Aromatic) Aqueous GC (W)	All	X			X			X		X			5
GRO BTEX MTBE GC (W)	All	X			X			X		X			0
Hexavalent Chromium (w)	All		X			X					X		5
Mercury Dissolved	All	X			X				X		X		0
PAH Spec MS - Aqueous (W)	All	X			X			X		X			5
pH Value	All	X			X				X		X		0
Phenols by HPLC (W)	All	X				X			X		X		5
Sulphide	All					X			X			X	0
Total Metals by ICP-MS	All			X				X		X		X	5
TPH CWG (W)	All	X			X			X		X			0
VOC MS (W)	All	X			X			X		X		X	5
										X		X	0
													2

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SDG: 091215-78
Job: D_MOUCHEL_ELE-95
Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 68596

Test Completion dates

SDG reference: 091215-78

Sample ID	Depth	Type	VOC MS (W)	TPH CWG (W)	Total Metals by ICP-MS	Sulphide	Phenols by HPLC (W)	pH Value	PAH Spec MS - Aqueous (W)	Mercury Dissolved	Hexavalent Chromium (W)	GRO BTEX MTBE GC (W)	EPH CWG (Aromatic) Aqueous GC (	EPH CWG (Aliphatic) Aqueous GC (	Dissolved Metals by ICP-MS	Cyanide Comp/Free/Total/Thiocyana	Anions by Kone (W)	Ammonium
G8	0.50 - 2.00	LIQUID	23/12/2009	23/12/2009	23/12/2009	16/12/2009	18/12/2009	17/12/2009	21/12/2009	21/12/2009	17/12/2009	21/12/2009	23/12/2009	23/12/2009	19/12/2009	17/12/2009	17/12/2009	17/12/2009
K1	2.00 - 4.00	LIQUID	23/12/2009	23/12/2009	23/12/2009	16/12/2009	19/12/2009	17/12/2009	21/12/2009	21/12/2009	17/12/2009	21/12/2009	23/12/2009	23/12/2009	19/12/2009	17/12/2009	17/12/2009	17/12/2009
K10	0.10 - 2.00	LIQUID	22/12/2009	22/12/2009	23/12/2009	16/12/2009	18/12/2009	17/12/2009	21/12/2009	23/12/2009	17/12/2009	21/12/2009	22/12/2009	22/12/2009	19/12/2009	17/12/2009	17/12/2009	17/12/2009
K5	1.50 - 4.00	LIQUID	04/01/2010	04/01/2010	24/12/2009	16/12/2009	19/12/2009	17/12/2009	21/12/2009	23/12/2009	17/12/2009	21/12/2009	22/12/2009	22/12/2009	19/12/2009	17/12/2009	17/12/2009	17/12/2009
M3	3.00 - 6.00	LIQUID	23/12/2009	23/12/2009	23/12/2009	16/12/2009	19/12/2009	17/12/2009	21/12/2009	23/12/2009	17/12/2009	21/12/2009	23/12/2009	23/12/2009	19/12/2009	17/12/2009	17/12/2009	18/12/2009

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SDG: 091215-78
Job: D_MOUCHEL_ELE-95
Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68596

Component	LOD/Units	Method	Sample Identity		G8	K1	K10	K5	M3
			Depth (m)	Sample Type	0.50 - 2.00 Water(GW/SW)	2.00 - 4.00 Water(GW/SW)	0.10 - 2.00 Water(GW/SW)	1.50 - 4.00 Water(GW/SW)	3.00 - 6.00 Water(GW/SW)
Results Legend			# ISO17025 accredited. # mCERTS accredited. # subcontracted test. * This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		27/11/2118	11/12/2009	03/12/2118	11/12/2009	11/12/2009
			Date Received		091215-78	091215-78	091215-78	091215-78	091215-78
			SDG Ref		738673	738698	738832	738630	738584
			Lab Sample No.(s)						
Phenol	<0.002 mg/l	TM062	1.28	<0.00200	<0.00200	512	<0.00200	#	
Cresols	<0.006 mg/l	TM062	1.71	<0.00600	<0.00600	1030	<0.00600	#	
Xylenols	<0.008 mg/l	TM062	2.11	<0.00800	<0.00800	293	<0.00800	#	
2,3,5-Trimethylphenol	<0.003 mg/l	TM062	<0.00300	<0.00300	<0.00300	<0.600	<0.00300	#	
2-Isopropylphenol	<0.006 mg/l	TM062	<0.00600	<0.00600	<0.00600	<1.20	<0.00600	#	
Phenols Total of 5 Speciated	<0.025 mg/l	TM062	5.10	<0.0250	<0.0250	1840	<0.0250	#	
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	15.1	9.27	<0.200	135	1.37	#	
Sulphide	<0.1 mg/l	TM101	<0.500	<0.500	<0.500	<0.500	<0.500	#	
Arsenic Dissolved	<0.75 µg/l	TM152	4.28	3.90	1.49	41.7	5.30	#	
Cadmium Dissolved	<0.22 µg/l	TM152	<0.220	<0.220	<0.220	<0.220	<0.220	#	
Copper Dissolved	<1.6 µg/l	TM152	3.27	11.5	4.83	5.44	8.55	#	
Lead Dissolved	<0.4 µg/l	TM152	<0.400	5.04	3.88	1.53	2.90	#	
Nickel Dissolved	<1.5 µg/l	TM152	3.41	15.9	6.36	28.7	7.43	#	
Selenium Dissolved	<1 µg/l	TM152	7.22	1.48	<1.00	22.4	3.64	#	
Zinc Dissolved	<5 µg/l	TM152	<5.00	41.4	25.8	9.78	30.0	#	
Mercury Dissolved	<0.01 µg/l	TM183	<0.0100	<0.0100	<0.0100	0.0262	<0.0100	#	
Sulphate (soluble)	3 mg/l	TM184	83.0	372	27.3	678	541	#	
Chromium (Unfiltered)	<3 µg/l	TM191	15.6	28.5	19.7	45.3	21.2	#	
Total Cyanide	<0.05 mg/l	TM227	0.449	0.577	<0.0500	5.20	0.702	#	
Hexavalent Chromium	<0.03 mg/l	TM241	<0.0300	<0.0300	<0.0300	<0.0600	<0.0300	#	
pH value	<1.00 pH Units	TM256	8.37	8.10	8.06	9.56	7.86	#	

SDG: 091215-78
 Job: D_MOUCHEL_ELE-95
 Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 68596

PAH Spec MS - Aqueous (W)

Results Legend		Sample Identity	G8	K1	K10	K5	M3
# ISO17025 accredited. mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m)	0.50 - 2.00	2.00 - 4.00	0.10 - 2.00	1.50 - 4.00	3.00 - 6.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	27/11/2118		03/12/2118	11/12/2009	
		Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
		SDG Ref	091215-78	091215-78	091215-78	091215-78	091215-78
		Lab Sample No.(s)	738673	738698	738832	738630	738584
Component	LOD/Units	Method					
Naphthalene (Aqueous)	<0.1 µg/l	TM178	613	<0.100	0.439	241	0.143
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	5.82	0.712	1.58	3.58	2.19
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	45.4	0.473	0.475	19.3	0.944
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	11.3	0.667	3.67	2.11	1.91
Anthracene (Aqueous)	<0.015 µg/l	TM178	7.53	0.0939	0.194	2.52	0.239
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	28.4	0.0410	0.0554	9.20	0.233
Fluorene (Aqueous)	<0.014 µg/l	TM178	22.1	0.498	0.430	7.36	0.539
Chrysene (Aqueous)	<0.013 µg/l	TM178	1.73	0.0734	0.124	<1.30	0.480
Pyrene (Aqueous)	<0.015 µg/l	TM178	7.60	0.453	2.00	<1.50	1.49
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	2.44	0.0864	0.284	<1.70	0.573
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	1.36	0.125	0.0737	<2.30	0.881
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	0.711	0.0473	0.0760	<2.70	0.338
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	1.07	0.0872	0.0756	<0.900	0.576
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	0.398	0.0182	<0.0160	<1.60	0.104
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	0.815	0.0805	0.0294	<1.60	0.540
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	0.632	0.0802	0.0236	<1.40	0.389
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	751	2.52	9.53	287	11.6

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SDG: 091215-78
Job: D_MOUCHEL_ELE-95
Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68596

TPH CWG (W)

Results Legend			Sample Identity	G8	K1	K10	K5	M3
# ISO17025 accredited. # mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	0.50 - 2.00	2.00 - 4.00	0.10 - 2.00	1.50 - 4.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/11/2118		03/12/2118	11/12/2009	11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091215-78	091215-78	091215-78	091215-78	091215-78
			Lab Sample No.(s)	738673	738698	738832	738630	738584
Component	LOD/Units	Method						
GRO C5-C12	<42 µg/l	TM245	1590	<42.0	<42.0	69500	<42.0	#
MTBE	<3 µg/l	TM245	<3.00	<3.00	<3.00	<3.00	<3.00	#
Benzene	<7 µg/l	TM245	309	<7.00	<7.00	18900	9.00	#
Toluene	<4 µg/l	TM245	160	<4.00	<4.00	6560	<4.00	#
Ethyl Benzene	<5 µg/l	TM245	11.0	<5.00	<5.00	393	<5.00	#
m & p Xylene	<8 µg/l	TM245	79.0	<8.00	<8.00	2270	<8.00	#
o Xylene	<3 µg/l	TM245	33.0	<3.00	<3.00	1000	<3.00	#
Sum m&p and o Xylene	<10 µg/l	TM245	112	<10.0	<10.0	3270	<10.0	#
Sum of BTEX	<10 µg/l	TM245	592	<10.0	<10.0	29200	<10.0	#
Aliphatics C5-C6	<10 µg/l	TM245	<10.0	<10.0	<10.0	467	<10.0	#
Aliphatics >C6-C8	<10 µg/l	TM245	76.7	<10.0	<10.0	9560	11.0	#
Aliphatics >C8-C10	<10 µg/l	TM245	63.7	<10.0	<10.0	2960	<10.0	#
Aliphatics >C10-C12	<10 µg/l	TM245	306	<10.0	<10.0	9170	<10.0	#
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	<10.0	<10.0	<10.0	<10.0	<10.0	#
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	<10.0	<10.0	<10.0	20.0	<10.0	#
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	<10.0	<10.0	<10.0	<10.0	<10.0	#
Total Aliphatics C5-C12	<10 µg/l	TM245	446	<10.0	10.1	22200	11.0	#
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10.0	<10.0	<10.0	20.0	<10.0	#
Aromatics C6-C7	<10 µg/l	TM245	309	<10.0	<10.0	18900	<10.0	#
Aromatics >C7-C8	<10 µg/l	TM245	160	<10.0	<10.0	6560	<10.0	#
Aromatics >EC8-EC10	<10 µg/l	TM245	219	<10.0	<10.0	8110	<10.0	#
Aromatics >EC10-EC12	<10 µg/l	TM245	459	<10.0	15.2	13800	<10.0	#
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	283	<10.0	8560	<10.0	<10.0	#
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	82.0	<10.0	520	<10.0	<10.0	#
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	22.0	<10.0	71.0	<10.0	<10.0	#
Total Aromatics C6-C12	<10 µg/l	TM245	1150	<10.0	15.2	47400	<10.0	#
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	387	<10.0	9150	<10.0	<10.0	#
Surrogate Recovery %**	%	TM245	52.00	101.00	96.00	106.00	98.00	#
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	387	<10.0	9150	20.0	<10.0	#
GRO (>C8-C10A)	<10 µg/l	TM245	<10.0	<10.0	<10.0	719	<10.0	#
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	446	<10.0	10.1	22200	11.0	#
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	1530	<10.0	9170	47400	<10.0	#
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	1980	<10.0	9180	69500	11.0	#

SDG: 091215-78
Job: D_MOUCHEL_ELE-95
Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 68596

VOC MS (W)

Results Legend		Sample Identity	K5	M3			
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.50 - 4.00 Water(GW/SW) 11/12/2009 11/12/2009 091215-78 738630	3.00 - 6.00 Water(GW/SW) 11/12/2009 091215-78 738584			
Component	LOD/Units	Method					
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Chloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #			
Vinyl Chloride	<1.2 µg/l	TM208	<1.20 #	<1.20 #			
Bromomethane	<2.0 µg/l	TM208	<2.00 #	<2.00 #			
Chloroethane	<2.5 µg/l	TM208	<2.50 #	<2.50 #			
Trichlorofluoromethane	<1.3 µg/l	TM208	2.79 #	<1.30 #			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.20 #	<1.20 #			
Carbon disulphide	<1.3 µg/l	TM208	1.85 #	<1.30 #			
Dichloromethane	<3.7 µg/l	TM208	3.80 #	<3.70 #			
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.60 #	<1.60 #			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.90 #	<1.90 #			
1,1-Dichloroethane	<1.2 µg/l	TM208	1.53 #	<1.20 #			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.30 #	<2.30 #			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.80 #	<3.80 #			
Bromochloromethane	<1.9 µg/l	TM208	<1.90 #	<1.90 #			
Chloroform	<1.8 µg/l	TM208	2.92 #	2.25 #			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	8.02 #	2.30 #			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Carbontetrachloride	<1.4 µg/l	TM208	<1.40 #	<1.40 #			
1,2-Dichloroethane	<3.3 µg/l	TM208	574 #	<3.30 #			
Benzene	<1.3 µg/l	TM208	16200 #	1.32 #			
Trichloroethene	<2.5 µg/l	TM208	10.3 #	<2.50 #			
1,2-Dichloropropane	<3 µg/l	TM208	<3.00 #	<3.00 #			
Dibromomethane	<2.7 µg/l	TM208	<2.70 #	<2.70 #			
Bromodichloromethane	<0.9 µg/l	TM208	<0.900 #	<0.900 #			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.90 #	<1.90 #			
Toluene	<1.4 µg/l	TM208	4540 #	<1.40 #			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.50 #	<3.50 #			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	390 #	<2.20 #			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.20 #	<2.20 #			
Tetrachloroethene	<1.5 µg/l	TM208	2.21 #	<1.50 #			
Dibromochloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.30 #	<2.30 #			
Chlorobenzene	<3.5 µg/l	TM208	<3.50 #	<3.50 #			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Ethylbenzene	<2.5 µg/l	TM208	252 #	<2.50 #			
p/m-Xylene	<2.5 µg/l	TM208	1810 #	<2.50 #			
o-Xylene	<1.7 µg/l	TM208	615 #	<1.70 #			
Styrene	<1.2 µg/l	TM208	329 #	<1.20 #			

SDG: 091215-78
Job: D_MOUCHEL_ELE-95
Client Reference: 11/12/09 (M3/K5/G8/K1/K10)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68596

VOC MS (W)

Results Legend			Sample Identity		K5	M3				
# ISO17025 accredited. # mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	1.50 - 4.00	3.00 - 6.00					
			Sample Type	Water(GW/SW)	Water(GW/SW)					
			Date Sampled	11/12/2009	11/12/2009					
			Date Received	11/12/2009	11/12/2009					
			SDG Ref	091215-78	091215-78					
			Lab Sample No.(s)	738630	738584					
Component	LOD/Units	Method								
Bromoform	<3 µg/l	TM208	<3.00		<3.00	#	#			
Isopropylbenzene	<1.4 µg/l	TM208	12.2		<1.40	#	#			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.20		<5.20					
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.80		<7.80	#	#			
Bromobenzene	<2 µg/l	TM208	<2.00		<2.00	#	#			
Propylbenzene	<2.6 µg/l	TM208	15.5		<2.60	#	#			
2-Chlorotoluene	<1.9 µg/l	TM208	11.5		<1.90	#	#			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	71.9		<1.80	#	#			
4-Chlorotoluene	<1.9 µg/l	TM208	2.46		<1.90	#	#			
tert-Butylbenzene	<2 µg/l	TM208	17.6		<2.00	#	#			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	173		<1.70	#	#			
sec-Butylbenzene	<1.7 µg/l	TM208	<1.70		<1.70	#	#			
4-Isopropyltoluene	<2.6 µg/l	TM208	24.9		<2.60	#	#			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.20		<2.20	#	#			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.70		<2.70	#	#			
n-Butylbenzene	<2 µg/l	TM208	48.6		<2.00	#	#			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.70		<3.70	#	#			
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.80		<9.80					
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.30		<2.30	#	#			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.50		<2.50	#	#			
Tert-amyl methyl ether	<1 µg/l	TM208	577		<1.00	#	#			
Naphthalene	<3.5 µg/l	TM208	7340		<3.50	#	#			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.10		<3.10	#	#			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10.0		<10.0					

Table of Results - Appendix

SDG Number : 091215-78

Client : Mouchel

Client Ref : 11/12/09 (M3/K5/G8/K1/K10)

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	

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

APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 04 January 2010
Job: D_MOUCHEL_ELE-96
Sample Delivery Group (SDG): 091215-85 **Report No.:** 68637
Your Reference: 10/12/09 11/12/09 (B8/C7/C11/H
Location: Limerick Gasworks

A total of 5 samples was received on Friday December 11, 2009 and completed on Monday January 04, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG: 091215-85 **Customer:** Mouchel
Job: D_MOUCHEL_ELE-96 **Attention:** Verity Sankey
Client Reference: 10/12/09 11/12/09 (B8/C7/C11/H12/F11) **Order No.:**
Location: Limerick Gasworks **Report No:** 68637

Test Completion dates

SDG reference: 091215-85

Sample ID	Depth	Type	VOC MS (W)	TPH CWG (W)	Total Metals by ICP-MS	Sulphide	Phenols by HPLC (W)	pH Value	PAH Spec MS - Aqueous (W)	Mercury Dissolved	Hexavalent Chromium (W)	GRO BTEX MTBE GC (W)	EPH CWG (Aromatic) Aqueous GC (	EPH CWG (Aliphatic) Aqueous GC (	Dissolved Metals by ICP-MS	Cyanide Comp/Free/Total/Thiocyana	Anions by Kone (W)	Ammonium
B8	2.00 - 3.00	LIQUID	04/01/2010	31/12/2009	24/12/2009	18/12/2009	18/12/2009	17/12/2009	21/12/2009	17/12/2009	22/12/2009	30/12/2009	23/12/2009	23/12/2009	19/12/2009	17/12/2009	21/12/2009	18/12/2009
C11	1.50 - 2.50	LIQUID	22/12/2009	24/12/2009	21/12/2009	17/12/2009	17/12/2009	17/12/2009	23/12/2009	17/12/2009	17/12/2009	21/12/2009	22/12/2009	22/12/2009	19/12/2009	16/12/2009	17/12/2009	17/12/2009
C7	2.00 - 7.00	LIQUID	04/01/2010	31/12/2009	24/12/2009	21/12/2009	19/12/2009	17/12/2009	21/12/2009	17/12/2009	17/12/2009	30/12/2009	30/12/2009	30/12/2009	19/12/2009	17/12/2009	21/12/2009	18/12/2009
F11	1.50 - 3.50	LIQUID	04/01/2010	04/01/2010	23/12/2009	16/12/2009	17/12/2009	16/12/2009	04/01/2010	04/01/2010	17/12/2009	21/12/2009	04/01/2010	04/01/2010	18/12/2009	16/12/2009	17/12/2009	17/12/2009
H12	2.00 - 4.00	LIQUID	21/12/2009	21/12/2009	23/12/2009	16/12/2009	17/12/2009	16/12/2009	21/12/2009	21/12/2009	16/12/2009	21/12/2009	21/12/2009	21/12/2009	18/12/2009	16/12/2009	17/12/2009	17/12/2009

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SDG: 091215-85
Job: D_MOUCHEL_ELE-96
Client Reference: 10/12/09 11/12/09 (B8/C7/C11/H12/F11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68637

Component	LOD/Units	Method	Sample Identity		B8	C11	C7	F11	H12
			Depth (m)	Sample Type	2.00 - 3.00 Water(GW/SW)	1.50 - 2.50 Water(GW/SW)	2.00 - 7.00 Water(GW/SW)	1.50 - 3.50 Water(GW/SW)	2.00 - 4.00 Water(GW/SW)
Phenol	<0.002 mg/l	TM062	10/12/2009	11/12/2009	27.0	<0.00200	180	<0.00200	0.0400
Cresols	<0.006 mg/l	TM062	10/12/2009	11/12/2009	51.9	<0.00600	337	<0.00600	0.290
Xylenols	<0.008 mg/l	TM062	10/12/2009	11/12/2009	51.8	<0.00800	108	0.180	0.560
2,3,5-Trimethylphenol	<0.003 mg/l	TM062	10/12/2009	11/12/2009	<0.0300	<0.00300	<0.150	<0.00300	<0.00300
2-Isopropylphenol	<0.006 mg/l	TM062	10/12/2009	11/12/2009	<0.0600	<0.00600	<0.300	<0.00600	<0.00600
Phenols Total of 5 Speciated	<0.025 mg/l	TM062	10/12/2009	11/12/2009	131	<0.0250	625	0.180	0.890
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	10/12/2009	11/12/2009	184	6.49	94.8	4.53	3.88
Sulphide	<0.1 mg/l	TM101	10/12/2009	11/12/2009	<0.500	<5.00	<2.50	<0.500	<0.500
Arsenic Dissolved	<0.75 µg/l	TM152	10/12/2009	11/12/2009	30.9	5.85	18.4	2.26	1.92
Cadmium Dissolved	<0.22 µg/l	TM152	10/12/2009	11/12/2009	0.955	<0.220	<0.220	<0.220	<0.220
Copper Dissolved	<1.6 µg/l	TM152	10/12/2009	11/12/2009	7.56	3.08	5.29	1.94	12.8
Lead Dissolved	<0.4 µg/l	TM152	10/12/2009	11/12/2009	6.58	0.520	6.61	1.11	0.815
Nickel Dissolved	<1.5 µg/l	TM152	10/12/2009	11/12/2009	10.2	5.07	5.32	1.82	2.33
Selenium Dissolved	<1 µg/l	TM152	10/12/2009	11/12/2009	3.58	1.69	8.43	4.30	3.63
Zinc Dissolved	<5 µg/l	TM152	10/12/2009	11/12/2009	55.4	<5.00	36.1	5.94	7.07
Mercury Dissolved	<0.01 µg/l	TM183	10/12/2009	11/12/2009	0.0117	<0.0100	0.0124	<0.0100	<0.0100
Sulphate (soluble)	3 mg/l	TM184	10/12/2009	11/12/2009	115	264	159	35.8	150
Chromium (Unfiltered)	<3 µg/l	TM191	10/12/2009	11/12/2009	6.54	<3.00	40.1	57.1	67.4
Total Cyanide	<0.05 mg/l	TM227	10/12/2009	11/12/2009	0.269	1.41	0.454	<0.0500	<0.0500
Hexavalent Chromium	<0.03 mg/l	TM241	10/12/2009	11/12/2009	<0.0300	<0.0300	<0.0600	<0.0300	<0.0300
pH value	<1.00 pH Units	TM256	10/12/2009	11/12/2009	8.63	8.06	8.75	8.10	7.91

Results Legend
 # ISO17025 accredited.
 M mCERTS accredited.
 subcontracted test.
 * This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %
 The results of the individual compounds within the sample are not corrected for this recovery.

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SDG: 091215-85
Job: D_MOUCHEL_ELE-96
Client Reference: 10/12/09 11/12/09 (B8/C7/C11/H12/F11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68637

PAH Spec MS - Aqueous (W)

Results Legend			Sample Identity	B8	C11	C7	F11	H12
# ISO17025 accredited. mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	2.00 - 3.00	1.50 - 2.50	2.00 - 7.00	1.50 - 3.50	2.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/12/2009	11/12/2009	26/11/2118	11/12/2009	11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091215-85	091215-85	091215-85	091215-85	091215-85
			Lab Sample No.(s)	739353	739459	739390	739521	739490
Component	LOD/Units	Method						
Naphthalene (Aqueous)	<0.1 µg/l	TM178	5590	933	308	2.81	23.3	
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	47.7	724	3.72	0.398	25.3	
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	278	247	23.8	3.08	38.4	
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	154	421	17.1	7.32	90.3	
Anthracene (Aqueous)	<0.015 µg/l	TM178	92.8	162	10.6	1.06	27.6	
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	298	889	33.8	1.80	64.1	
Fluorene (Aqueous)	<0.014 µg/l	TM178	152	423	14.7	0.355	32.2	
Chrysene (Aqueous)	<0.013 µg/l	TM178	31.5	58.2	2.75	5.26	16.8	
Pyrene (Aqueous)	<0.015 µg/l	TM178	102	259	11.3	6.29	61.8	
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	42.7	102	4.30	5.48	27.2	
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	42.5	97.3	3.75	11.5	28.9	
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	17.7	35.0	<2.70	5.44	11.6	
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	35.2	74.1	3.34	10.3	24.9	
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	5.38	9.74	<1.60	1.41	3.73	
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	18.5	40.1	<1.60	6.86	13.4	
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	15.6	34.7	<1.40	5.90	11.4	
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	6920	8510	441	75.2	501	

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SDG: 091215-85
Job: D_MOUCHEL_ELE-96
Client Reference: 10/12/09 11/12/09 (B8/C7/C11/H12/F11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68637

TPH CWG (W)

Results Legend			Sample Identity	B8	C11	C7	F11	H12
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	2.00 - 3.00	1.50 - 2.50	2.00 - 7.00	1.50 - 3.50	2.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/12/2009	11/12/2009	26/11/2118	11/12/2009	11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091215-85	091215-85	091215-85	091215-85	091215-85
			Lab Sample No.(s)	739353	739459	739390	739521	739490
Component	LOD/Units	Method						
GRO C5-C12	<42 µg/l	TM245	57200	11300	52400	78.0	1030	#
MTBE	<3 µg/l	TM245	<3.00	<3.00	<3.00	<3.00	6.00	#
Benzene	<7 µg/l	TM245	15300	86.0	16400	7.00	24.0	#
Toluene	<4 µg/l	TM245	7810	106	5070	8.00	20.0	#
Ethyl Benzene	<5 µg/l	TM245	399	210	232	<5.00	<5.00	#
m & p Xylene	<8 µg/l	TM245	2800	586	1540	9.00	40.0	#
o Xylene	<3 µg/l	TM245	1180	332	705	6.00	36.0	#
Sum m&p and o Xylene	<10 µg/l	TM245	3980	918	2250	<10.0	76.0	#
Sum of BTEX	<10 µg/l	TM245	27500	1320	23900	<10.0	120	#
Aliphatics C5-C6	<10 µg/l	TM245	133	<10.0	176	<10.0	<10.0	#
Aliphatics >C6-C8	<10 µg/l	TM245	7120	83.8	6980	<10.0	17.1	#
Aliphatics >C8-C10	<10 µg/l	TM245	2090	829	1950	13.2	77.7	#
Aliphatics >C10-C12	<10 µg/l	TM245	6900	3120	6570	11.8	278	#
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	99.0	5450	203	27.0	185	#
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	111	2410	<10.0	222	126	#
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	145	896	<10.0	216	682	#
Total Aliphatics C5-C12	<10 µg/l	TM245	16300	4040	15700	25.0	373	#
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	355	8760	203	465	993	#
Aromatics C6-C7	<10 µg/l	TM245	15300	86.0	16400	<10.0	24.0	#
Aromatics >C7-C8	<10 µg/l	TM245	7810	106	5070	<10.0	20.0	#
Aromatics >EC8-EC10	<10 µg/l	TM245	7520	2370	5400	19.8	193	#
Aromatics >EC10-EC12	<10 µg/l	TM245	10400	4680	9850	17.7	417	#
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	7400	8460	20600	75.0	527	#
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	1920	2980	3200	148	718	#
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	2470	2600	3010	376	1700	#
Total Aromatics C6-C12	<10 µg/l	TM245	41000	7250	36700	37.5	653	#
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	11800	14000	26800	599	2950	#
Surrogate Recovery %**	%	TM245	117.00	104.00	117.00	98.00	101.00	#
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	12100	22800	27000	1060	3940	#
GRO (>C8-C10A)	<10 µg/l	TM245	178	31.2	407	<10.0	<10.0	#
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	16600	12800	15900	490	1370	#
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	52800	21300	63500	636	3600	#
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	69400	34100	79400	1130	4960	#

SDG: 091215-85
Job: D_MOUCHEL_ELE-96
Client Reference: 10/12/09 11/12/09 (B8/C7/C11/H12/F11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68637

VOC MS (W)

Results Legend		Sample Identity	B8	C7			
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m)	2.00 - 3.00	2.00 - 7.00			
		Sample Type	Water(GW/SW)	Water(GW/SW)			
		Date Sampled	10/12/2009	26/11/2118			
		Date Received	11/12/2009	11/12/2009			
		SDG Ref	091215-85	091215-85			
		Lab Sample No.(s)	739353	739390			
Component	LOD/Units	Method					
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Chloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #			
Vinyl Chloride	<1.2 µg/l	TM208	<1.20 #	<1.20 #			
Bromomethane	<2.0 µg/l	TM208	<2.00 #	<2.00 #			
Chloroethane	<2.5 µg/l	TM208	<2.50 #	<2.50 #			
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.20 #	<1.20 #			
Carbon disulphide	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Dichloromethane	<3.7 µg/l	TM208	<3.70 #	<3.70 #			
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.60 #	<1.60 #			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.90 #	<1.90 #			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.20 #	<1.20 #			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.30 #	<2.30 #			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.80 #	<3.80 #			
Bromochloromethane	<1.9 µg/l	TM208	<1.90 #	<1.90 #			
Chloroform	<1.8 µg/l	TM208	<1.80 #	10.0 #			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.30 #	27.30 #			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Carbontetrachloride	<1.4 µg/l	TM208	<1.40 #	<1.40 #			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.30 #	<3.30 #			
Benzene	<1.3 µg/l	TM208	17100 #	19400 #			
Trichloroethene	<2.5 µg/l	TM208	<2.50 #	<2.50 #			
1,2-Dichloropropane	<3 µg/l	TM208	<3.00 #	<3.00 #			
Dibromomethane	<2.7 µg/l	TM208	<2.70 #	<2.70 #			
Bromodichloromethane	<0.9 µg/l	TM208	<0.900 #	1.99 #			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.90 #	<1.90 #			
Toluene	<1.4 µg/l	TM208	8020 #	5380 #			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.50 #	<3.50 #			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.20 #	<2.20 #			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.20 #	<2.20 #			
Tetrachloroethene	<1.5 µg/l	TM208	<1.50 #	<1.50 #			
Dibromochloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.30 #	<2.30 #			
Chlorobenzene	<3.5 µg/l	TM208	<3.50 #	<3.50 #			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #			
Ethylbenzene	<2.5 µg/l	TM208	343 #	180 #			
p/m-Xylene	<2.5 µg/l	TM208	8020 #	1430 #			
o-Xylene	<1.7 µg/l	TM208	1140 #	569 #			
Styrene	<1.2 µg/l	TM208	<1.20 #	<1.20 #			

SDG: 091215-85
Job: D_MOUCHEL_ELE-96
Client Reference: 10/12/09 11/12/09 (B8/C7/C11/H12/F11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 68637

VOC MS (W)

Results Legend			Sample Identity		B8	C7				
# ISO17025 accredited. mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	2.00 - 3.00	2.00 - 7.00					
			Sample Type	Water(GW/SW)	Water(GW/SW)					
			Date Sampled	10/12/2009	26/11/2118					
			Date Received	11/12/2009	11/12/2009					
			SDG Ref	091215-85	091215-85					
			Lab Sample No.(s)	739353	739390					
Component	LOD/Units	Method								
Bromoform	<3 µg/l	TM208	<3.00		<3.00	#	#			
Isopropylbenzene	<1.4 µg/l	TM208	15.6		7.65	#	#			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.20		<5.20					
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.80		<7.80	#	#			
Bromobenzene	<2 µg/l	TM208	<2.00		<2.00	#	#			
Propylbenzene	<2.6 µg/l	TM208	21.0		11.2	#	#			
2-Chlorotoluene	<1.9 µg/l	TM208	<1.90		<1.90	#	#			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	138		73.4	#	#			
4-Chlorotoluene	<1.9 µg/l	TM208	<1.90		<1.90	#	#			
tert-Butylbenzene	<2 µg/l	TM208	<2.00		<2.00	#	#			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	338		174	#	#			
sec-Butylbenzene	<1.7 µg/l	TM208	<1.70		<1.70	#	#			
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.60		<2.60	#	#			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.20		<2.20	#	#			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.70		<2.70	#	#			
n-Butylbenzene	<2 µg/l	TM208	<2.00		<2.00	#	#			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.70		<3.70	#	#			
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.80		<9.80					
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.30		<2.30	#	#			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.50		<2.50	#	#			
Tert-amyl methyl ether	<1 µg/l	TM208	<1.00		<1.00	#	#			
Naphthalene	<3.5 µg/l	TM208	15800		10400	#	#			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.10		<3.10	#	#			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10.0		<10.0					

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Table of Results - Appendix

SDG Number : 091215-85

Client : Mouchel

Client Ref : 10/12/09 11/12/09 (B8/C7/C

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	

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

APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 22 January 2010
Job: D_MOUCHEL_ELE-98
Sample Delivery Group (SDG): 100118-36 **Report No.:** 70561
Your Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

A total of 5 samples was received on Friday January 15, 2010 and completed on Friday January 22, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No.: 70561

LIQUID

Results Legend	Sample ID	A11		C11		E8		F11		G8		Total
		Depth (m)		Depth (m)		Depth (m)		Depth (m)		Depth (m)		
		Container		Container		Container		Container		Container		
X Test												
N No Determination Possible												
Ammonium	All		X		X	X		X		X		0
Anions by Kone (w)	All		X		X	X		X		X		5
Cyanide Comp/Free/Total/Thiocyanate	All	X		X		X		X		X		0
Dissolved Metals by ICP-MS	All		X		X	X		X		X		5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X		X		X		X		X		0
EPH CWG (Aromatic) Aqueous GC (W)	All	X		X		X		X		X		5
GRO BTEX MTBE GC (W)	All		X		X	X		X		X		0
Hexavalent Chromium (w)	All		X		X	X		X		X		5
Mercury Dissolved	All	X		X		X		X		X		0
PAH Spec MS - Aqueous (W)	All	X		X		X		X		X		5
pH Value	All	X		X		X		X		X		0
Phenols by HPLC (W)	All	X		X		X		X		X		5
Sulphide	All		X		X	X		X		X		0
Total Metals by ICP-MS	All		X		X	X		X		X		5
TPH CWG (W)	All	X		X		X		X		X		0
VOC MS (W)	All		X		X	X		X		X		5
			X		X	X		X		X		0
			X		X	X		X		X		1

SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 70561

Test Completion dates

SDG reference: 100118-36

Sample ID	Depth	Type	SDG reference: 100118-36														
			VOC MS (W)	TPH CWG (W)	Total Metals by ICP-MS	Sulphide	Phenols by HPLC (W)	pH Value	PAH Spec MS - Aqueous (W)	Mercury Dissolved	Hexavalent Chromium (W)	GRO BTEX MTBE GC (W)	EPH CWG (Aromatic) Aqueous GC (EPH CWG (Aliphatic) Aqueous GC (Dissolved Metals by ICP-MS	Cyanide Comp/Free/Total/Thiocyana	Anions by Kone (W)	Ammonium
A11	1.0 - 2.5	LIQUID	20/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010	19/01/2010	20/01/2010	20/01/2010	20/01/2010	21/01/2010	21/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010
C11	1.5 - 2.5	LIQUID	22/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010
E8	1.0 - 6.0	LIQUID	22/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010
F11	1.0 - 2.0	LIQUID	22/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010
G8	0.5 - 2.0	LIQUID	22/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010

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SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

Results Legend			Sample Identity		A11	C11	E8	F11	G8
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	Sample Type	1.0 - 2.5	1.5 - 2.5	1.0 - 6.0	1.0 - 2.0	0.5 - 2.0
			Date Sampled	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010	
			SDG Ref	100118-36	100118-36	100118-36	100118-36	100118-36	
			Lab Sample No.(s)	841167	841205	840752	841168	841170	
Component	LOD/Units	Method							
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	1.33	4.73	59.3	1.93	21.3	#	#
Sulphide	<0.1 mg/l	TM101	<0.1	<0.1	<0.1	<0.1	<0.1	#	#
Arsenic Dissolved	<0.12 µg/l	TM152	1.22	4.13	2.35	13.9	5.16	#	#
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1	<0.1	<0.1	<0.1	<0.1	#	#
Copper Dissolved	<0.85 µg/l	TM152	1.52	1.27	11.2	3.2	1.4	#	#
Lead Dissolved	<0.02 µg/l	TM152	2.33	0.02	0.308	0.58	0.07	#	#
Nickel Dissolved	<0.15 µg/l	TM152	3.47	5.14	5.84	3.89	4.83	#	#
Selenium Dissolved	<0.39 µg/l	TM152	5.48	4.12	8.47	8.08	4.78	#	#
Zinc Dissolved	<0.41 µg/l	TM152	11.6	0.801	0.957	1.41	1.09	#	#
Mercury Dissolved	<0.01 µg/l	TM183	<0.01	<0.01	0.012	<0.01	<0.01	#	#
Sulphate (soluble)	3 mg/l	TM184	328	222	547	33.9	112	#	#
Chromium (Unfiltered)	<3 µg/l	TM191	15.9	46.2	17.2	6.41	52	#	#
Total Cyanide	<0.05 mg/l	TM227	<0.05	0.074	15.7	<0.05	0.817	#	#
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	<0.06	<0.03	<0.03	#	#
pH value	<1 pH Units	TM256	7.9	7.81	9.74	8.15	8.6	#	#
Phenol	<0.002 mg/l	TM259	<0.002	<0.002	86	0.04	3.17	#	#
Cresols	<0.006 mg/l	TM259	<0.006	<0.006	138	0.07	6.35	#	#
Xylenols	<0.008 mg/l	TM259	<0.008	0.07	67.2	0.04	5.88	#	#
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003	<0.003	<0.06	<0.003	<0.003	#	#
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006	<0.006	<0.12	<0.006	2.1	#	#
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	<0.025	0.07	291	0.15	17.5	#	#

SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70239

PAH Spec MS - Aqueous (W)

Table with columns: Component, LOD/Units, Method, A11, C11, E8, F11, G8. Includes a Results Legend box and a large red watermark: 'For inspection purposes only. Consent of copyright owner required for any other use.'

SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70239

TPH CWG (W)

Results Legend			Sample Identity		A11	C11	E8	F11	G8	
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	Sample Type	1.0 - 2.5	1.5 - 2.5	1.0 - 6.0	1.0 - 2.0	0.5 - 2.0	
			Date Sampled	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010		
			SDG Ref	100118-36	100118-36	100118-36	100118-36	100118-36		
			Lab Sample No.(s)	841167	841205	840752	841168	841170		
Component	LOD/Units	Method								
GRO C5-C12	<42 µg/l	TM245	679	5970	21200	48	7040	#	#	
MTBE	<3 µg/l	TM245	7	21	<3	6	4	#	#	
Benzene	<7 µg/l	TM245	<7	61	8540	<7	2170	#	#	
Toluene	<4 µg/l	TM245	<4	61	2040	<4	1190	#	#	
Ethyl Benzene	<5 µg/l	TM245	<5	65	85	<5	83	#	#	
m & p Xylene	<8 µg/l	TM245	23	307	640	<8	595	#	#	
o Xylene	<3 µg/l	TM245	50	198	300	<3	229	#	#	
Sum m&p and o Xylene	<10 µg/l	TM245	73	505	940	<10	824	#	#	
Sum of BTEX	<10 µg/l	TM245	73	692	11600	<10	4270	#	#	
Aliphatics C5-C6	<10 µg/l	TM245	14.3	31.3	136	12.3	18.3	#	#	
Aliphatics >C6-C8	<10 µg/l	TM245	48.3	124	1620	35.7	<10	#	#	
Aliphatics >C8-C10	<10 µg/l	TM245	55.2	498	774	<10	208	#	#	
Aliphatics >C10-C12	<10 µg/l	TM245	162	1540	2360	<10	990	#	#	
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	<10	156	<10	<10	<10	#	#	
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	<10	325	<10	<10	<10	#	#	
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	<10	77	<10	<10	<10	#	#	
Total Aliphatics C5-C12	<10 µg/l	TM245	280	2200	4890	48	1220	#	#	
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10	552	<10	<10	<10	#	#	
Aromatics C6-C7	<10 µg/l	TM245	<10	61	8540	<10	2170	#	#	
Aromatics >C7-C8	<10 µg/l	TM245	<10	61	2040	<10	1190	#	#	
Aromatics >EC8-EC10	<10 µg/l	TM245	156	1320	2190	<10	1220	#	#	
Aromatics >EC10-EC12	<10 µg/l	TM245	243	2320	3550	<10	1490	#	#	
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	201	1550	5740	<10	1050	#	#	
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	197	779	904	<10	322	#	#	
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	111	433	543	<10	188	#	#	
Total Aromatics C6-C12	<10 µg/l	TM245	399	3760	16300	<10	6070	#	#	
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	509	2770	7190	<10	1560	#	#	
Surrogate Recovery %**	%	TM245	94	95	84	91	95	#	#	
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	509	3320	7190	<10	1560	#	#	
GRO (>C8-C10A)	<10 µg/l	TM245	<10	20.9	193	<10	25.1	#	#	
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	280	2750	4890	48	1220	#	#	
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	908	6520	23500	<10	7630	#	#	
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	1190	9270	28400	48	8840	#	#	

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SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Reference: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70239

VOC MS (W)

Results Legend		Sample Identity	A11				
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m)	1.0 - 2.5				
		Sample Type	Water(GW/SW)				
		Date Sampled					
		Date Received	15/01/2010				
		SDG Ref	100118-36				
		Lab Sample No.(s)	841167				
Component	LOD/Units	Method					
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3	#			
Chloromethane	<1.7 µg/l	TM208	<1.7	#			
Vinyl Chloride	<1.2 µg/l	TM208	<1.2	#			
Bromomethane	<2 µg/l	TM208	<2	#			
Chloroethane	<2.5 µg/l	TM208	<2.5	#			
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	#			
Carbon disulphide	<1.3 µg/l	TM208	<1.3	#			
Dichloromethane	<3.7 µg/l	TM208	<3.7	#			
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6	#			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	#			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	#			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	#			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	#			
Bromochloromethane	<1.9 µg/l	TM208	<1.9	#			
Chloroform	<1.8 µg/l	TM208	<1.8	#			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	#			
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	#			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	#			
Benzene	<1.3 µg/l	TM208	1.72	#			
Trichloroethene	<2.5 µg/l	TM208	<2.5	#			
1,2-Dichloropropane	<3 µg/l	TM208	<3	#			
Dibromomethane	<2.7 µg/l	TM208	<2.7	#			
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	#			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	#			
Toluene	<1.4 µg/l	TM208	9.33	#			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	#			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	#			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	#			
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	#			
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	#			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	#			
Chlorobenzene	<3.5 µg/l	TM208	<3.5	#			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	#			
Ethylbenzene	<2.5 µg/l	TM208	<2.5	#			
p/m-Xylene	<2.5 µg/l	TM208	37.5	#			
o-Xylene	<1.7 µg/l	TM208	70.3	#			
Styrene	<1.2 µg/l	TM208	<1.2	#			

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Table of Results - Appendix

SDG Number : 100118-36

Client : Mouchel

Client Ref : 14/01/10 (E8/C11/G8/F11/A)

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

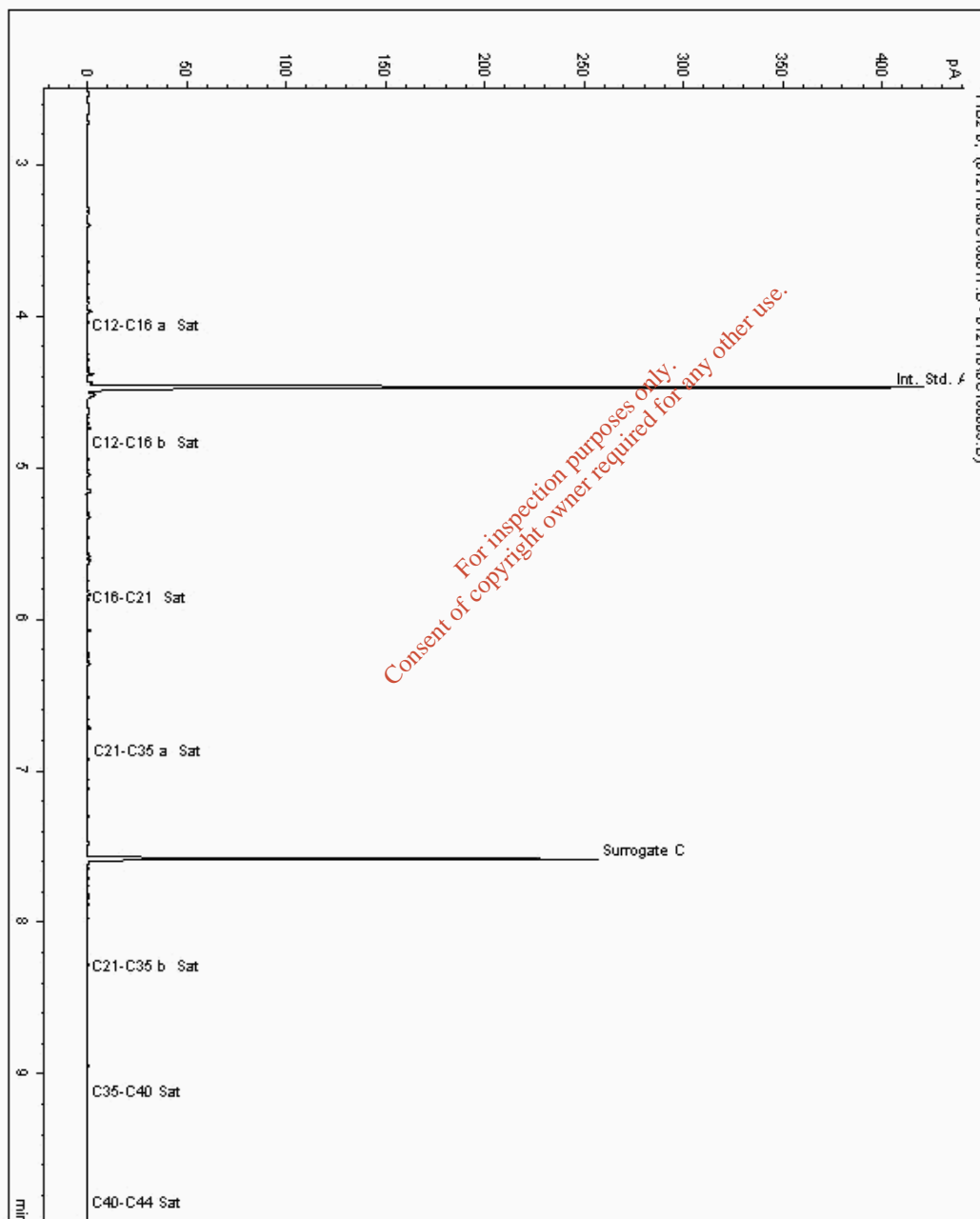
Chromatogram

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

Sample No 845640
Sample ID E8
Depth 1.0 - 6.0

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

Sample Identity: 971316-845640
Date Acquired : 21/01/10 13:49:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

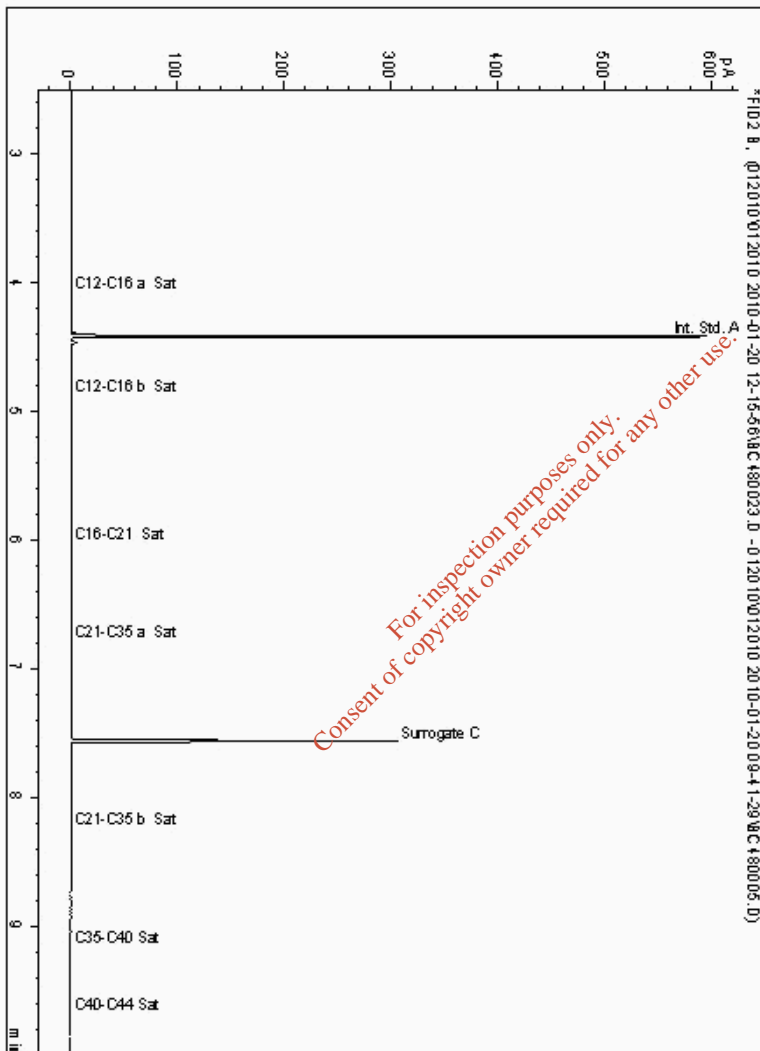
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 845949
Sample ID A11
Depth 1.0 - 2.5

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

Sample Identity: 971353-845949
Date Acquired : 20/01/10 16:23:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

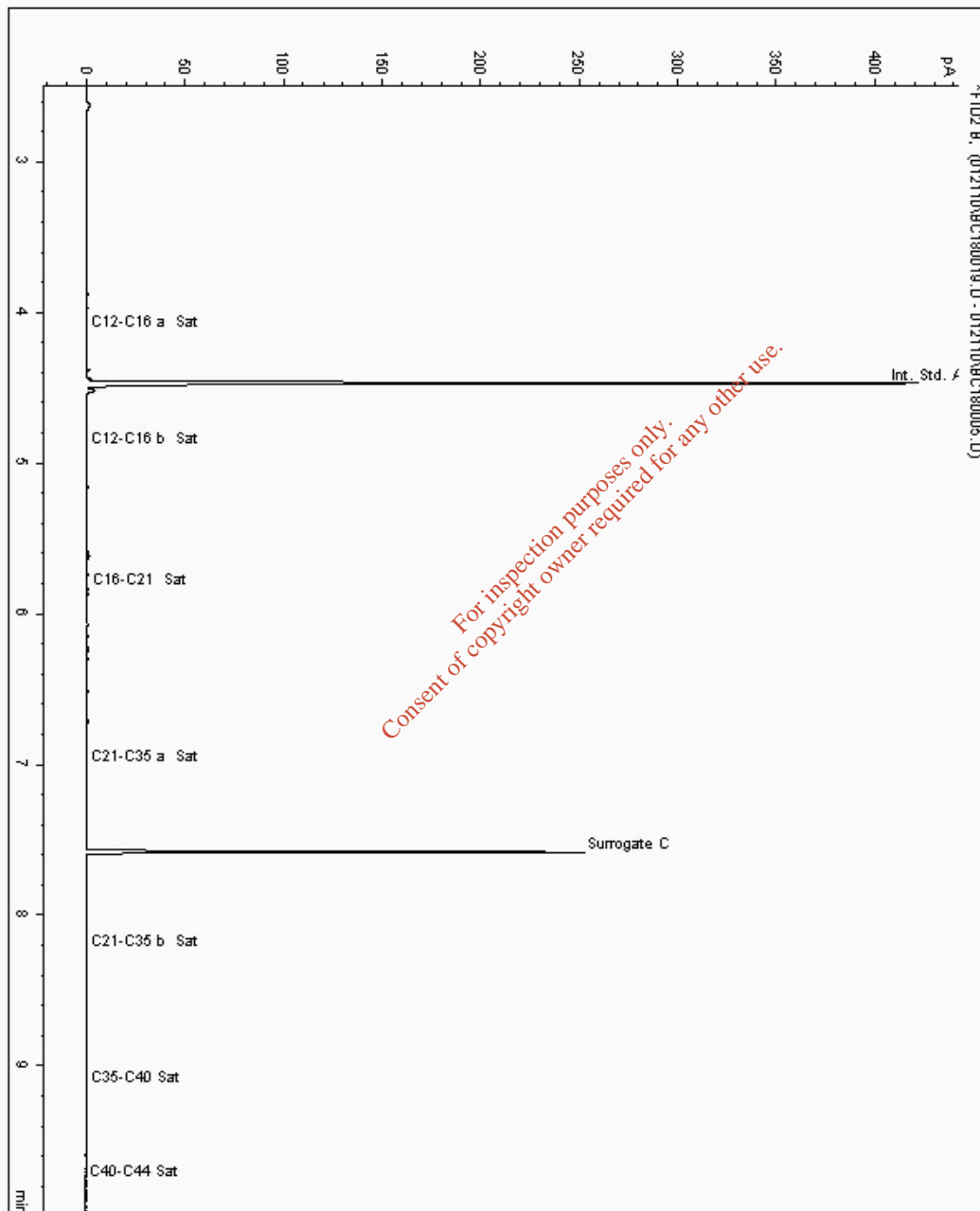
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 847090
Sample ID F11
Depth 1.0 - 2.0

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

Sample Identity: 971386-847090
Date Acquired : 21/01/10 14:21:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

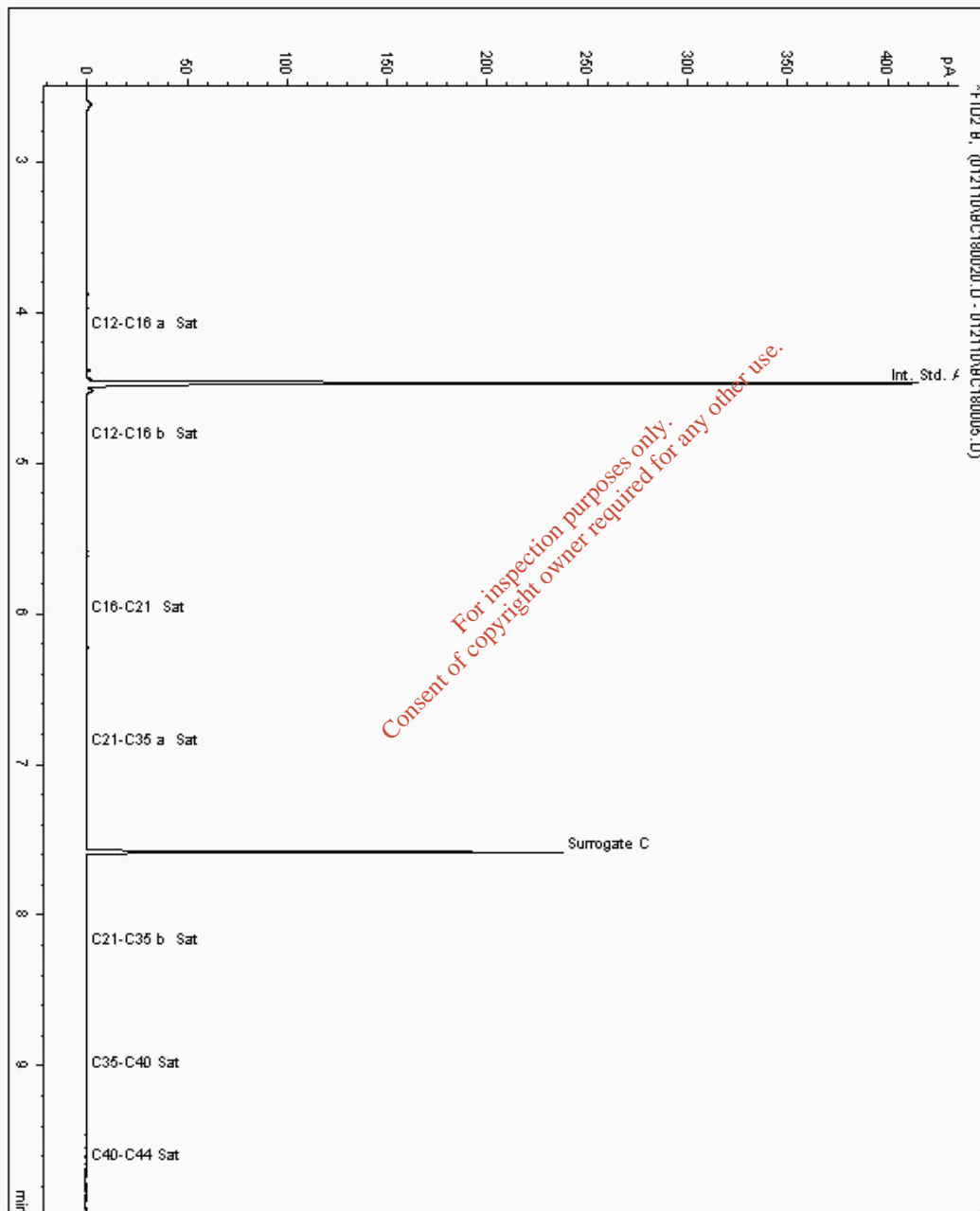
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 847381
Sample ID G8
Depth 0.5 - 2.0

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

Sample Identity: 971419-847381
Date Acquired : 21/01/10 14:39:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

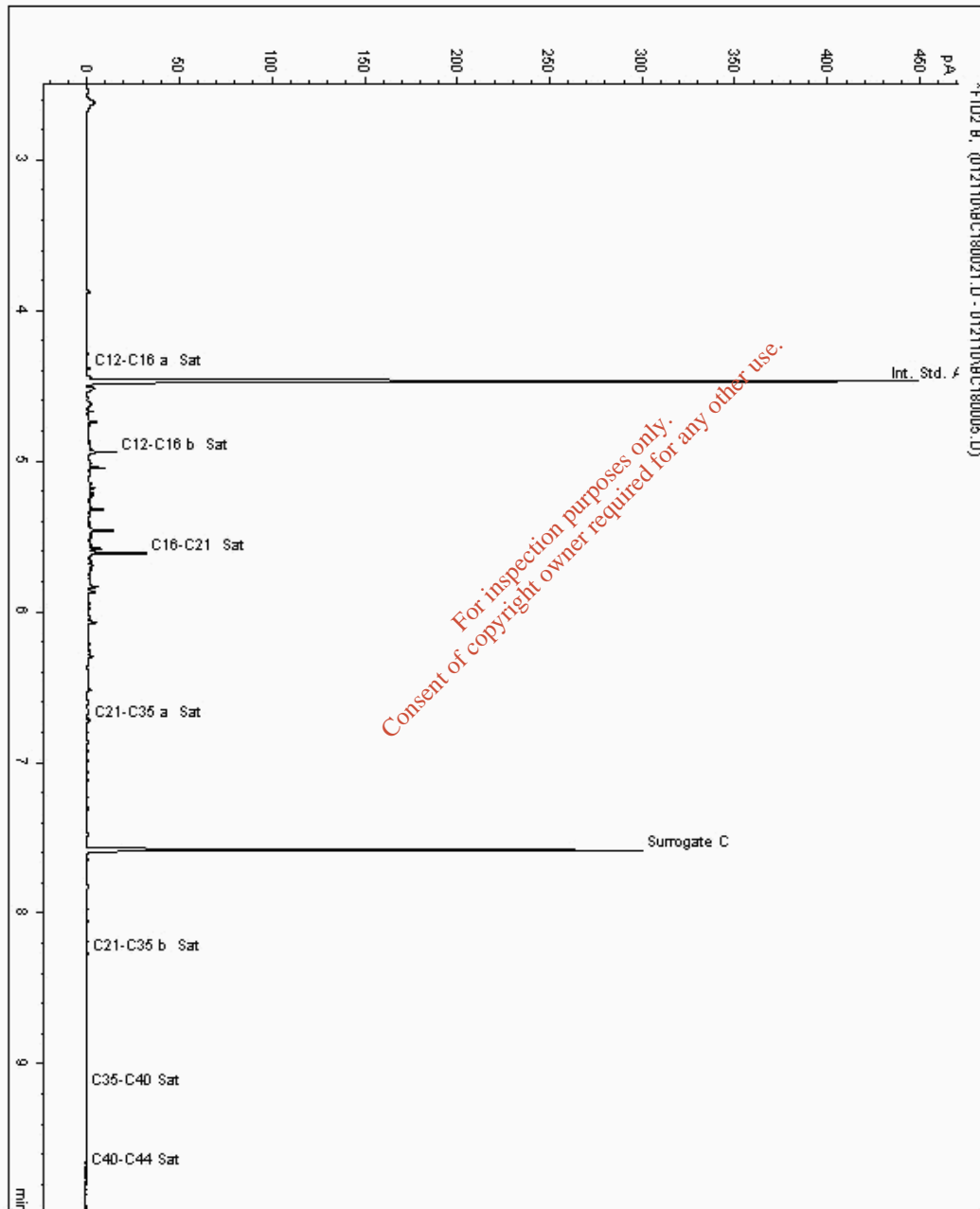
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 847418
Sample ID C11
Depth 1.5 - 2.5

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

Sample Identity: 971452-847418
Date Acquired : 21/01/10 14:58:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

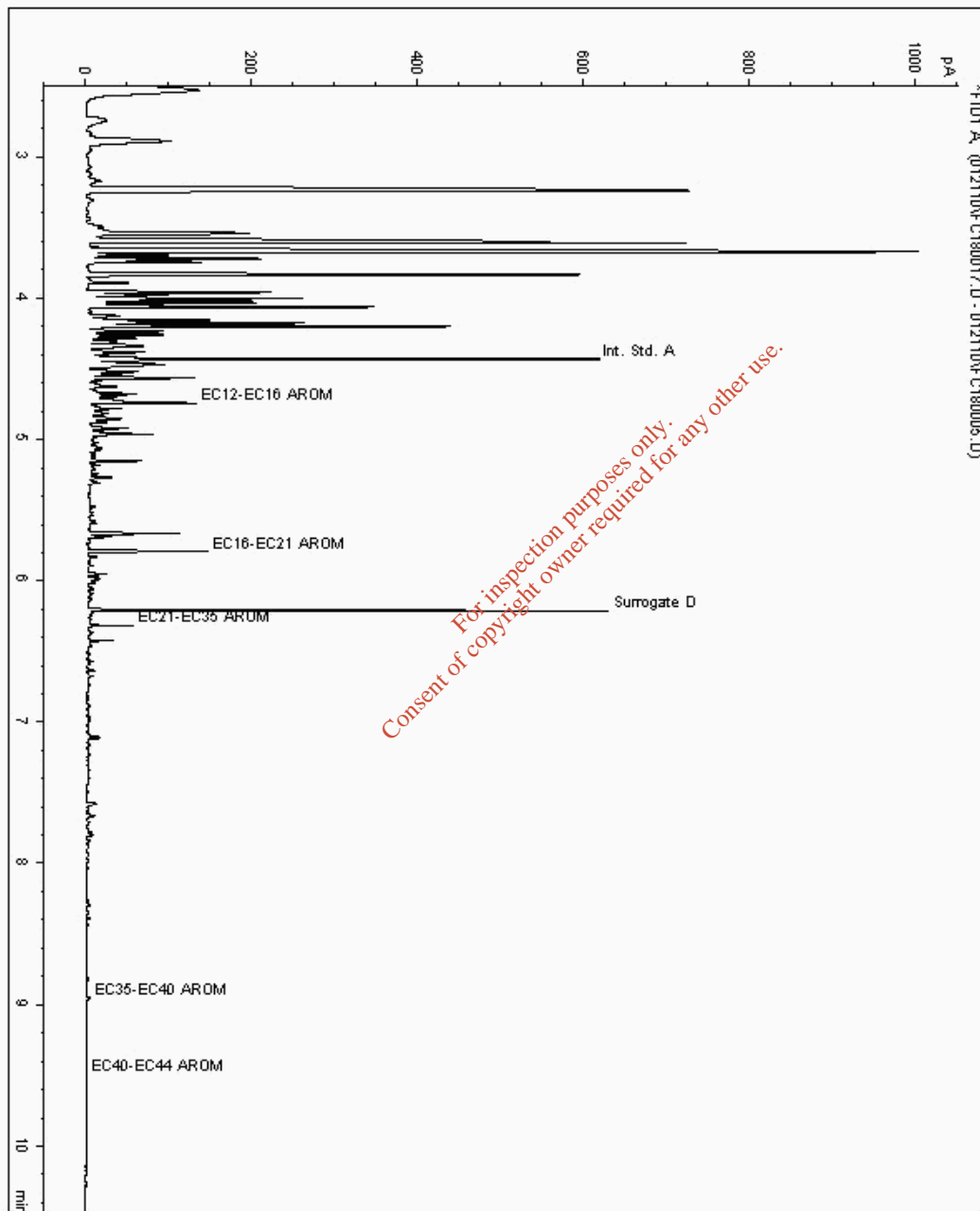
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 845640
Sample ID E8
Depth 1.0 - 6.0

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

Sample Identitv: 971317-845640
Date Acquired : 21/01/10 13:49:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

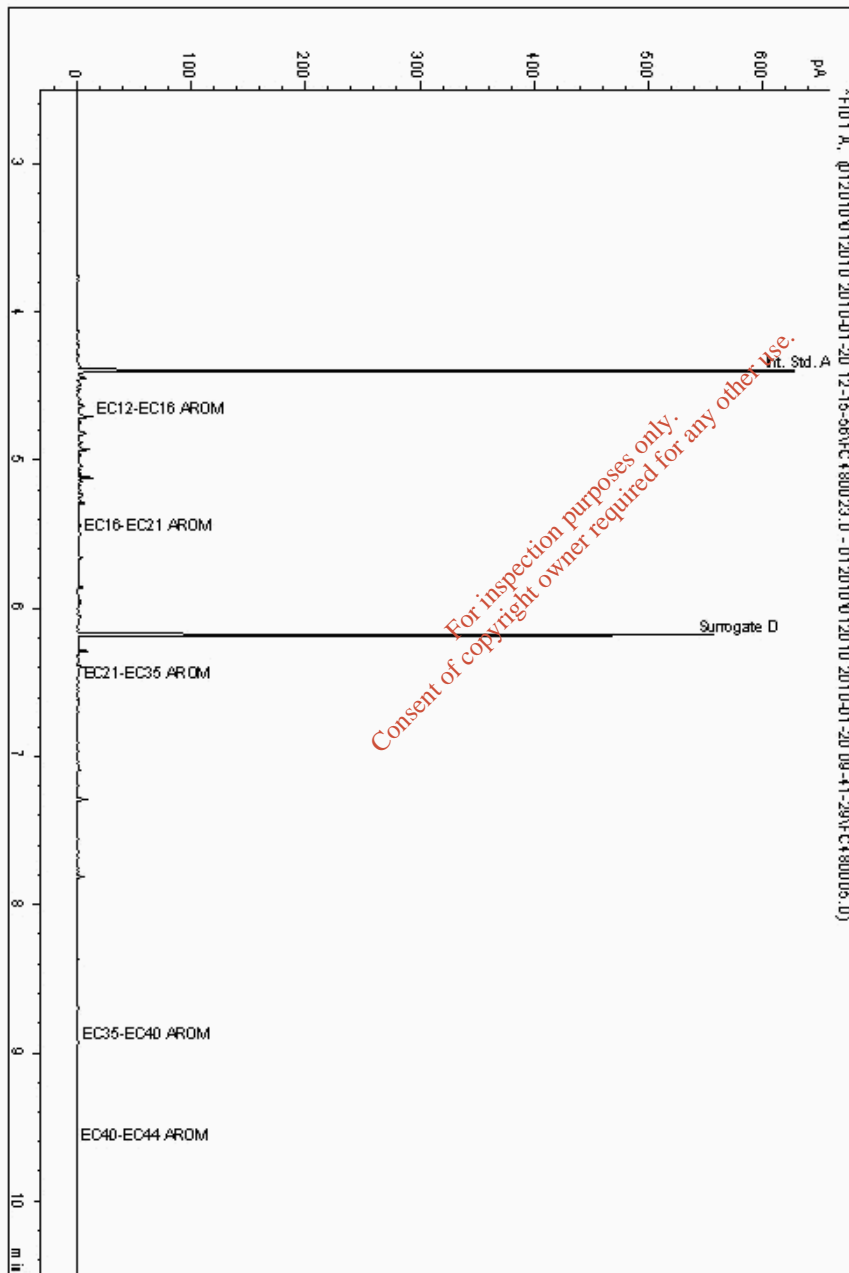
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 845949
Sample ID A11
Depth 1.0 - 2.5

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

Sample Identity: 971354-845949
Date Acquired : 20/01/10 16:23:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

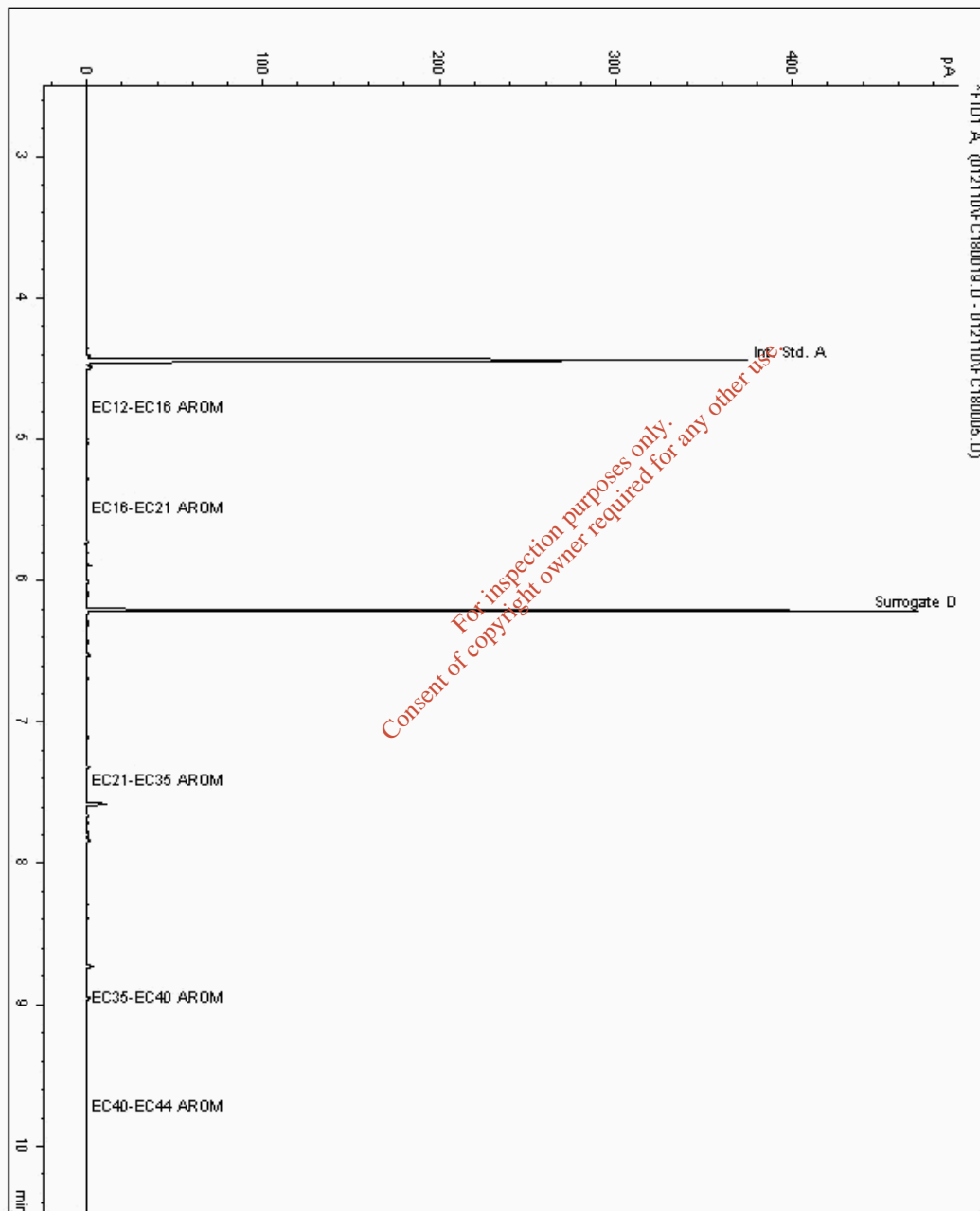
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 847090
Sample ID F11
Depth 1.0 - 2.0

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

Sample Identity: 971387-847090
Date Acquired : 21/01/10 14:21:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

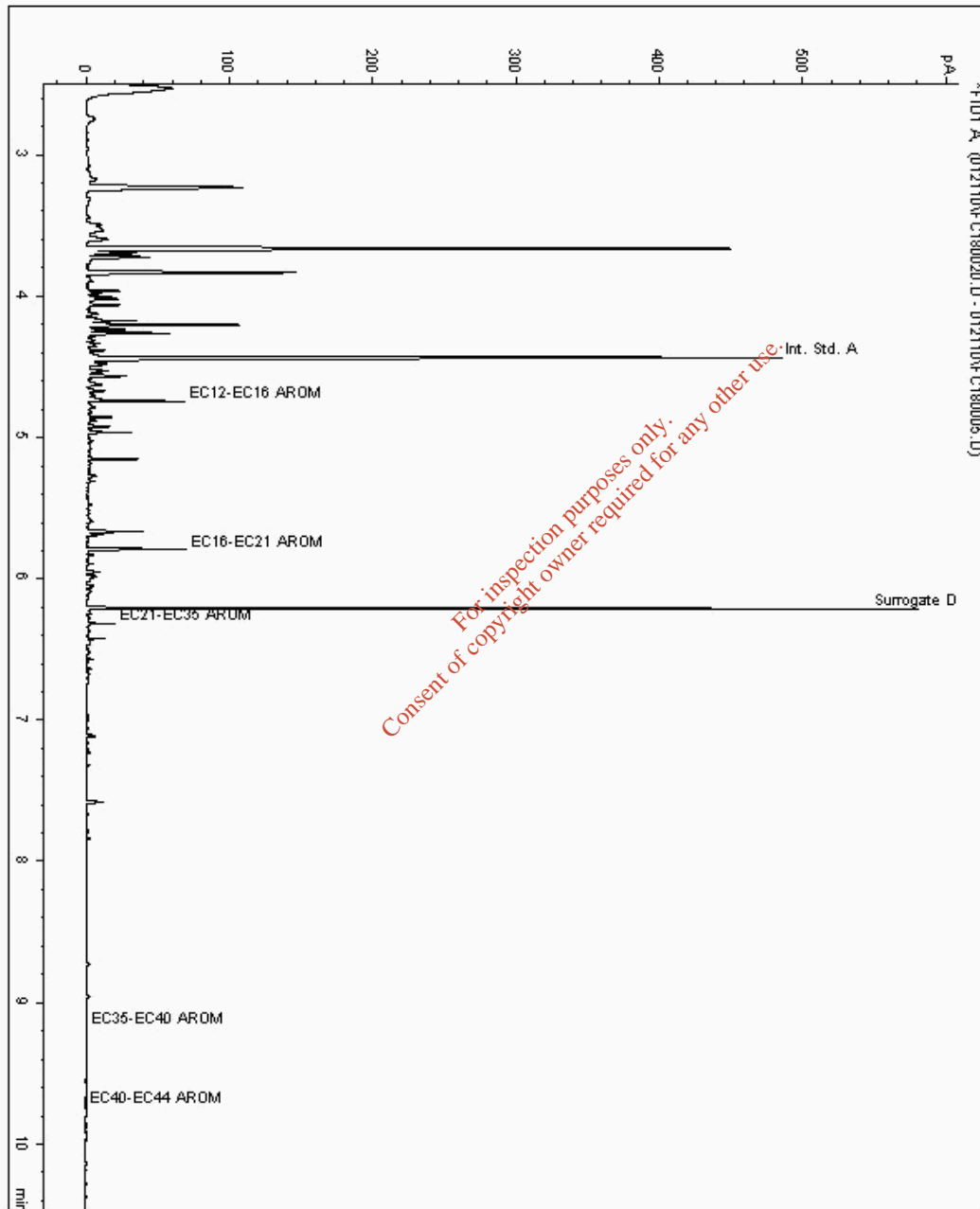
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 847381
Sample ID G8
Depth 0.5 - 2.0

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

Sample Identity: 971420-847381
Date Acquired : 21/01/10 14:39:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



ALcontrol Laboratories Analytical Services

SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

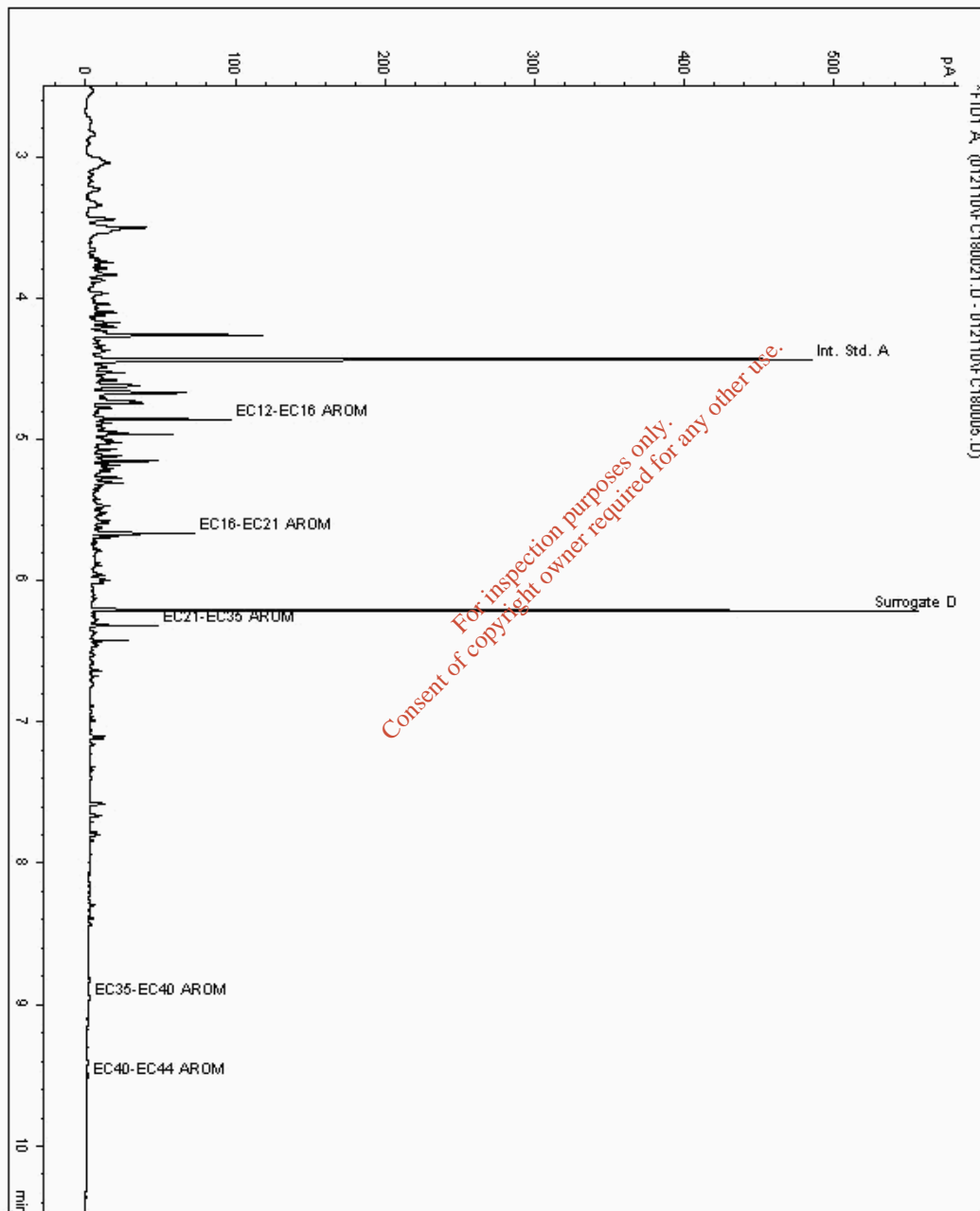
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

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

Sample No 847418
Sample ID C11
Depth 1.5 - 2.5

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

Sample Identity: 971453-847418
Date Acquired : 21/01/10 14:58:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

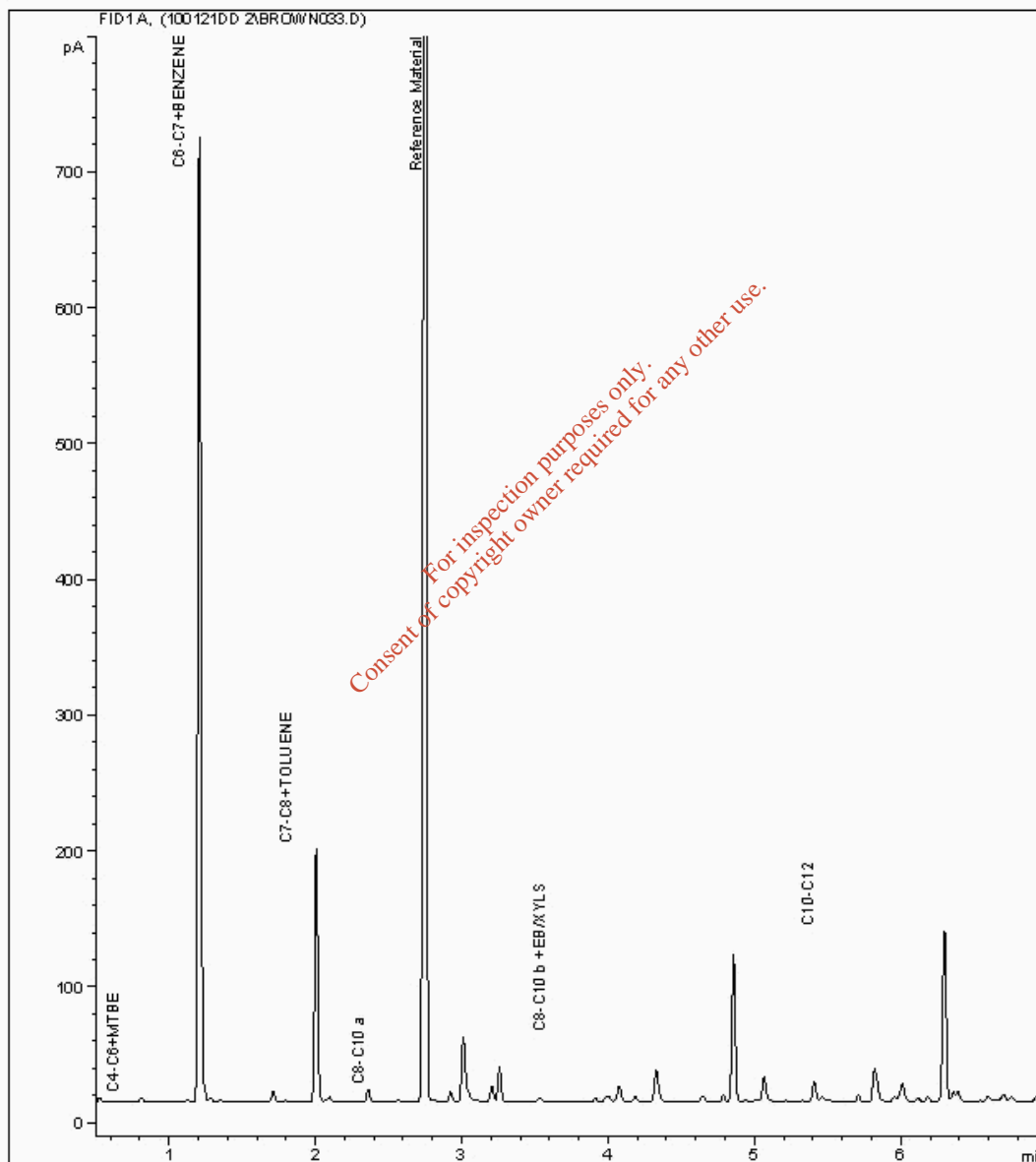
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

Analysis: GRO BTEX MTBE GC (W)

Sample No 840697
Sample ID E8
Depth 1.0 - 6.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971315-840697
Date Acquired : 21/01/10 17:24:05
Units : ppb
Dilution : 5



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70239

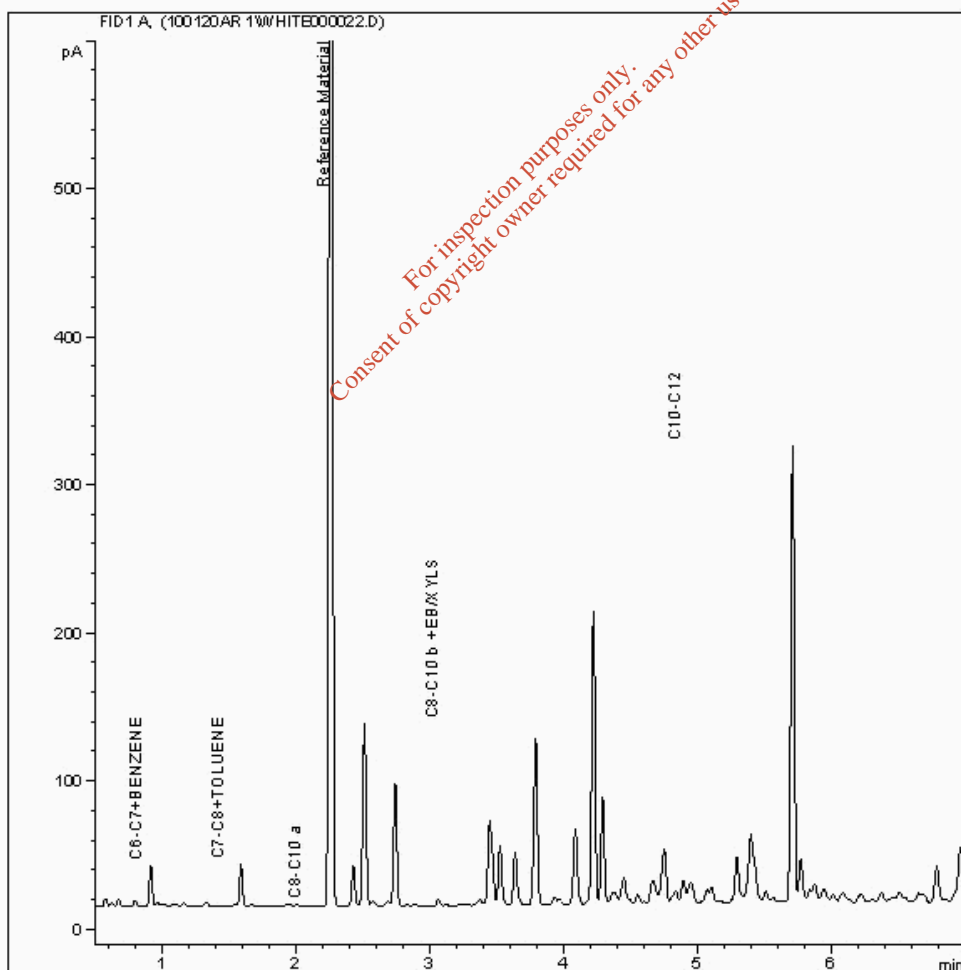
Analysis: GRO BTEX MTBE GC (W)

Sample No 840718
Sample ID C11
Depth 1.5 - 2.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971451-840718
Date Acquired : 20/01/10 23:00:14
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	624
2	C6-C7+BENZENE	1436
3	C7-C8+TOLUENE	1495
4	C8-C10 a	249
5	Reference Material	22558
6	C8-C10 b +EB/XYLS	21393
7	C10-C12	46026



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

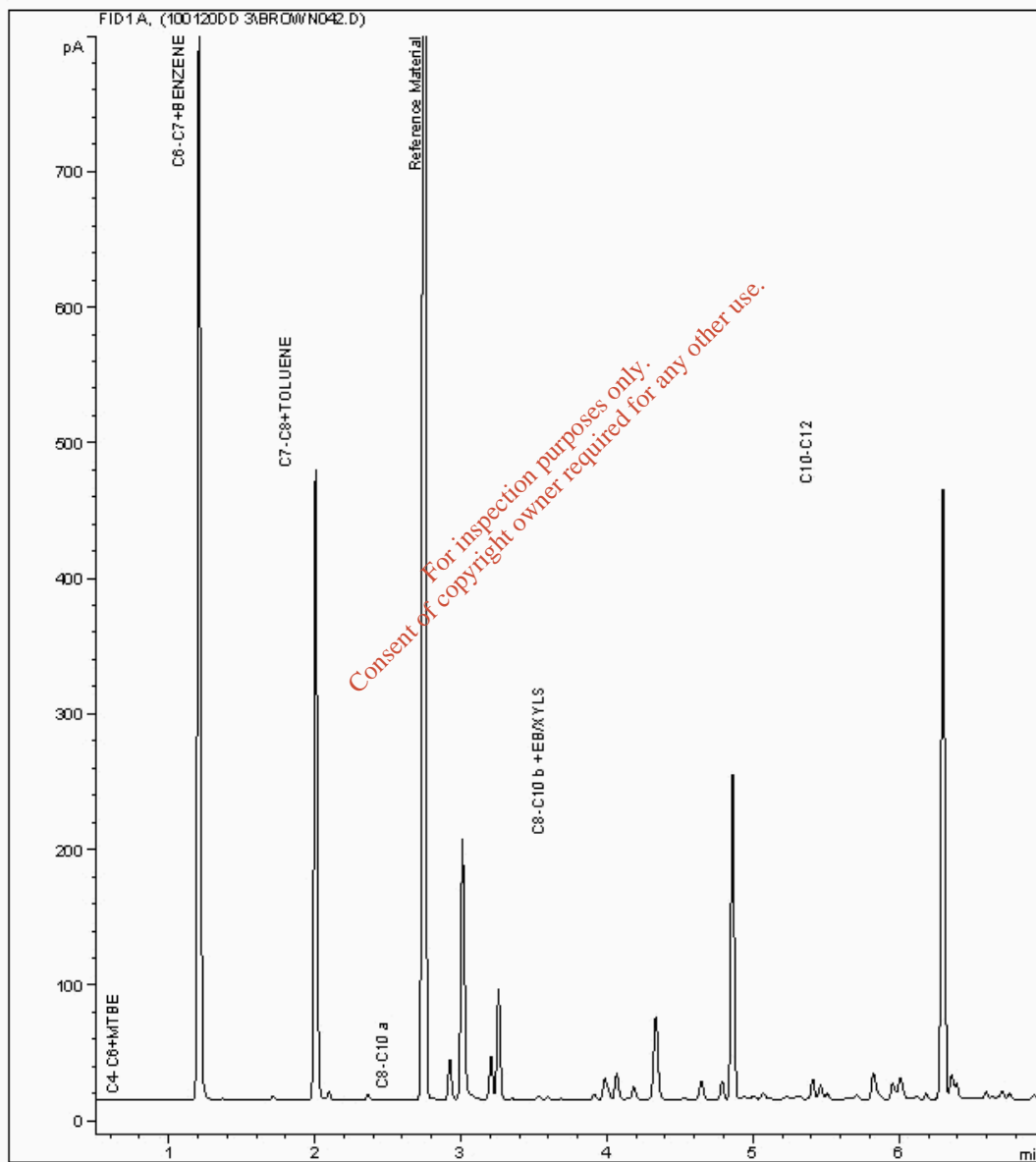
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70239

Analysis: GRO BTEX MTBE GC (W)

Sample No 840894
Sample ID G8
Depth 0.5 - 2.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971418-840894
Date Acquired : 20/01/10 18:42:41
Units : ppb
Dilution : 1



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70239

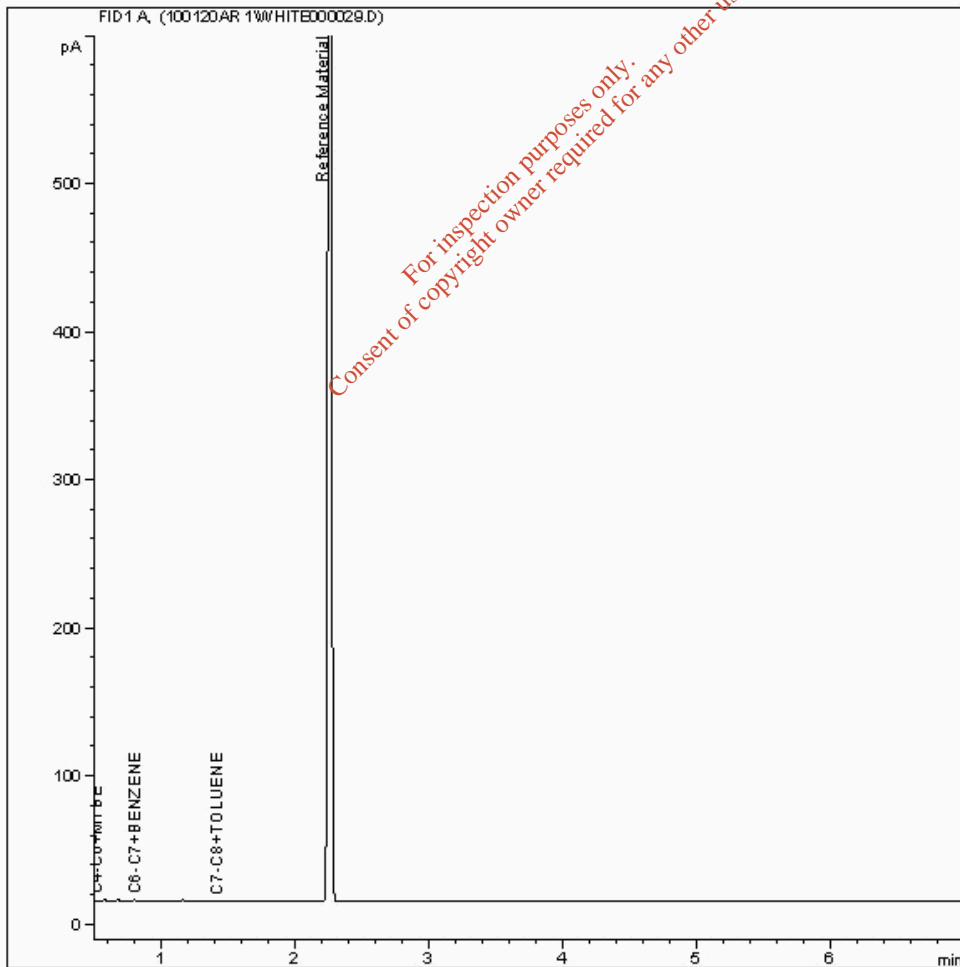
Analysis: GRO BTEX MTBE GC (W)

Sample No 841095
Sample ID F11
Depth 1.0 - 2.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971385-841095
Date Acquired : 21/01/10 00:35:18
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	143
2	C6-C7+BENZENE	220
3	C7-C8+TOLUENE	195
4	C8-C10 a	0
5	Reference Material	21702
6	C8-C10 b +EB/XYLS	0
7	C10-C12	0



SDG: 100118-36
Job: D_MOUCHEL_ELE-98
Client Ref.: 14/01/10 (E8/C11/G8/F11/A11)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70239

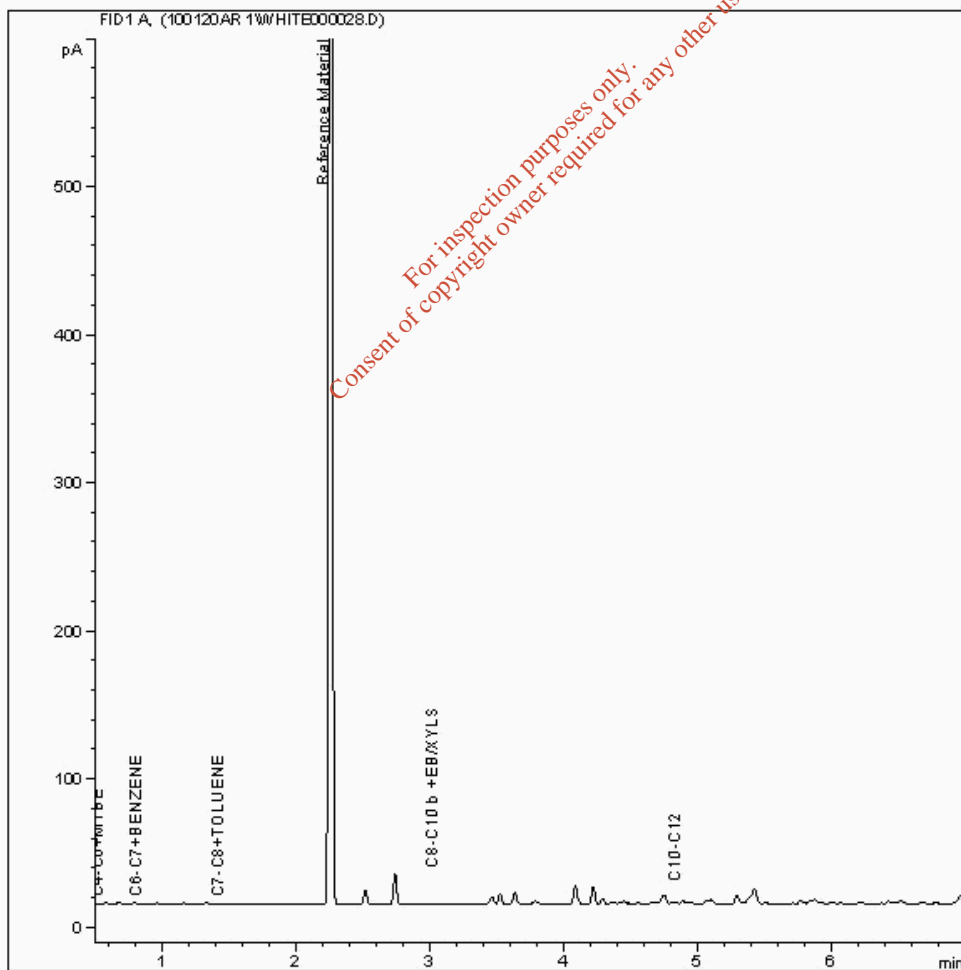
Analysis: GRO BTEX MTBE GC (W)

Sample No 841122
Sample ID A11
Depth 1.0 - 2.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971352-841122
Date Acquired : 21/01/10 00:21:44
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	170
2	C6-C7+BENZENE	269
3	C7-C8+TOLUENE	305
4	C8-C10 a	0
5	Reference Material	22373
6	C8-C10 b +EB/XYLS	2508
7	C10-C12	4820



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 26 January 2010
Customer: D_MOUCHEL_ELE-97
Sample Delivery Group (SDG): 100115-129 **Report No.:** 70911
Your Reference: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

We received 5 samples on Friday January 15, 2010 and 5 of these samples were scheduled for analysis which was completed on Tuesday January 26, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG:	100115-129	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-97	Attention:	Verity Sankey
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	Order No.:	
Location:	Limerick Gasworks	Report No:	70911

Received Sample Overview

Lab Sample No(s)	Customer Reference	Depth (m)	Sampled Date
836266	A3 EW002	2.0 - 4.5	14/01/2010 06:00:00
836268	A4 EW002	1.5 - 3.0	14/01/2010 06:00:00
836270	B8 EW002	2.0 - 2.5	14/01/2010 00:00:00
836271	C7 EW002	2.0 - 7.0	14/01/2010 00:00:00
836273	D5 EW002	2.0 - 3.0	

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

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SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Reference: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No.: 70911

LIQUID

Results Legend	Lab Sample No(s)	836273	836271	836270	836268	836266	Total
	Sample ID	D5	C7	B8	A4	A3	
	Depth (m)	2.0 - 3.0	2.0 - 7.0	2.0 - 2.5	1.5 - 3.0	2.0 - 4.5	
	Container	500ml Plastic egg VOC Durlin	500ml Plastic egg VOC Durlin	500ml Plastic egg VOC Durlin	500ml Plastic egg VOC Durlin	500ml Plastic egg VOC Durlin	
Ammonium	All	X	X	X	X	X	0 5
Anions by ion Chromatography	All		X				0 1
Anions by Kone (w)	All	X		X	X	X	0 4
Cyanide Comp/Free/Total/Thiocyanate	All	X		X	X	X	0 5
Dissolved Metals by ICP-MS	All	X	X	X	X	X	0 5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	0 5
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	0 5
GRO BTEX MTBE GC (W)	All	X	X	X	X	X	0 5
Hexavalent Chromium (w)	All	X	X	X	X	X	0 5
Mercury Dissolved	All	X	X	X	X	X	0 5
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	0 5
pH Value	All	X	X	X	X	X	0 5
Phenols by HPLC (W)	All	X	X	X	X	X	0 5
Sulphide	All	X	X	X	X	X	0 5
Total Metals by ICP-MS	All	X	X	X	X	X	0 5
TPH CWG (W)	All	X	X	X	X	X	0 5
VOC MS (W)	All	X	X	X	X	X	0 4

SDG:	100115-129	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-97	Attention:	Verity Sankey
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	Order No.:	
Location:	Limerick Gasworks	Report No.:	70911

Test Completion dates

SDG reference: 100115-129

Lab Sample No(s)	836266	836268	836270	836271	836273
Sample ID	A3	A4	B8	C7	D5
Depth	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Anions by Ion Chromatography				19/01/2010	
Anions by Kone (w)	19/01/2010	19/01/2010	19/01/2010		19/01/2010
Cyanide	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Dissolved Metals by ICP-MS	18/01/2010	18/01/2010	18/01/2010	18/01/2010	19/01/2010
EPH CWG (Aliphatic) Aqueous GC	22/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
EPH CWG (Aromatic) Aqueous GC	22/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
GRO BTEX MTBE GC (W)	19/01/2010	19/01/2010	20/01/2010	20/01/2010	19/01/2010
Hexavalent Chromium (w)	18/01/2010	18/01/2010	18/01/2010	18/01/2010	19/01/2010
Mercury Dissolved	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
PAH Spec MS - Aqueous (W)	23/01/2010	22/01/2010	23/01/2010	23/01/2010	22/01/2010
pH Value	18/01/2010	18/01/2010	18/01/2010	18/01/2010	19/01/2010
Phenols by HPLC (W)	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Sulphide	18/01/2010	18/01/2010	18/01/2010	18/01/2010	20/01/2010
Total Metals by ICP-MS	19/01/2010	19/01/2010	19/01/2010	19/01/2010	21/01/2010
TPH CWG (W)	22/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
VOC MS (W)	26/01/2010	25/01/2010	25/01/2010	25/01/2010	

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SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Reference: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

Results Legend			Sample Identity		A3	A4	B8	C7	D5
# ISO17025 accredited. # mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	A3	A4	B8	C7	D5	
			Sample Type	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0	
			Date Sampled	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
			Date Received	14/01/2010	14/01/2010	14/01/2010	14/01/2010	15/01/2010	
			SDG Ref	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010	
Lab Sample No.(s)	100115-129	100115-129	100115-129	100115-129	100115-129				
Component	LOD/Units	Method							
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	9.27	2.93	60.3	118	1.48	#	
Sulphide	<0.1 mg/l	TM101	<0.1	<0.1	<0.1	<0.1	<0.1	#	
Arsenic Dissolved	<0.12 µg/l	TM152	29.8	3.3	18	37.1	6.04	#	
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1	<0.1	<0.1	<0.1	<0.1	#	
Copper Dissolved	<0.85 µg/l	TM152	1.14	1.03	1.71	<0.85	0.914	#	
Lead Dissolved	<0.02 µg/l	TM152	0.034	0.112	0.087	0.371	<0.02	#	
Nickel Dissolved	<0.15 µg/l	TM152	5.52	4.36	7.18	6.15	7.49	#	
Selenium Dissolved	<0.39 µg/l	TM152	1.23	1.26	14.7	44.6	1.56	#	
Zinc Dissolved	<0.41 µg/l	TM152	2.33	1.56	1.32	1.18	0.955	#	
Mercury Dissolved	<0.01 µg/l	TM183	<0.01	<0.01	<0.01	0.029	<0.01	#	
Sulphate (soluble)	3 mg/l	TM184	423	310	67.5		43	#	
Chromium (Unfiltered)	<3 µg/l	TM191	11.5	9.21	<3	5.9	<3	#	
Sulphate	<0.1 mg/l	TM226				64.6		#	
Total Cyanide	<0.05 mg/l	TM227	0.242	0.177	0.118	0.814	0.179	#	
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	<0.06	<0.15	<0.03	#	
pH value	<1 pH Units	TM256	7.88	7.84	8.57	9.15	8.5	#	
Phenol	<0.002 mg/l	TM259	0.02	<0.002	12.9	63.8	<0.002	#	
Cresols	<0.006 mg/l	TM259	<0.006	<0.006	24.8	159	<0.006	#	
Xylenols	<0.008 mg/l	TM259	<0.008	<0.008	18.6	97.3	<0.008	#	
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003	<0.003	<0.015	<0.15	<0.003	#	
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006	<0.006	6.45	38	<0.006	#	
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	<0.025	<0.025	62.8	358	<0.025	#	

SDG: 100115-129
 Job: D_MOUCHEL_ELE-97
 Client Reference: 14/01/10 (D5/B8/A3/A4/C7)
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 70911

PAH Spec MS - Aqueous (W)

Results Legend			Sample Identity	A3	A4	B8	C7	D5
# ISO17025 accredited. mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/01/2010	14/01/2010	14/01/2010	14/01/2010	14/01/2010
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-129	100115-129	100115-129	100115-129	100115-129
			Lab Sample No.(s)	836266	836268	836270	836271	836273
Component	LOD/Units	Method						
Naphthalene (Aqueous)	<0.1 µg/l	TM178	0.853	1.64	3680	4410	0.969	
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	114	1.26	32.5	19	0.083	
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	65.5	1.56	206	183	0.422	
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	4.81	6.43	81.4	21.4	3.89	
Anthracene (Aqueous)	<0.015 µg/l	TM178	3.25	0.525	55.3	19.8	0.425	
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	<0.11	0.395	198	81.7	0.58	
Fluorene (Aqueous)	<0.014 µg/l	TM178	34.1	0.649	107	68.6	0.196	
Chrysene (Aqueous)	<0.013 µg/l	TM178	0.261	1.26	18	4.35	0.622	
Pyrene (Aqueous)	<0.015 µg/l	TM178	5.47	5.01	56.5	13.8	2.32	
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	0.282	2.23	16.3	<4.25	0.856	
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	0.119	2.97	15.4	<5.75	1.32	
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	<0.135	1.13	6.81	<6.75	0.503	
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	0.115	2.19	9.92	2.49	0.932	
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	<0.08	0.338	<3.2	<4	0.124	
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	<0.08	1.35	7.18	<4	0.489	
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	<0.07	1.26	5.73	<3.5	0.434	
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	229	30.2	4500	4840	14.2	

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SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Reference: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

TPH CWG (W)

Results Legend			Sample Identity	A3	A4	B8	C7	D5
# ISO17025 accredited. # mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/01/2010	14/01/2010	14/01/2010	14/01/2010	14/01/2010
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-129	100115-129	100115-129	100115-129	100115-129
			Lab Sample No.(s)	836266	836268	836270	836271	836273
Component	LOD/Units	Method						
GRO C5-C12	<42 µg/l	TM245	2970	216	<42	88200	479	#
MTBE	<3 µg/l	TM245	<3	<3	<3	<30	<3	#
Benzene	<7 µg/l	TM245	458	<7	7150	22800	38	#
Toluene	<4 µg/l	TM245	36	<4	4120	9130	24	#
Ethyl Benzene	<5 µg/l	TM245	82	<5	310	391	<5	#
m & p Xylene	<8 µg/l	TM245	77	12	2120	2580	32	#
o Xylene	<3 µg/l	TM245	63	8	885	1080	39	#
Sum m&p and o Xylene	<10 µg/l	TM245	140	12	3000	3660	71	#
Sum of BTEX	<10 µg/l	TM245	716	12	14600	36000	133	#
Aliphatics C5-C6	<10 µg/l	TM245	<10	<10	<10	402	<10	#
Aliphatics >C6-C8	<10 µg/l	TM245	319	<10	<10	<100	23.2	#
Aliphatics >C8-C10	<10 µg/l	TM245	205	31.2	<10	6680	37.3	#
Aliphatics >C10-C12	<10 µg/l	TM245	567	50.4	<10	16500	91.8	#
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	<10	126	11	<10	<10	#
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	<10	247	50	<10	<10	#
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	<10	85	44	<10	<10	#
Total Aliphatics C5-C12	<10 µg/l	TM245	1090	87.6	<10	23600	152	#
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10	458	105	<10	<10	#
Aromatics C6-C7	<10 µg/l	TM245	458	<10	7150	22800	38	#
Aromatics >C7-C8	<10 µg/l	TM245	36	<10	4120	9130	24	#
Aromatics >EC8-EC10	<10 µg/l	TM245	529	58.8	1320	14100	127	#
Aromatics >EC10-EC12	<10 µg/l	TM245	850	75.6	<10	24800	138	#
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	634	61	5200	16400	83	#
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	185	116	1340	1050	51	#
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	22	156	1060	306	93	#
Total Aromatics C6-C12	<10 µg/l	TM245	1870	134	12600	70800	327	#
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	841	333	7600	17800	227	#
Surrogate Recovery %**	%	TM245	92	92	85	84	95	#
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	841	791	7710	17800	227	#
GRO (>C8-C10A)	<10 µg/l	TM245	14.9	<10	<10	742	<10	#
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	1090	540	105	23600	152	#
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	2710	467	20200	88500	554	#
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	3800	1010	20300	112000	706	#

SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Reference: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

VOC MS (W)

Results Legend		Sample Identity	A3	A4	B8	C7		
# ISO17025 accredited. # mCERTS accredited. # subcontracted test. * This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	2.0 - 4.5 Water(GW/SW) 14/01/2010 15/01/2010 100115-129 836266	1.5 - 3.0 Water(GW/SW) 14/01/2010 15/01/2010 100115-129 836268	2.0 - 2.5 Water(GW/SW) 14/01/2010 15/01/2010 100115-129 836270	2.0 - 7.0 Water(GW/SW) 14/01/2010 15/01/2010 100115-129 836271		
Component	LOD/Units	Method						
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Chloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
Vinyl Chloride	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Bromomethane	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
Chloroethane	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	2.8 #		
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #		
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6 #	<1.6 #	<1.6 #	<1.6 #		
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #	<3.8 #	<3.8 #	<3.8 #		
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
Chloroform	<1.8 µg/l	TM208	<1.8 #	<1.8 #	<1.8 #	<1.8 #		
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #	<1.4 #	<1.4 #	<1.4 #		
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3 #	<3.3 #	<3.3 #	<3.3 #		
Benzene	<1.3 µg/l	TM208	536 #	<1.3 #	9930 #	28300 #		
Trichloroethene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
1,2-Dichloropropane	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #		
Dibromomethane	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #		
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #	<0.9 #	<0.9 #	<0.9 #		
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
Toluene	<1.4 µg/l	TM208	41 #	<1.4 #	5020 #	9990 #		
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #	<1.5 #	<1.5 #	<1.5 #		
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Ethylbenzene	<2.5 µg/l	TM208	87.6 #	<2.5 #	296 #	388 #		
p/m-Xylene	<2.5 µg/l	TM208	91.2 #	8.7 #	2280 #	2910 #		
o-Xylene	<1.7 µg/l	TM208	75.8 #	<1.7 #	946 #	1240 #		
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	196 #	540 #		

SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Reference: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

VOC MS (W)

Results Legend			Sample Identity		A3	A4	B8	C7
# ISO17025 accredited. # mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	Sample Type	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0
			Date Sampled	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
			Date Received	14/01/2010	14/01/2010	14/01/2010	14/01/2010	
			SDG Ref	15/01/2010	15/01/2010	15/01/2010	15/01/2010	
			Lab Sample No.(s)	100115-129	100115-129	100115-129	100115-129	
Component	LOD/Units	Method	Lab Sample No.(s)	Method	A3	A4	B8	C7
Bromoform	<3 µg/l	TM208	836266		<3	<3	<3	<3
Isopropylbenzene	<1.4 µg/l	TM208	836268		15	<1.4	18.1	14.2
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208			<5.2	<5.2	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208			<7.8	<7.8	<7.8	<7.8
Bromobenzene	<2 µg/l	TM208			<2	<2	<2	<2
Propylbenzene	<2.6 µg/l	TM208			<2.6	<2.6	26.5	18.9
2-Chlorotoluene	<1.9 µg/l	TM208			<1.9	<1.9	<1.9	<1.9
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208			10.4	5.18	158	115
4-Chlorotoluene	<1.9 µg/l	TM208			<1.9	<1.9	<1.9	<1.9
tert-Butylbenzene	<2 µg/l	TM208			<2	<2	<2	<2
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208			41.7	2.65	392	276
sec-Butylbenzene	<1.7 µg/l	TM208			<1.7	<1.7	<1.7	<1.7
4-Isopropyltoluene	<2.6 µg/l	TM208			<2.6	<2.6	36.7	46.4
1,3-Dichlorobenzene	<2.2 µg/l	TM208			<2.2	<2.2	<2.2	<2.2
1,4-Dichlorobenzene	<2.7 µg/l	TM208			<2.7	<2.7	<2.7	<2.7
n-Butylbenzene	<2 µg/l	TM208			<2	<2	<2	<2
1,2-Dichlorobenzene	<3.7 µg/l	TM208			<3.7	<3.7	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208			<9.8	<9.8	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208			<2.3	<2.3	<2.3	<2.3
Hexachlorobutadiene	<2.5 µg/l	TM208			<2.5	<2.5	<2.5	<2.5
Tert-amyl methyl ether	<1 µg/l	TM208			<1	<1	<1	<1
Naphthalene	<3.5 µg/l	TM208			32.7	<3.5	10400	11300
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208			<3.1	<3.1	<3.1	<3.1
1,3,5-Trichlorobenzene	<10 µg/l	TM208			<10	<10	<10	<10

Table of Results - Appendix

SDG Number : 100115-129

Client : Mouchel

Client Ref : 14/01/10 (D5/B8/A3/A4/C7)

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

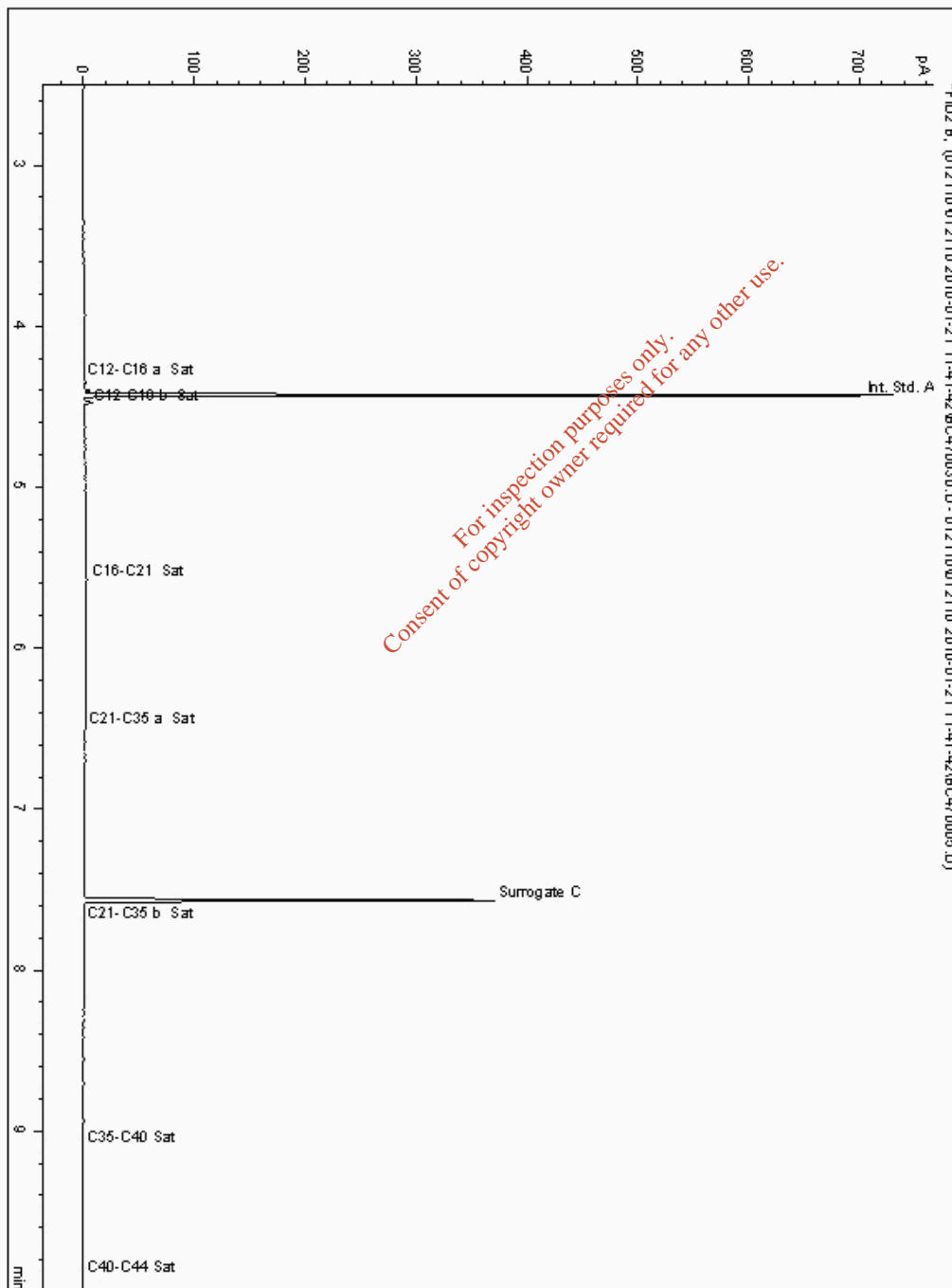
Chromatogram

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

Sample No 843244
Sample ID A4
Depth 1.5 - 3.0

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

Sample Identity: 970673-843244
Date Acquired : 21/01/10 20:35:50
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

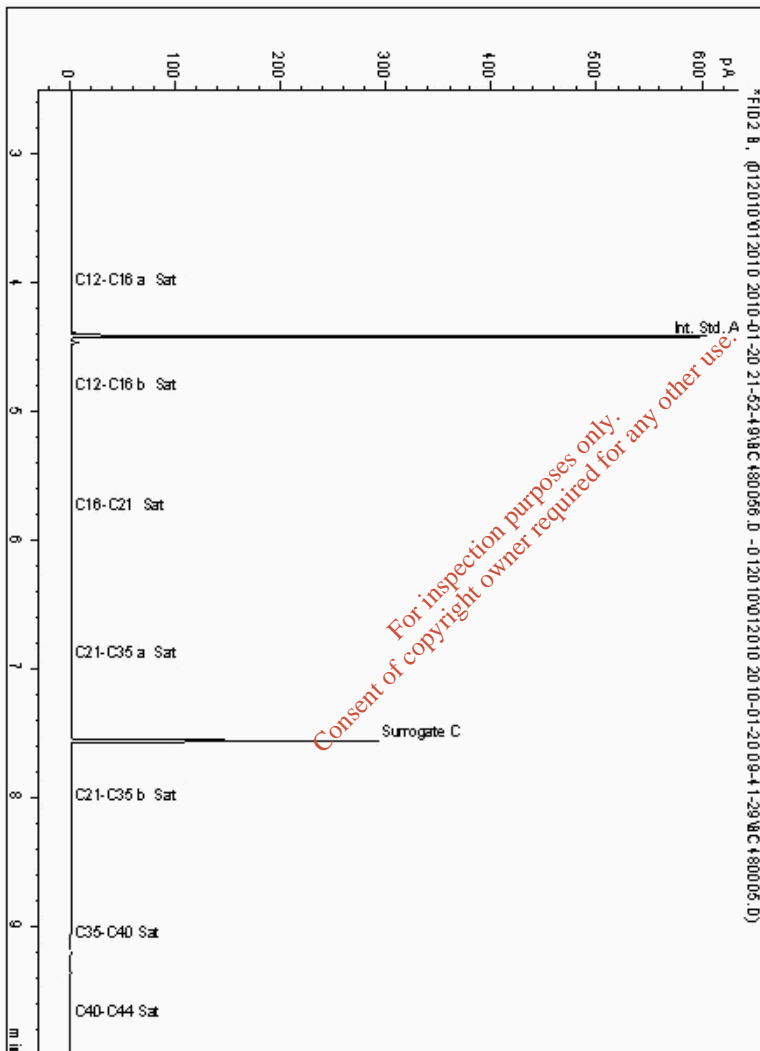
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

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

Sample No 843593
Sample ID D5
Depth 2.0 - 3.0

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

Sample Identity: 970748-843593
Date Acquired : 21/01/10 03:20:14
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

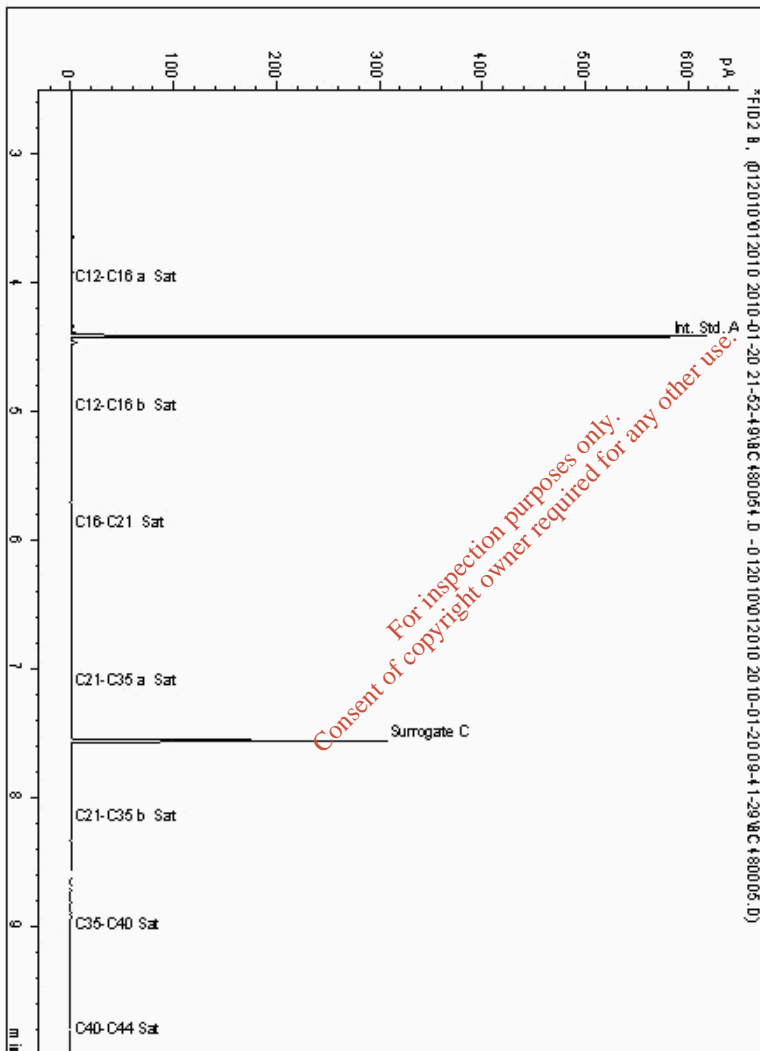
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

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

Sample No 843635
Sample ID C7
Depth 2.0 - 7.0

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

Sample Identity: 970731-843635
Date Acquired : 21/01/10 02:48:34
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

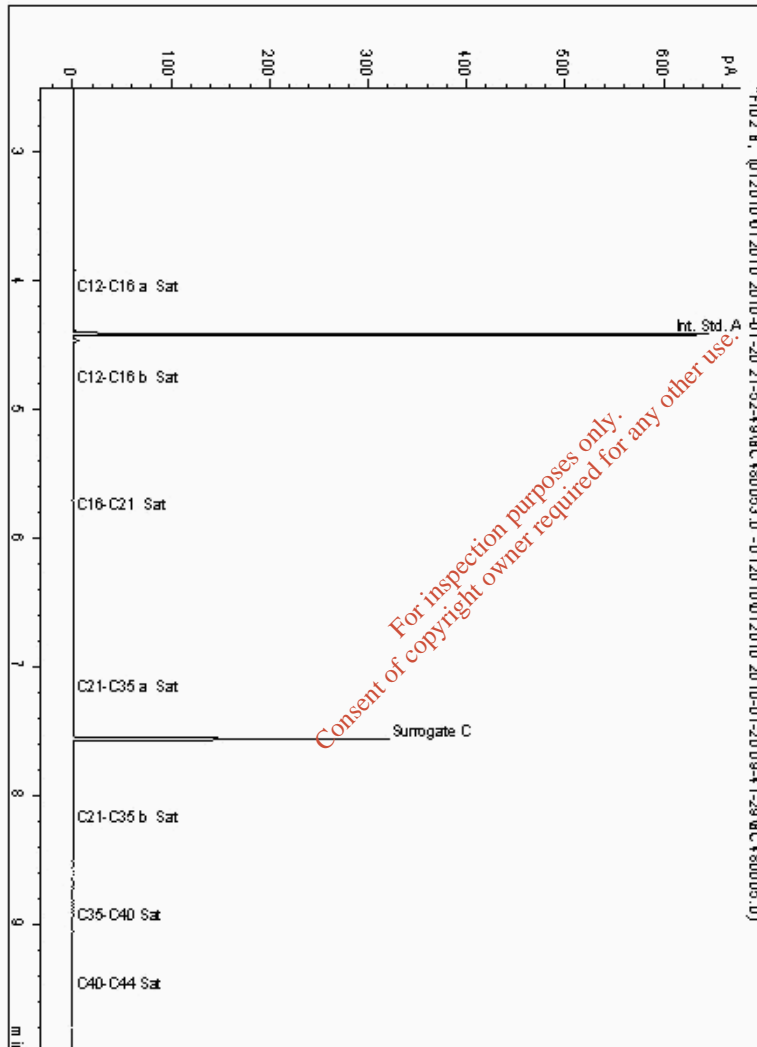
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

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

Sample No 843846
Sample ID A3
Depth 2.0 - 4.5

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

Sample Identity: 970644-843846
Date Acquired : 21/01/10 02:29:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

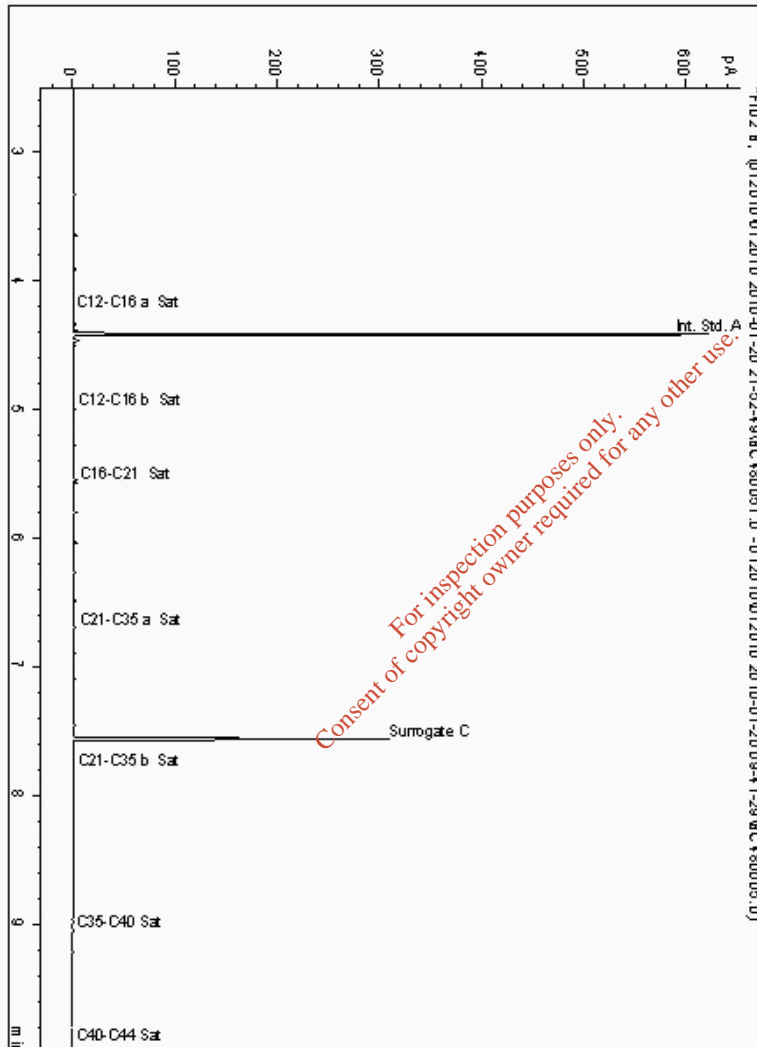
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

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

Sample No 843896
Sample ID B8
Depth 2.0 - 2.5

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

Sample Identity: 970713-843896
Date Acquired : 21/01/10 01:58:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

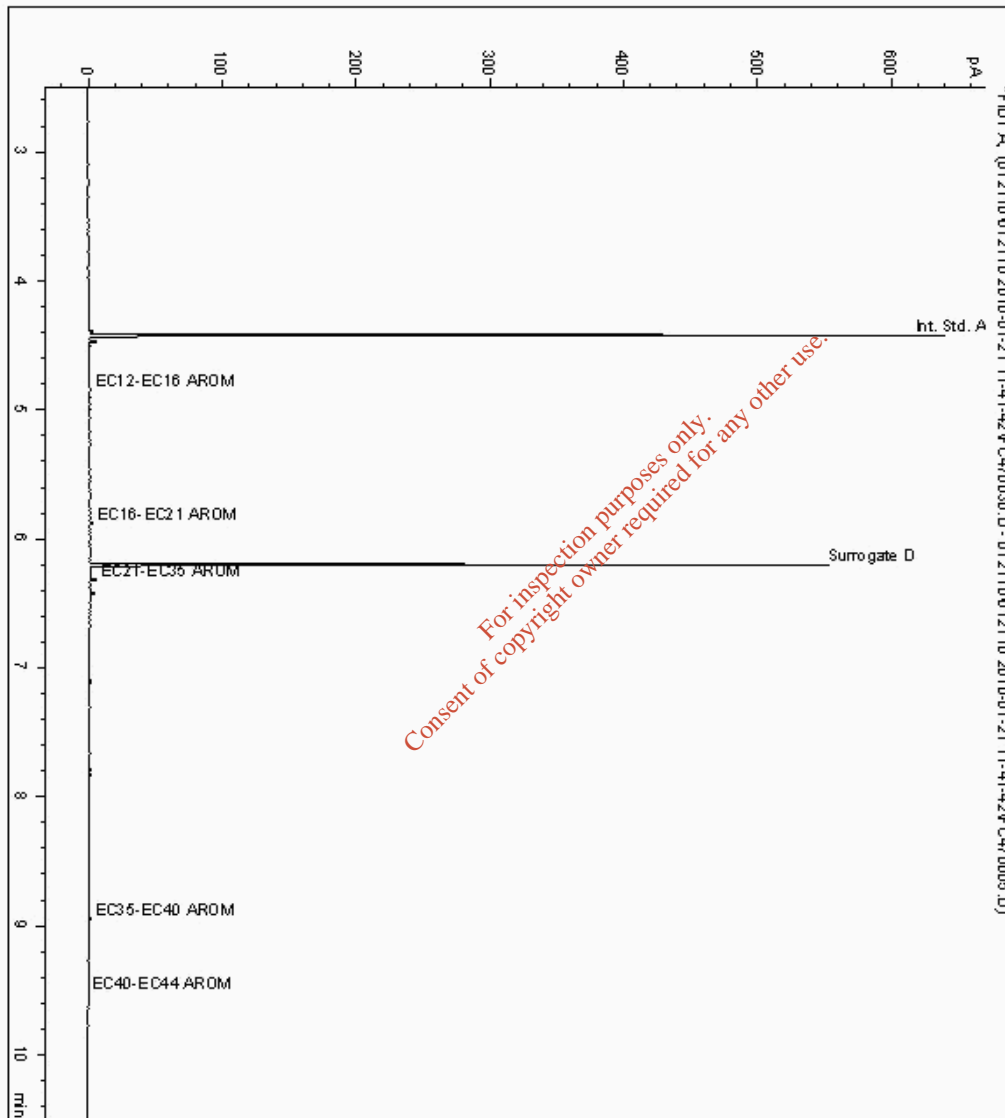
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

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

Sample No 843244
Sample ID A4
Depth 1.5 - 3.0

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

Sample Identity: 970674-843244
Date Acquired : 21/01/10 20:35:50
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

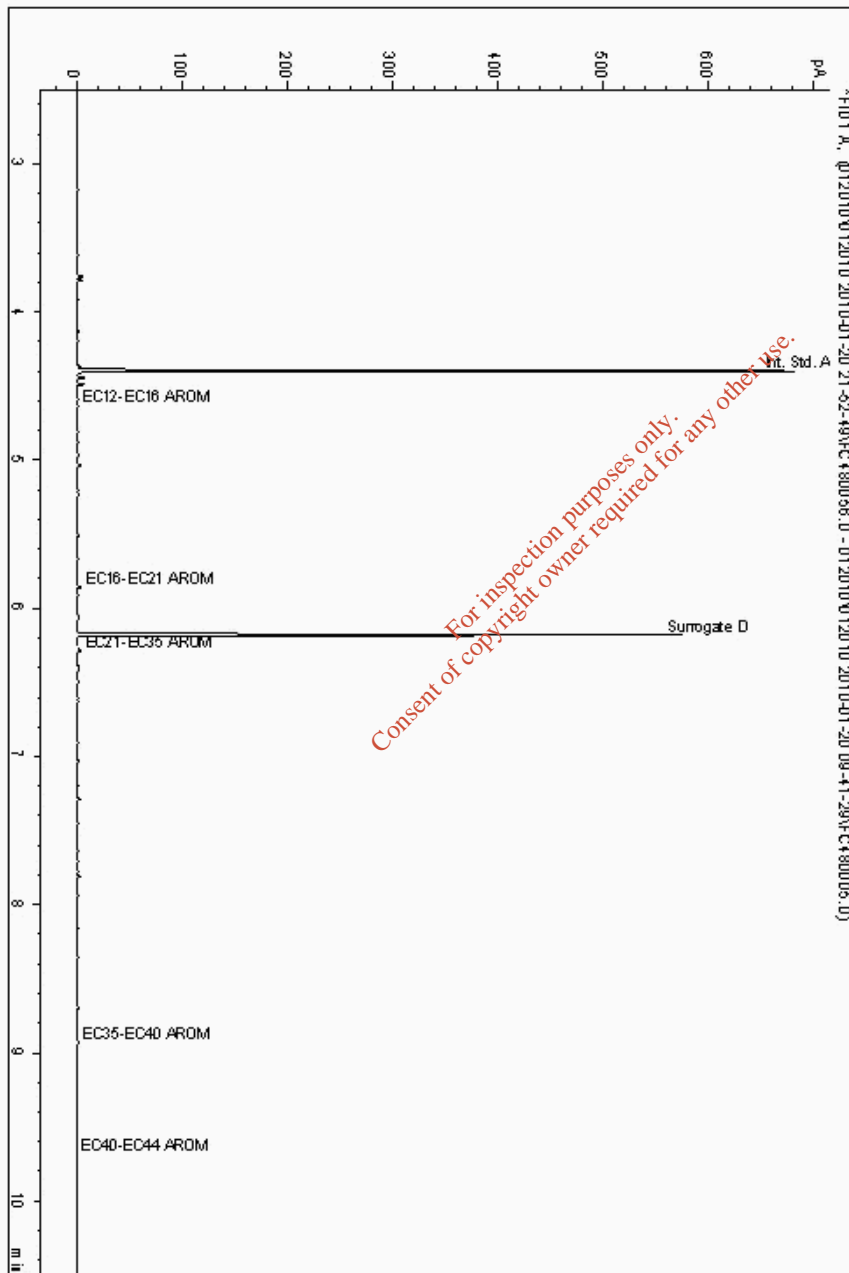
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

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

Sample No 843593
Sample ID D5
Depth 2.0 - 3.0

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

Sample Identity: 970749-843593
Date Acquired : 21/01/10 03:20:14
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

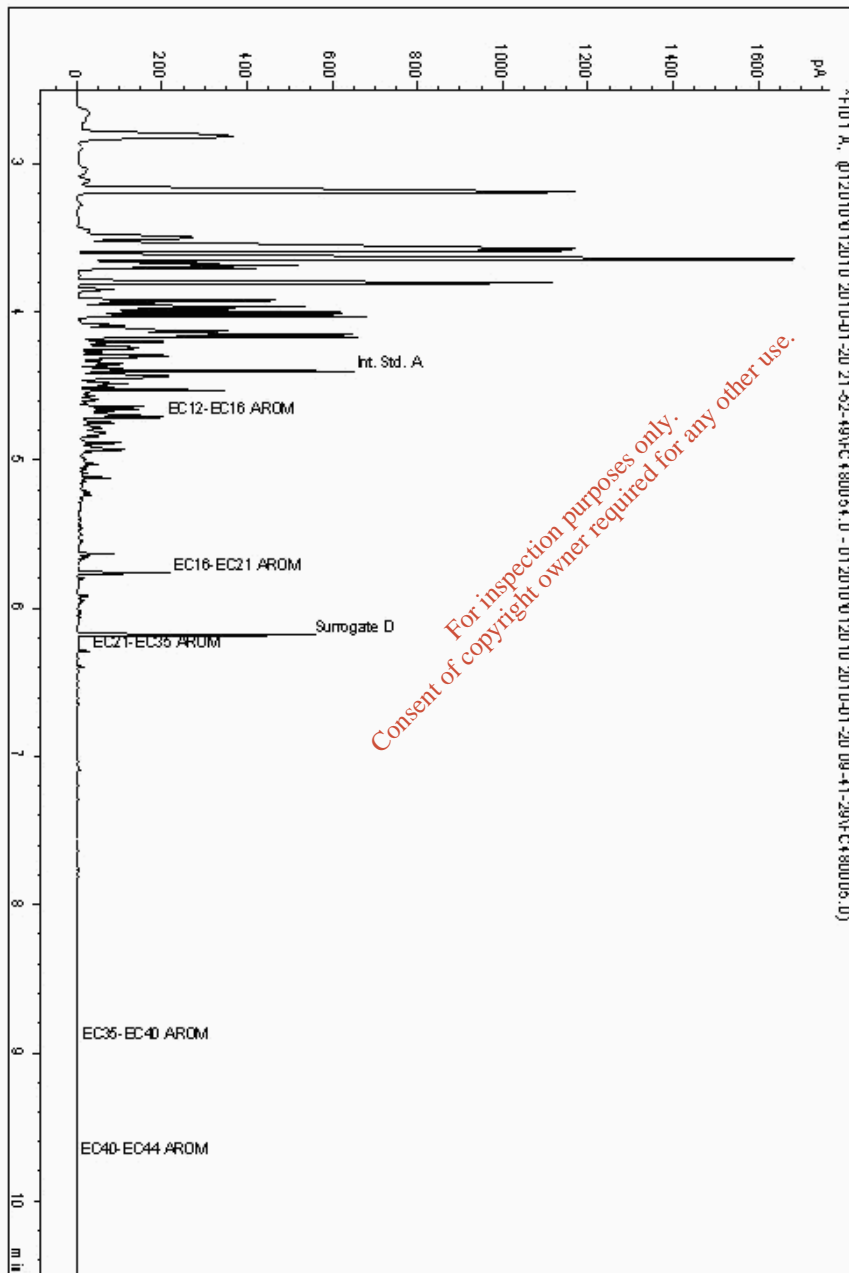
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

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

Sample No 843635
Sample ID C7
Depth 2.0 - 7.0

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

Sample Identity: 970732-843635
Date Acquired : 21/01/10 02:48:34
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

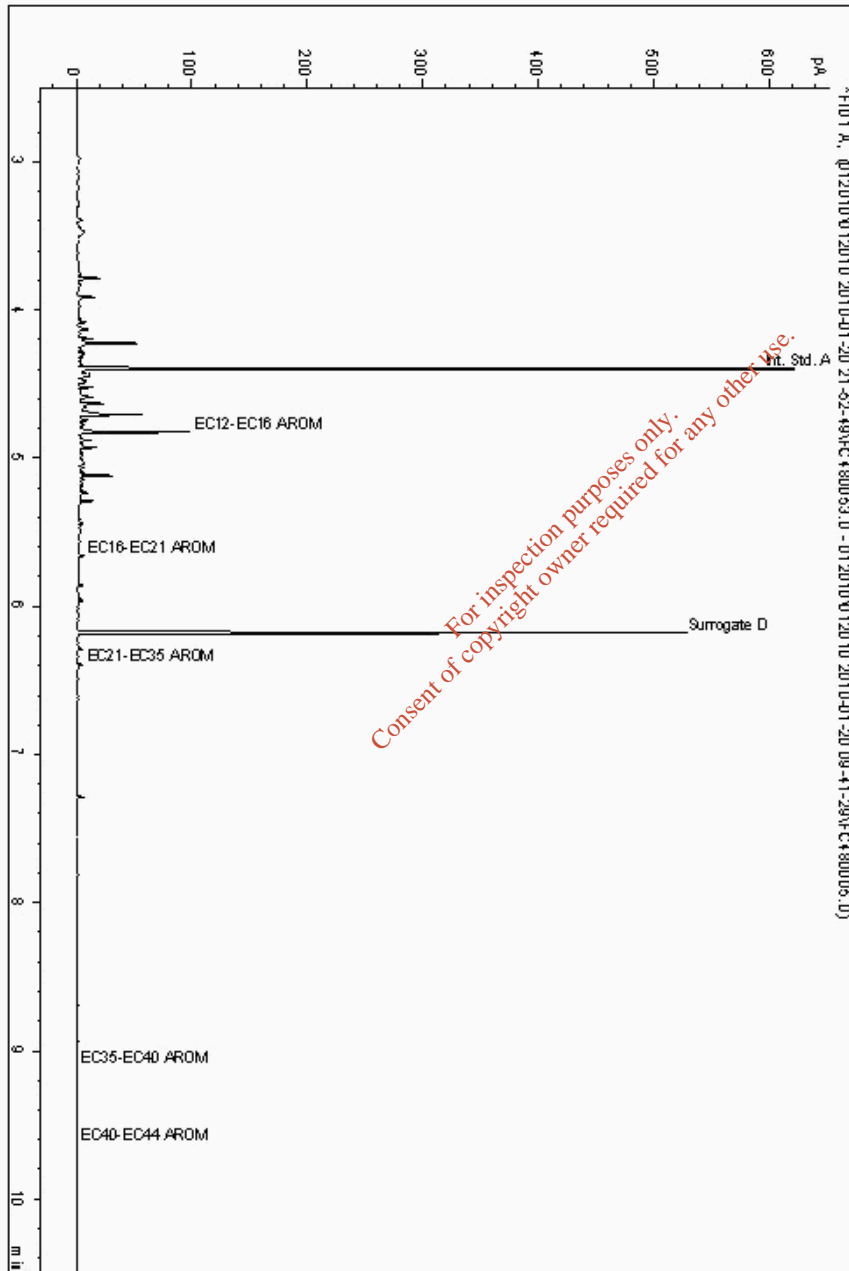
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

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

Sample No 843846
Sample ID A3
Depth 2.0 - 4.5

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

Sample Identity: 970645-843846
Date Acquired : 21/01/10 02:29:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

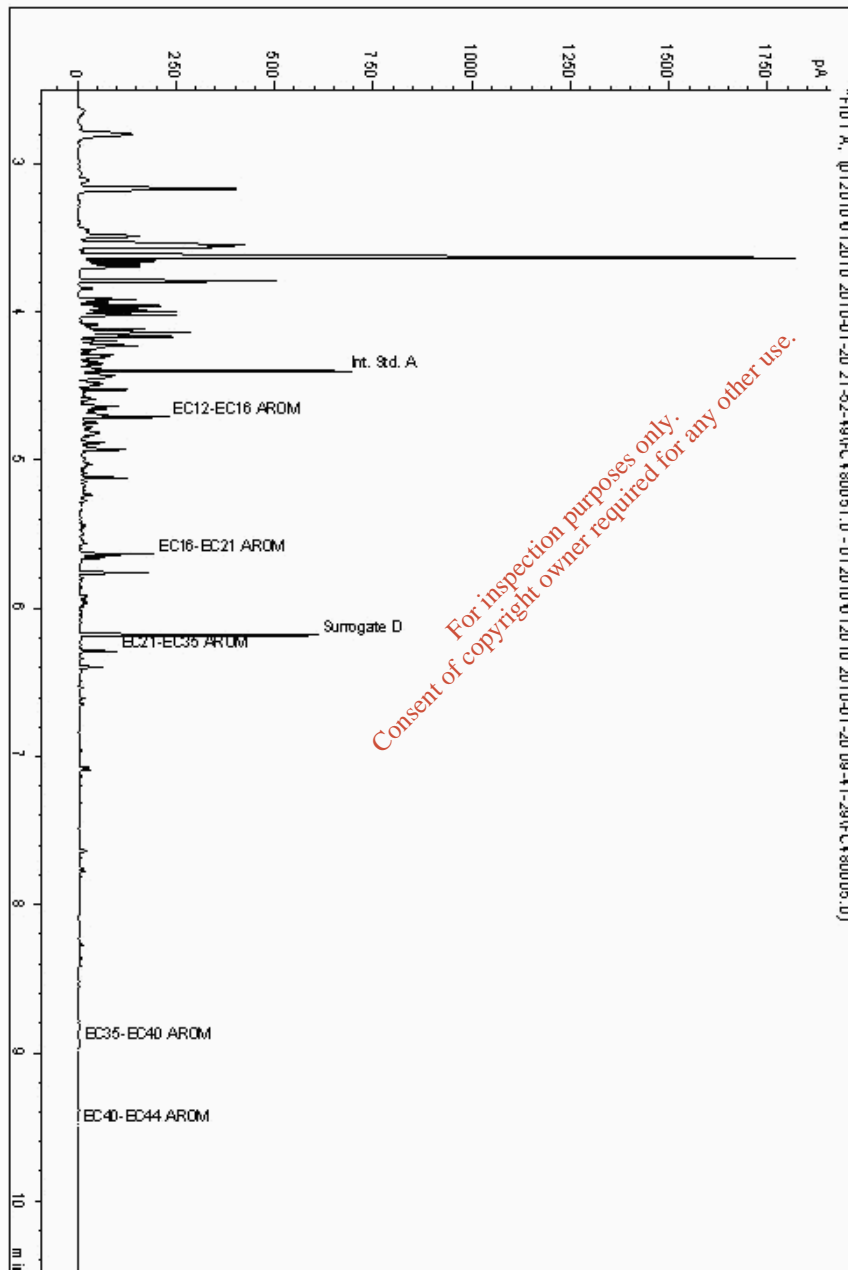
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

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

Sample No 843896
Sample ID B8
Depth 2.0 - 2.5

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

Sample Identity: 970714-843896
Date Acquired : 21/01/10 01:58:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

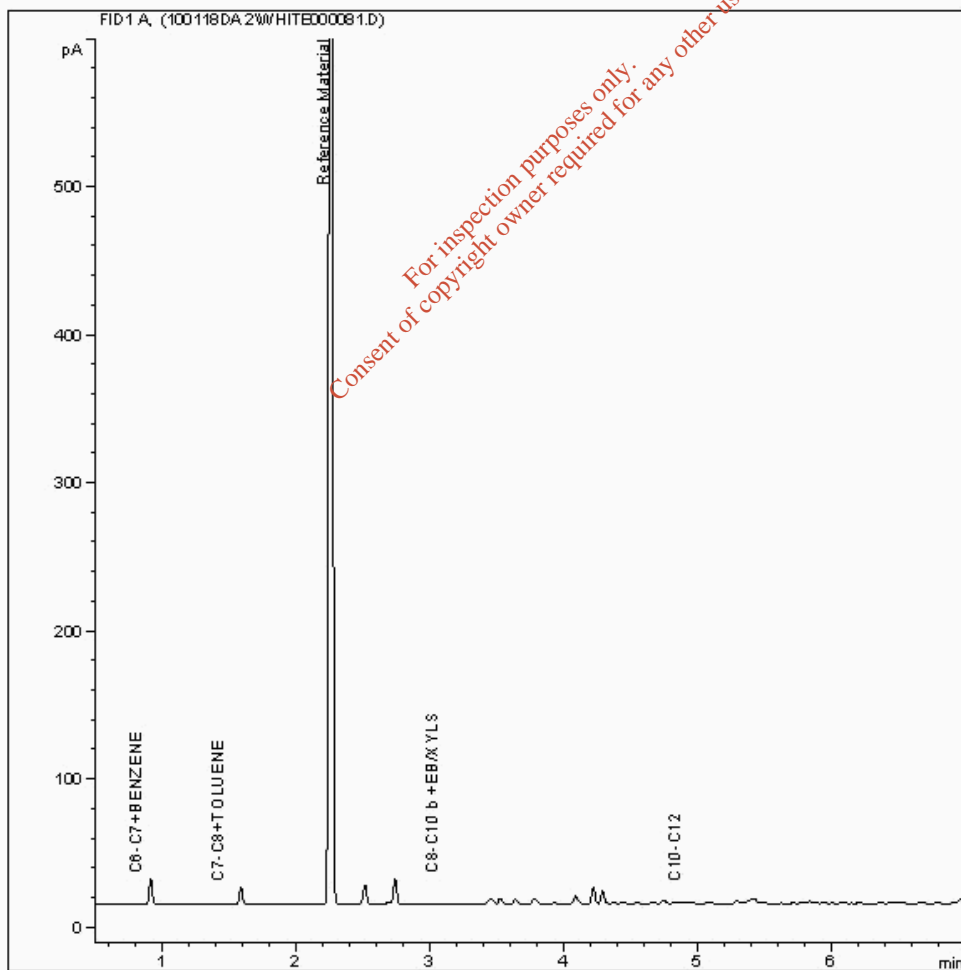
Analysis: GRO BTEX MTBE GC (W)

Sample No 836100
Sample ID D5
Depth 2.0 - 3.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970747-836100
Date Acquired : 19/01/10 06:37:30
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	617
3	C7-C8+TOLUENE	488
4	C8-C10 a	0
5	Reference Material	24408
6	C8-C10 b +EB/XYLS	2132
7	C10-C12	2977



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

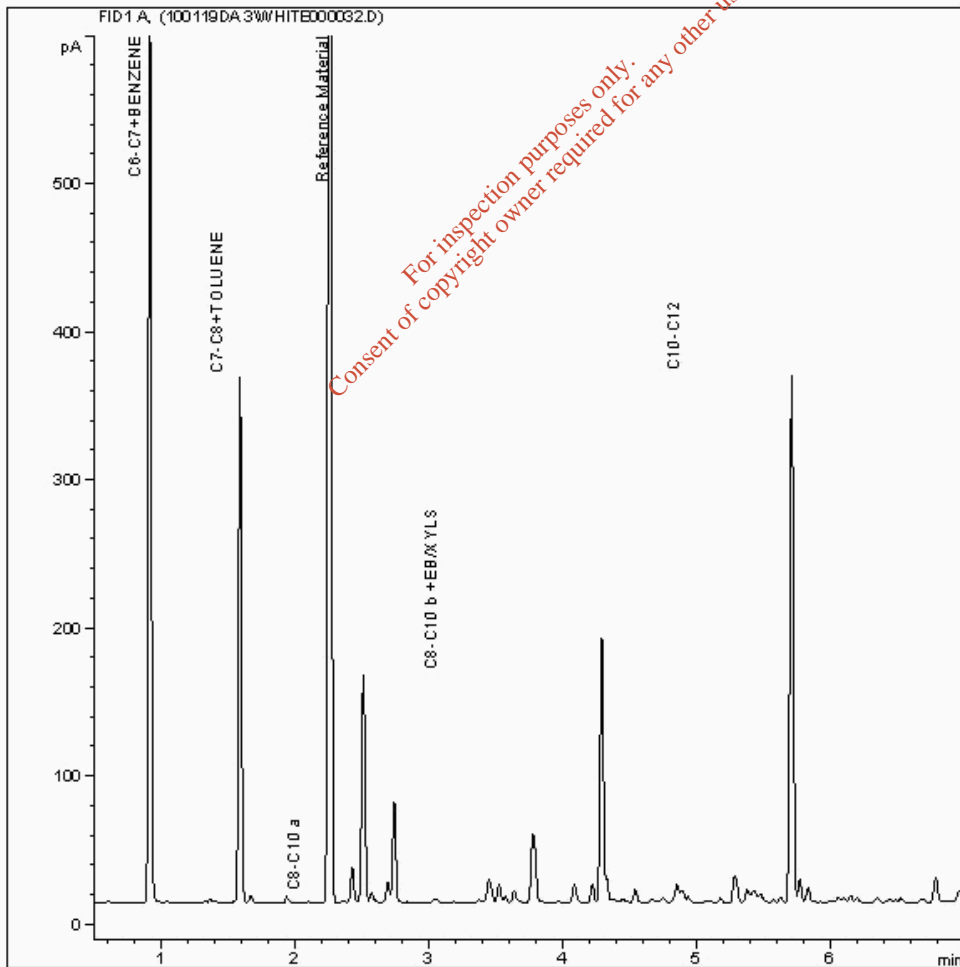
Analysis: GRO BTEX MTBE GC (W)

Sample No 836125
Sample ID B8
Depth 2.0 - 2.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970712-836125
Date Acquired : 19/01/10 23:06:12
Units : ppb
Dilution : 5

#	Compound Name	Amount
1	C4-C6+MTBE	937
2	C6-C7+BENZENE	99187
3	C7-C8+TOLUENE	61198
4	C8-C10 a	1503
5	Reference Material	102578
6	C8-C10 b +EB/XYLS	77265
7	C10-C12	144740



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

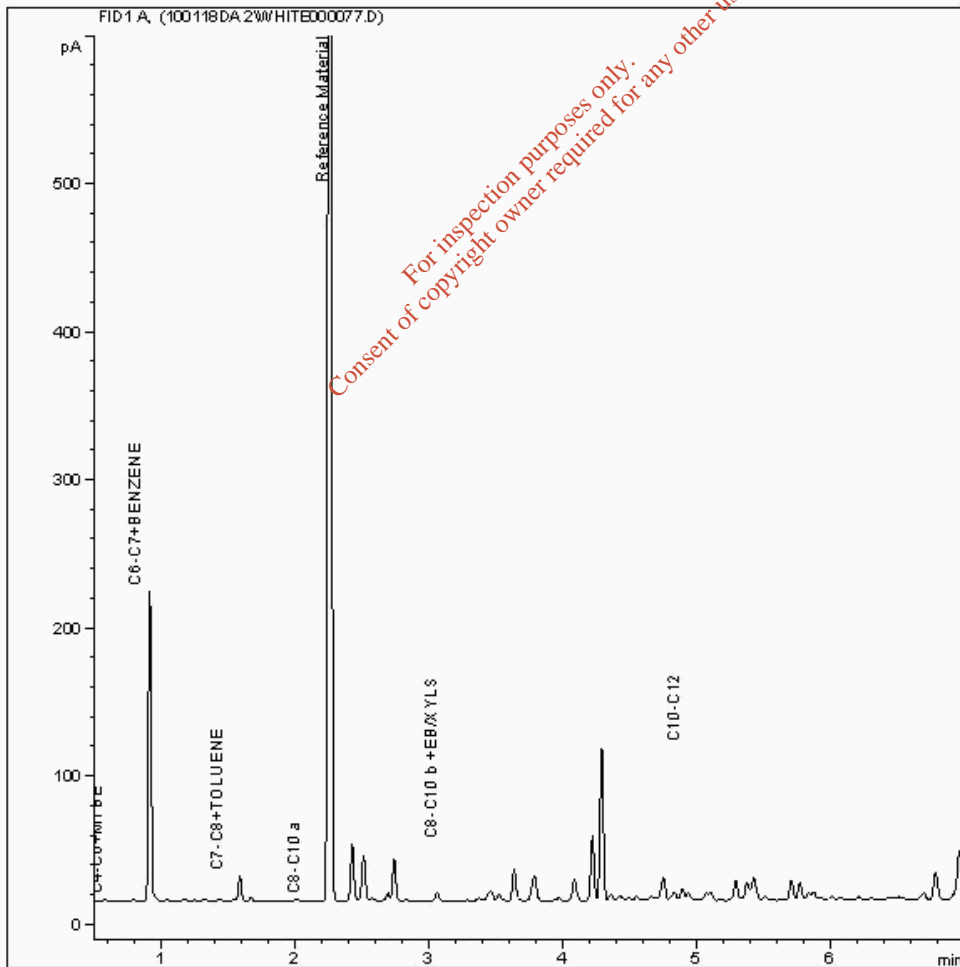
Analysis: GRO BTEX MTBE GC (W)

Sample No 836157
Sample ID A3
Depth 2.0 - 4.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970643-836157
Date Acquired : 19/01/10 05:43:15
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	74
2	C6-C7+BENZENE	7007
3	C7-C8+TOLUENE	940
4	C8-C10 a	146
5	Reference Material	23450
6	C8-C10 b +EB/XYLS	7027
7	C10-C12	13860



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70911

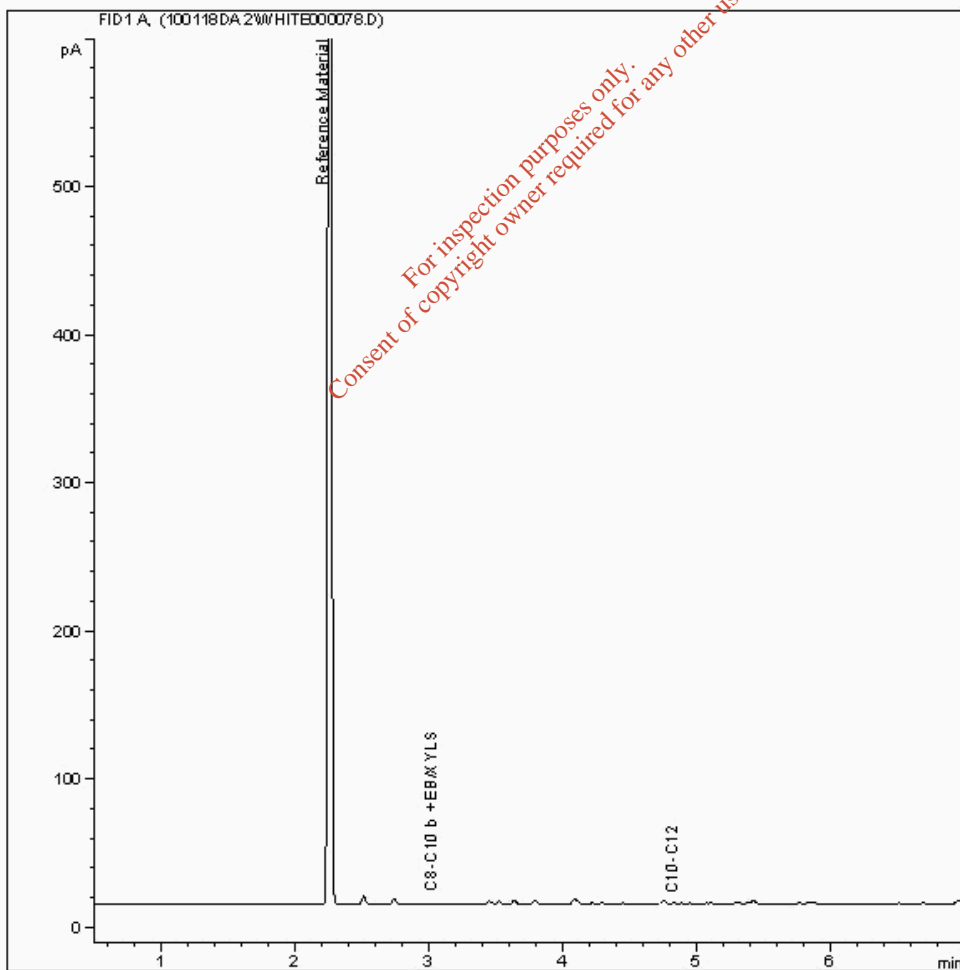
Analysis: GRO BTEX MTBE GC (W)

Sample No 836175
Sample ID A4
Depth 1.5 - 3.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970672-836175
Date Acquired : 19/01/10 05:56:47
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	0
3	C7-C8+TOLUENE	0
4	C8-C10 a	0
5	Reference Material	23685
6	C8-C10 b +EB/XYLS	898
7	C10-C12	1259



SDG: 100115-129
Job: D_MOUCHEL_ELE-97
Client Ref.: 14/01/10 (D5/B8/A3/A4/C7)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70911

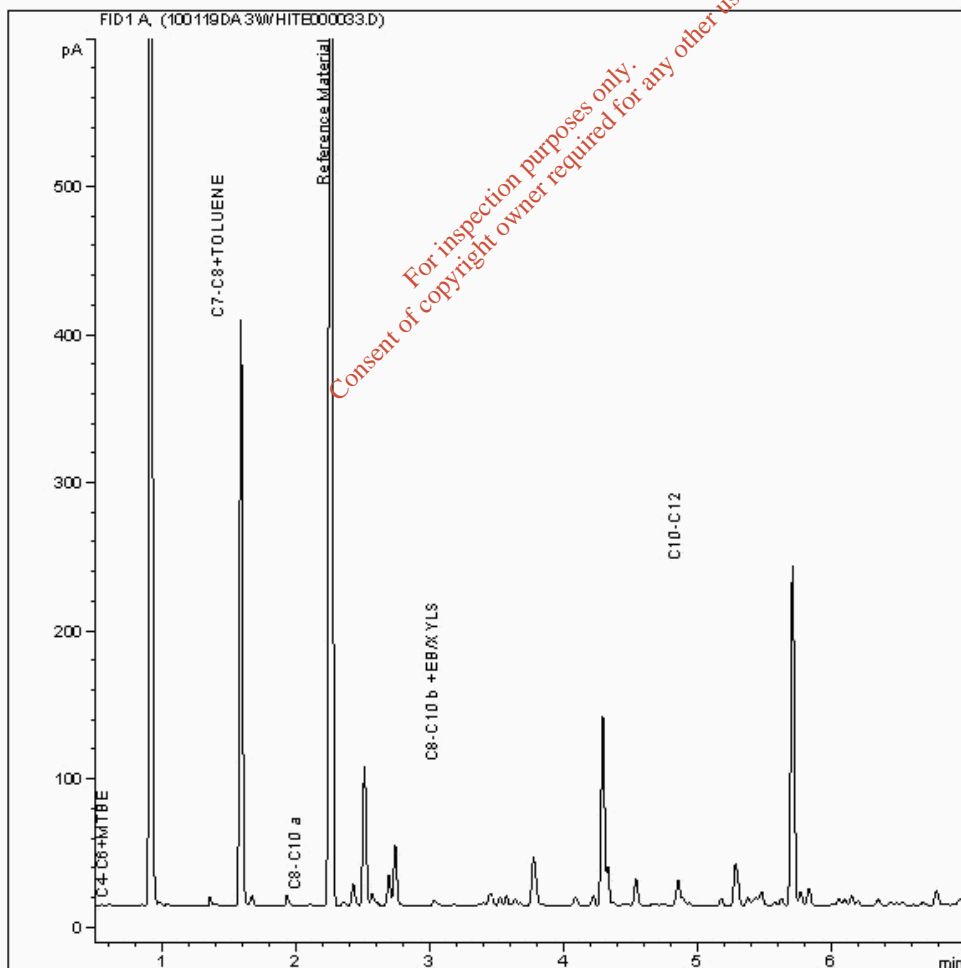
Analysis: GRO BTEX MTBE GC (W)

Sample No 836239
Sample ID C7
Depth 2.0 - 7.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970730-836239
Date Acquired : 19/01/10 23:19:45
Units : ppb
Dilution : 10

#	Compound Name	Amount
1	C4-C6+MTBE	2129
2	C6-C7+BENZENE	0
3	C7-C8+TOLUENE	136203
4	C8-C10 a	3927
5	Reference Material	202174
6	C8-C10 b +EB/XYLS	105844
7	C10-C12	218525



APPENDIX

*For inspection purposes only.
Consent of copyright owner required for any other use.*

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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 25 January 2010
Customer: D_MOUCHEL_ELE-99
Sample Delivery Group (SDG): 100118-49 **Report No.:** 70700
Your Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

We received 5 samples on Friday January 15, 2010 and 5 of these samples were scheduled for analysis which was completed on Monday January 25, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG:	100118-49	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-99	Attention:	Verity Sankey
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	Order No.:	
Location:	Limerick Gasworks	Report No:	70700

Received Sample Overview

Lab Sample No(s)	Customer Reference	Depth (m)	Sampled Date
841477	D1 EW002	3.0 - 5.0	
841478	G2 EW002	4.0 - 9.0	
841479	G3 EW002	5.0 - 7.0	14/01/2010 00:00:00
841371	G4	3.0 - 9.0	
841481	G5 EW002	4.0 - 6.0	

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

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SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No.: 70700

LIQUID

Results Legend	Lab Sample No(s)	841371	841477	841478	841479	841481	Total
	Sample ID	G4	D1	G2	G3	G5	
	Depth (m)	3.0 - 9.0	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	4.0 - 6.0	
	Container	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	
		1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	1l green glass bottle 500ml Plastic	
Ammonium	All						0
Anions by Kone (w)	All	X	X	X	X	X	5
Cyanide Comp/Free/Total/Thiocyanate	All						0
Dissolved Metals by ICP-MS	All	X	X	X	X	X	5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	5
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	5
GRO BTEX MTBE GC (W)	All		X	X	X	X	4
Hexavalent Chromium (w)	All	X	X	X	X	X	5
Mercury Dissolved	All	X	X	X	X	X	5
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	5
pH Value	All	X	X	X	X	X	5
Phenols by HPLC (W)	All	X	X	X	X	X	5
Sulphide	All	X	X	X	X	X	5
Total Metals by ICP-MS	All	X	X	X	X	X	5
TPH CWG (W)	All	X	X	X	X	X	5
VOC MS (W)	All		X	X		X	2

SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No.: 70700

Test Completion dates

SDG reference: 100118-49

Lab Sample No(s) Sample ID Depth Type	841371	841477	841478	841479	841481
	G4	D1	G2	G3	G5
	3.0 - 9.0	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	4.0 - 6.0
	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Anions by Kone (w)	19/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Cyanide	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Dissolved Metals by ICP-MS	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
EPH CWG (Aliphatic) Aqueous GC	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
EPH CWG (Aromatic) Aqueous GC	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
GRO BTEX MTBE GC (W)	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
Hexavalent Chromium (w)	19/01/2010	19/01/2010	19/01/2010	19/01/2010	20/01/2010
Mercury Dissolved	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
PAH Spec MS - Aqueous (W)	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
pH Value	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Phenols by HPLC (W)	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Sulphide	20/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010
Total Metals by ICP-MS	21/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
TPH CWG (W)	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
VOC MS (W)	25/01/2010	22/01/2010	25/01/2010		20/01/2010

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SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

Results Legend
 # ISO17025 accredited.
 M mCERTS accredited.
 * subcontracted test.
 ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %
 The results of the individual compounds within the sample are not corrected for this recovery.

Sample Identity	D1	G2	G3	G4	G5
Depth (m)	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	3.0 - 9.0	4.0 - 6.0
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	15/01/2010	15/01/2010	14/01/2010	15/01/2010	15/01/2010
Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref	100118-49	100118-49	100118-49	100118-49	100118-49
Lab Sample No.(s)	841477	841478	841479	841371	841481

Component	LOD/Units	Method	D1	G2	G3	G4	G5
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	10.4 #	48.3 #	22.5 #	9.46 #	4.19 #
Sulphide	<0.1 mg/l	TM101	34.1 #	0.2 #	<0.1 #	<0.1 #	<0.1 #
Arsenic Dissolved	<0.12 µg/l	TM152	15.4 #	24.4 #	6.11 #	4.29 #	3.76 #
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Copper Dissolved	<0.85 µg/l	TM152	1.34 #	1.83 #	1.6 #	3.31 #	2.71 #
Lead Dissolved	<0.02 µg/l	TM152	0.03 #	<0.02 #	0.077 #	<0.02 #	0.139 #
Nickel Dissolved	<0.15 µg/l	TM152	7.91 #	10.4 #	14.2 #	3.95 #	15.2 #
Selenium Dissolved	<0.39 µg/l	TM152	3.05 #	9.82 #	8.98 #	5.32 #	4.58 #
Zinc Dissolved	<0.41 µg/l	TM152	<0.41 #	<0.41 #	<0.41 #	<0.41 #	<0.41 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.01 #	<0.01 #
Sulphate (soluble)	3 mg/l	TM184	456 #	583 #	571 #	127 #	671 #
Chromium (Unfiltered)	<3 µg/l	TM191	37.3 #	22.9 #	47.9 #	6.83 #	124 #
Total Cyanide	<0.05 mg/l	TM227	0.663 #	0.809 #	0.495 #	0.243 #	0.321 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH value	<1 pH Units	TM256	7.78 #	7.77 #	7.79 #	7.91 #	7.34 #
Phenol	<0.002 mg/l	TM259	0.01 #	0.01 #	0.01 #	0.18 #	<0.002 #
Cresols	<0.006 mg/l	TM259	0.06 #	0.06 #	<0.006 #	1.42 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	0.34 #	13.2 #	0.02 #	2.58 #	<0.008 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.003 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	1.62 #	<0.006 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	0.41 #	22.9 #	0.03 #	5.8 #	<0.025 #

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SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

PAH Spec MS - Aqueous (W)

Results Legend			Sample Identity	D1	G2	G3	G4	G5
# ISO17025 accredited. M mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	3.0 - 9.0	4.0 - 6.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/01/2010	15/01/2010	14/01/2010	15/01/2010	15/01/2010
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-49	100118-49	100118-49	100118-49	100118-49
			Lab Sample No.(s)	841477	841478	841479	841371	841481
Component	LOD/Units	Method						
Naphthalene (Aqueous)	<0.1 µg/l	TM178	1950	563	0.103	1770	297	
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	137	29.4	1.63	97.5	98.1	
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	286	45.7	1.75	372	283	
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	215	23.2	8.92	339	640	
Anthracene (Aqueous)	<0.015 µg/l	TM178	95.5	6.74	2.12	177	307	
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	400	49.5	3.35	625	948	
Fluorene (Aqueous)	<0.014 µg/l	TM178	180	19	1.25	274	336	
Chrysene (Aqueous)	<0.013 µg/l	TM178	38.4	5.83	3.67	70	154	
Pyrene (Aqueous)	<0.015 µg/l	TM178	136	15	6.88	224	419	
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	44.8	5.63	4.29	87.2	193	
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	42	6.76	4.81	72.4	169	
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	17.2	2.39	1.8	28.2	60.2	
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	29.9	4.8	3.5	48.7	122	
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	4.96	0.914	0.565	6.13	15.8	
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	17.7	2.61	2.1	21.6	54.6	
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	16.4	2.35	1.89	21.1	54	
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	3610	283	48.6	4230	4150	

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SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

TPH CWG (W)

Results Legend			Sample Identity	D1	G2	G3	G4	G5
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.0 - 5.0 Water(GW/SW) 15/01/2010 100118-49 841477	4.0 - 9.0 Water(GW/SW) 15/01/2010 100118-49 841478	5.0 - 7.0 Water(GW/SW) 14/01/2010 15/01/2010 100118-49 841479	3.0 - 9.0 Water(GW/SW) 15/01/2010 100118-49 841371	4.0 - 6.0 Water(GW/SW) 15/01/2010 100118-49 841481
Component	LOD/Units	Method						
GRO C5-C12	<42 µg/l	TM245	8960	16300	571	19500	1830	
MTBE	<3 µg/l	TM245	12	<3	12	24	10	
Benzene	<7 µg/l	TM245	644	4140	158	2150	30	
Toluene	<4 µg/l	TM245	512	2890	13	2840	34	
Ethyl Benzene	<5 µg/l	TM245	227	281	14	293	14	
m & p Xylene	<8 µg/l	TM245	670	1270	44	1840	148	
o Xylene	<3 µg/l	TM245	351	679	34	779	70	
Sum m&p and o Xylene	<10 µg/l	TM245	1020	1950	78	2620	218	
Sum of BTEX	<10 µg/l	TM245	2400	9270	263	7910	296	
Aliphatics C5-C6	<10 µg/l	TM245	<10	<20	15.2	30.6	13.2	
Aliphatics >C6-C8	<10 µg/l	TM245	405	629	83.4	1510	83.7	
Aliphatics >C8-C10	<10 µg/l	TM245	609	647	32.1	1130	209	
Aliphatics >C10-C12	<10 µg/l	TM245	1840	1910	44.7	2860	360	
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	267	<10	<10	342	906	
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	207	<10	135	364	725	
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	115	530	95	265	524	
Total Aliphatics C5-C12	<10 µg/l	TM245	2860	3200	175	5540	666	
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	589	<10	230	971	2160	
Aromatics C6-C7	<10 µg/l	TM245	644	4140	158	2150	30	
Aromatics >C7-C8	<10 µg/l	TM245	512	2890	13	2840	34	
Aromatics >EC8-EC10	<10 µg/l	TM245	2160	3200	140	4610	545	
Aromatics >EC10-EC12	<10 µg/l	TM245	2760	2860	67.1	4300	540	
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	1840	1980	48	3570	2580	
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	1840	250	75	3070	4460	
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	2660	172	189	4180	8260	
Total Aromatics C6-C12	<10 µg/l	TM245	6080	13100	378	13900	1150	
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	6340	2410	312	10800	15300	
Surrogate Recovery %**	%	TM245	91	82	87	88	97	
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	6930	2410	542	11800	17500	
GRO (>C8-C10A)	<10 µg/l	TM245	22.2	44.9	<10	35.2	12.1	
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	3440	3200	405	6510	2820	
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	12400	15500	690	24700	16400	
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	15900	18700	1100	31200	19300	

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SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

VOC MS (W)

Results Legend		Sample Identity	D1	G2	G4	G5		
# ISO17025 accredited. # mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.0 - 5.0 Water(GW/SW) 15/01/2010 100118-49 841477	4.0 - 9.0 Water(GW/SW) 15/01/2010 100118-49 841478	3.0 - 9.0 Water(GW/SW) 15/01/2010 100118-49 841371	4.0 - 6.0 Water(GW/SW) 15/01/2010 100118-49 841481		
Component	LOD/Units	Method						
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Chloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
Vinyl Chloride	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Bromomethane	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
Chloroethane	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Carbon disulphide	<1.3 µg/l	TM208	2.36 #	5.03 #	<1.3 #	<1.3 #		
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #		
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6 #	<1.6 #	<1.6 #	<1.6 #		
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #	<3.8 #	<3.8 #	<3.8 #		
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
Chloroform	<1.8 µg/l	TM208	<1.8 #	<1.8 #	<1.8 #	<1.8 #		
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #	<1.4 #	<1.4 #	<1.4 #		
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3 #	<3.3 #	<3.3 #	<3.3 #		
Benzene	<1.3 µg/l	TM208	822 #	5680 #	2900 #	38.1 #		
Trichloroethene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
1,2-Dichloropropane	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #		
Dibromomethane	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #		
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #	<0.9 #	<0.9 #	<0.9 #		
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
Toluene	<1.4 µg/l	TM208	623 #	3990 #	3620 #	44.1 #		
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #	<1.5 #	<1.5 #	<1.5 #		
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Ethylbenzene	<2.5 µg/l	TM208	276 #	397 #	331 #	19.4 #		
p/m-Xylene	<2.5 µg/l	TM208	829 #	1670 #	2370 #	185 #		
o-Xylene	<1.7 µg/l	TM208	447 #	874 #	1020 #	81.1 #		
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		

SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Reference: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

VOC MS (W)

Results Legend # ISO17025 accredited. M mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Sample Identity Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)		D1	G2	G4	G5
			3.0 - 5.0 Water(GW/SW)	4.0 - 9.0 Water(GW/SW)	3.0 - 9.0 Water(GW/SW)	4.0 - 6.0 Water(GW/SW)		
			15/01/2010 100118-49 841477	15/01/2010 100118-49 841478	15/01/2010 100118-49 841371	15/01/2010 100118-49 841481		
Component	LOD/Units	Method						
Bromoform	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #		
Isopropylbenzene	<1.4 µg/l	TM208	26.4 #	26.2 #	25.8 #	4.2 #		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2 #	<5.2 #	<5.2 #	<5.2 #		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #	<7.8 #	<7.8 #		
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
Propylbenzene	<2.6 µg/l	TM208	33.2 #	28.2 #	29.4 #	4 #		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	110 #	94.9 #	168 #	60.4 #		
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	360 #	345 #	426 #	134 #		
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	<2.6 #	<2.6 #		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #		
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8 #	<9.8 #	<9.8 #	<9.8 #		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
Tert-amyl methyl ether	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #		
Naphthalene	<3.5 µg/l	TM208	3480 #	3250 #	6270 #	457 #		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #	<3.1 #	<3.1 #		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10 #	<10 #	<10 #	<10 #		

Table of Results - Appendix

SDG Number : 100118-49

Client : Mouchel

Client Ref : 14/01/10 (G4/D1/G2/G3/G5)

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

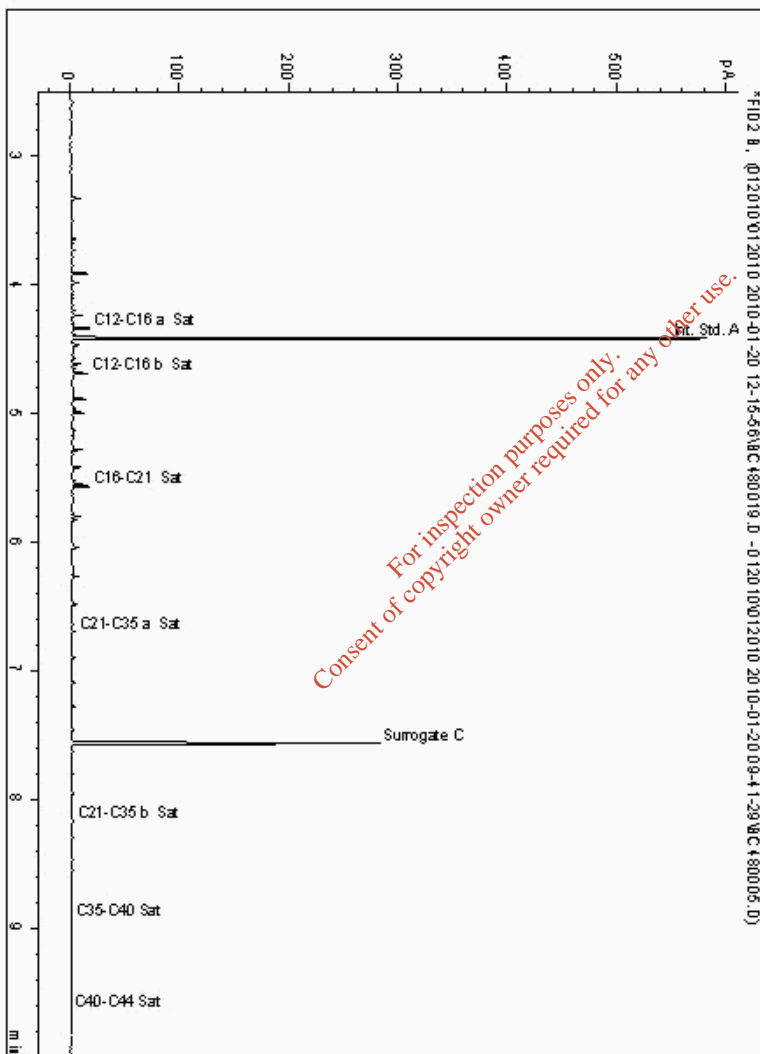
Chromatogram

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

Sample No 845696
Sample ID D1
Depth 3.0 - 5.0

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

Sample Identity: 971898-845696
Date Acquired : 20/01/10 15:19:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

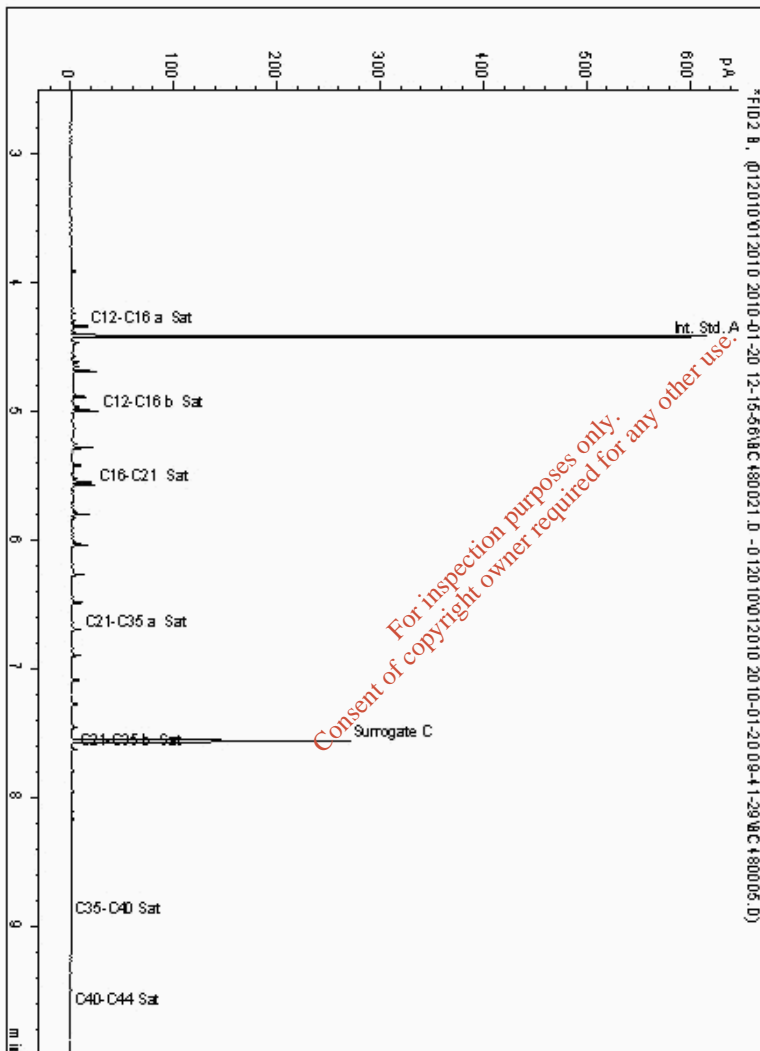
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 845739
Sample ID G4
Depth 3.0 - 9.0

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

Sample Identity: 971852-845739
Date Acquired : 20/01/10 15:51:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

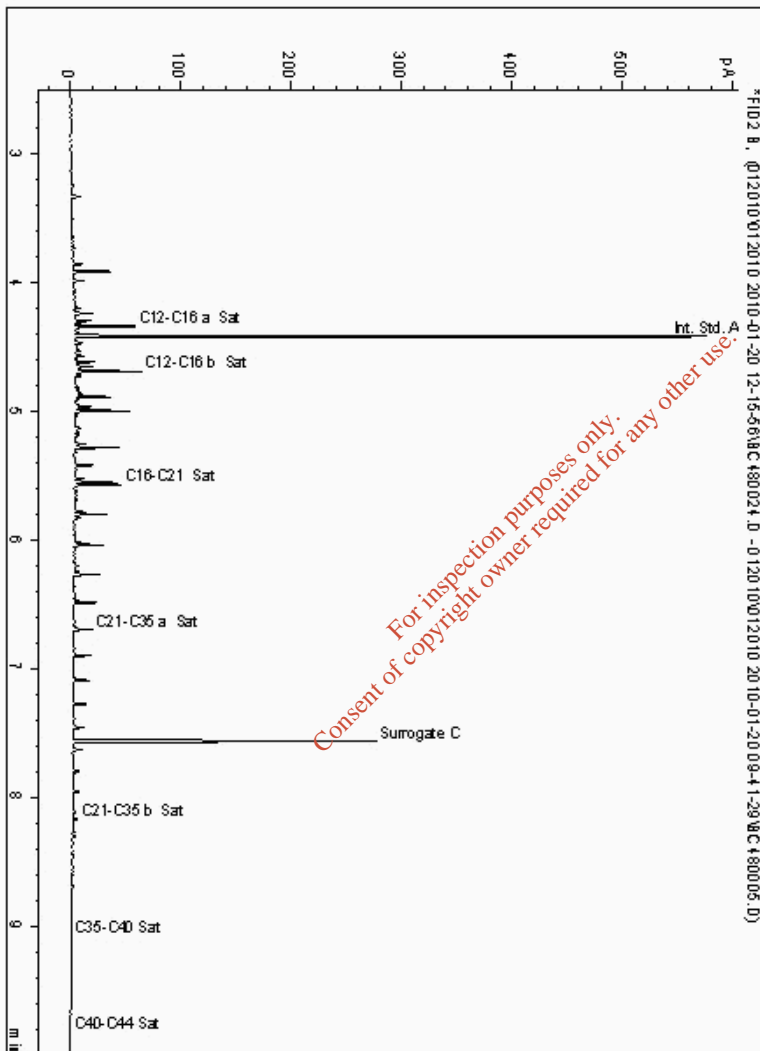
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 845979
Sample ID G5
Depth 4.0 - 6.0

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

Sample Identity: 972004-845979
Date Acquired : 20/01/10 16:41:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

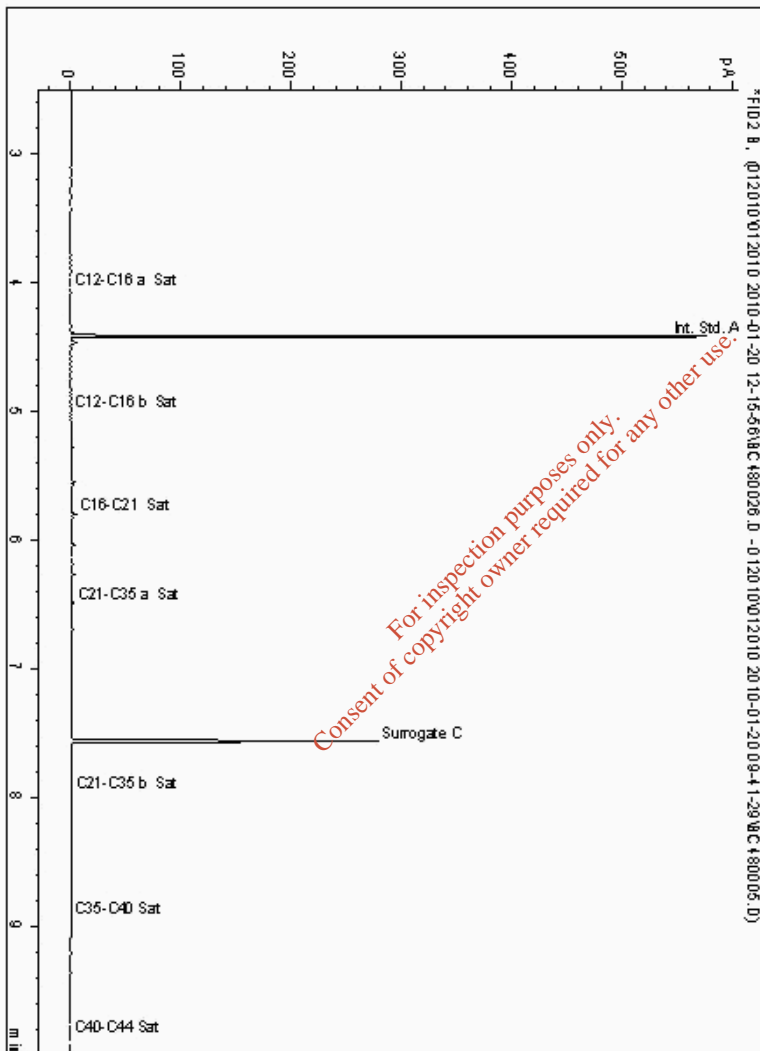
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 846009
Sample ID G3
Depth 5.0 - 7.0

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

Sample Identity: 971972-846009
Date Acquired : 20/01/10 17:13:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

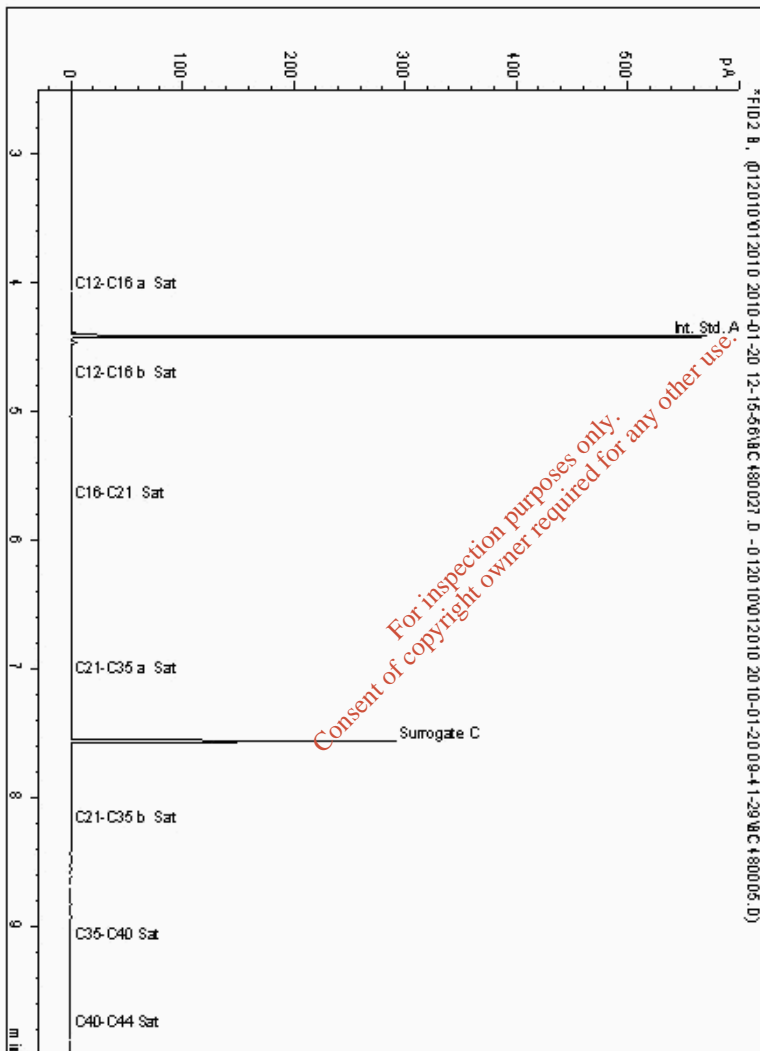
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 846024
Sample ID G2
Depth 4.0 - 9.0

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

Sample Identity: 971918-846024
Date Acquired : 20/01/10 17:32:21
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

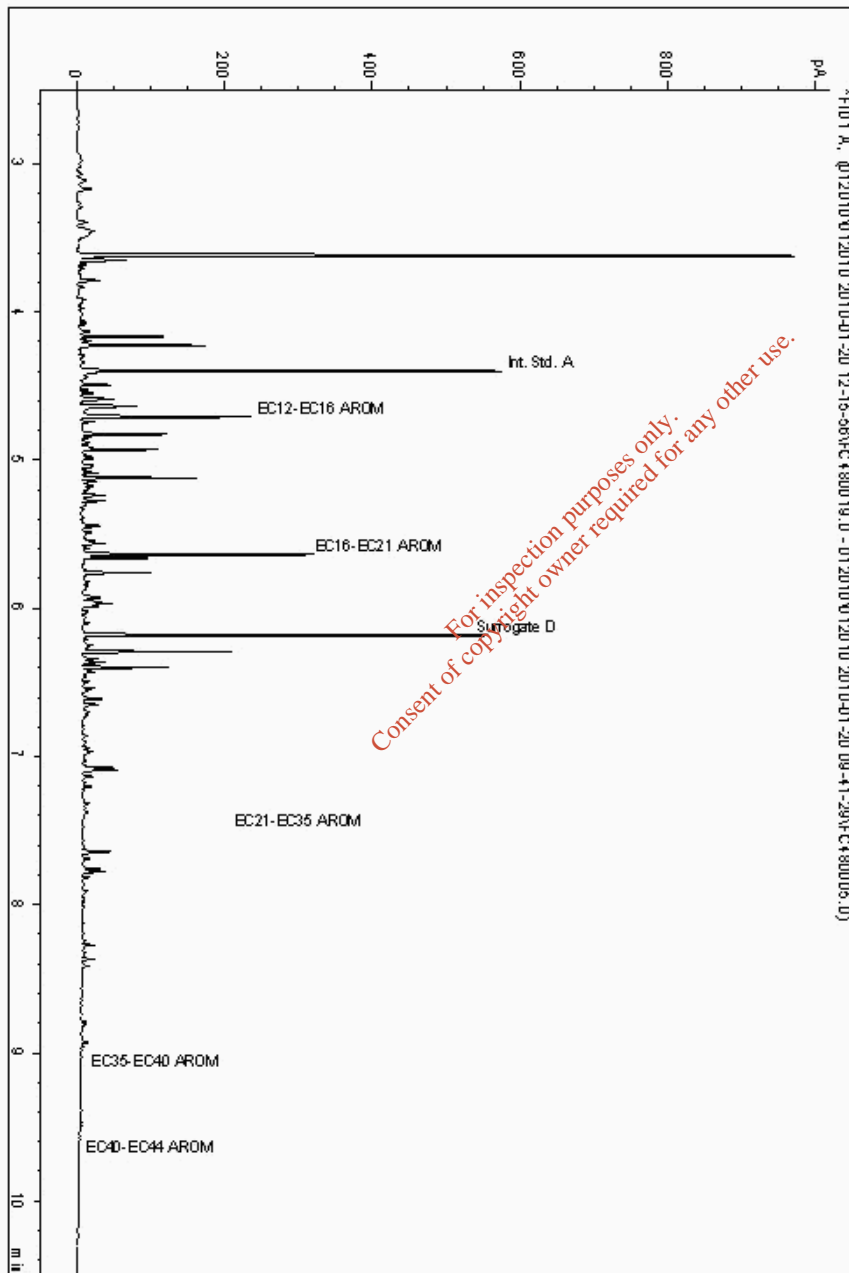
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 845696
Sample ID D1
Depth 3.0 - 5.0

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

Sample Identity: 971899-845696
Date Acquired : 20/01/10 15:19:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

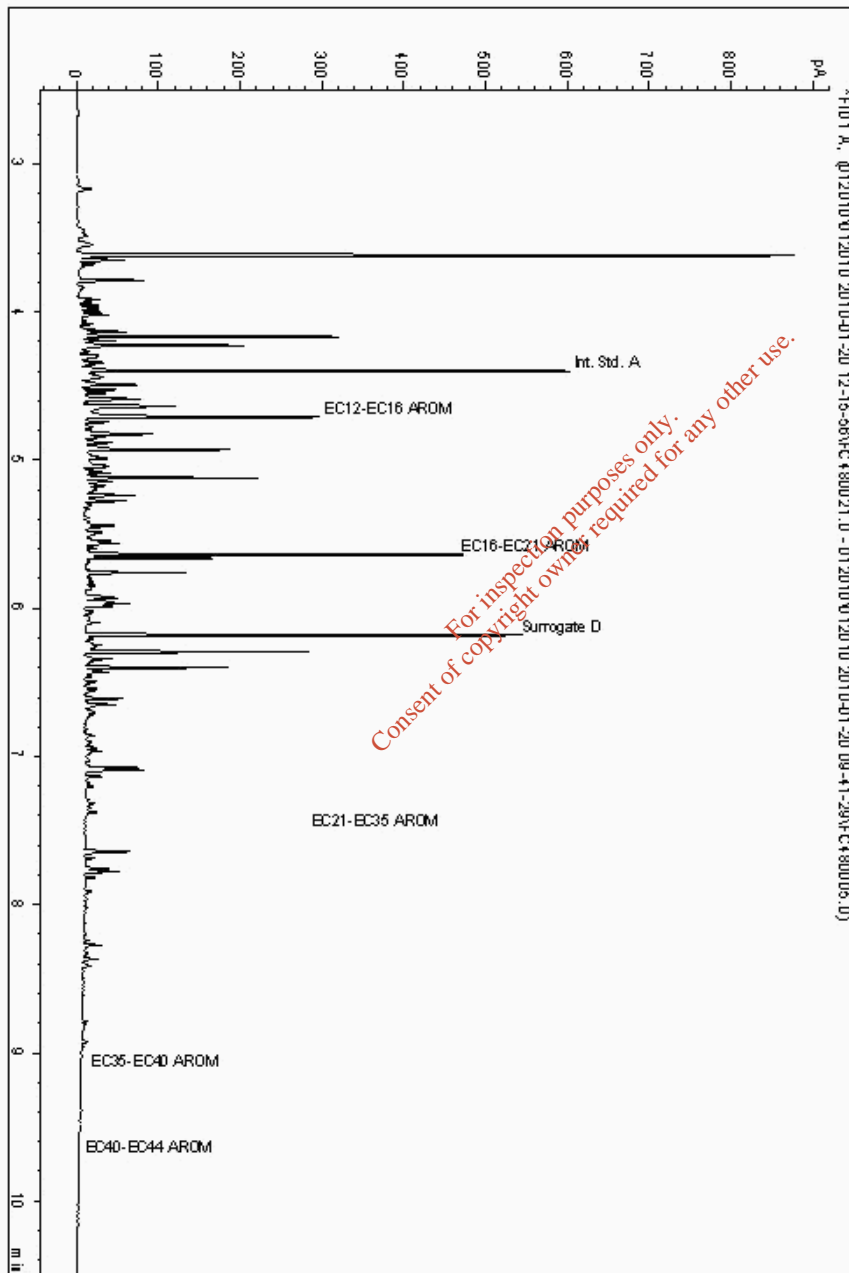
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 845739
Sample ID G4
Depth 3.0 - 9.0

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

Sample Identity: 971853-845739
Date Acquired : 20/01/10 15:51:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

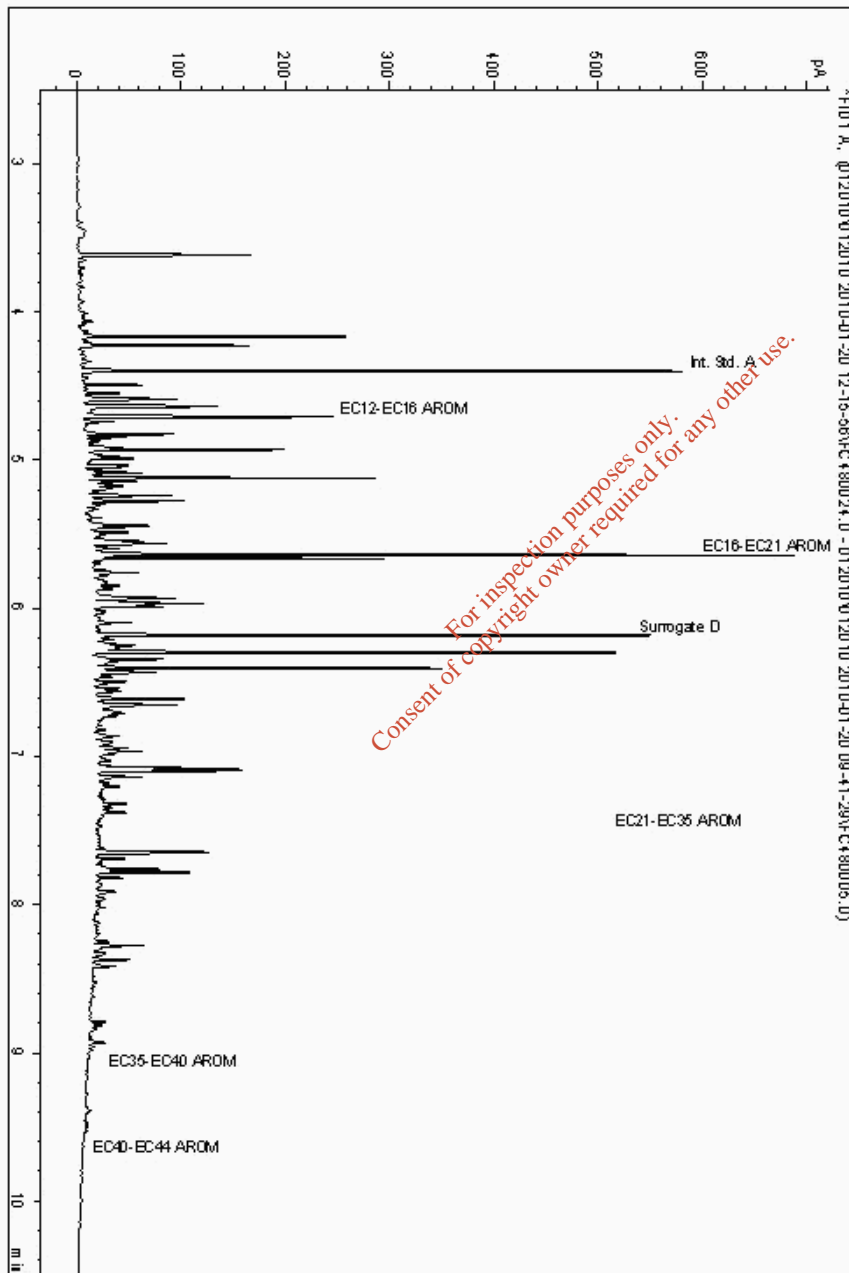
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 845979
Sample ID G5
Depth 4.0 - 6.0

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

Sample Identity: 972005-845979
Date Acquired : 20/01/10 16:41:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

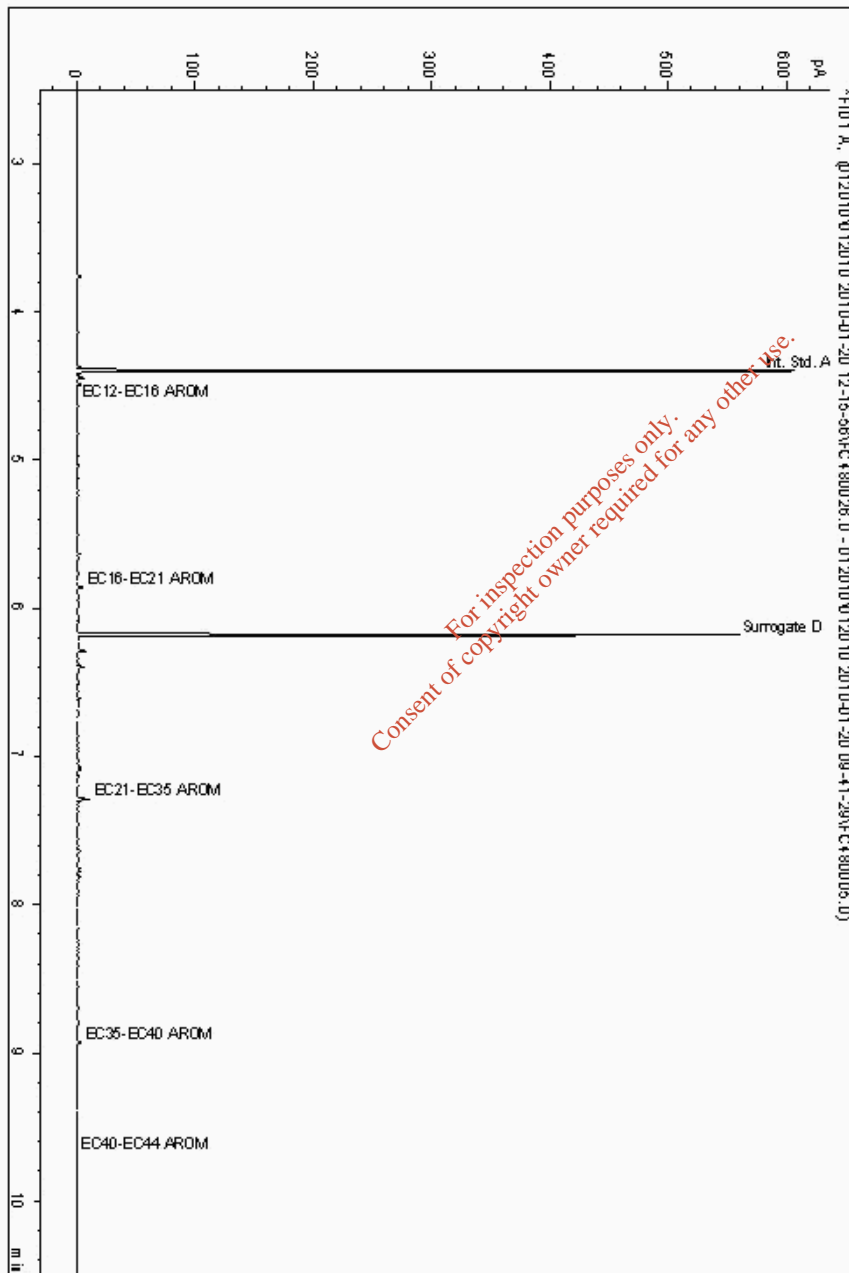
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 846009
Sample ID G3
Depth 5.0 - 7.0

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

Sample Identity: 971973-846009
Date Acquired : 20/01/10 17:13:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

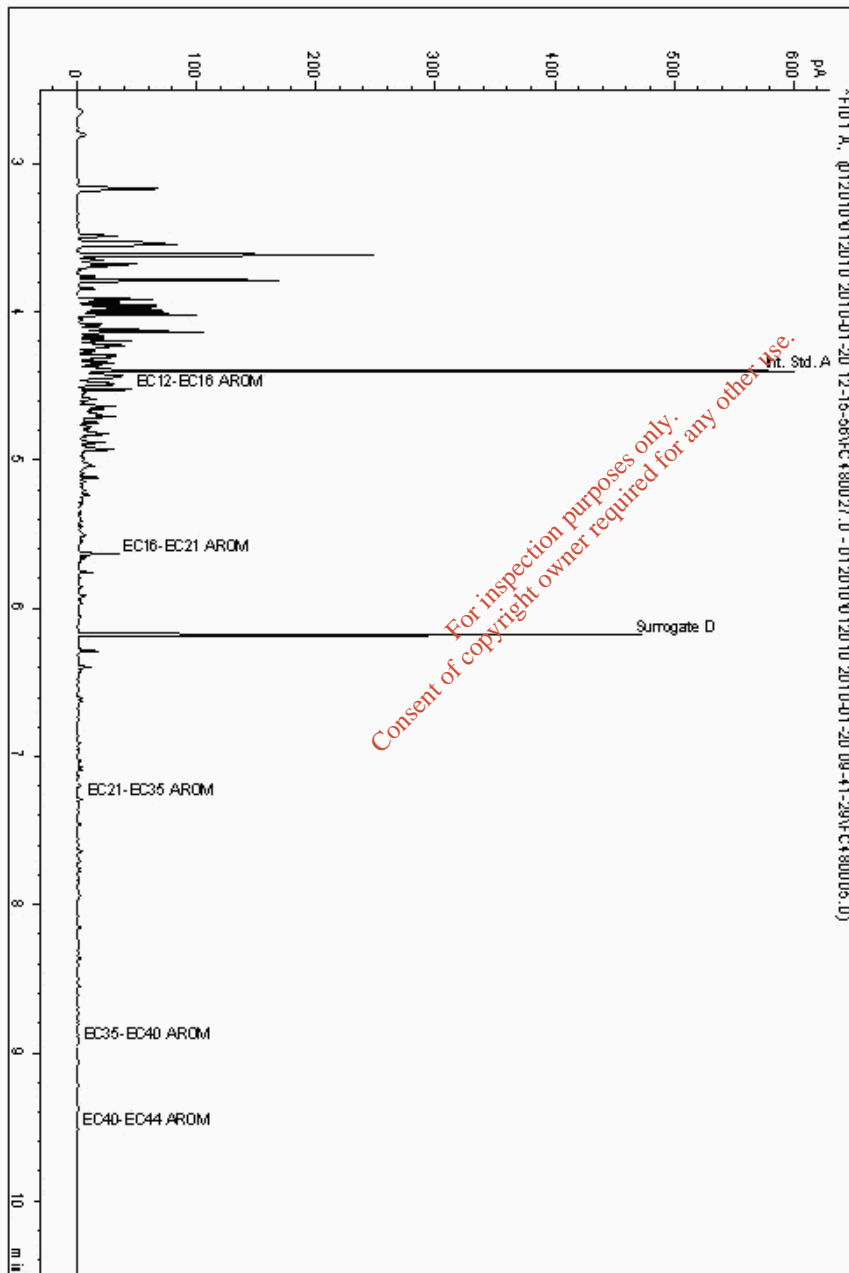
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

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

Sample No 846024
Sample ID G2
Depth 4.0 - 9.0

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

Sample Identity: 971919-846024
Date Acquired : 20/01/10 17:32:21
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

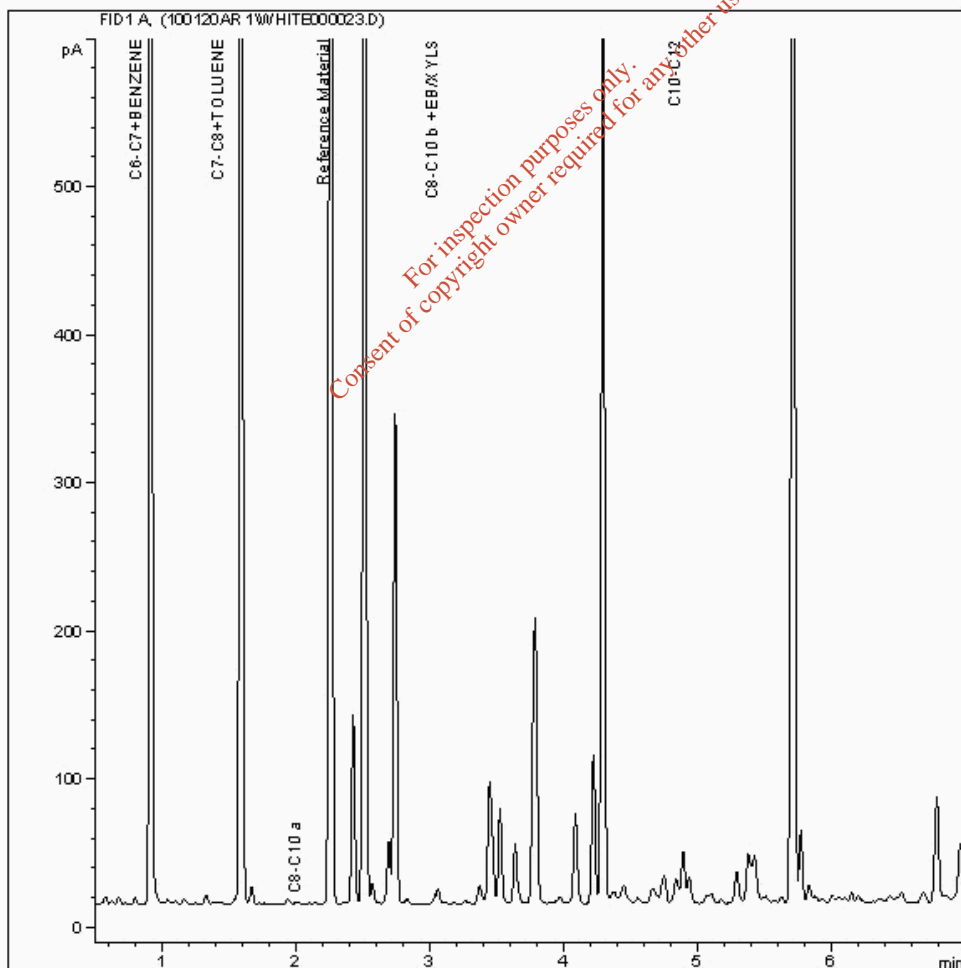
Analysis: GRO BTEX MTBE GC (W)

Sample No 841360
Sample ID G4
Depth 3.0 - 9.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971851-841360
Date Acquired : 20/01/10 23:13:52
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	652
2	C6-C7+BENZENE	32580
3	C7-C8+TOLUENE	45115
4	C8-C10 a	421
5	Reference Material	20773
6	C8-C10 b +EB/XYLS	68185
7	C10-C12	85512



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

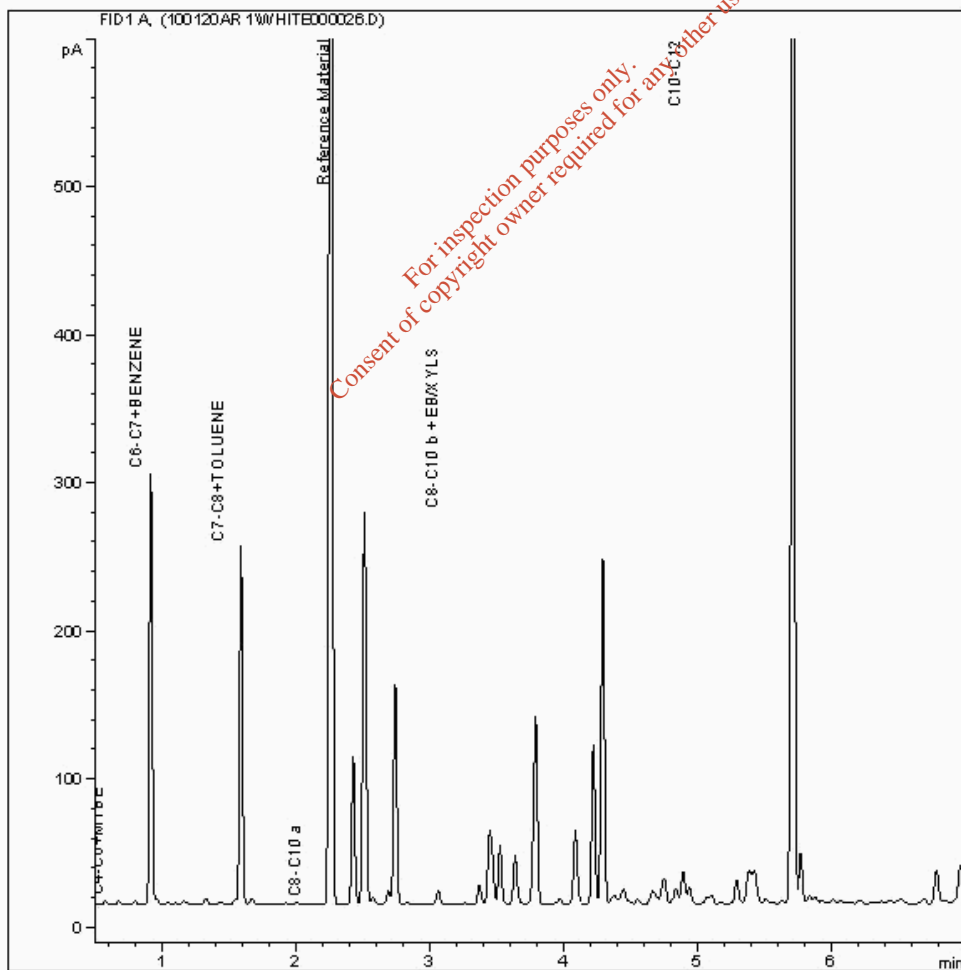
Analysis: GRO BTEX MTBE GC (W)

Sample No 841384
Sample ID D1
Depth 3.0 - 5.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971897-841384
Date Acquired : 20/01/10 23:54:34
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	253
2	C6-C7+BENZENE	9892
3	C7-C8+TOLUENE	8779
4	C8-C10 a	266
5	Reference Material	21506
6	C8-C10 b +EB/XYLS	32871
7	C10-C12	55033



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

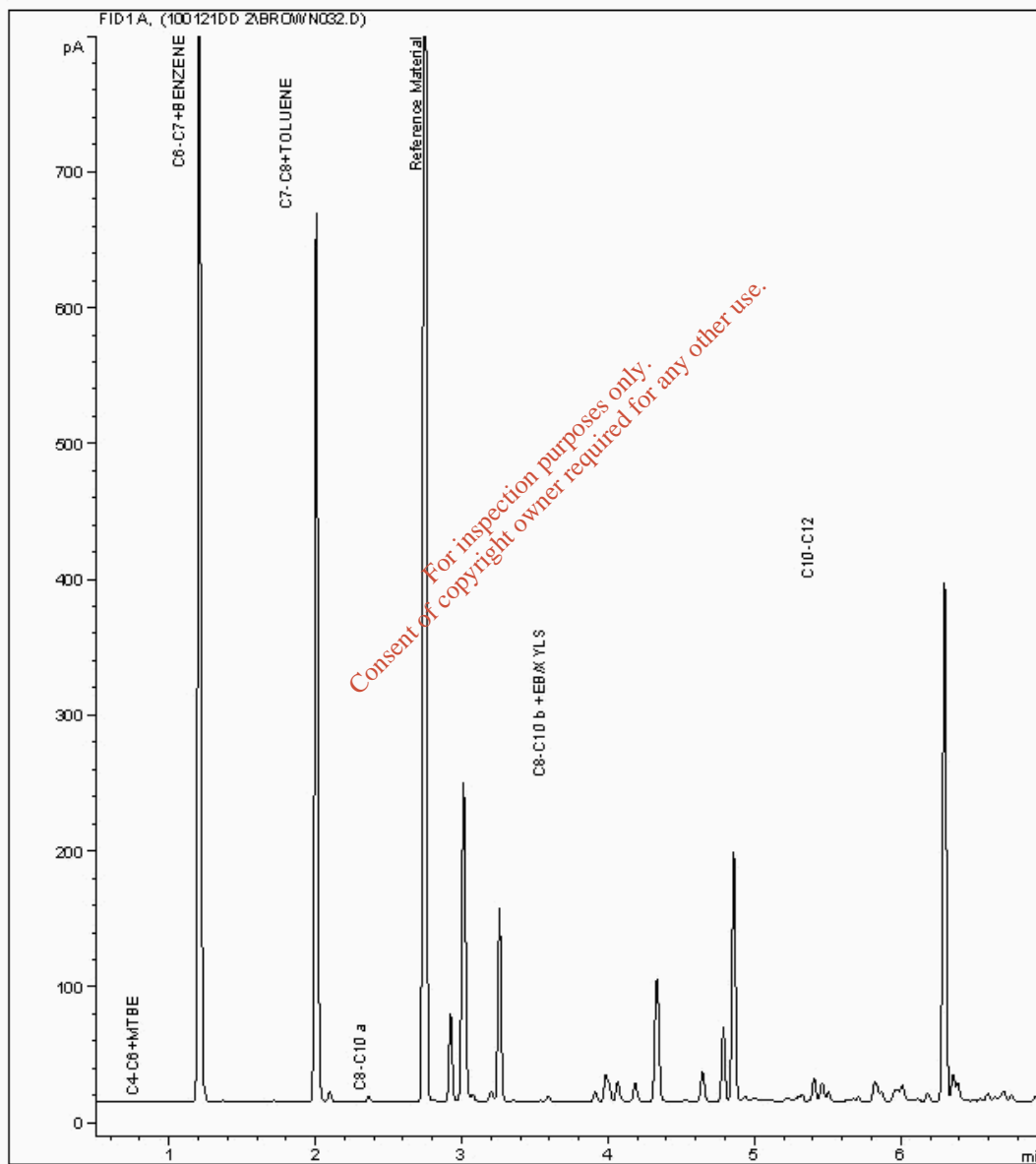
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

Analysis: GRO BTEX MTBE GC (W)

Sample No 841399
Sample ID G2
Depth 4.0 - 9.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971917-841399
Date Acquired : 21/01/10 17:09:58
Units : ppb
Dilution : 2



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70700

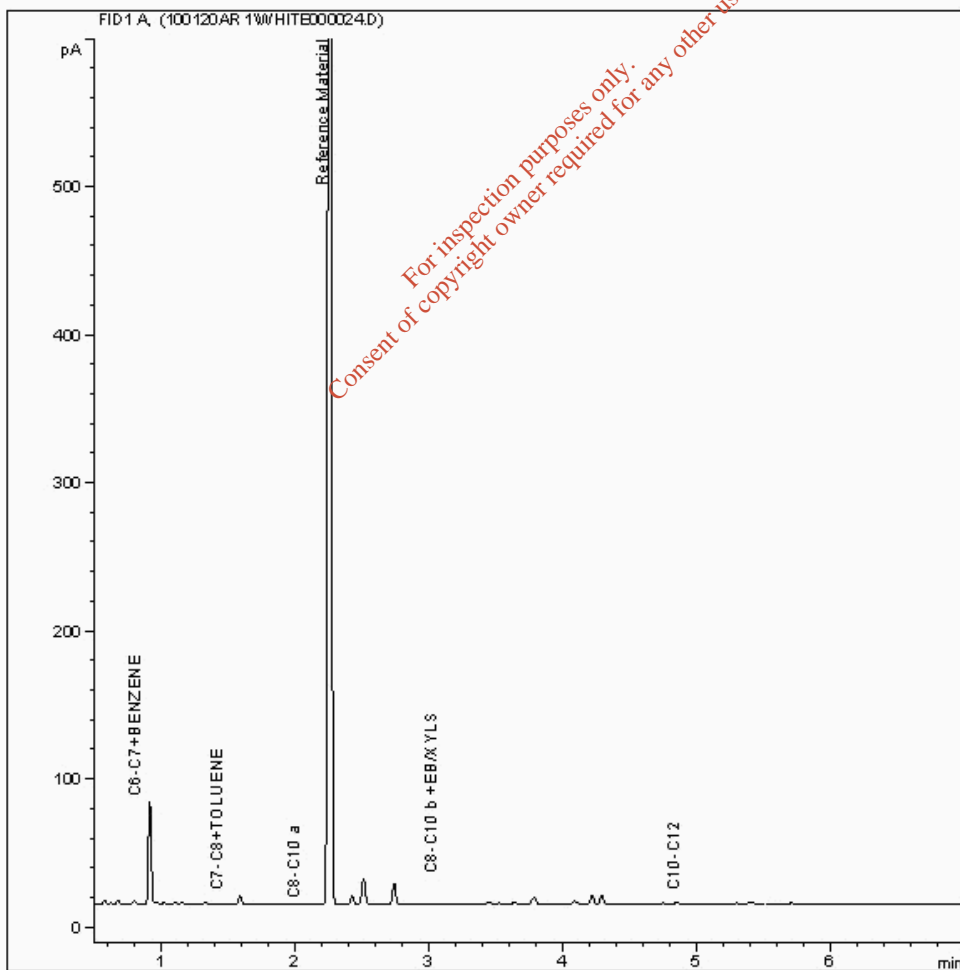
Analysis: GRO BTEX MTBE GC (W)

Sample No 841415
Sample ID G3
Depth 5.0 - 7.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971971-841415
Date Acquired : 20/01/10 23:27:25
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	333
2	C6-C7+BENZENE	2613
3	C7-C8+TOLUENE	501
4	C8-C10 a	65
5	Reference Material	20712
6	C8-C10 b +EB/XYLS	2108
7	C10-C12	1369



SDG: 100118-49
Job: D_MOUCHEL_ELE-99
Client Ref.: 14/01/10 (G4/D1/G2/G3/G5)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70700

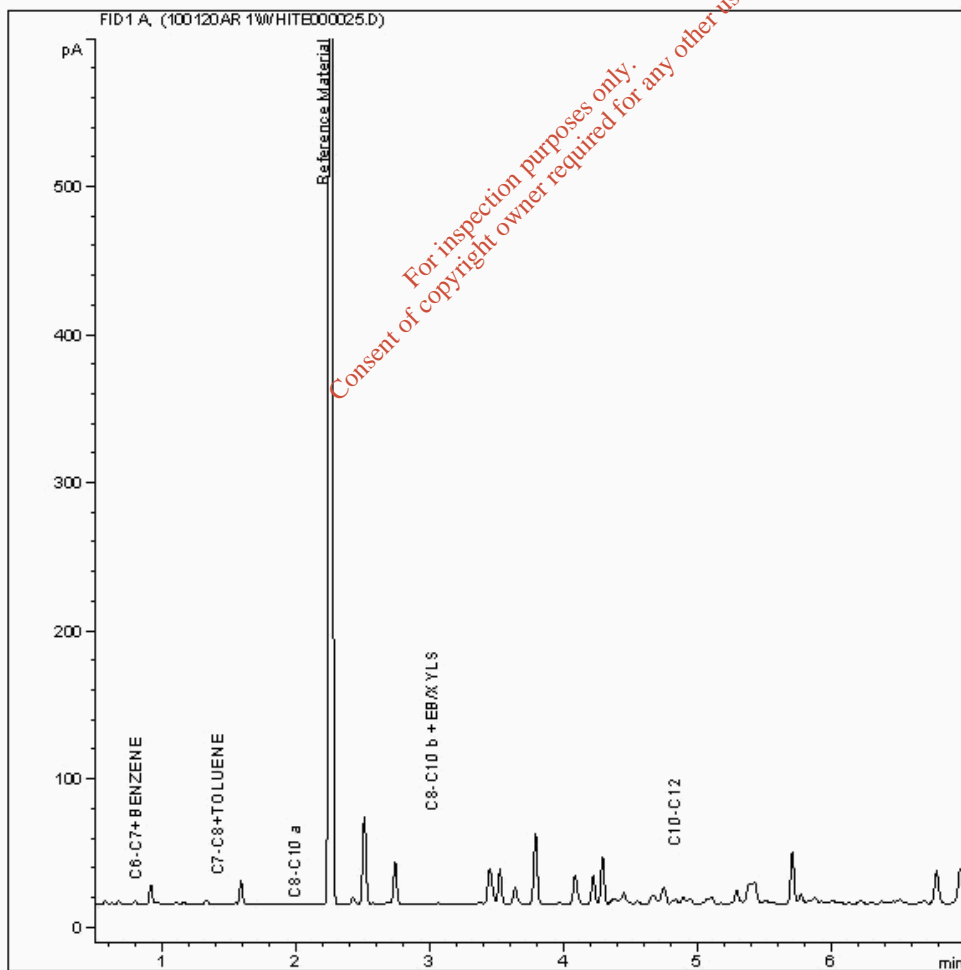
Analysis: GRO BTEX MTBE GC (W)

Sample No 841447
Sample ID G5
Depth 4.0 - 6.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972003-841447
Date Acquired : 20/01/10 23:41:01
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	276
2	C6-C7+BENZENE	776
3	C7-C8+TOLUENE	984
4	C8-C10 a	144
5	Reference Material	23095
6	C8-C10 b +EB/XYLS	8840
7	C10-C12	10732



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 22 January 2010
Job: D_MOUCHEL_ELE-100
Sample Delivery Group (SDG): 100115-123 **Report No.:** 70516
Your Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

A total of 5 samples was received on Friday January 15, 2010 and completed on Friday January 22, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No.: 70516

LIQUID

Results Legend	Sample ID	H12		J10		K1		K5		M3		Total
		Depth (m)		Depth (m)		Depth (m)		Depth (m)		Depth (m)		
		11 green glass bottle	500ml Plastic Vial	11 green glass bottle	500ml Plastic Vial	11 green glass bottle	500ml Plastic Vial	11 green glass bottle	500ml Plastic Vial	11 green glass bottle	500ml Plastic Vial	
Ammonium	All											0
		X		X		X		X		X		5
Anions by ion Chromatography	All											0
Anions by Kone (w)	All							X				1
Anions by Kone (w)	All		X		X		X			X		4
Cyanide Comp/Free/Total/Thiocyanate	All											0
		X		X		X		X		X		5
Dissolved Metals by ICP-MS	All											0
		X		X		X		X		X		5
EPH CWG (Aliphatic) Aqueous GC (W)	All											0
		X		X		X		X		X		5
EPH CWG (Aromatic) Aqueous GC (W)	All											0
		X		X		X		X		X		5
GRO BTEX MTBE GC (W)	All											0
		X		X		X		X		X		5
Hexavalent Chromium (w)	All											0
		X		X		X		X		X		5
Mercury Dissolved	All											0
		X		X		X		X		X		5
PAH Spec MS - Aqueous (W)	All											0
		X		X		X		X		X		5
pH Value	All											0
		X		X		X		X		X		5
Phenols by HPLC (W)	All											0
		X		X		X		X		X		5
Sulphide	All											0
		X		X		X		X		X		5
Total Metals by ICP-MS	All											0
		X		X		X		X		X		5
TPH CWG (W)	All											0
		X		X		X		X		X		5
VOC MS (W)	All											0
										X		1

SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 70516

Test Completion dates

SDG reference: 100115-123

Sample ID	Depth	Type	VOC MS (W)	TPH CWG (W)	Total Metals by ICP-MS	Sulphide	Phenols by HPLC (W)	pH Value	PAH Spec MS - Aqueous (W)	Mercury Dissolved	Hexavalent Chromium (W)	GRO BTEX MTBE GC (W)	EPH CWG (Aromatic) Aqueous GC (	EPH CWG (Aliphatic) Aqueous GC (	Dissolved Metals by ICP-MS	Cyanide Comp/Free/Total/Thiocyana	Anions by Kone (W)	Anions by Ion Chromatography	Ammonium
H12	1.00 - 4.00	LIQUID	19/01/2010	22/01/2010	21/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
J10	0.50 - 2.00	LIQUID	20/01/2010	22/01/2010	21/01/2010	20/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010	20/01/2010
K1	2.00 - 4.00	LIQUID	19/01/2010	22/01/2010	21/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
K5	1.00 - 5.00	LIQUID	20/01/2010	22/01/2010	21/01/2010	20/01/2010	20/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010	20/01/2010
M3	3.00 - 6.00	LIQUID	19/01/2010	22/01/2010	21/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	22/01/2010	20/01/2010	19/01/2010	19/01/2010	19/01/2010	20/01/2010

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SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

Results Legend			Sample Identity		H12	J10	K1	K5	M3
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	H12	J10	K1	K5	M3	
			Sample Type	1.00 - 4.00	0.50 - 2.00	2.00 - 4.00	1.00 - 5.00	3.00 - 6.00	
			Date Sampled	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
			Date Received	15/01/2010	15/01/2010	14/01/2010	15/01/2010	15/01/2010	
			SDG Ref	100115-123	100115-123	100115-123	100115-123	100115-123	
Lab Sample No.(s)	835807	835708	835759	835661	835837				
Component	LOD/Units	Method							
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	6.27	0.439	11.8	202	0.89	#	
Sulphide	<0.1 mg/l	TM101	<0.1	<0.1	<0.1	<0.1	<0.1	#	
Arsenic Dissolved	<0.12 µg/l	TM152	2.36	2.01	3.9	290	3.53	#	
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1	<0.1	<0.1	0.439	<0.1	#	
Copper Dissolved	<0.85 µg/l	TM152	<0.85	3.9	1.57	3.19	2.2	#	
Lead Dissolved	<0.02 µg/l	TM152	0.094	0.063	0.582	5.31	0.066	#	
Nickel Dissolved	<0.15 µg/l	TM152	4.88	4.75	13.9	69.6	7.08	#	
Selenium Dissolved	<0.39 µg/l	TM152	1.6	1.35	1.62	68	2.62	#	
Zinc Dissolved	<0.41 µg/l	TM152	<0.41	<0.41	<0.41	107	<0.41	#	
Mercury Dissolved	<0.01 µg/l	TM183	<0.01	<0.01	<0.01	0.187	<0.01	#	
Sulphate (soluble)	3 mg/l	TM184	169	35.9	709		556	#	
Chromium (Unfiltered)	<3 µg/l	TM191	17.6	<3	95.7	56.8	14.7	#	
Sulphate	<0.1 mg/l	TM226				715		#	
Total Cyanide	<0.05 mg/l	TM227	<0.05	<0.05	0.152	12	0.794	#	
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	0.05	<0.6	<0.03	#	
pH value	<1 pH Units	TM256	8.07	8.4	8.01	10.34	7.97	#	
Phenol	<0.002 mg/l	TM259	<0.002	0.02	<0.002	464	<0.002	#	
Cresols	<0.006 mg/l	TM259	<0.006	0.02	<0.006	765	<0.006	#	
Xylenols	<0.008 mg/l	TM259	0.05	<0.008	<0.008	256	<0.008	#	
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003	<0.003	<0.003	<0.6	<0.003	#	
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006	<0.006	<0.006	27.8	<0.006	#	
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	0.05	0.04	<0.025	1510	<0.025	#	

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SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

PAH Spec MS - Aqueous (W)

Results Legend			Sample Identity	H12	J10	K1	K5	M3
# ISO17025 accredited. M mCERTS accredited. subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	1.00 - 4.00	0.50 - 2.00	2.00 - 4.00	1.00 - 5.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/01/2010	15/01/2010	14/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-123	100115-123	100115-123	100115-123	100115-123
			Lab Sample No.(s)	835807	835708	835759	835661	835837
Component	LOD/Units	Method						
Naphthalene (Aqueous)	<0.1 µg/l	TM178	9.9	<0.1	0.467	3440	0.241	
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	4.76	0.185	0.43	35.4	0.0522	
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	11.9	0.203	0.882	191	0.156	
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	52.3	0.597	6.85	41.1	2.18	
Anthracene (Aqueous)	<0.015 µg/l	TM178	6.08	0.0562	0.765	31.9	0.152	
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	13.4	0.0613	1.83	104	0.261	
Fluorene (Aqueous)	<0.014 µg/l	TM178	4.9	0.0317	0.385	72.7	0.0527	
Chrysene (Aqueous)	<0.013 µg/l	TM178	12	0.107	3.22	4.42	1.23	
Pyrene (Aqueous)	<0.015 µg/l	TM178	40.9	0.431	7.39	26.9	2.16	
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	17.9	0.193	4.76	5.99	1.67	
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	23.3	0.381	8.12	4.08	3.16	
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	8.45	0.126	3.15	<2.7	1.16	
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	18.3	0.296	6.78	3	2.15	
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	2.93	0.0522	1.32	<1.6	0.409	
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	11.1	0.2	5.43	2	1.94	
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	10	0.172	4.65	2.1	1.62	
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	248	2.09	55.8	3970	18.6	

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SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

TPH CWG (W)

Results Legend			Sample Identity	H12	J10	K1	K5	M3
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			Depth (m)	1.00 - 4.00	0.50 - 2.00	2.00 - 4.00	1.00 - 5.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/01/2010	15/01/2010	14/01/2010	15/01/2010	15/01/2010
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-123	100115-123	100115-123	100115-123	100115-123
Lab Sample No.(s)	835807	835708	835759	835661	835837			
Component	LOD/Units	Method						
GRO C5-C12	<42 µg/l	TM245	949	66	<42	49500	<42	
			#	#	#	#	#	#
MTBE	<3 µg/l	TM245	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#
Benzene	<7 µg/l	TM245	12	<7	<7	13800	<7	
			#	#	#	#	#	#
Toluene	<4 µg/l	TM245	14	<4	<4	4670	<4	
			#	#	#	#	#	#
Ethyl Benzene	<5 µg/l	TM245	<5	<5	<5	236	<5	
			#	#	#	#	#	#
m & p Xylene	<8 µg/l	TM245	31	<8	<8	1510	<8	
			#	#	#	#	#	#
o Xylene	<3 µg/l	TM245	27	<3	<3	672	<3	
			#	#	#	#	#	#
Sum m&p and o Xylene	<10 µg/l	TM245	58	<10	<10	2180	<10	
			#	#	#	#	#	#
Sum of BTEX	<10 µg/l	TM245	84	<10	<10	20900	<10	
			#	#	#	#	#	#
Aliphatics C5-C6	<10 µg/l	TM245	<10	<10	<10	760	<10	
Aliphatics >C6-C8	<10 µg/l	TM245	17.2	<10	<10	4600	<10	
Aliphatics >C8-C10	<10 µg/l	TM245	82.8	26.4	<10	1990	<10	
Aliphatics >C10-C12	<10 µg/l	TM245	256	<10	<10	7310	<10	
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174	223	<10	<10	<10	<10	
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174	195	<10	<10	<10	<10	
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174	595	<10	<10	<10	<10	
Total Aliphatics C5-C12	<10 µg/l	TM245	356	26.4	<10	14700	<10	
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174	1010	<10	<10	<10	<10	
Aromatics C6-C7	<10 µg/l	TM245	12	<10	<10	13800	<10	
Aromatics >C7-C8	<10 µg/l	TM245	14	<10	<10	4670	<10	
Aromatics >EC8-EC10	<10 µg/l	TM245	182	39.6	<10	5400	<10	
Aromatics >EC10-EC12	<10 µg/l	TM245	384	<10	<10	11000	<10	
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174	235	<10	<10	8490	<10	
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174	353	<10	<10	789	<10	
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174	1260	<10	184	149	<10	
Total Aromatics C6-C12	<10 µg/l	TM245	593	39.6	<10	34800	<10	
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174	1850	<10	184	9430	<10	
Surrogate Recovery %**	%	TM245	97	94	86	81	99	
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174	2870	<10	184	9430	<10	
GRO (>C8-C10A)	<10 µg/l	TM245	<10	<10	<10	466	<10	
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174	1370	26.4	<10	14700	<10	
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174	2440	39.6	184	44300	<10	
TPH C5-C35 (Aqueous)	<10 µg/l	TM174	3810	66	184	58900	<10	

SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

VOC MS (W)

Results Legend		Sample Identity	M3				
# ISO17025 accredited. M mCERTS accredited. * subcontracted test. This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.		Depth (m)	3.00 - 6.00				
		Sample Type	Water(GW/SW)				
		Date Sampled					
		Date Received	15/01/2010				
		SDG Ref	100115-123				
		Lab Sample No.(s)	835837				
Component	LOD/Units	Method					
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3	#			
Chloromethane	<1.7 µg/l	TM208	<1.7	#			
Vinyl Chloride	<1.2 µg/l	TM208	<1.2	#			
Bromomethane	<2 µg/l	TM208	<2	#			
Chloroethane	<2.5 µg/l	TM208	<2.5	#			
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	#			
Carbon disulphide	<1.3 µg/l	TM208	<1.3	#			
Dichloromethane	<3.7 µg/l	TM208	<3.7	#			
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6	#			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	#			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	#			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	#			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	#			
Bromochloromethane	<1.9 µg/l	TM208	<1.9	#			
Chloroform	<1.8 µg/l	TM208	<1.8	#			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	#			
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	#			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	#			
Benzene	<1.3 µg/l	TM208	4.84	#			
Trichloroethene	<2.5 µg/l	TM208	<2.5	#			
1,2-Dichloropropane	<3 µg/l	TM208	<3	#			
Dibromomethane	<2.7 µg/l	TM208	<2.7	#			
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	#			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	#			
Toluene	<1.4 µg/l	TM208	<1.4	#			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	#			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	#			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	#			
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	#			
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	#			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	#			
Chlorobenzene	<3.5 µg/l	TM208	<3.5	#			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	#			
Ethylbenzene	<2.5 µg/l	TM208	<2.5	#			
p/m-Xylene	<2.5 µg/l	TM208	<2.5	#			
o-Xylene	<1.7 µg/l	TM208	<1.7	#			
Styrene	<1.2 µg/l	TM208	<1.2	#			

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 Consent of copyright owner required for any other use.

SDG: 100115-123
 Job: D_MOUCHEL_ELE-100
 Client Reference: 15/01/10 (K5/J10/K1/H12/M3)
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 70516

VOC MS (W)

Results Legend			Sample Identity		
# ISO17025 accredited. # mCERTS accredited. # subcontracted test. ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 % The results of the individual compounds within the sample are not corrected for this recovery.			M3 Depth (m) 3.00 - 6.00 Sample Type Water(GW/SW) Date Sampled Date Received 15/01/2010 SDG Ref 100115-123 Lab Sample No.(s) 835837		
Component	LOD/Units	Method			
Bromoform	<3 µg/l	TM208	<3	#	
Isopropylbenzene	<1.4 µg/l	TM208	<1.4	#	
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	#	
Bromobenzene	<2 µg/l	TM208	<2	#	
Propylbenzene	<2.6 µg/l	TM208	<2.6	#	
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	#	
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	<1.8	#	
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	#	
tert-Butylbenzene	<2 µg/l	TM208	<2	#	
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	<1.7	#	
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	#	
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.6	#	
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	#	
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	#	
n-Butylbenzene	<2 µg/l	TM208	<2	#	
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	#	
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	#	
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	#	
Tert-amyl methyl ether	<1 µg/l	TM208	<1	#	
Naphthalene	<3.5 µg/l	TM208	<3.5	#	
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	#	
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10		

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Table of Results - Appendix

SDG Number : 100115-123

Client : Mouchel

Client Ref : 15/01/10 (K5/J10/K1/H12/M:

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

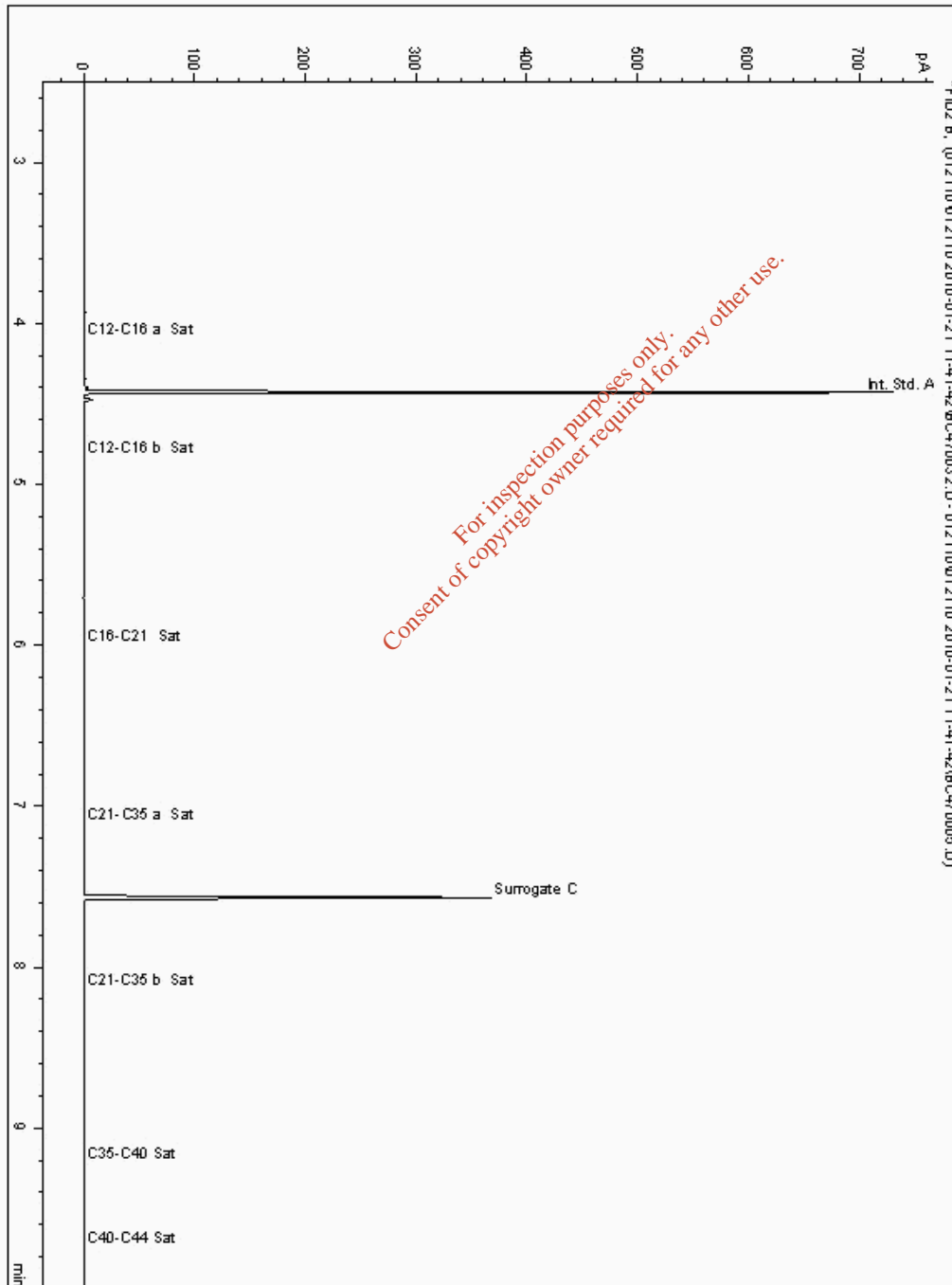
Chromatogram

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

Sample No 844032
Sample ID M3
Depth 3.00 - 6.00

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

Sample Identity: 972933-844032
Date Acquired : 21/01/10 21:12:54
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

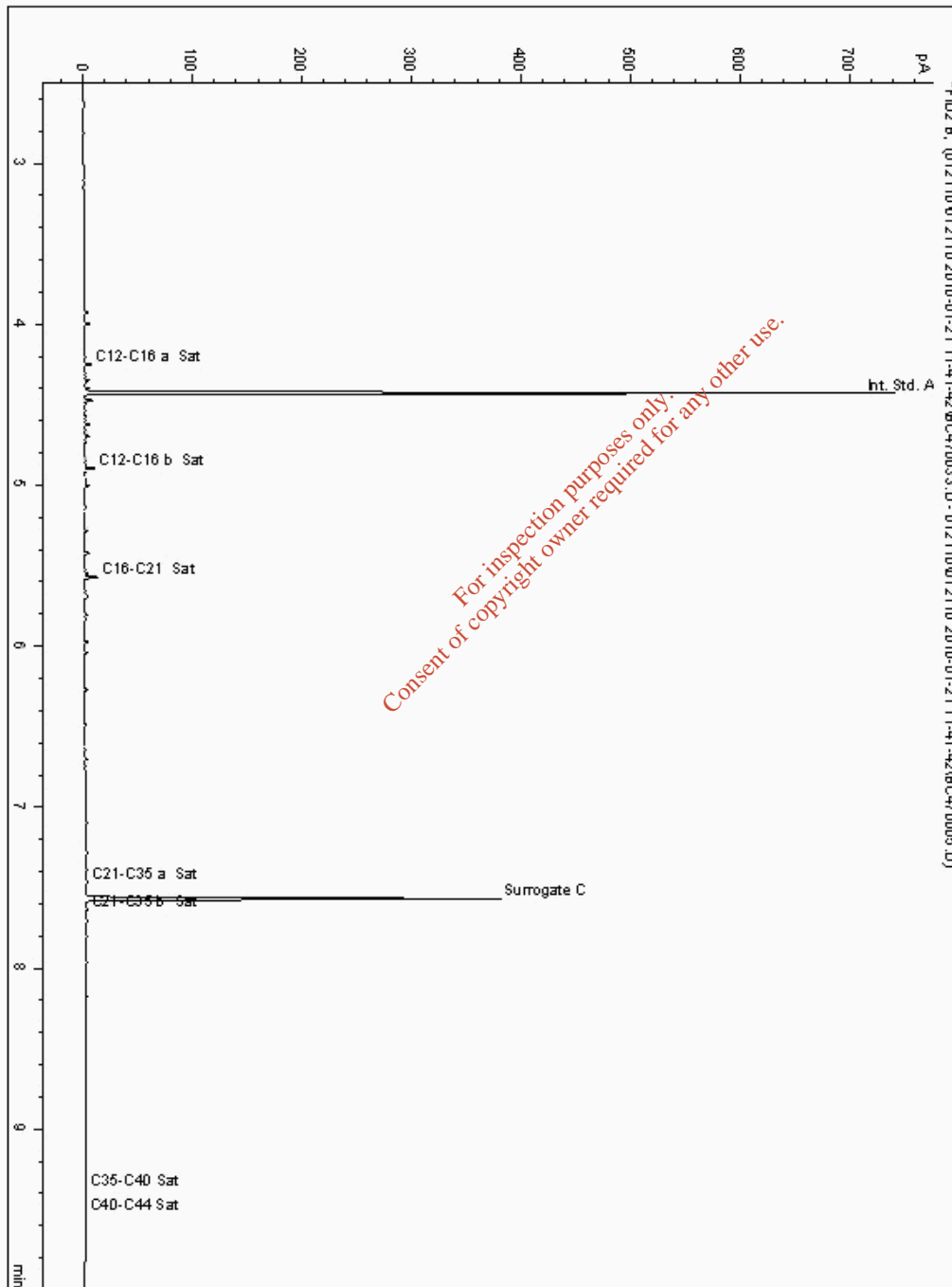
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844052
Sample ID H12
Depth 1.00 - 4.00

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

Sample Identity: 972914-844052
Date Acquired : 21/01/10 22:00:31
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

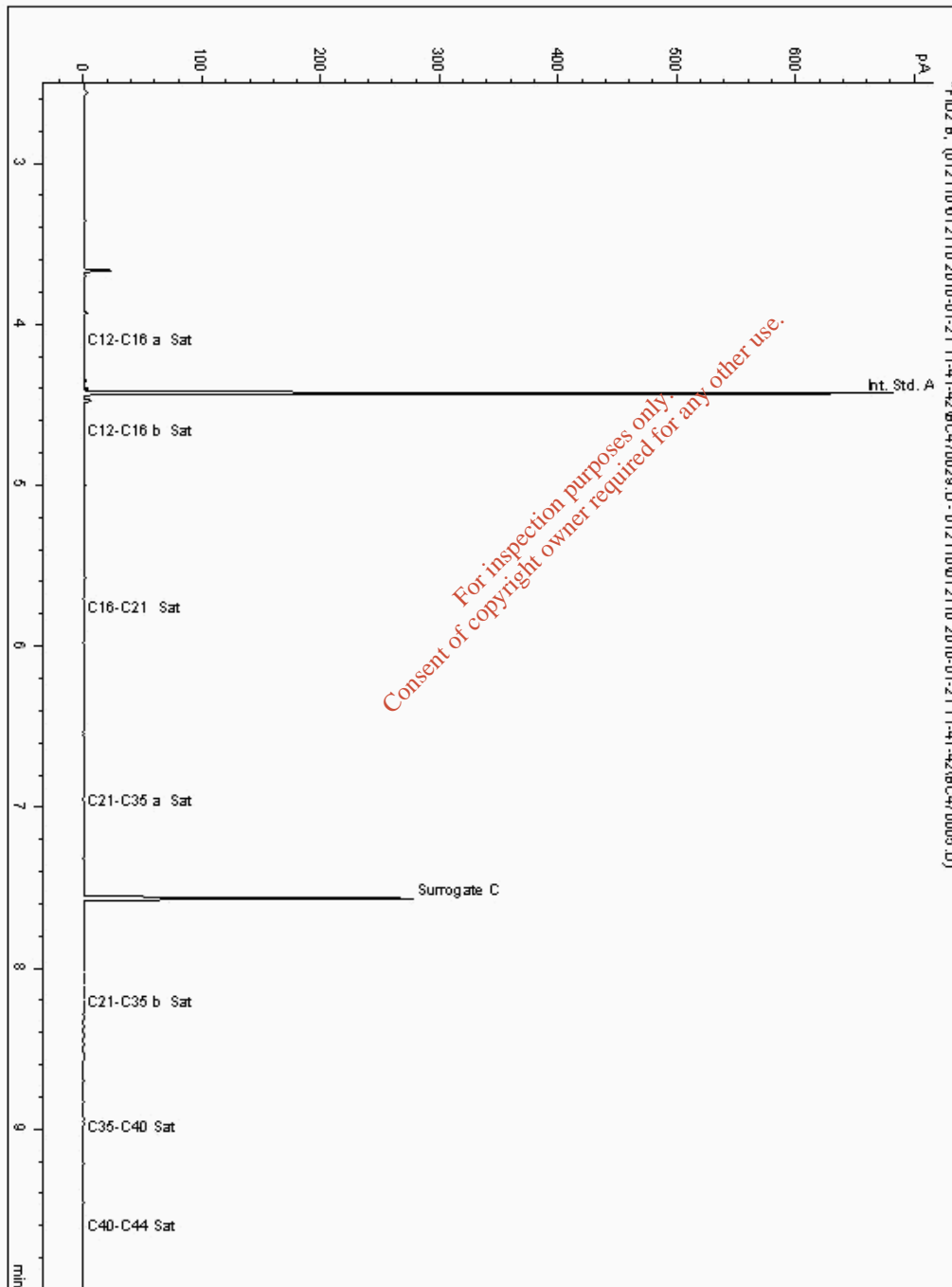
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844075
Sample ID K5
Depth 1.00 - 5.00

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

Sample Identity: 972845-844075
Date Acquired : 21/01/10 20:17:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

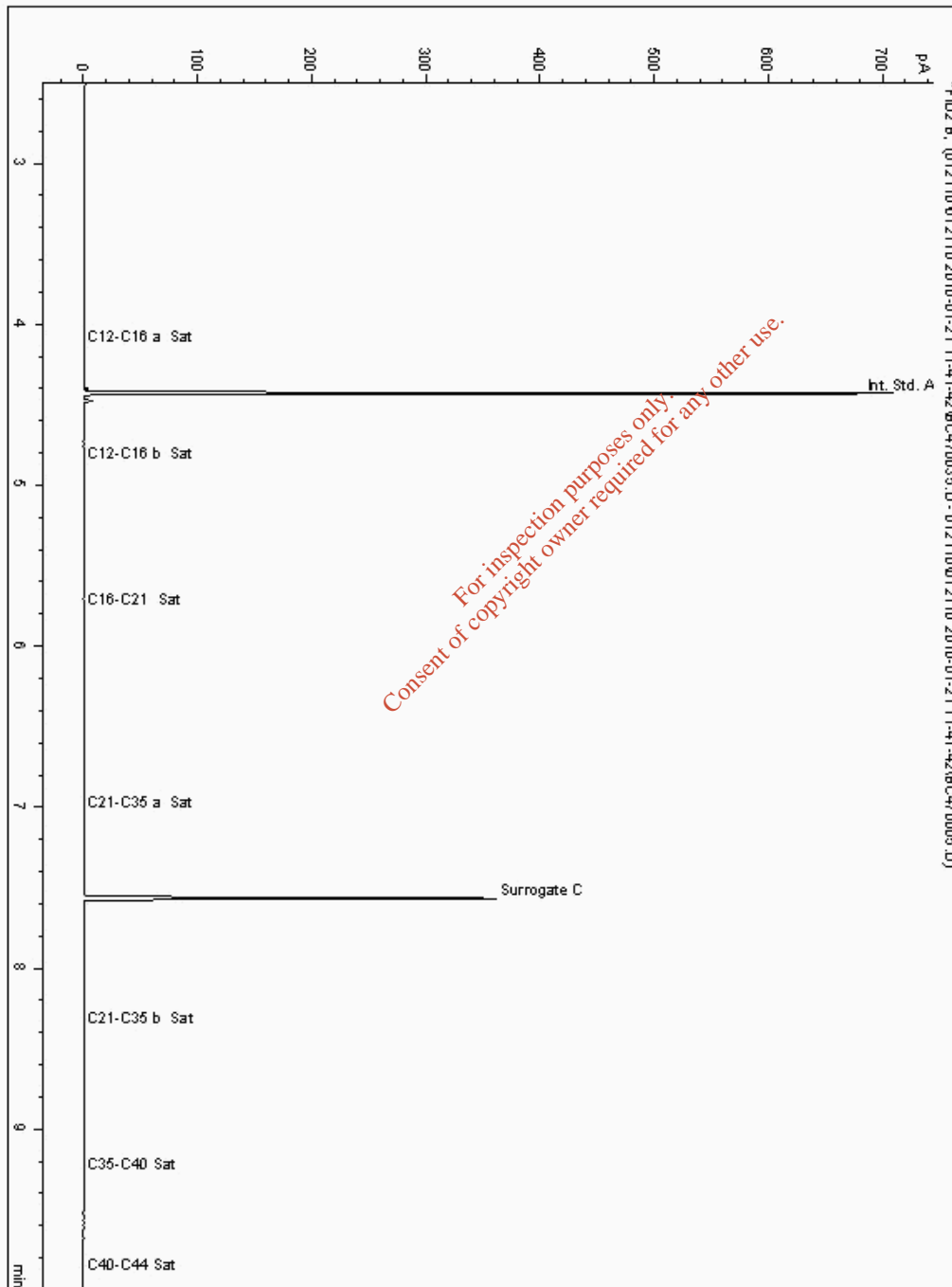
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844086
Sample ID K1
Depth 2.00 - 4.00

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

Sample Identity: 972893-844086
Date Acquired : 21/01/10 22:32:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

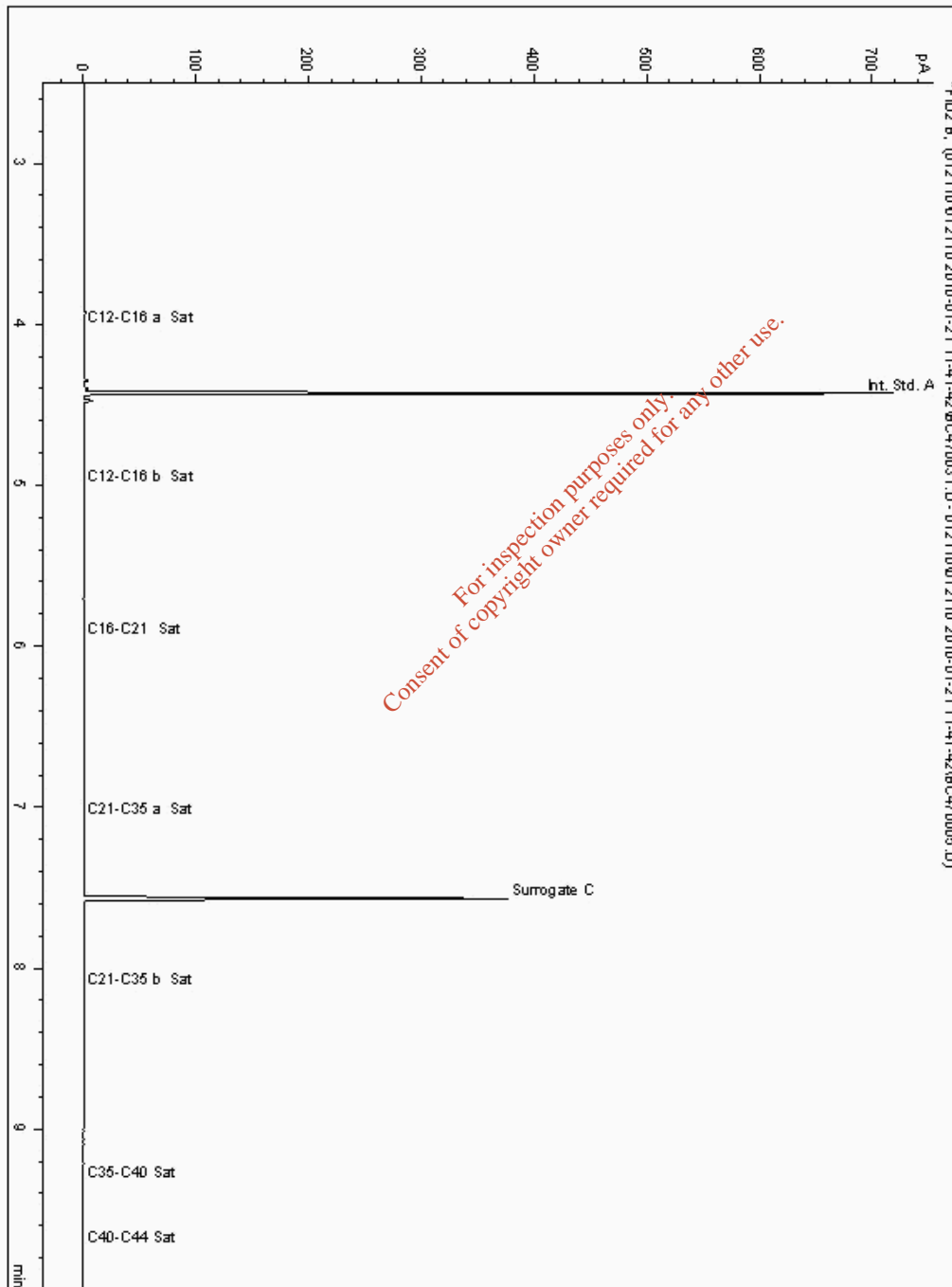
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844102
Sample ID J10
Depth 0.50 - 2.00

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

Sample Identity: 972866-844102
Date Acquired : 21/01/10 20:54:22
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

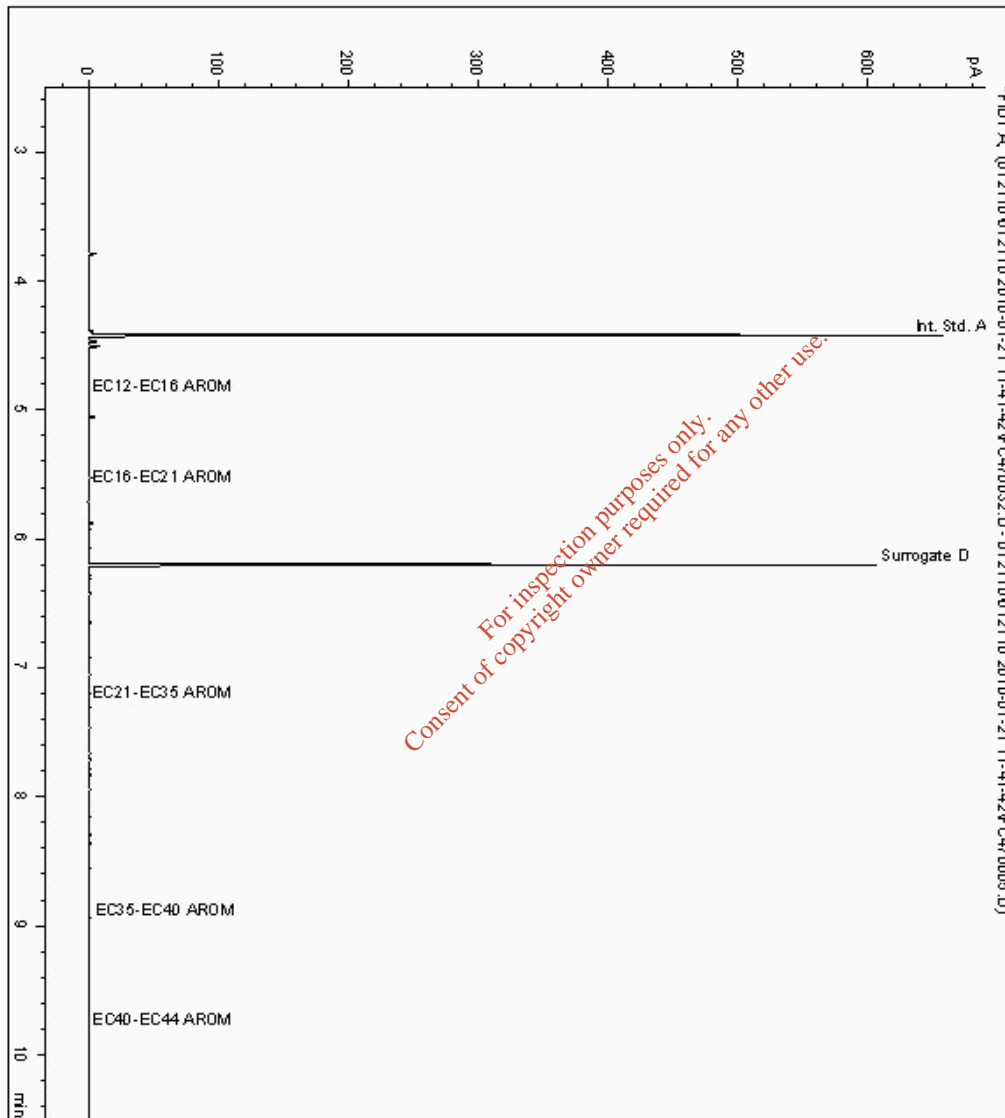
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844032
Sample ID M3
Depth 3.00 - 6.00

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

Sample Identity: 972934-844032
Date Acquired : 21/01/10 21:12:54
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

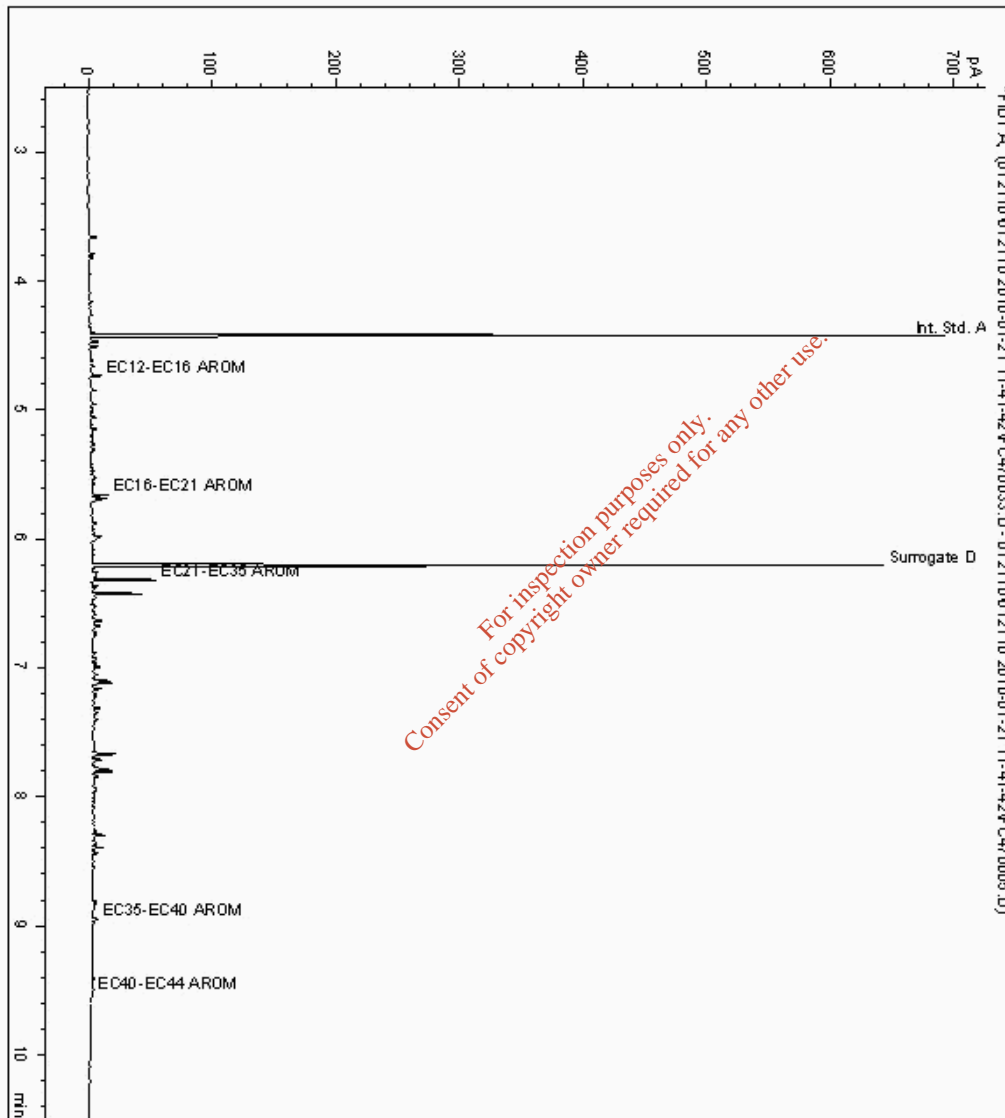
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844052
Sample ID H12
Depth 1.00 - 4.00

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

Sample Identity: 972915-844052
Date Acquired : 21/01/10 22:00:31
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

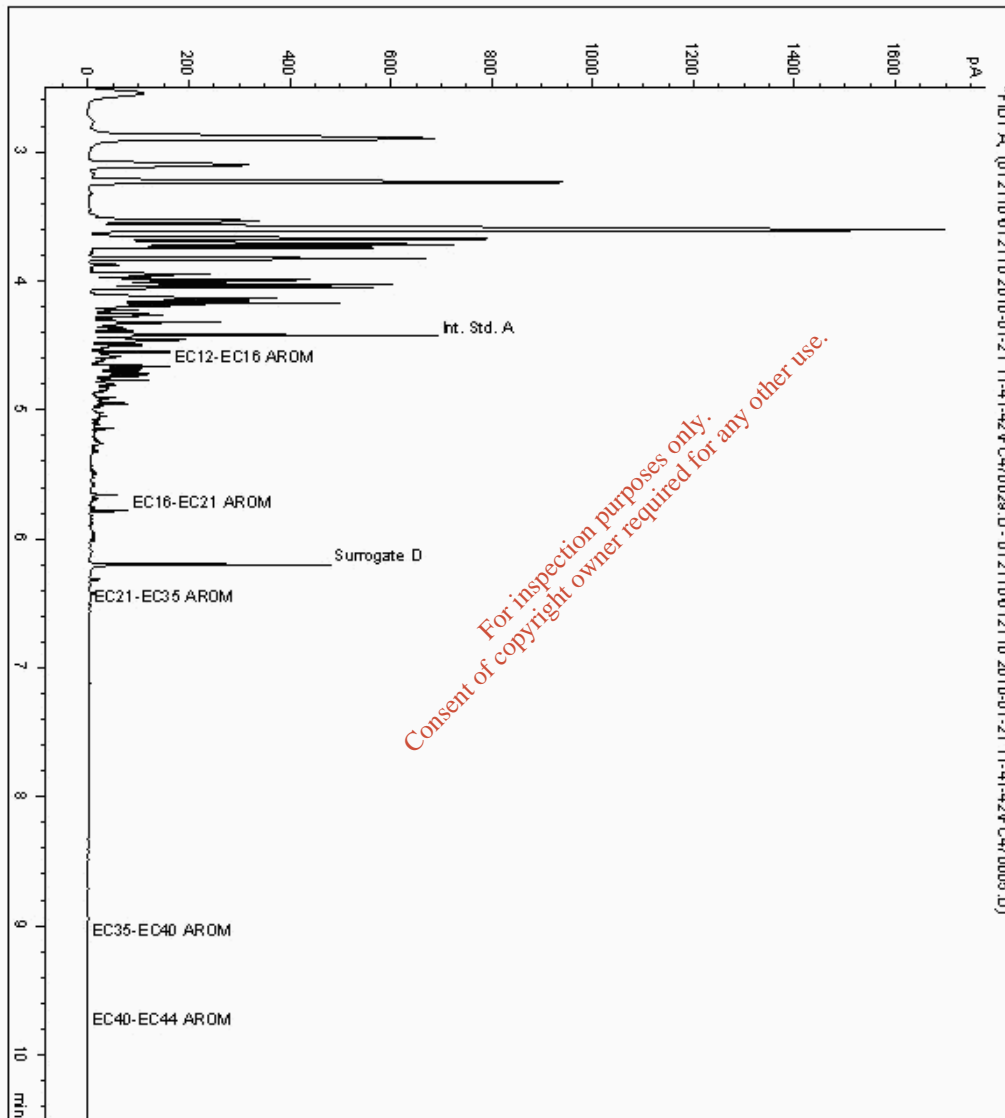
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

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

Sample No 844075
Sample ID K5
Depth 1.00 - 5.00

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

Sample Identity: 972846-844075
Date Acquired : 21/01/10 20:17:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

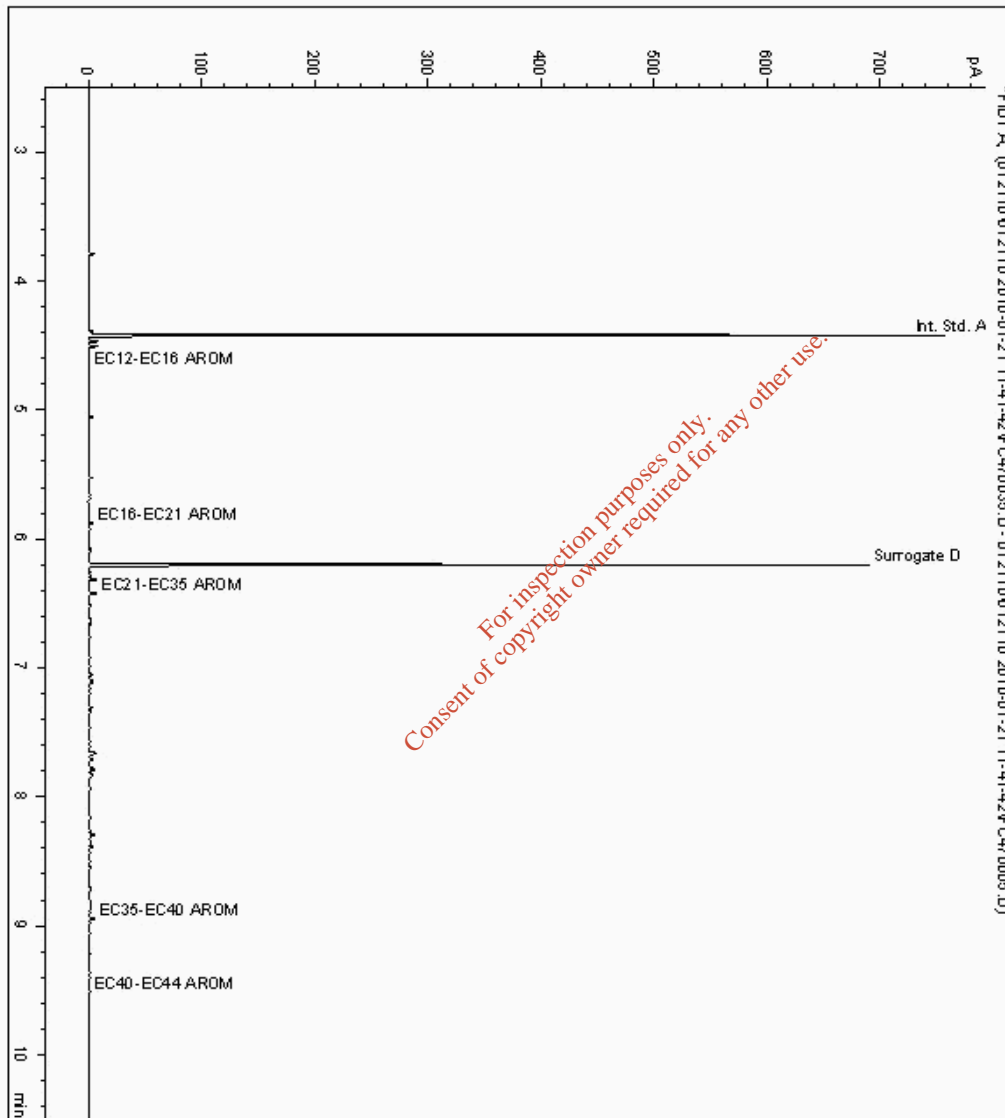
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

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

Sample No 844086
Sample ID K1
Depth 2.00 - 4.00

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

Sample Identity: 972894-844086
Date Acquired : 21/01/10 22:32:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

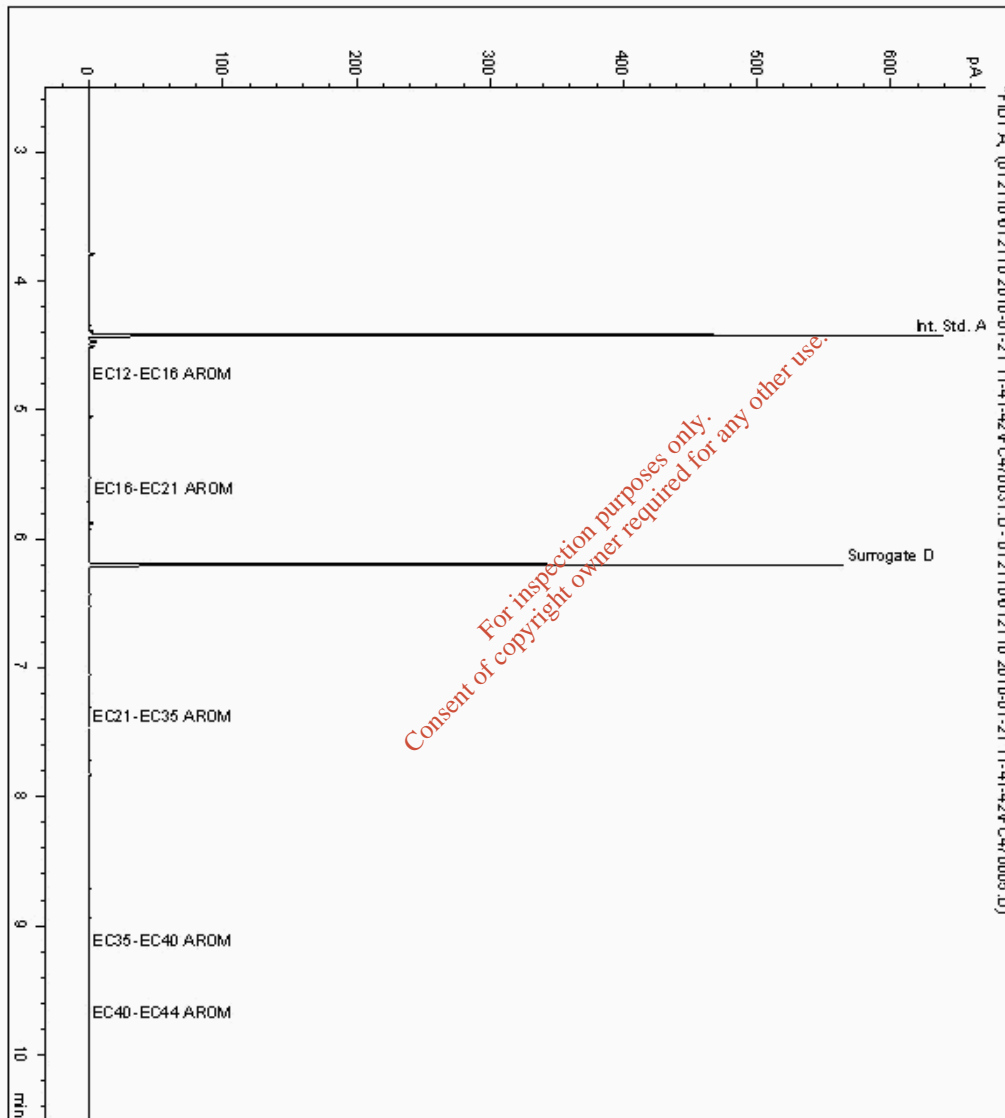
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

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

Sample No 844102
Sample ID J10
Depth 0.50 - 2.00

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

Sample Identity: 972867-844102
Date Acquired : 21/01/10 20:54:22
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

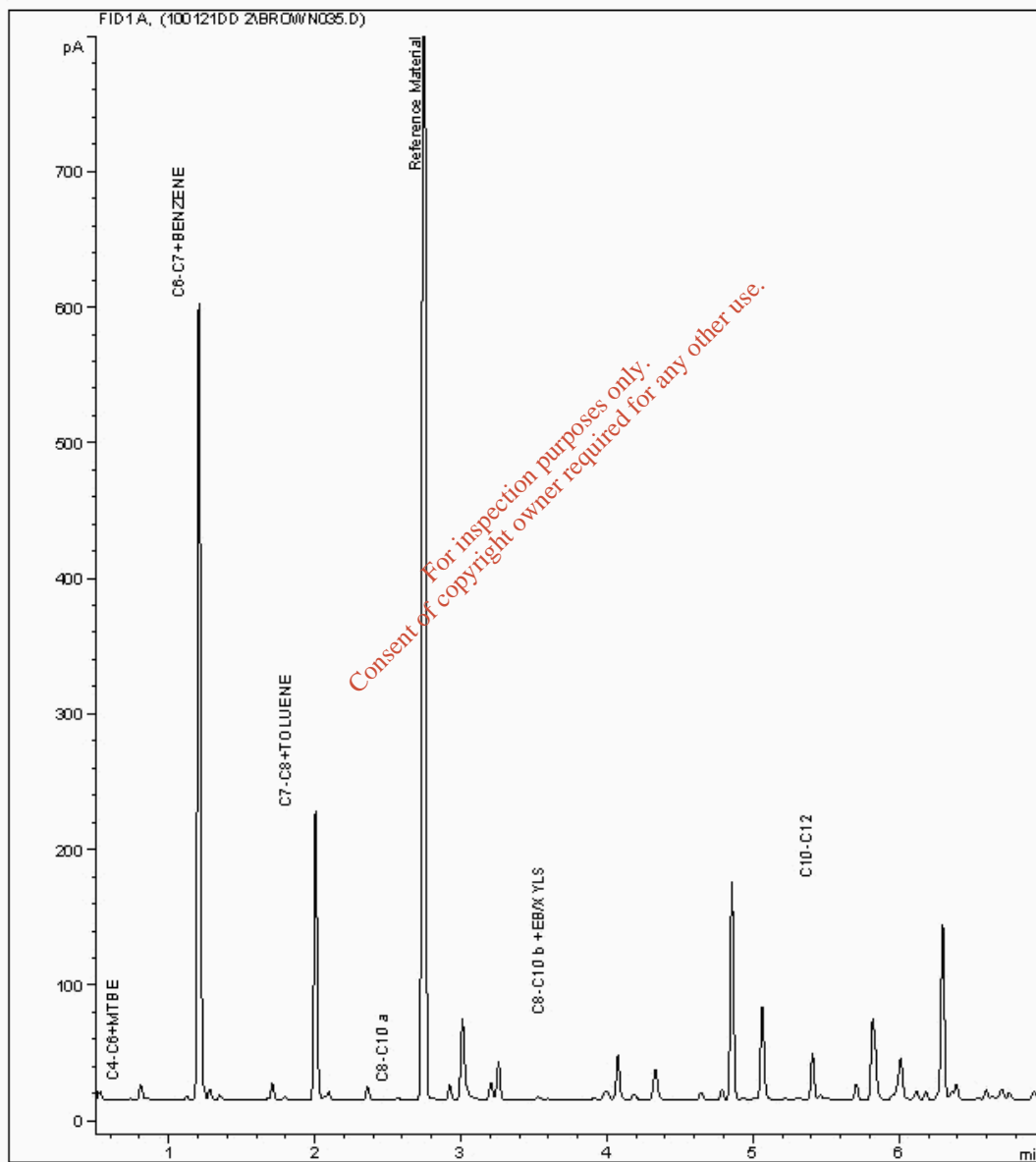
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

Analysis: GRO BTEX MTBE GC (W)

Sample No 835658
Sample ID K5
Depth 1.00 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972844-835658
Date Acquired : 21/01/10 17:52:12
Units : ppb
Dilution : 10



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

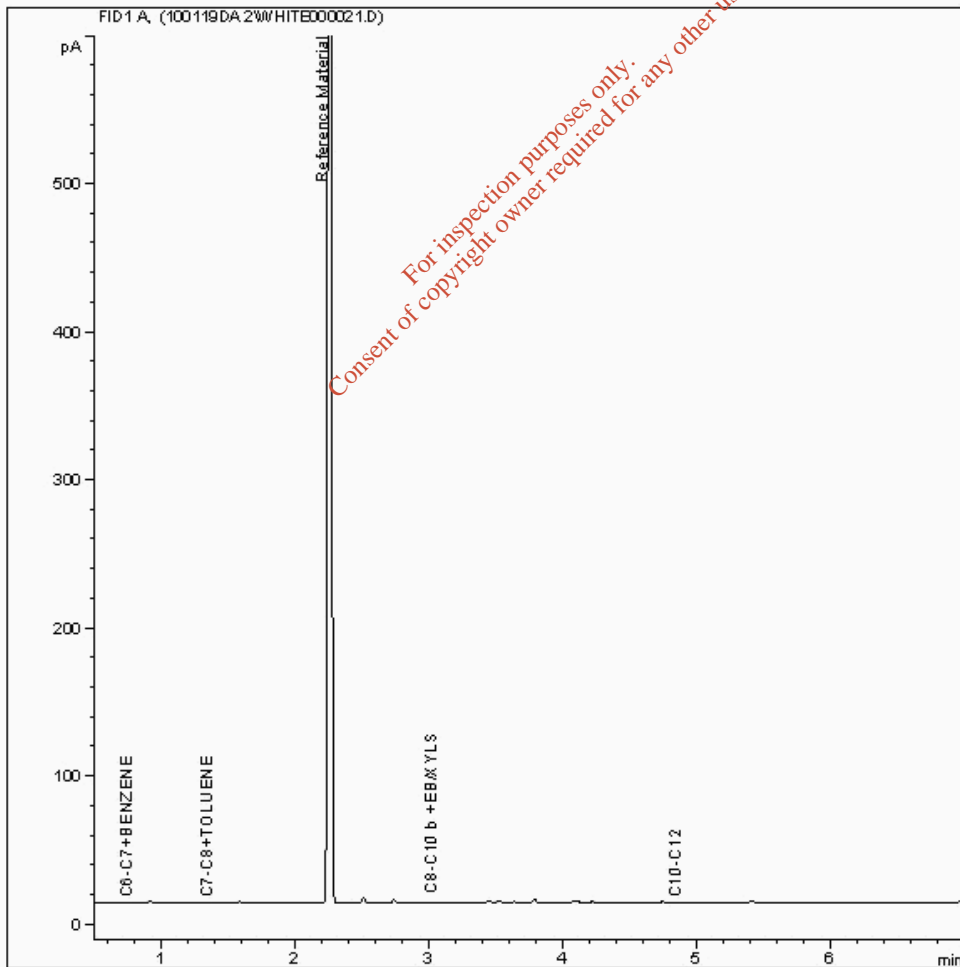
Analysis: GRO BTEX MTBE GC (W)

Sample No 835706
Sample ID J10
Depth 0.50 - 2.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972865-835706
Date Acquired : 19/01/10 20:00:16
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	0
3	C7-C8+TOLUENE	0
4	C8-C10 a	0
5	Reference Material	22732
6	C8-C10 b +EB/XYLS	634
7	C10-C12	0



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

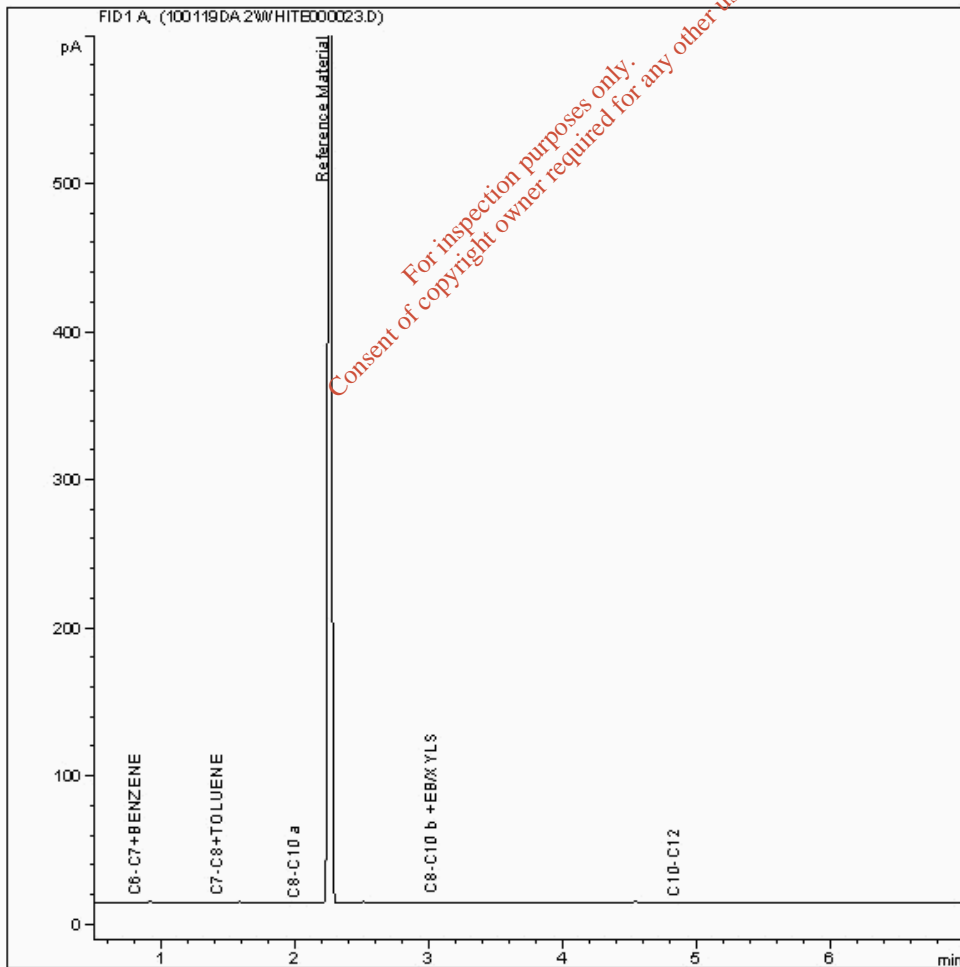
Analysis: GRO BTEX MTBE GC (W)

Sample No 835756
Sample ID K1
Depth 2.00 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972892-835756
Date Acquired : 19/01/10 20:27:27
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	47
2	C6-C7+BENZENE	97
3	C7-C8+TOLUENE	88
4	C8-C10 a	9
5	Reference Material	20731
6	C8-C10 b +EB/XYLS	176
7	C10-C12	288



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 70516

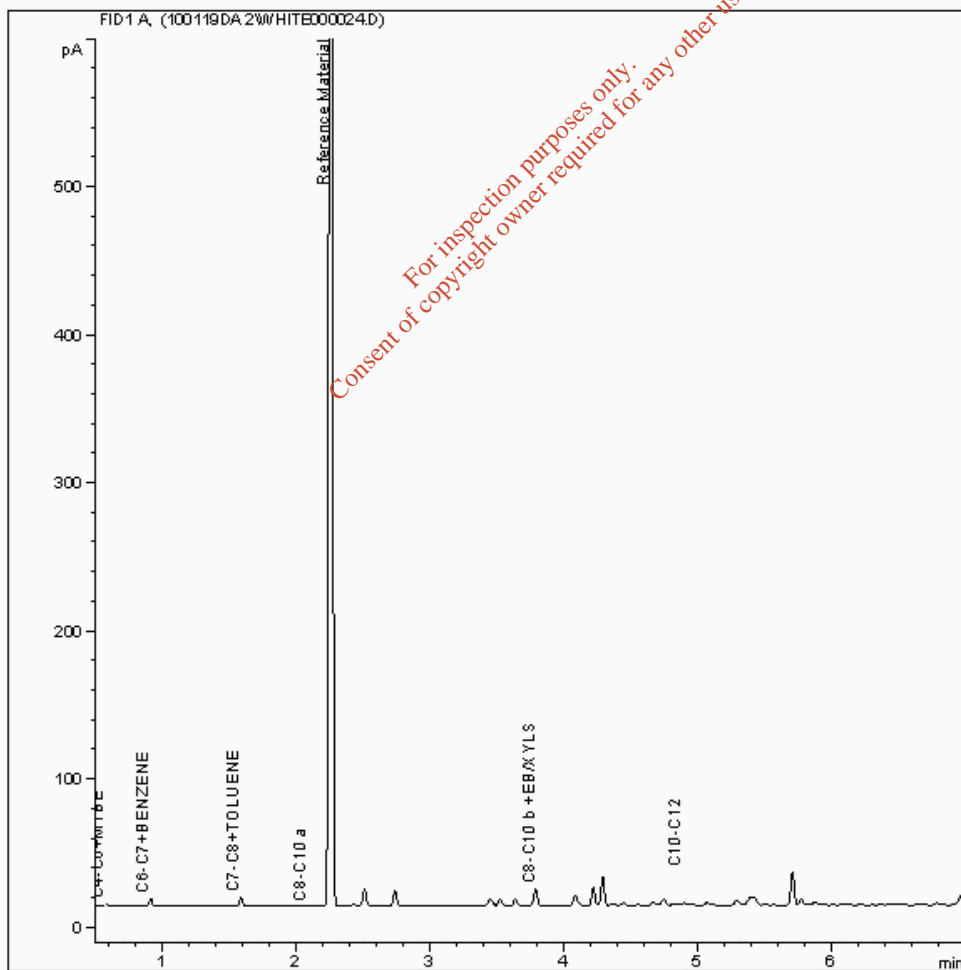
Analysis: GRO BTEX MTBE GC (W)

Sample No 835802
Sample ID H12
Depth 1.00 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972913-835802
Date Acquired : 19/01/10 20:41:00
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	172
3	C7-C8+TOLUENE	200
4	C8-C10 a	0
5	Reference Material	23277
6	C8-C10 b +EB/XYLS	2282
7	C10-C12	5517



SDG: 100115-123
Job: D_MOUCHEL_ELE-100
Client Ref.: 15/01/10 (K5/J10/K1/H12/M3)
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 70516

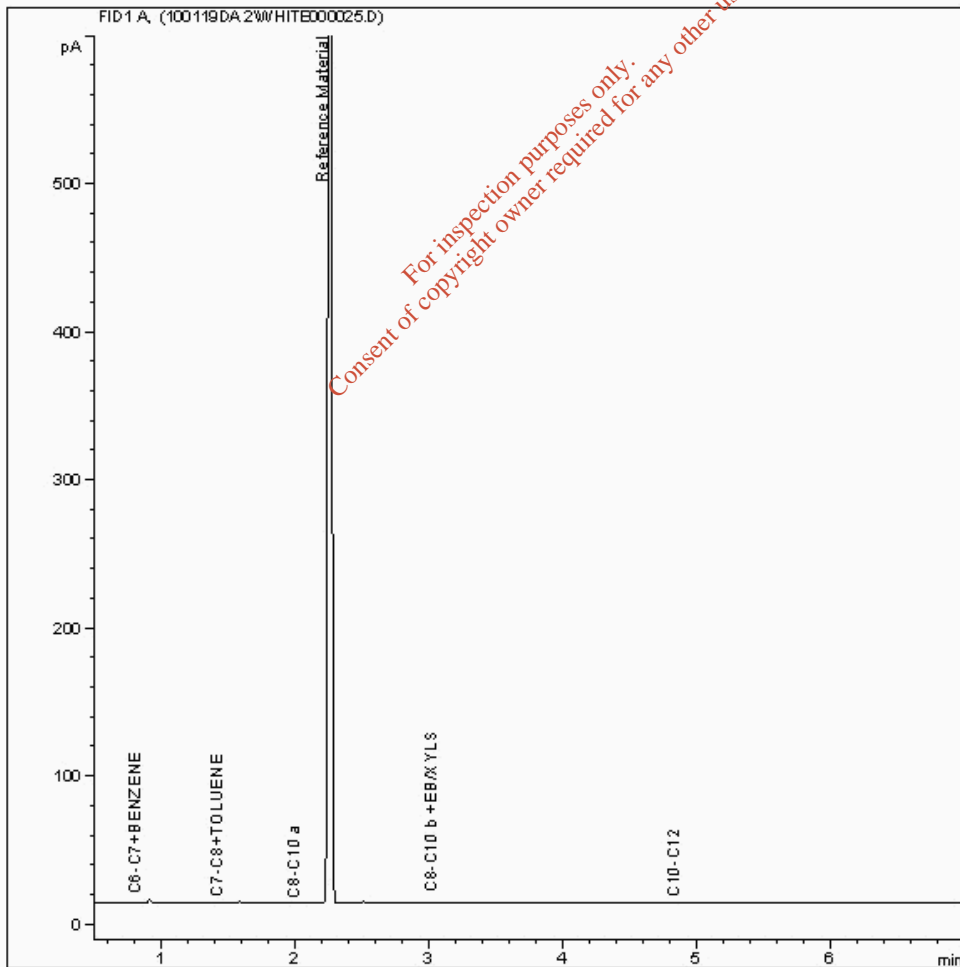
Analysis: GRO BTEX MTBE GC (W)

Sample No 835836
Sample ID M3
Depth 3.00 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972932-835836
Date Acquired : 19/01/10 20:54:36
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	48
2	C6-C7+BENZENE	128
3	C7-C8+TOLUENE	70
4	C8-C10 a	5
5	Reference Material	23770
6	C8-C10 b +EB/XYLS	149
7	C10-C12	170



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPOINIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 30 April 2010
Customer: D_MOUCHEL_ELE-101
Sample Delivery Group (SDG): 100422-72 **Report No.:** 82277
Your Reference: 22/04/10
Location: Limerick Gasworks

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Friday April 30, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Operations Director - Land UK & Ireland



SDG:	100422-72	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-101	Attention:	Verity Sankey
Client Reference:	22/04/10	Order No.:	
Location:	Limerick Gasworks	Report No:	82277

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436363	D1 EW003	3.00 - 4.50	21/04/2010
1436362	G2 EW003	4.00 - 10.00	21/04/2010
1436367	G3 EW003	3.50 - 8.50	21/04/2010
1436368	G4 EW003	3.00 - 9.50	21/04/2010
1436369	G5 EW003	2.50 - 8.50	21/04/2010

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

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SDG: 100422-72
 Job: D_MOUCHEL_ELE-101
 Client Reference: 22/04/10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Verity Sankey
 Order No.:
 Report No: 82277

LIQUID

Results Legend	Lab Sample No(s)						Total			
		Customer Sample Ref.								
			Depth (m)							
				Container						
<p>X Test</p> <p>N No Determination Possible</p>	1436362				1436363	1436367	1436368	1436369		
	G2 EW003	D1 EW003			G3 EW003	G4 EW003	G5 EW003			
	4.00 -10.00	3.00 -4.50	3.50 -8.50		3.00 -9.50	2.50 -8.50				
	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial					
Ammonium	All	X	X	X	X	X	0 5			
Anions by Kone (w)	All	X	X	X	X	X	0 5			
Cyanide Comp/Free/Total/Thiocyanate	All	X	X	X	X	X	0 5			
Dissolved Metals by ICP-MS	All	X	X	X	X	X	0 5			
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	0 5			
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	0 5			
GRO BTEX MTBE GC (W)	All	X	X	X	X	X	0 5			
Hexavalent Chromium (w)	All	X	X	X	X	X	0 5			
Mercury Dissolved	All	X	X	X	X	X	0 5			
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	0 5			
pH Value	All	X	X	X	N	X	1 4			
Phenols by HPLC (W)	All	X	X	X	X	X	0 5			
Sulphide	All	X	X	X	X	X	0 5			
TPH CWG (W)	All	X	X	X	X	X	0 5			
VOC MS (W)	All	X	X	X	X	X	0 4			

SDG:	100422-72	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-101	Attention:	Verity Sankey
Client Reference:	22/04/10	Order No.:	
Location:	Limerick Gasworks	Report No.:	82277

Test Completion dates

SDG reference: 100422-72

Lab Sample No(s) Customer Sample Ref. Depth Type	1436362	1436363	1436367	1436368	1436369
	G2	D1	G3	G4	G5
	4.00 - 10.00	3.00 - 4.50	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by Kone (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
EPH CWG (Aromatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
GRO BTEX MTBE GC (W)	27/04/2010	26/04/2010	26/04/2010	27/04/2010	26/04/2010
Hexavalent Chromium (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	30/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
pH Value	23/04/2010	23/04/2010	23/04/2010		23/04/2010
Phenols by HPLC (W)	26/04/2010	26/04/2010	26/04/2010	27/04/2010	26/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	29/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
VOC MS (W)	28/04/2010	28/04/2010		28/04/2010	26/04/2010

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SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
diss.filt	Dissolved / filtered sample.		22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
tot.unfilt	Total / unfiltered sample.		100422-72	100422-72	100422-72	100422-72	100422-72
*	subcontracted test.		1436363	1436362	1436367	1436368	1436369
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	12 #	46.6 #	24.9 #	27.6 #	6.48 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	15.4 #	59.9 #	32 #	35.5 #	8.33 #
Sulphide	<0.01 mg/l	TM101	1.34 #	0.319 #	<0.01 #	<0.01 #	0.016 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	12 #	18.6 #	6.1 #	30.6 #	4.35 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	20.6 #	28.1 #	20.9 #	23.4 #	26.1 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	1.11 #	<0.85 #	<0.85 #	1.99 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.033 #	0.022 #	0.034 #	0.107 #	0.092 #
Nickel (diss.filt)	<0.15 µg/l	TM152	5.13 #	6.96 #	8.31 #	6.61 #	11.1 #
Selenium (diss.filt)	<0.39 µg/l	TM152	14.5 #	22 #	6.28 #	24.9 #	5.91 #
Zinc (diss.filt)	<0.41 µg/l	TM152	2.7 #	2.23 #	1.95 #	3.49 #	3.86 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	0.0117 #	<0.01 #	0.0153 #	<0.01 #
Sulphate	3 mg/l	TM184	401 #	565 #	304 #	254 #	729 #
Cyanide, Total	<0.05 mg/l	TM227	0.93 #	1.11 #	0.279 #	0.202 #	0.38 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.06 #	<0.03 #	<0.03 #	<0.06 #	<0.06 #
pH	<1 pH Units	TM256	7.59 #	7.8 #	7.66 #		7.44 #
Resorcinol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<0.02 #	<0.01 #
Catechol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<0.02 #	<0.01 #
Phenol	<0.002 mg/l	TM259	0.01 #	2.11 #	<0.002 #	2.37 #	<0.002 #
Cresols	<0.006 mg/l	TM259	0.06 #	5.89 #	<0.006 #	17.2 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	0.44 #	13.4 #	<0.008 #	29.2 #	<0.008 #
1-Naphthol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<0.02 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.003 #	<0.006 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	0.15 #	<0.006 #	<0.006 #	7.87 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259	0.66 #	21.4 #	<0.025 #	56.6 #	<0.025 #

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SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
		Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Component	LOD/Units	Method					
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	56	<10	<10	1270	40
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	84	<10	57	1310	38
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	27	<10	46	1280	23
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	167	<10	103	3860	101
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	2800	6880	263	45500	458

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SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
		Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Component	LOD/Units	Method					
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	1310	6280	21	19900	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	826	534	11	8400	39
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	497	70	128	13400	318
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	2630	6880	160	41700	357

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SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
		Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
		SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
		Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Component	LOD/Units	Method					
Benzene	<7 µg/l	TM245	681 #	4830 #	112 #	9250 #	20 #
Toluene	<4 µg/l	TM245	360 #	3680 #	<4 #	6920 #	<4 #
Ethylbenzene	<5 µg/l	TM245	219 #	392 #	<5 #	606 #	<5 #
m,p-Xylene	<8 µg/l	TM245	554 #	1670 #	11 #	3710 #	10 #
o-Xylene	<3 µg/l	TM245	307 #	901 #	12 #	1540 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245	861 #	2570 #	23 #	5250 #	10 #
BTEX, Total	<10 µg/l	TM245	2120 #	11500 #	135 #	22000 #	30 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<6 #	<3 #	<15 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10 #	20 #	<10 #	<50 #	<10 #
Aliphatics >C6-C8	<10 µg/l	TM245	<10 #	1200 #	27 #	1860 #	13.5 #
Aliphatics >C8-C10	<10 µg/l	TM245	249 #	773 #	18.6 #	1670 #	44.1 #
Aliphatics >C10-C12	<10 µg/l	TM245	1120 #	1750 #	29 #	4680 #	107 #
Total Aliphatics >C5-C12	<10 µg/l	TM245	1370 #	3740 #	74.6 #	8250 #	165 #
Aromatics >C6-C7	<10 µg/l	TM245	681 #	4830 #	112 #	9250 #	20 #
Aromatics >C7-C8	<10 µg/l	TM245	360 #	3680 #	<10 #	6920 #	<10 #
Aromatics >EC8-EC10	<10 µg/l	TM245	1450 #	4120 #	50.9 #	8360 #	76.1 #
Aromatics >EC10-EC12	<10 µg/l	TM245	1680 #	2620 #	43.5 #	7010 #	161 #
Total Aromatics >C6-C12	<10 µg/l	TM245	4170 #	15300 #	206 #	31600 #	257 #

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SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003	
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Date Received	SDG Ref	Lab Sample No.(s)
Naphthalene (aq)	<0.1 µg/l	TM178	3.00 - 4.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436363
Acenaphthene (aq)	<0.015 µg/l	TM178	4.00 - 10.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436362
Acenaphthylene (aq)	<0.011 µg/l	TM178	3.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436367
Fluoranthene (aq)	<0.014 µg/l	TM178	3.00 - 9.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436368
Anthracene (aq)	<0.015 µg/l	TM178	2.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436369
Phenanthrene (aq)	<0.022 µg/l	TM178						
Fluorene (aq)	<0.014 µg/l	TM178						
Chrysene (aq)	<0.013 µg/l	TM178						
Pyrene (aq)	<0.015 µg/l	TM178						
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178						
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178						
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178						
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178						
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178						
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178						
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178						
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178						

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SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

VOC MS (W)

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G4 EW003	G5 EW003		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.00 - 4.50	4.00 - 10.00	3.00 - 9.50	2.50 - 8.50		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		21/04/2010	21/04/2010	21/04/2010	21/04/2010		
dis.filt	Dissolved / filtered sample.		22/04/2010	22/04/2010	22/04/2010	22/04/2010		
tot.unfilt	Total / unfiltered sample.		100422-72	100422-72	100422-72	100422-72		
*	subcontracted test.		1436363	1436362	1436368	1436369		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208	114	119	111	136		
Toluene-d8**	%	TM208	99	98.4	98.3	99.3		
4-Bromofluorobenzene**	%	TM208	99.9	101	94.4	106		
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Chloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	<1.7	#	#
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
Bromomethane	<2 µg/l	TM208	<2	<2	<2	<2	#	#
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	#	#
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
Carbon disulphide	<1.3 µg/l	TM208	1.38	6.04	<1.3	<1.3	#	#
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	<3.7	<3.7	#	#
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	<1.6	<1.6	#	#
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	#	#
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	<3.8	<3.8	#	#
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	<1.8	<1.8	#	#
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	<1.4	<1.4	#	#
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	<3.3	<3.3	#	#
Benzene	<1.3 µg/l	TM208	735	6040	6420	27.7	#	#
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	#	#
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	<3	<3	#	#
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	<2.7	<2.7	#	#
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	<0.9	<0.9	#	#
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
Toluene	<1.4 µg/l	TM208	406	4130	4410	2.41	#	#
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	#	#
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	#	#
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	#	#
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	<1.5	<1.5	#	#
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	<1.7	#	#
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	#	#
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	#	#
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Ethylbenzene	<2.5 µg/l	TM208	225	434	538	3.22	#	#

SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

VOC MS (W)

Results Legend		Customer Sample Ref.	D1 EW003	G2 EW003	G4 EW003	G5 EW003		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.00 - 4.50	4.00 - 10.00	3.00 - 9.50	2.50 - 8.50		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		21/04/2010	21/04/2010	21/04/2010	21/04/2010		
diss.filt	Dissolved / filtered sample.		22/04/2010	22/04/2010	22/04/2010	22/04/2010		
tot.unfilt	Total / unfiltered sample.		100422-72	100422-72	100422-72	100422-72		
*	subcontracted test.		1436363	1436362	1436368	1436369		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	570 #	1770 #	3290 #	7.19 #		
o-Xylene	<1.7 µg/l	TM208	335 #	931 #	1390 #	5.19 #		
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Bromoform	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #		
Isopropylbenzene	<1.4 µg/l	TM208	22.4 #	29.5 #	33.4 #	<1.4 #		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2 #	<5.2 #	<5.2 #	<5.2 #		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #	<7.8 #	<7.8 #		
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
Propylbenzene	<2.6 µg/l	TM208	27.7 #	32.7 #	39.7 #	<2.6 #		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	82.7 #	114 #	219 #	4.66 #		
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	275 #	421 #	555 #	8.39 #		
sec-Butylbenzene	<1.7 µg/l	TM208	2.15 #	<1.7 #	<1.7 #	<1.7 #		
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	55.5 #	<2.6 #		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #		
n-Butylbenzene	<2 µg/l	TM208	6.1 #	<2 #	7.83 #	<2 #		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8 #	<9.8 #	<9.8 #	<9.8 #		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #		
Naphthalene	<3.5 µg/l	TM208	3810 #	4350 #	8290 #	4.13 #		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #	<3.1 #	<3.1 #		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10 #	<10 #	<10 #	<10 #		

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Table of Results - Appendix

SDG Number : 100422-72

Client : Mouchel

Client Ref : 22/04/10

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978 ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

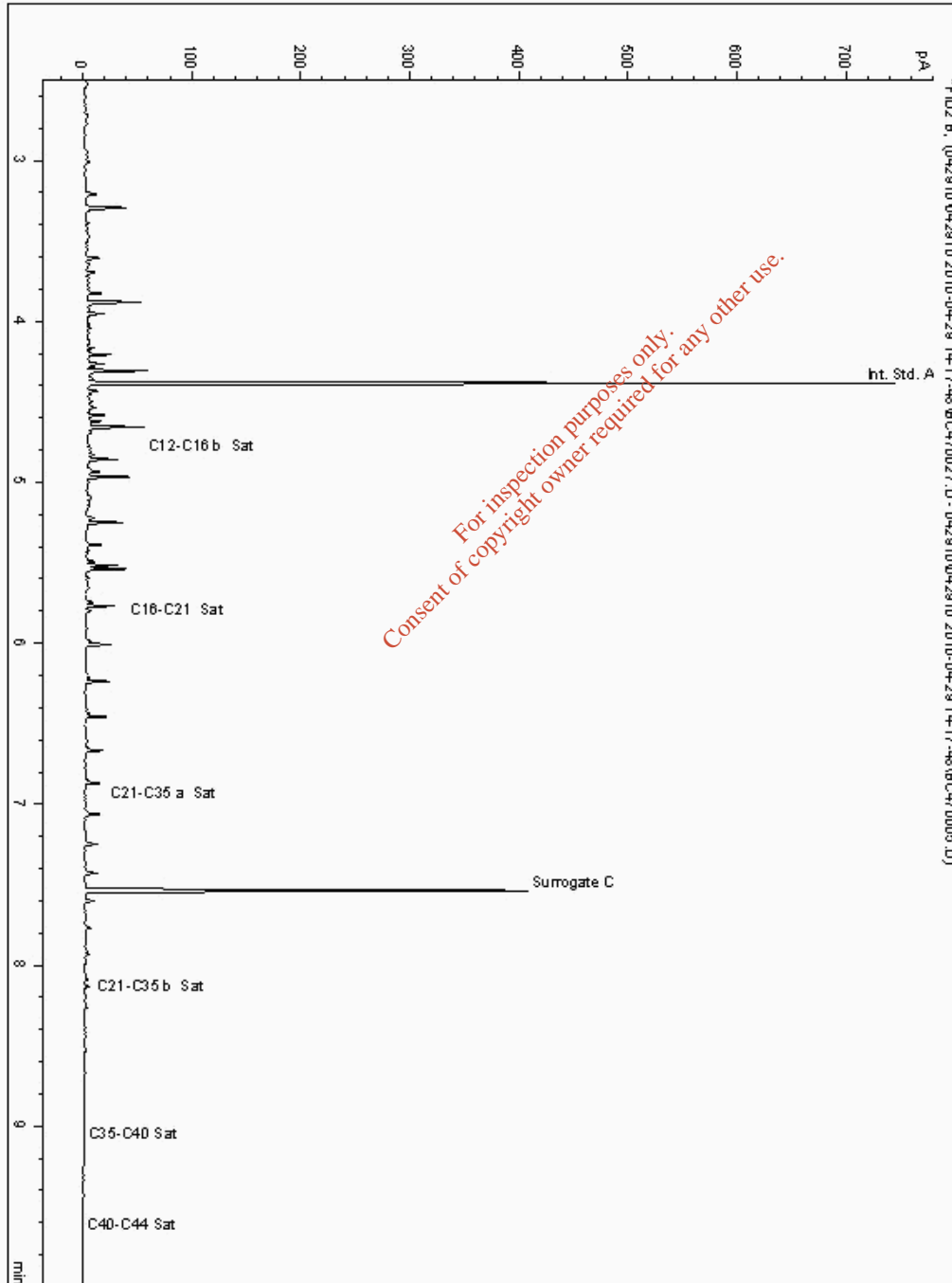
Chromatogram

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

Sample No 1438732
Sample ID G4
Depth 3.00 - 9.50

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

Sample Identity: 1559916-1438732
Date Acquired : 29/04/10 22:35:26
Units :
Dilution :
CF : 1
Multiplier : 0.033



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

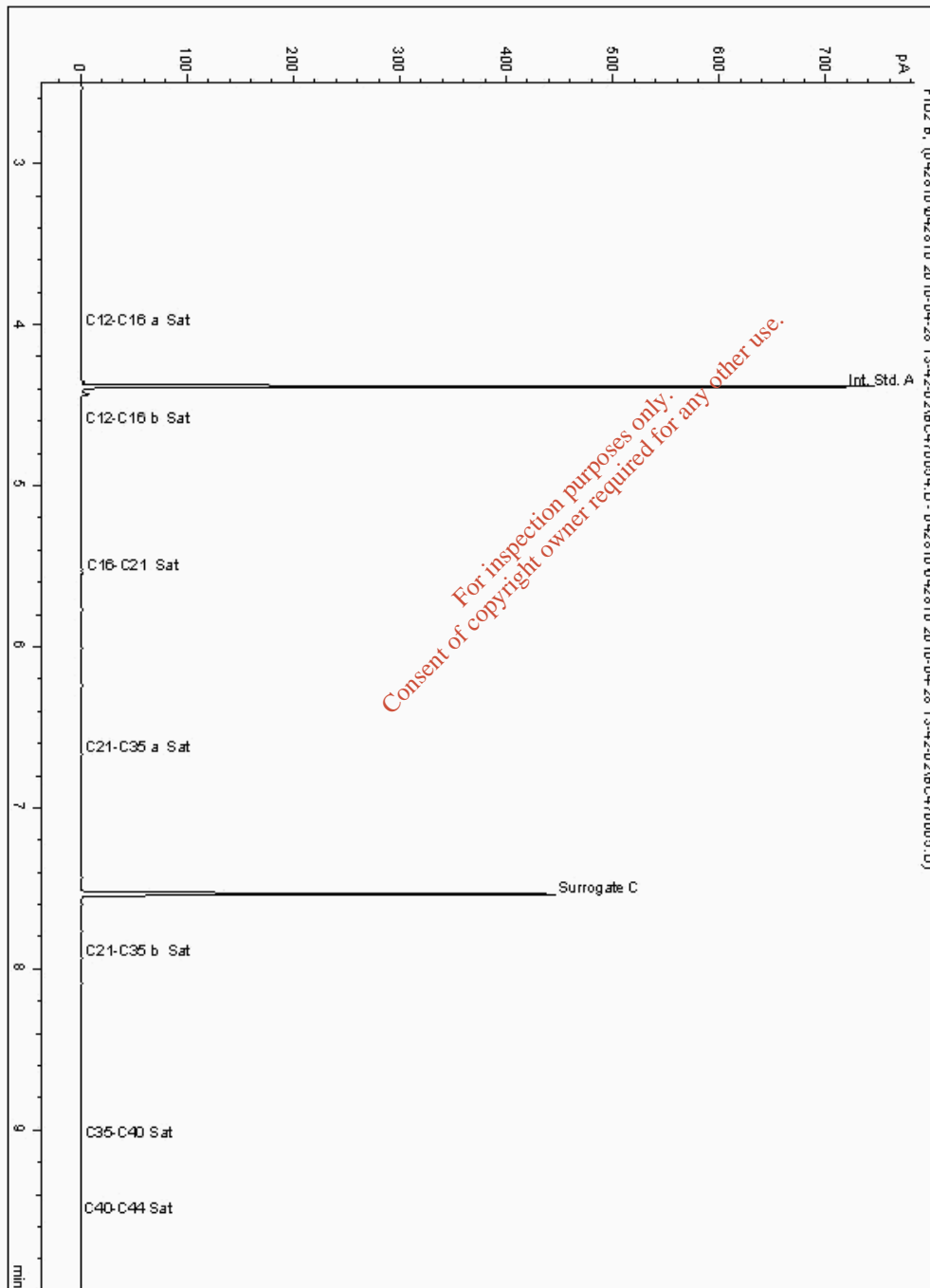
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438763
Sample ID G3
Depth 3.50 - 8.50

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

Sample Identity: 1559932-1438763
Date Acquired : 29/04/10 05:48:41
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

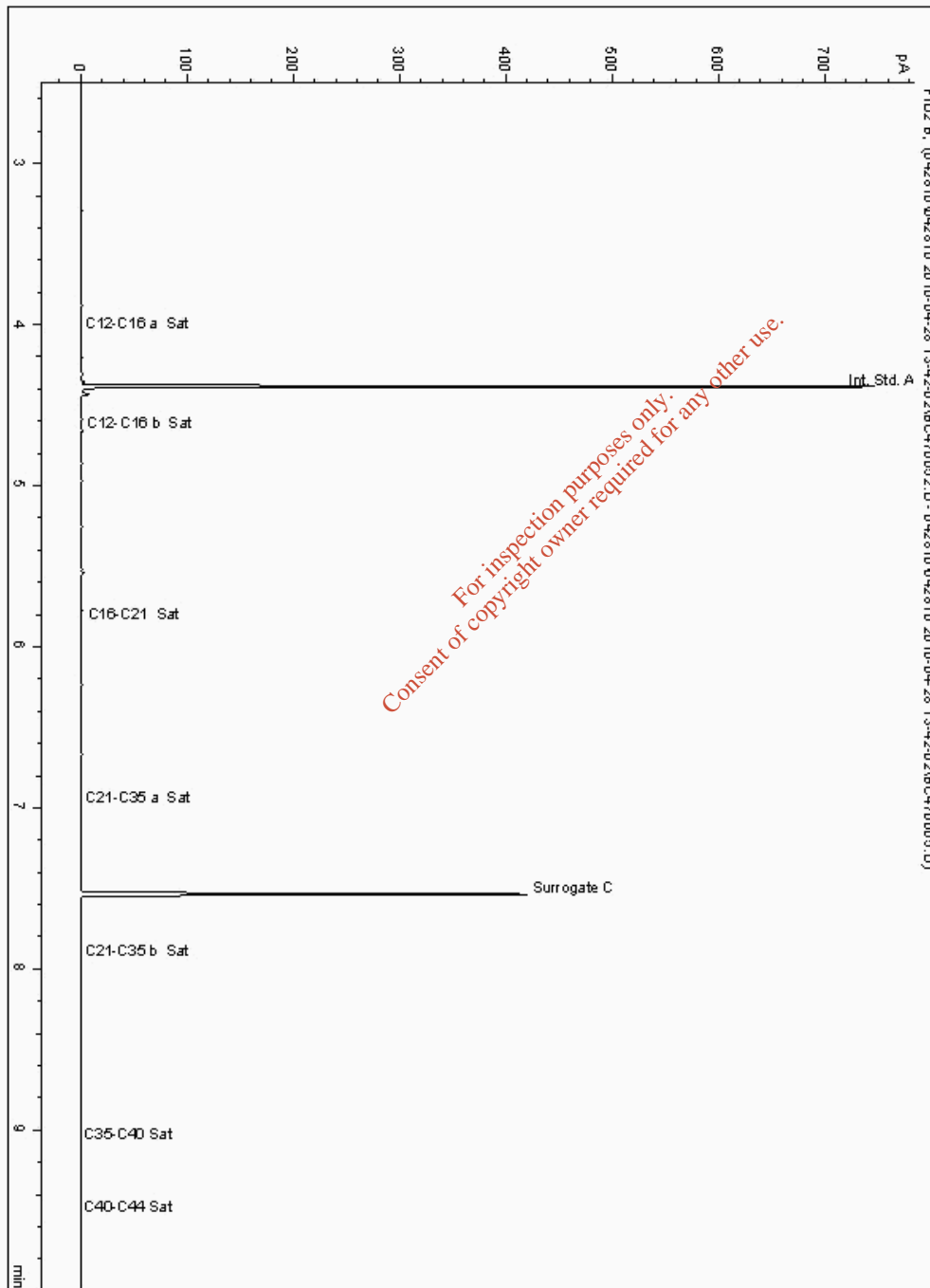
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

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

Sample No 1438779
Sample ID G5
Depth 2.50 - 8.50

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

Sample Identity: 1559980-1438779
Date Acquired : 29/04/10 05:15:56
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

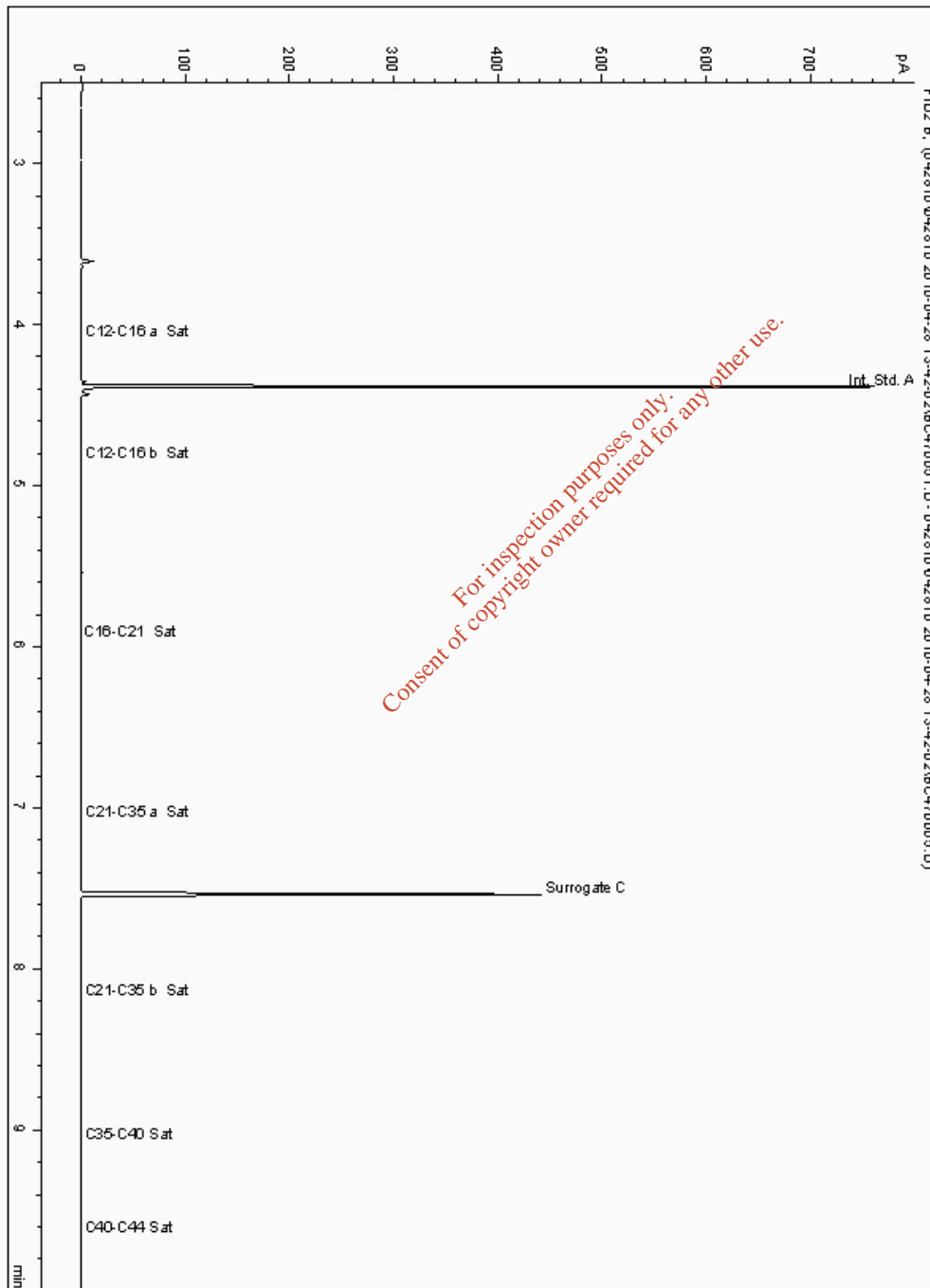
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438805
Sample ID G2
Depth 4.00 - 10.00

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

Sample Identity: 1559948-1438805
Date Acquired : 29/04/10 04:57:09
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

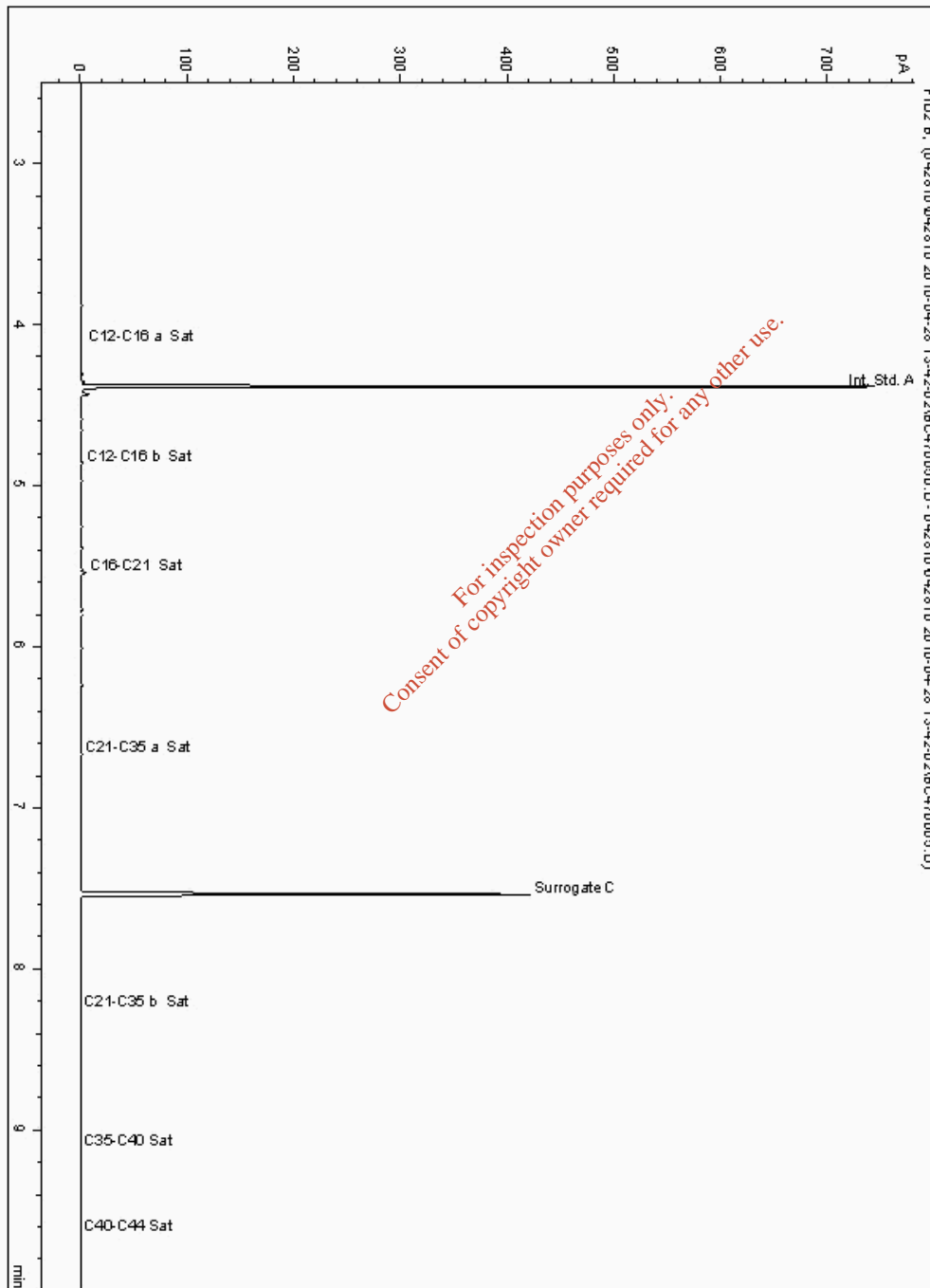
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438830
Sample ID D1
Depth 3.00 - 4.50

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

Sample Identity: 1559964-1438830
Date Acquired : 29/04/10 04:38:08
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

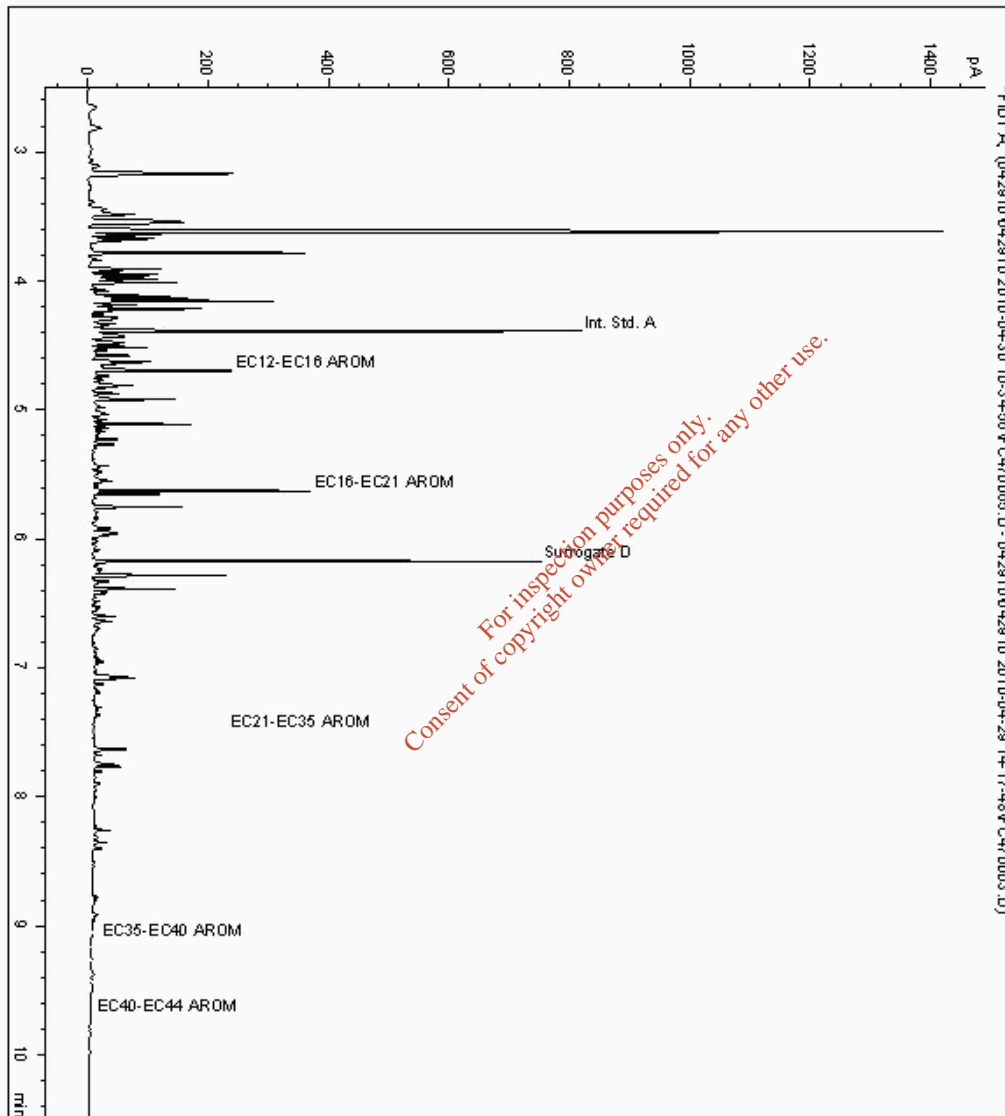
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438732
Sample ID G4
Depth 3.00 - 9.50

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

Sample Identity: 1559917-1438732
Date Acquired : 30/04/10 11:18:50
Units : ppb
Dilution :
CF : 1
Multiplier : 0.067



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

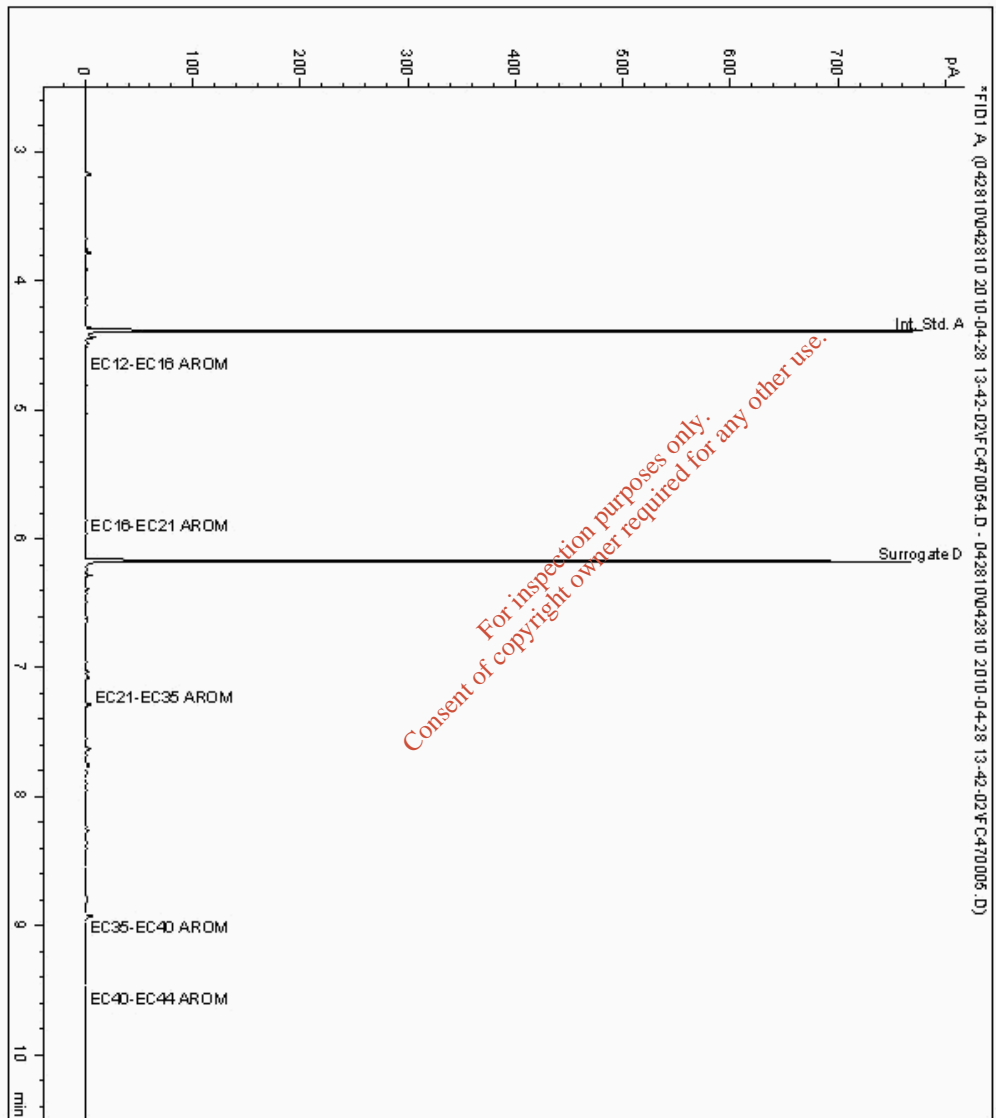
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438763
Sample ID G3
Depth 3.50 - 8.50

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

Sample Identity: 1559933-1438763
Date Acquired : 29/04/10 05:48:41
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

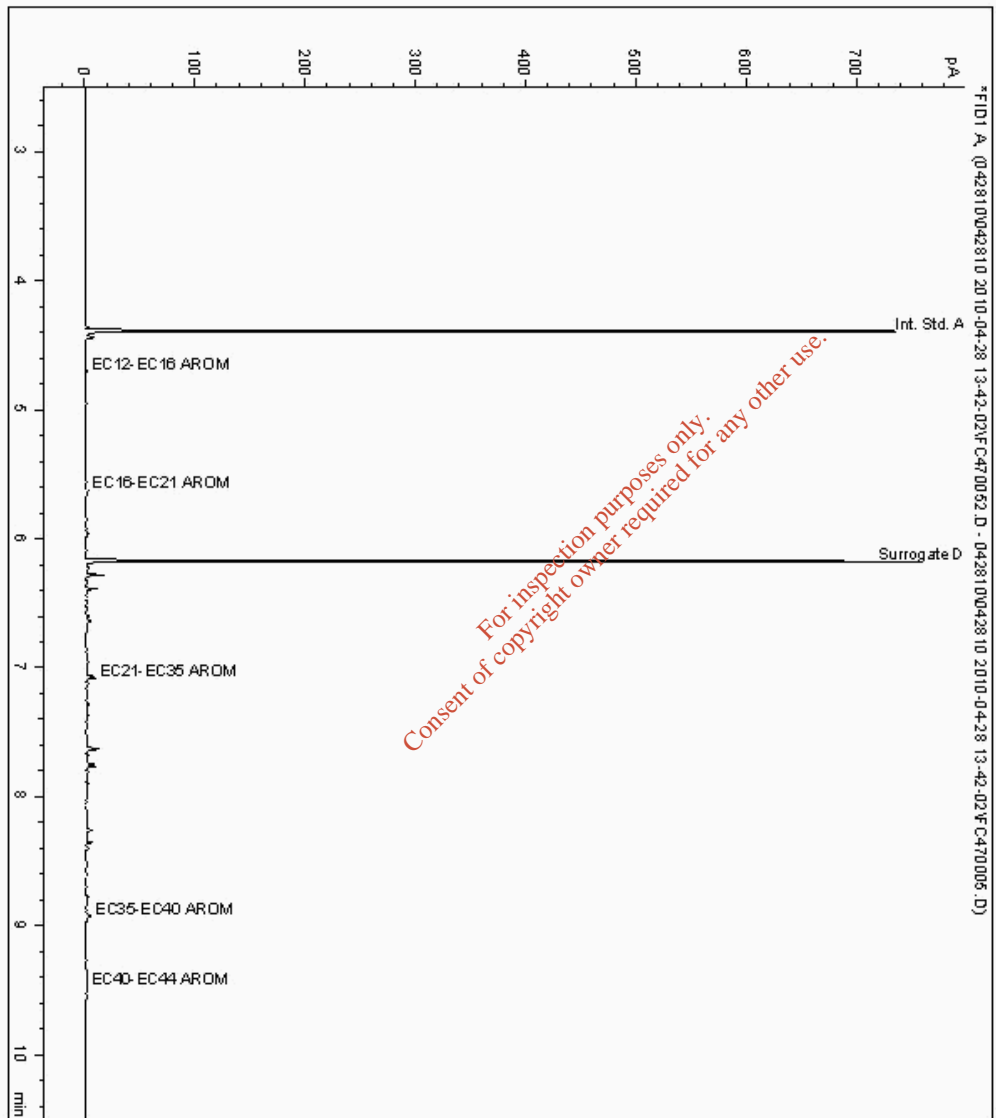
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438779
Sample ID G5
Depth 2.50 - 8.50

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

Sample Identity: 1559981-1438779
Date Acquired : 29/04/10 05:15:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

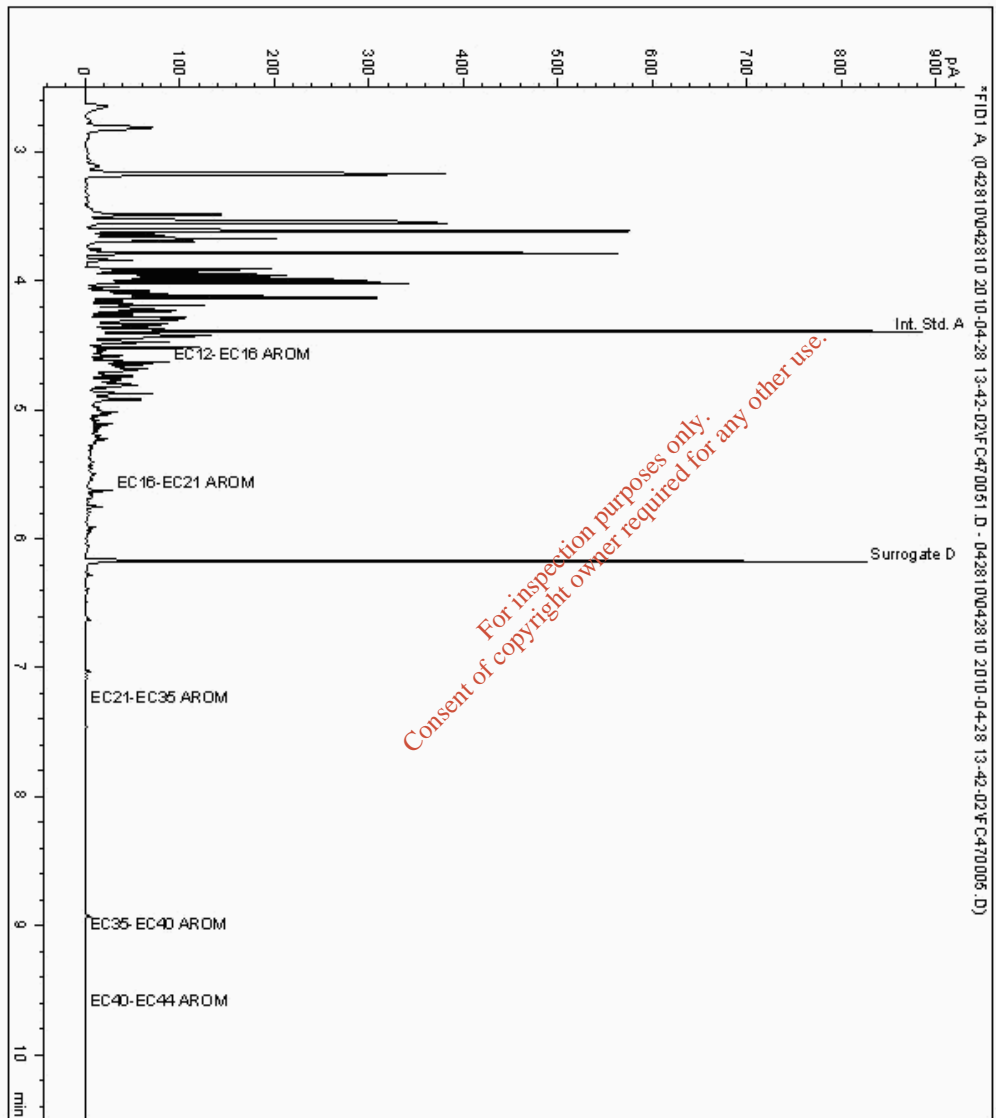
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438805
Sample ID G2
Depth 4.00 - 10.00

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

Sample Identity: 1559949-1438805
Date Acquired : 29/04/10 04:57:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

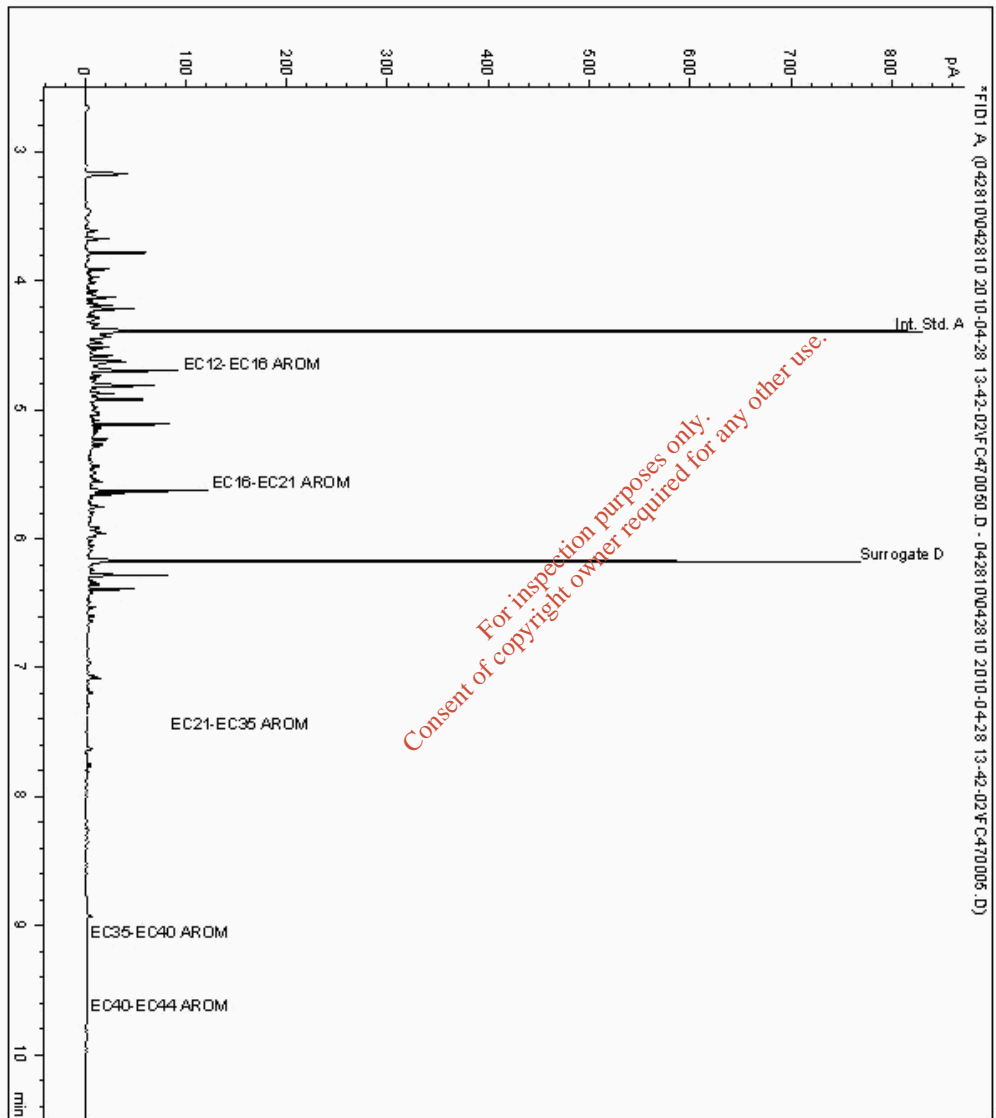
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82277

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

Sample No 1438830
Sample ID D1
Depth 3.00 - 4.50

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

Sample Identity: 1559965-1438830
Date Acquired : 29/04/10 04:38:08
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

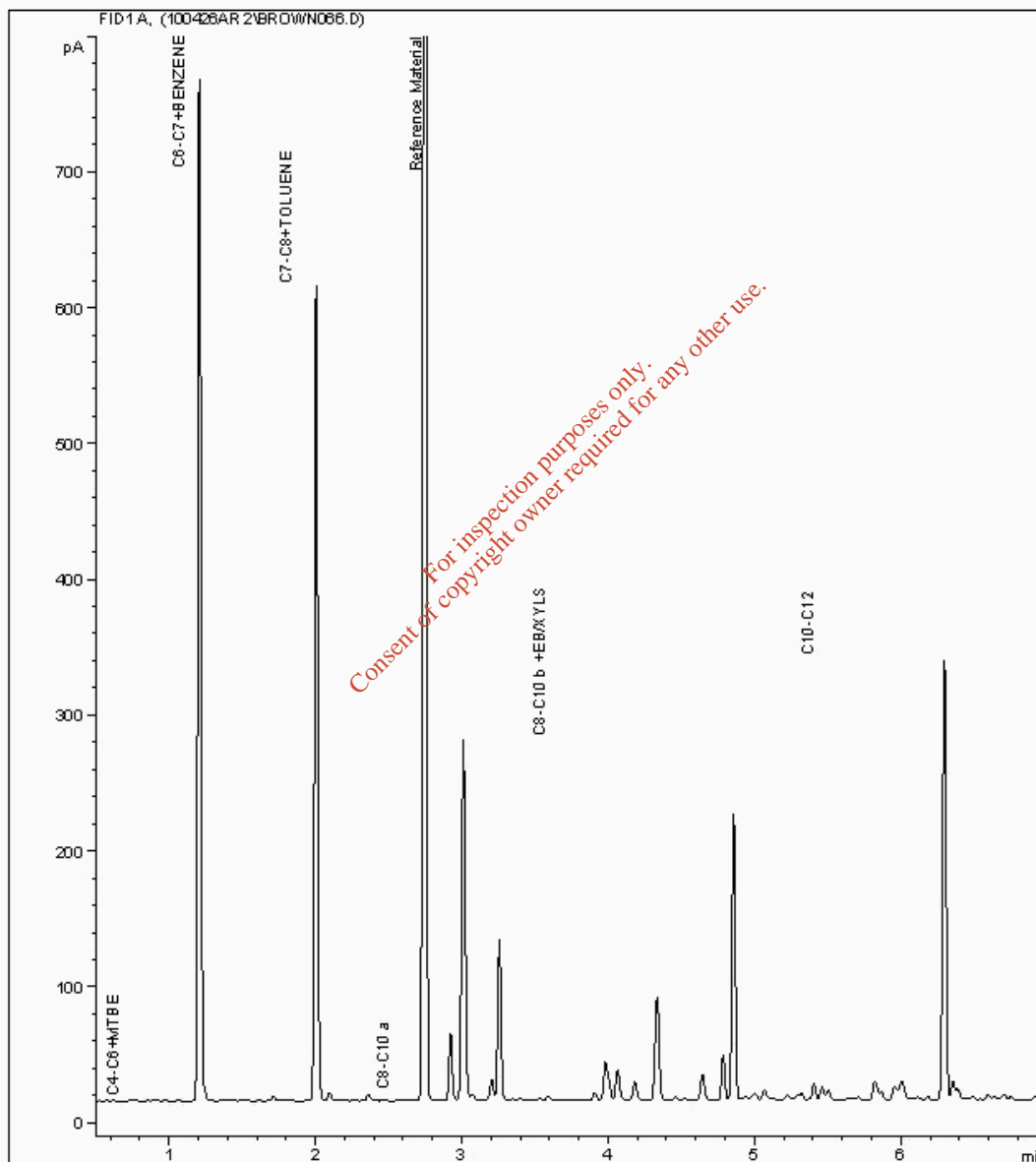
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

Analysis: GRO BTEX MTBE GC (W)

Sample No 1435824
Sample ID G4
Depth 3.00 - 9.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559918-1435824
Date Acquired : 27/04/10 09:58:04
Units : ppb
Dilution : 5



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

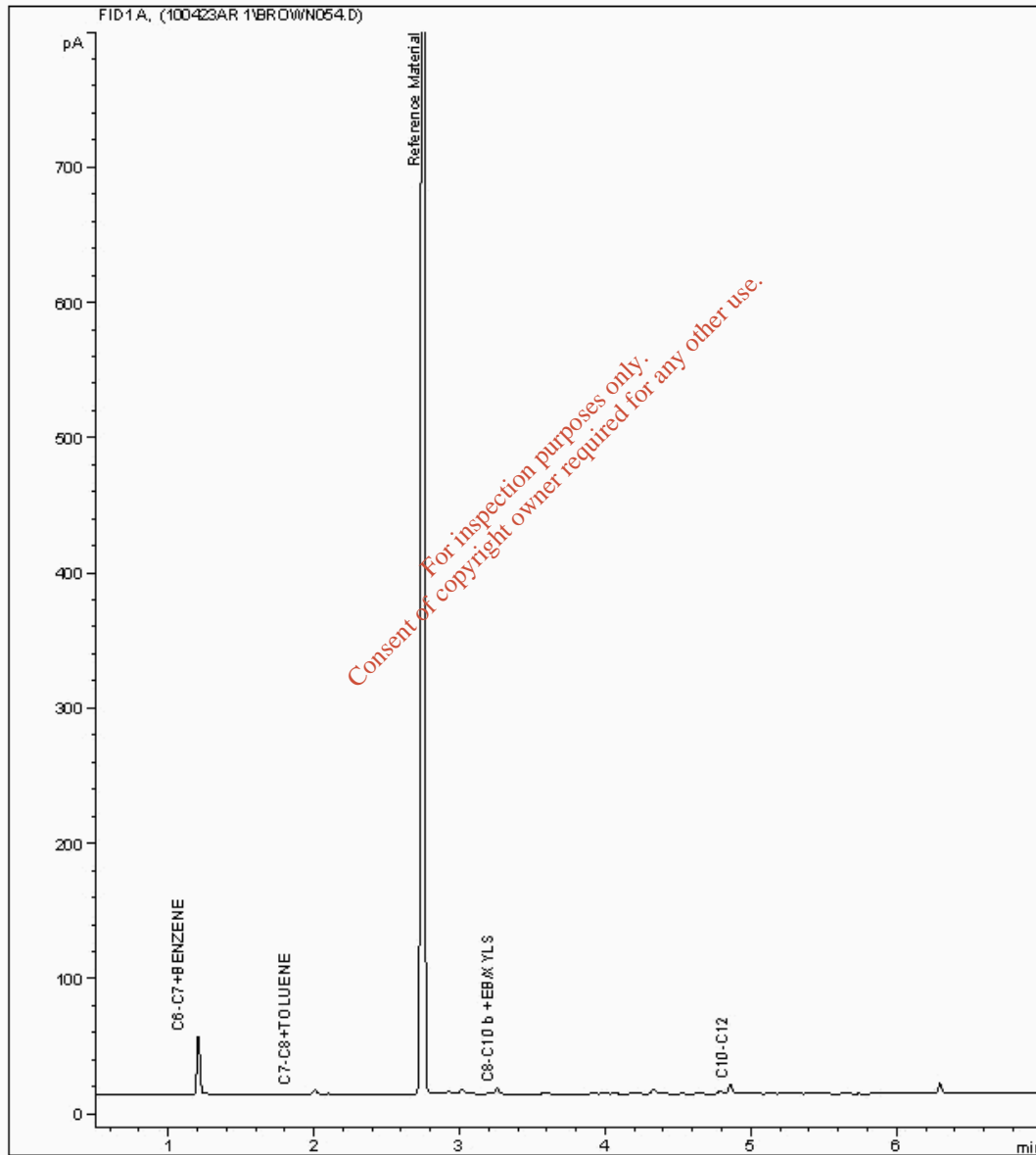
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

Analysis: GRO BTEX MTBE GC (W)

Sample No 1435864
Sample ID G3
Depth 3.50 - 8.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559934-1435864
Date Acquired : 24/04/10 01:57:32
Units : ppb
Dilution : 1



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

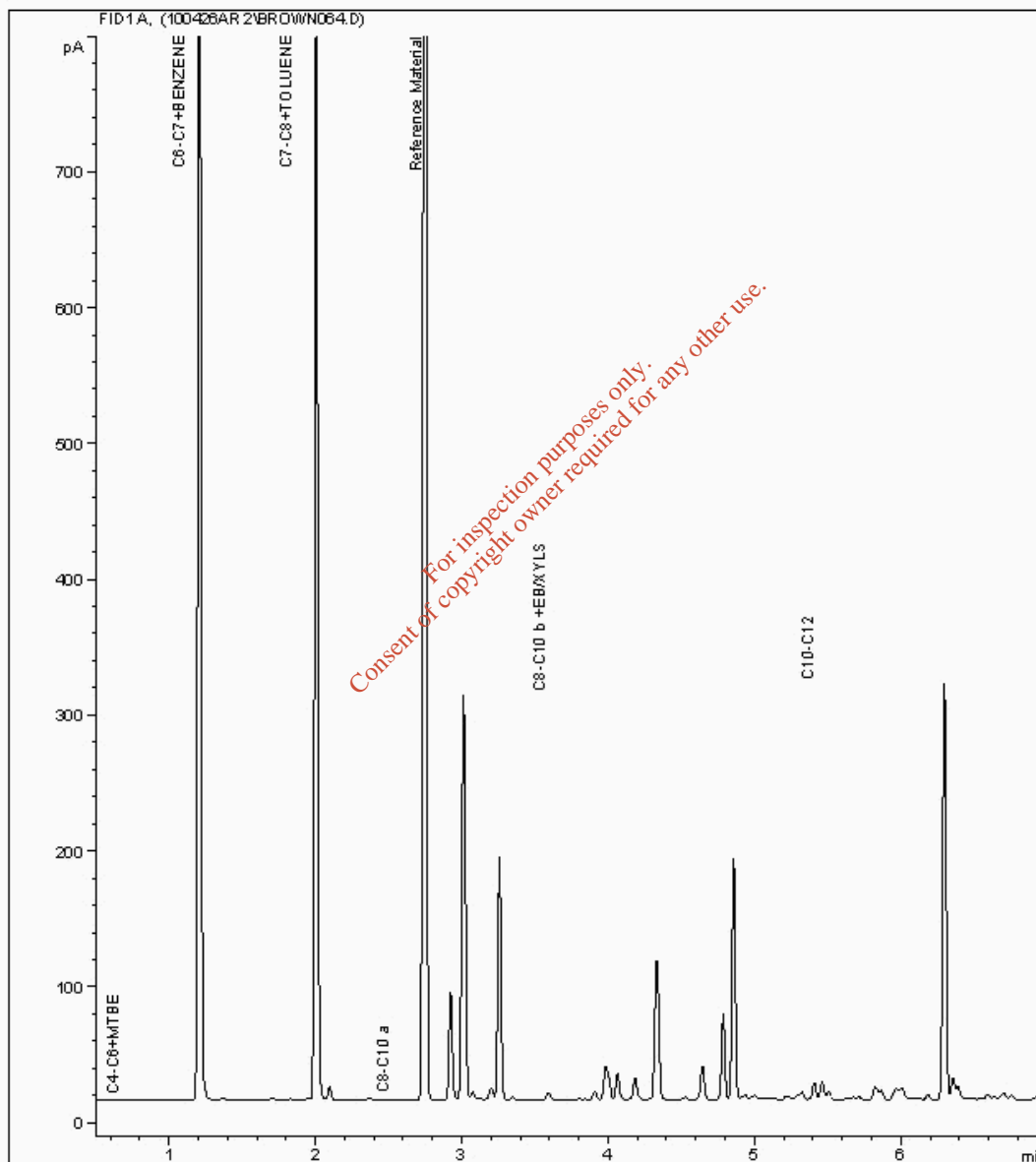
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

Analysis: GRO BTEX MTBE GC (W)

Sample No 1435901
Sample ID G2
Depth 4.00 - 10.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559950-1435901
Date Acquired : 27/04/10 09:29:57
Units : ppb
Dilution : 2



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

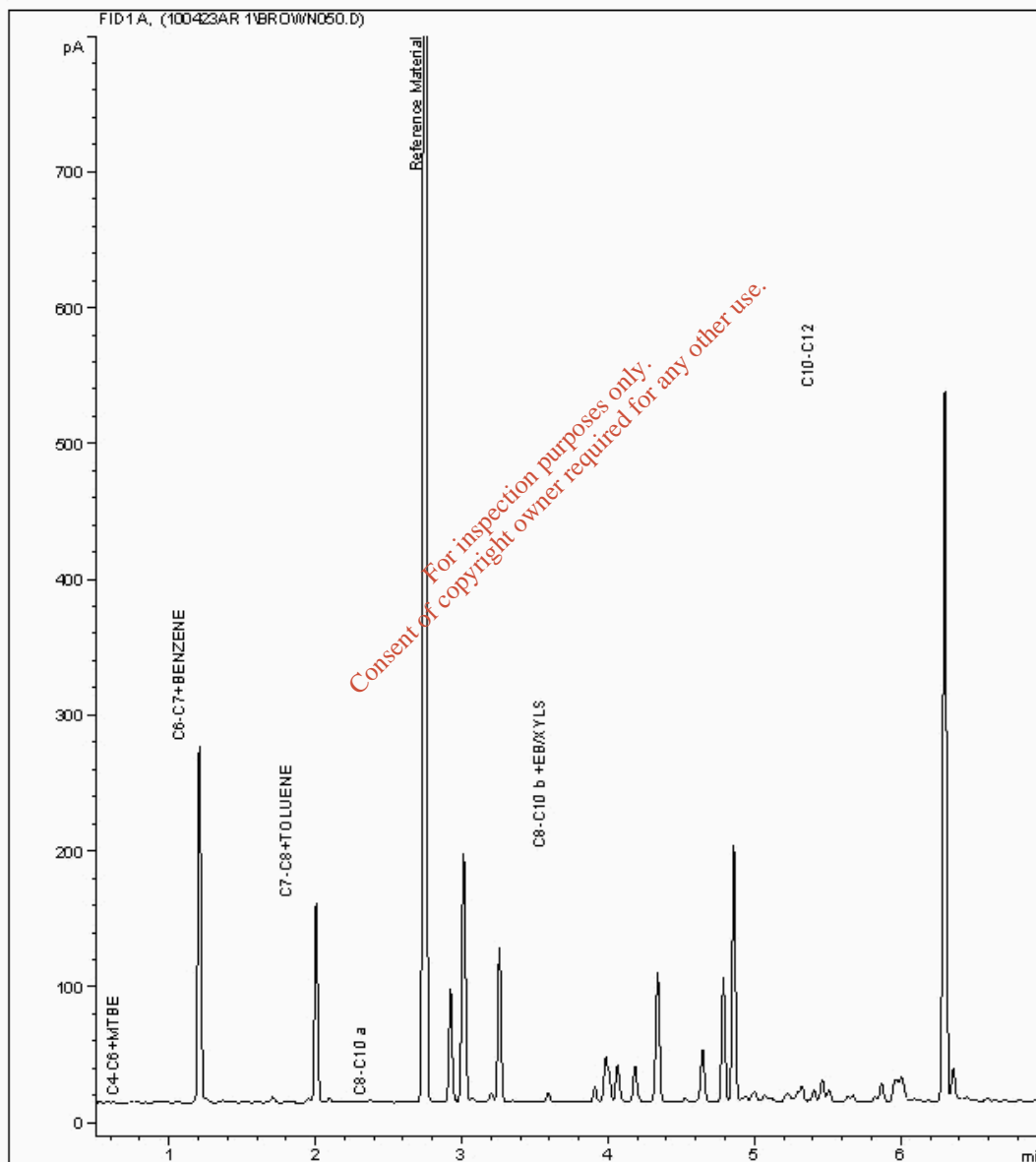
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

Analysis: GRO BTEX MTBE GC (W)

Sample No 1435927
Sample ID D1
Depth 3.00 - 4.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559966-1435927
Date Acquired : 24/04/10 01:01:18
Units : ppb
Dilution : 1



SDG: 100422-72
Job: D_MOUCHEL_ELE-101
Client Ref.: 22/04/10
Location: Limerick Gasworks

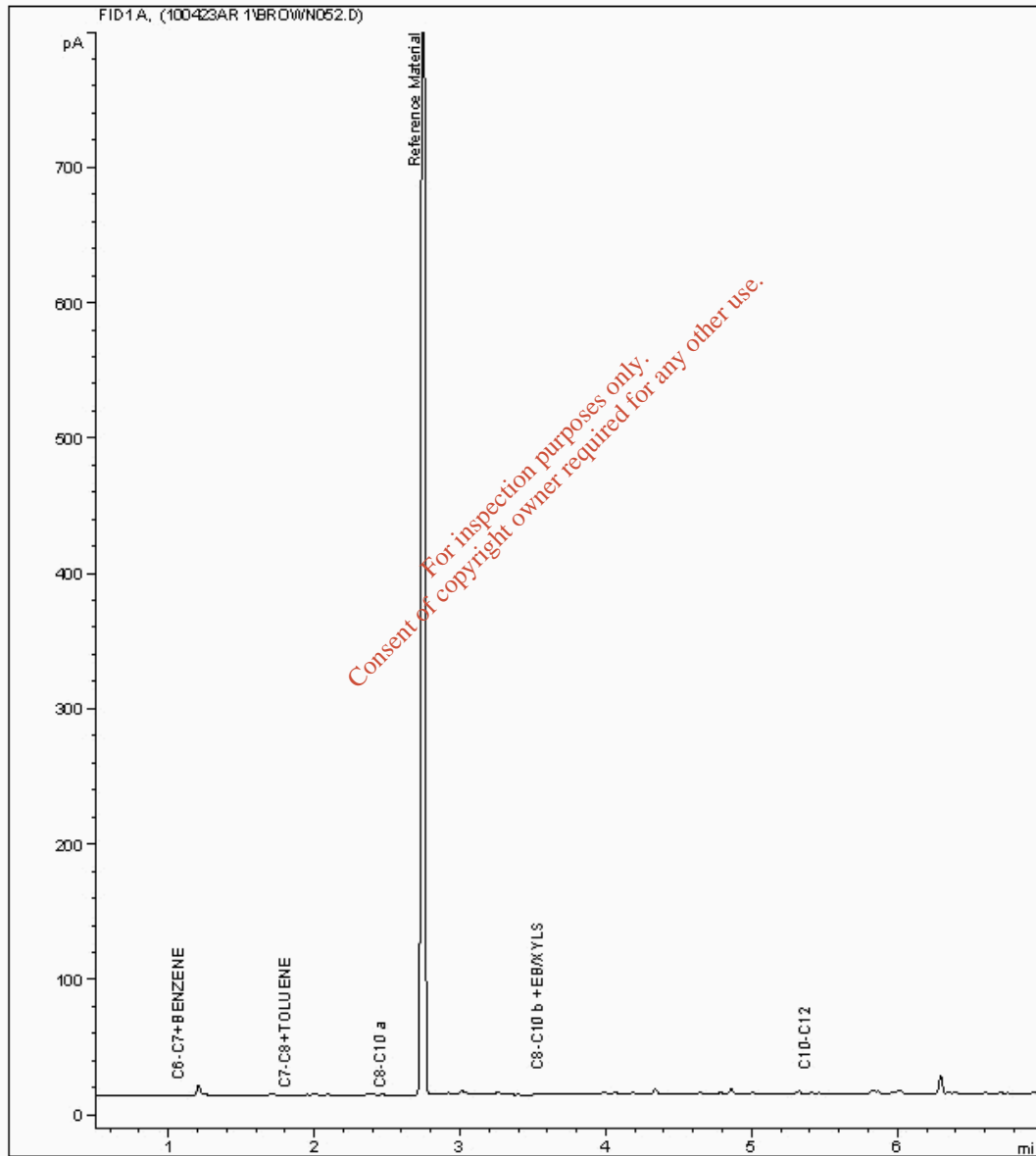
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82277

Analysis: GRO BTEX MTBE GC (W)

Sample No 1435958
Sample ID G5
Depth 2.50 - 8.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559982-1435958
Date Acquired : 24/04/10 01:29:25
Units : ppb
Dilution : 1



Notification of NDPs (No determination possible)

SDG Number	100422-72	Location	Limerick Gasworks
Client	D_MOUCHEL_ELE	Order No.	
Client Reference	22/04/10	Report No.	45707-0
Attention	Dave Watts	Date Received	22/04/2010 13:59:21

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1436368	G4 EW003	3.00 - 9.50	pH Value	Sample contains oil / product
1436368	G4 EW003	3.00 - 9.50	pH Value	Sample contains oil / product
1436368	G4 EW003	3.00 - 9.50	pH Value	Sample contains oil / product

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:
NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 29 April 2010
Customer: D_MOUCHEL_ELE-102
Sample Delivery Group (SDG): 100422-73 **Report No.:** 82119
Your Reference: 21.4.10
Location: Limerick Gasworks

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Thursday April 29, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Operations Director - Land UK & Ireland



SDG:	100422-73	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-102	Attention:	Verity Sankey
Client Reference:	21.4.10	Order No.:	
Location:	Limerick Gasworks	Report No:	82119

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436330	A11 EW003	1.00 - 2.50	21/04/2010
1436158	C11 EW003	1.50 - 2.50	21/04/2010
1436125	E8 EW003	1.50 - 6.00	21/04/2010
1436276	F11 EW003	1.00 - 4.00	21/04/2010
1436197	G8 EW003	1.00 - 2.00	21/04/2010

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

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SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Reference: 21.4.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 82119

LIQUID

Results Legend	Lab Sample No(s)	1436125	1436158	1436197	1436276	1436330	Total
	Customer Sample Ref.	E8 EW003	C11 EW003	G8 EW003	F11 EW003	A11 EW003	
	Depth (m)	1.50 - 6.00	1.50 - 2.50	1.00 - 2.00	1.00 - 4.00	1.00 - 2.50	
	Container	11 green glass bottle 500ml Plastic VIAL (D)	11 green glass bottle 500ml Plastic VIAL (D)	11 green glass bottle 500ml Plastic VIAL (D)	11 green glass bottle 500ml Plastic VIAL (D)	11 green glass bottle 500ml Plastic VIAL (D)	
Ammonium	All	X	X	X	X	X	0 5
Anions by Kone (w)	All	X	X	X	X	X	0 5
Cyanide Comp/Free/Total/Thiocyanate	All	X	X	X	X	X	0 5
Dissolved Metals by ICP-MS	All	X	X	X	X	X	0 5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	0 5
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	0 5
GRO BTEX MTBE GC (W)	All	X	X	X	X	X	0 5
Hexavalent Chromium (w)	All	X	X	X	X	X	0 5
Mercury Dissolved	All	X	X	X	X	X	0 5
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	0 5
pH Value	All	X	X	X	X	X	0 5
Phenols by HPLC (W)	All	X	X	X	X	X	0 5
Sulphide	All	X	X	X	X	X	0 5
TPH CWG (W)	All	X	X	X	X	X	0 5
VOC MS (W)	All	X	X	X	X	X	0 1

SDG:	100422-73	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-102	Attention:	Verity Sankey
Client Reference:	21.4.10	Order No.:	
Location:	Limerick Gasworks	Report No.:	82119

Test Completion dates

SDG reference: 100422-73

Lab Sample No(s) Customer Sample Ref. Depth Type	1436125	1436158	1436197	1436276	1436330
	E8	C11	G8	F11	A11
	1.50 - 6.00	1.50 - 2.50	1.00 - 2.00	1.00 - 4.00	1.00 - 2.50
	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by Kone (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
EPH CWG (Aromatic) Aqueous GC	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
GRO BTEX MTBE GC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Hexavalent Chromium (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	29/04/2010	28/04/2010	29/04/2010	28/04/2010	29/04/2010
pH Value	23/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Phenols by HPLC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
VOC MS (W)					26/04/2010

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SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Reference: 21.4.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

Results Legend		Customer Sample Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
diss.filt	Dissolved / filtered sample.		22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
tot.unfilt	Total / unfiltered sample.		100422-73	100422-73	100422-73	100422-73	100422-73
*	subcontracted test.		1436330	1436158	1436125	1436276	1436197
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	1.28 #	6.01 #	62.3 #	4.64 #	30.4 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	1.65 #	7.73 #	80.1 #	5.97 #	39.1 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	0.663 #	<0.1 #	<0.1 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	2.98 #	7.81 #	137 #	7.15 #	5.93 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.102 #	<0.1 #	0.721 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	3.59 #	8.31 #	3.35 #	4.28 #	4.48 #
Copper (diss.filt)	<0.85 µg/l	TM152	1.34 #	<0.85 #	2.47 #	<0.85 #	1.62 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.153 #	0.029 #	0.415 #	0.05 #	0.023 #
Nickel (diss.filt)	<0.15 µg/l	TM152	4.97 #	3.37 #	50.9 #	2.06 #	5.16 #
Selenium (diss.filt)	<0.39 µg/l	TM152	2.16 #	4.82 #	30.2 #	1.86 #	9.84 #
Zinc (diss.filt)	<0.41 µg/l	TM152	1.13 #	0.991 #	38.3 #	0.709 #	0.817 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	0.0559 #	<0.01 #	<0.01 #
Sulphate	3 mg/l	TM184	353 #	128 #	496 #	37.3 #	162 #
Cyanide, Total	<0.05 mg/l	TM227	0.066 #	0.069 #	12.8 #	<0.05 #	0.581 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.06 #	<0.03 #	<0.06 #
pH	<1 pH Units	TM256	8.05 #	8.24 #	9.34 #	7.72 #	8.31 #
Resorcinol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	0.21 #	<0.01 #	<0.01 #
Catechol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.2 #	<0.01 #	<0.01 #
Phenol	<0.002 mg/l	TM259	<0.002 #	<0.002 #	67.3 #	0.08 #	1.89 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	110 #	0.09 #	4.08 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	66.8 #	0.08 #	4.89 #
1-Naphthol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	0.26 #	<0.01 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.06 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	3.79 #	<0.006 #	1.33 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259	<0.025 #	<0.025 #	248 #	0.25 #	12.2 #

SDG: 100422-73	Customer: Mouchel
Job: D_MOUCHEL_ELE-102	Attention: Dave Watts
Client Reference: 21.4.10	Order No.:
Location: Limerick Gasworks	Report No: 82119

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003	
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00	
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010	
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73	
		Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197	

Component	LOD/Units	Method	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003	
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	797	357	46	65	<10	
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	560	131	41	398	<10	
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	1280	21	55	820	<10	
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	2630	509	142	1280	<10	
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	19800	1470	6270	2470	1540	

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SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Reference: 21.4.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
		Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Component	LOD/Units	Method					
Benzene	<7 µg/l	TM245	48 #	41 #	9090 #	55 #	1520 #
Toluene	<4 µg/l	TM245	76 #	40 #	2480 #	<4 #	996 #
Aliphatics >C6-C8	<10 µg/l	TM245	36.4 #	31.3 #	2060 #	<10 #	155 #
Aliphatics >C8-C10	<10 µg/l	TM245	95.8 #	368 #	665 #	<10 #	236 #
Aliphatics >C10-C12	<10 µg/l	TM245	176 #	937 #	1980 #	<10 #	818 #
Aromatics >C7-C8	<10 µg/l	TM245	76 #	40 #	2480 #	<10 #	996 #
Aromatics >EC8-EC10	<10 µg/l	TM245	291 #	1180 #	2430 #	14.4 #	1190 #
Aromatics >EC10-EC12	<10 µg/l	TM245	264 #	1400 #	2980 #	11.9 #	1230 #
Ethylbenzene	<5 µg/l	TM245	7 #	85 #	119 #	<5 #	75 #
m,p-Xylene	<8 µg/l	TM245	86 #	307 #	936 #	<8 #	544 #
o-Xylene	<3 µg/l	TM245	61 #	235 #	377 #	<3 #	213 #
m,p,o-Xylene	<10 µg/l	TM245	147 #	542 #	1310 #	<10 #	757 #
BTEX, Total	<10 µg/l	TM245	278 #	708 #	13000 #	55 #	3340 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<15 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10 #	<10 #	118 #	<10 #	16.2 #
Total Aliphatics >C5-C12	<10 µg/l	TM245	309 #	1340 #	4820 #	<10 #	1230 #
Aromatics >C6-C7	<10 µg/l	TM245	48 #	341 #	9090 #	55 #	1520 #
Total Aromatics >C6-C12	<10 µg/l	TM245	679 #	2660 #	17000 #	81.3 #	4920 #

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SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Reference: 21.4.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
		Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Component	LOD/Units	Method					
Naphthalene (aq)	<0.1 µg/l	TM178	87.9	2.59	1460	20.4	12.1
Acenaphthene (aq)	<0.015 µg/l	TM178	62.3	13.6	22.3	1.56	6.97
Acenaphthylene (aq)	<0.011 µg/l	TM178	267	4.77	127	5.77	40.8
Fluoranthene (aq)	<0.014 µg/l	TM178	678	18.5	93.9	19.6	23.8
Anthracene (aq)	<0.015 µg/l	TM178	282	2.79	48.7	2.79	14
Phenanthrene (aq)	<0.022 µg/l	TM178	782	5.8	175	5.96	39.1
Fluorene (aq)	<0.014 µg/l	TM178	266	4.76	77.3	1.67	25.2
Chrysene (aq)	<0.013 µg/l	TM178	138	3.36	16.8	10.2	6.46
Pyrene (aq)	<0.015 µg/l	TM178	442	11.5	61.9	16.6	16.3
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	205	5.49	18.6	13.2	10.6
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	175	5.6	11	25.7	8.33
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	64.5	1.68	4.62	8.59	3.07
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	140	4.53	8.61	21	6.28
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	19.1	0.685	0.975	4.23	0.957
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	69.9	2.45	4.28	15.8	2.67
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	61.6	2.27	3.28	13.8	2.46
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	3740	90.5	2130	187	219

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SDG: 100422-73
 Job: D_MOUCHEL_ELE-102
 Client Reference: 21.4.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 82119

TPH CWG (W)

Results Legend		Customer Sample Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003	
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00	
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010	
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73	
		Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197	
Component	LOD/Units	Method						
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	2940	1840	4970	1280	1230	
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	17800	3630	23100	1270	6470	
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	20800	5470	28100	2550	7690	

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SDG: 100422-73
 Job: D_MOUCHEL_ELE-102
 Client Reference: 21.4.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 82119

VOC MS (W)

Results Legend		Customer Sample Ref.	A11 EW003				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.00 - 2.50				
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)				
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010				
*	subcontracted test.	Date Received	22/04/2010				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-73				
		Lab Sample No.(s)	1436330				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	117				
Toluene-d8**	%	TM208	96				
4-Bromofluorobenzene**	%	TM208	100				
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3	#			
Chloromethane	<1.7 µg/l	TM208	<1.7	#			
Vinyl chloride	<1.2 µg/l	TM208	<1.2	#			
Bromomethane	<2 µg/l	TM208	<2	#			
Chloroethane	<2.5 µg/l	TM208	<2.5	#			
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	#			
Carbon disulphide	<1.3 µg/l	TM208	<1.3	#			
Dichloromethane	<3.7 µg/l	TM208	<3.7	#			
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	#			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	#			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	#			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	#			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	#			
Bromochloromethane	<1.9 µg/l	TM208	<1.9	#			
Chloroform	<1.8 µg/l	TM208	<1.8	#			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	#			
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	#			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	#			
Benzene	<1.3 µg/l	TM208	47.5	#			
Trichloroethene	<2.5 µg/l	TM208	<2.5	#			
1,2-Dichloropropane	<3 µg/l	TM208	<3	#			
Dibromomethane	<2.7 µg/l	TM208	<2.7	#			
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	#			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	#			
Toluene	<1.4 µg/l	TM208	61.6	#			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	#			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	#			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	#			
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	#			
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	#			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	#			
Chlorobenzene	<3.5 µg/l	TM208	<3.5	#			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	#			
Ethylbenzene	<2.5 µg/l	TM208	3.44	#			

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SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Reference: 21.4.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

VOC MS (W)

Results Legend		Customer Sample Ref.	A11 EW003				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.		Depth (m)	1.00 - 2.50			
diss.filt	Dissolved / filtered sample.		Sample Type	Water(GW/SW)			
tot.unfilt	Total / unfiltered sample.		Date Sampled	21/04/2010			
*	subcontracted test.		Date Received	22/04/2010			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		SDG Ref	100422-73			
			Lab Sample No.(s)	1436330			
Component	LOD/Units	Method					
m,p-Xylene	<2.5 µg/l	TM208	22.9	#			
o-Xylene	<1.7 µg/l	TM208	40.5	#			
Styrene	<1.2 µg/l	TM208	<1.2	#			
Bromoform	<3 µg/l	TM208	<3	#			
Isopropylbenzene	<1.4 µg/l	TM208	<1.4	#			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	#			
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	#			
Bromobenzene	<2 µg/l	TM208	<2	#			
Propylbenzene	<2.6 µg/l	TM208	<2.6	#			
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	#			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	11.3	#			
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	#			
tert-Butylbenzene	<2 µg/l	TM208	<2	#			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	3.77	#			
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	#			
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6	#			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	#			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	#			
n-Butylbenzene	<2 µg/l	TM208	<2	#			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	#			
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	#			
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	#			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	#			
Naphthalene	<3.5 µg/l	TM208	<3.5	#			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	#			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	#			

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Table of Results - Appendix

SDG Number : 100422-73

Client : Mouchel

Client Ref : 21.4.10

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978 ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

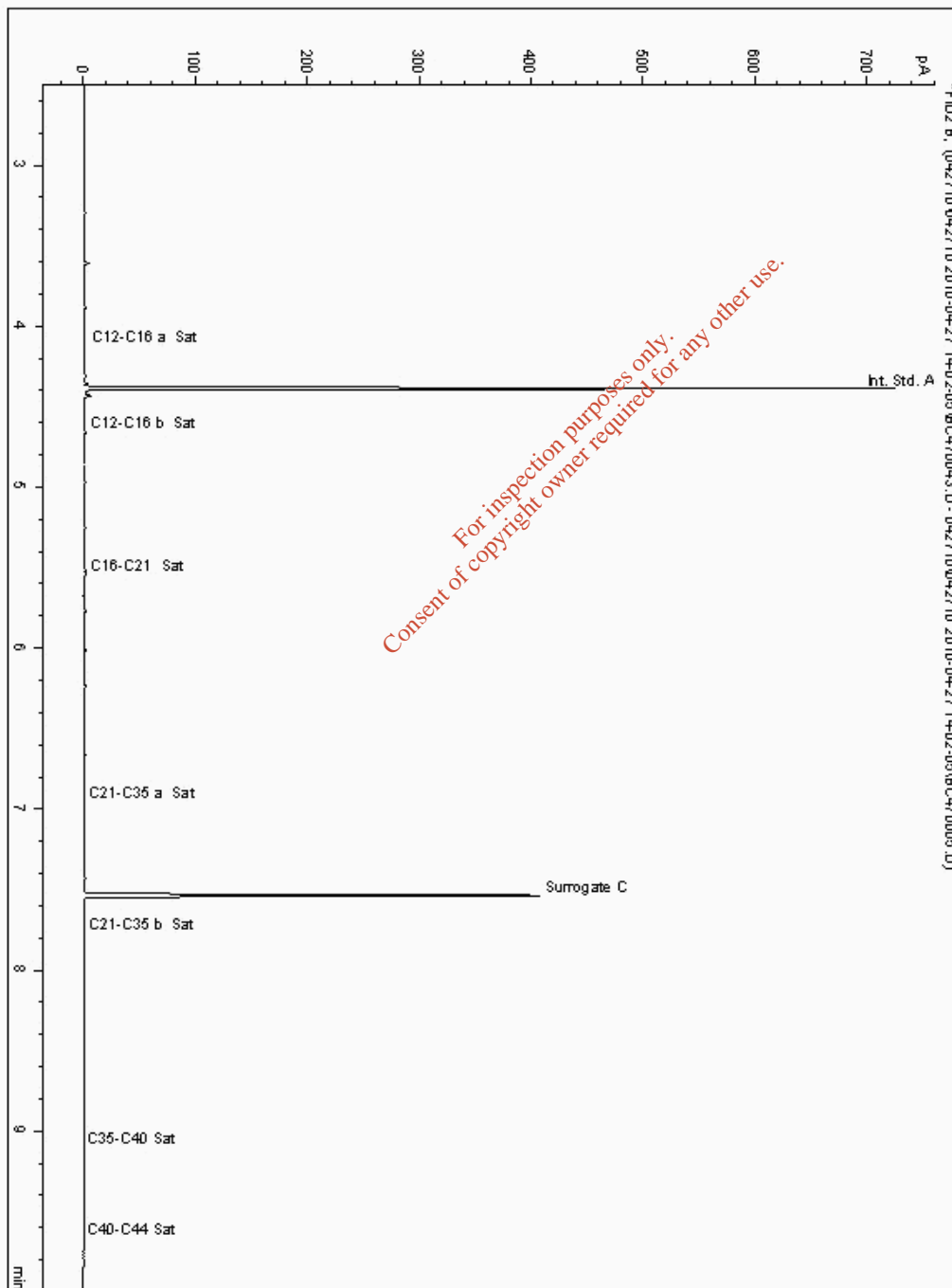
Chromatogram

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

Sample No 1439400
Sample ID E8
Depth 1.50 - 6.00

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

Sample Identity: 1560247-1439400
Date Acquired : 28/04/10 02:57:33
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

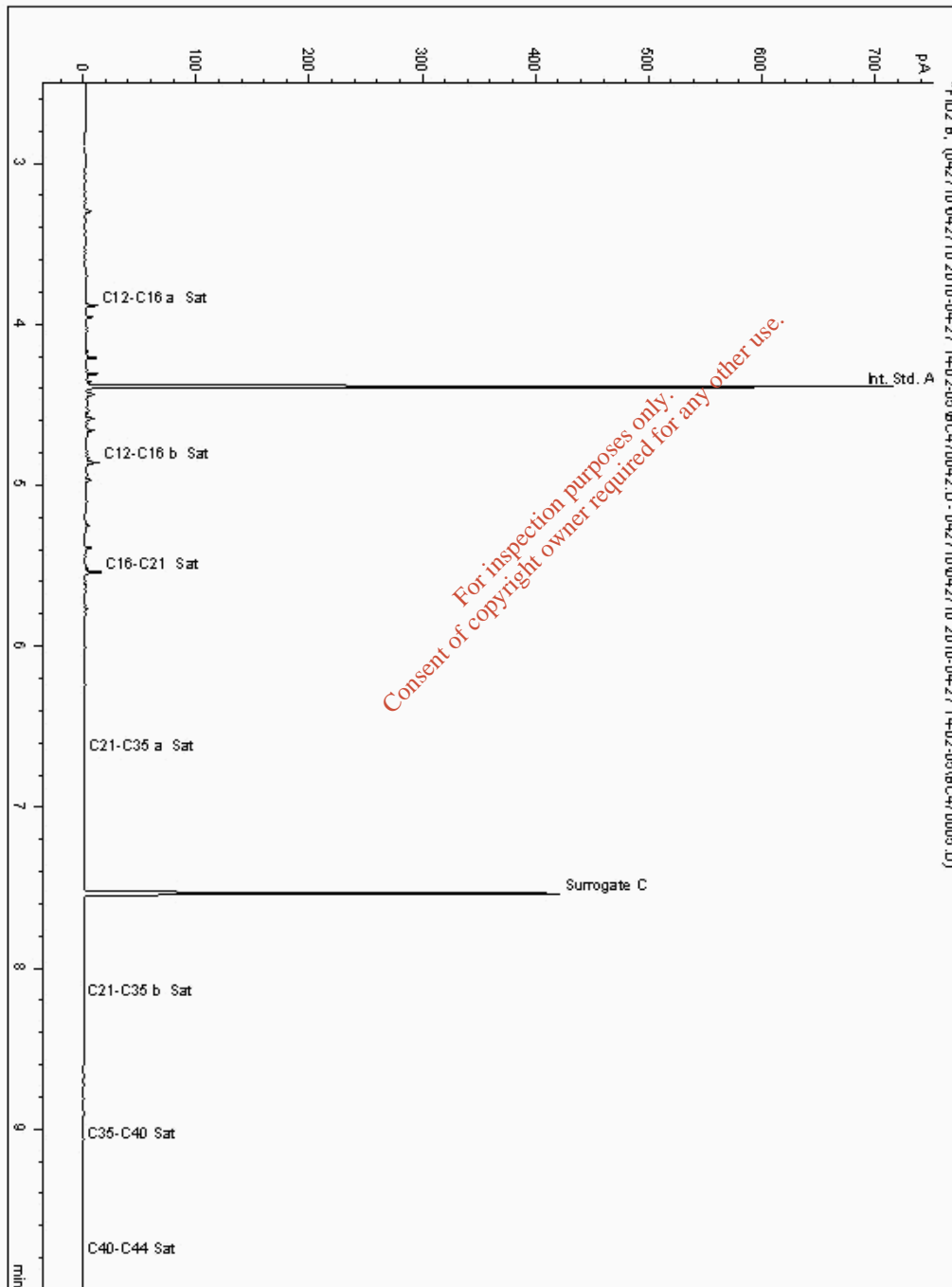
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439437
Sample ID C11
Depth 1.50 - 2.50

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

Sample Identity: 1560262-1439437
Date Acquired : 28/04/10 02:38:45
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

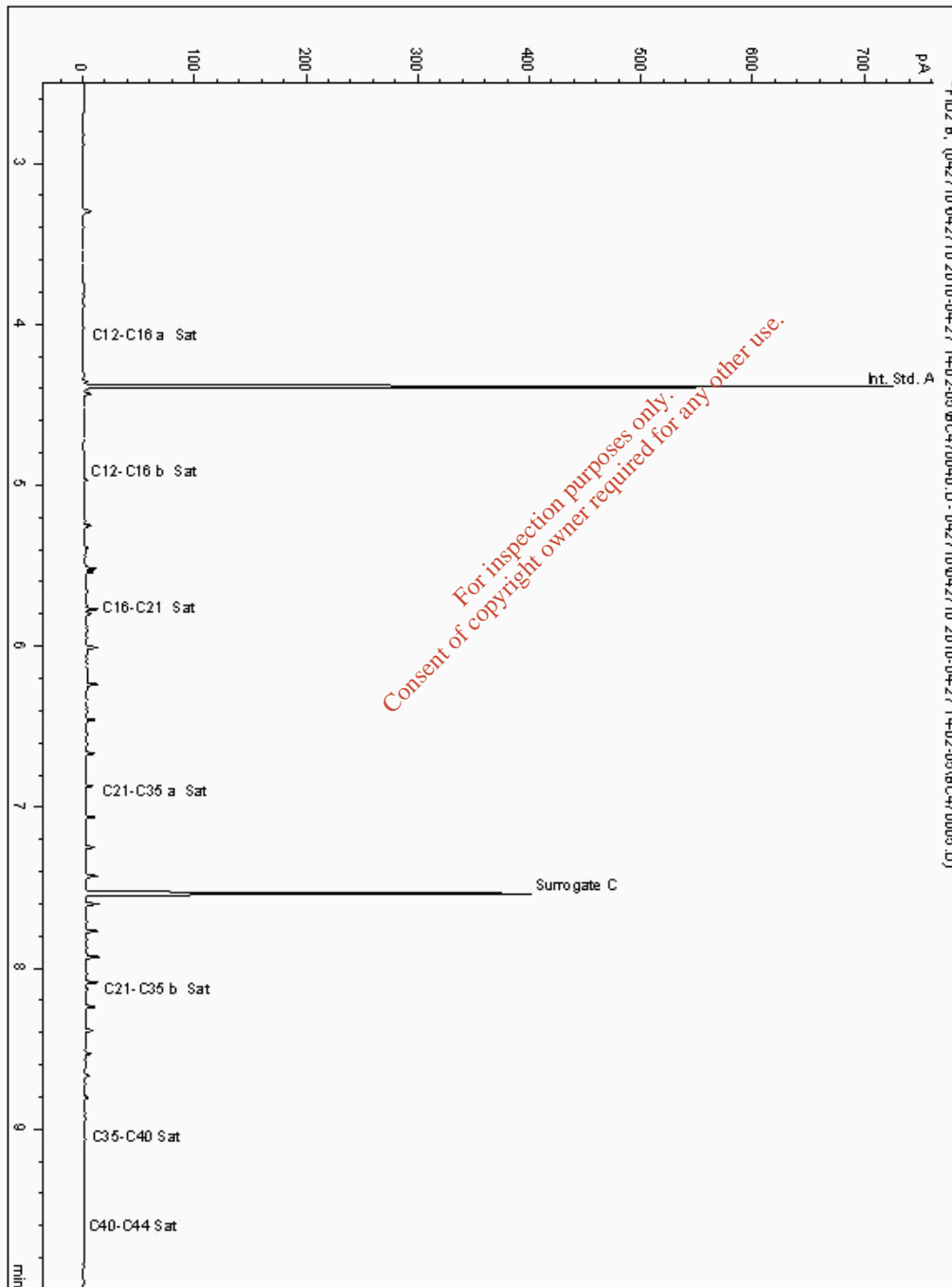
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439475
Sample ID F11
Depth 1.00 - 4.00

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

Sample Identity: 1560292-1439475
Date Acquired : 28/04/10 02:05:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

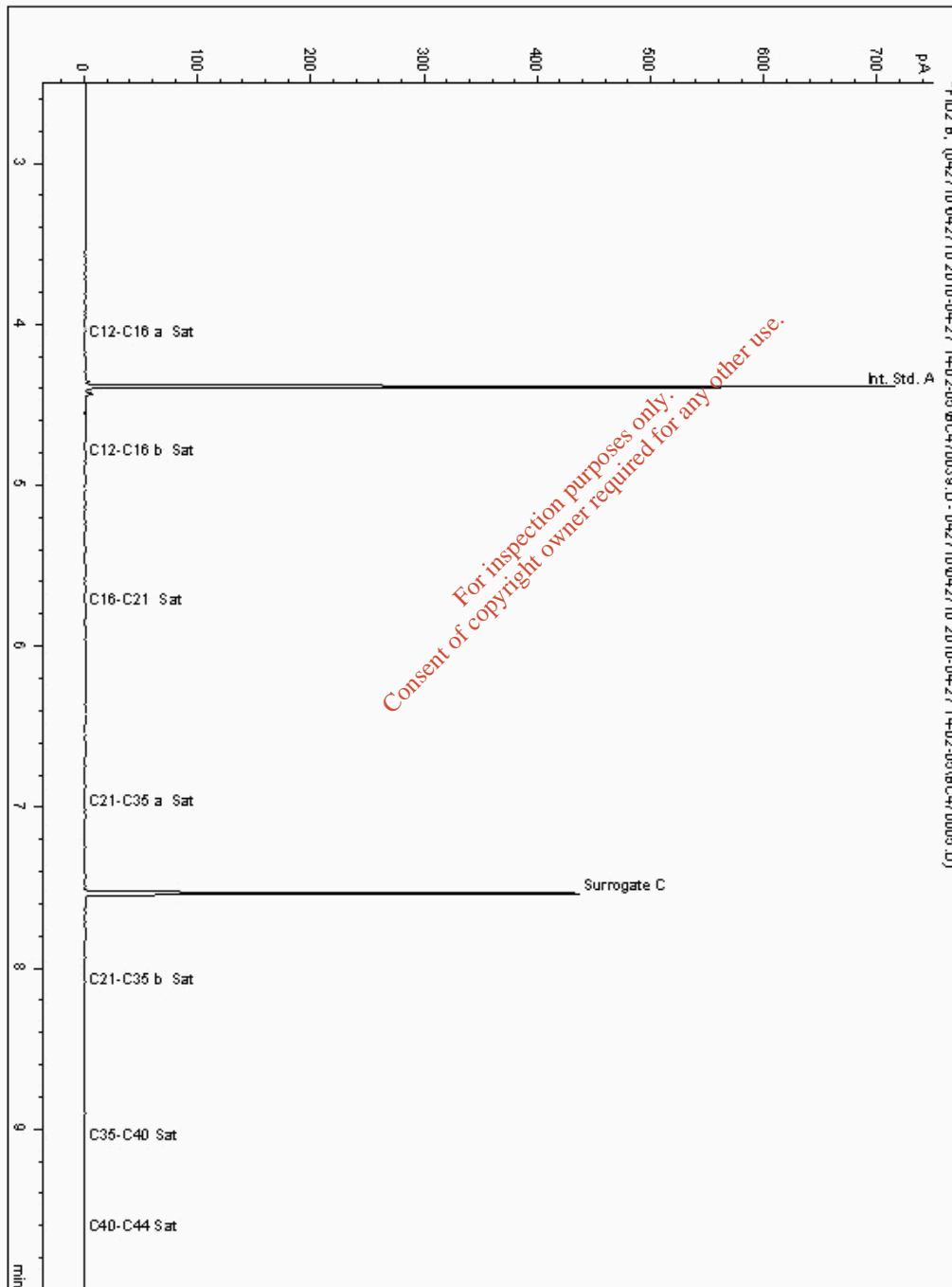
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439510
Sample ID G8
Depth 1.00 - 2.00

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

Sample Identity: 1560277-1439510
Date Acquired : 28/04/10 01:47:05
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

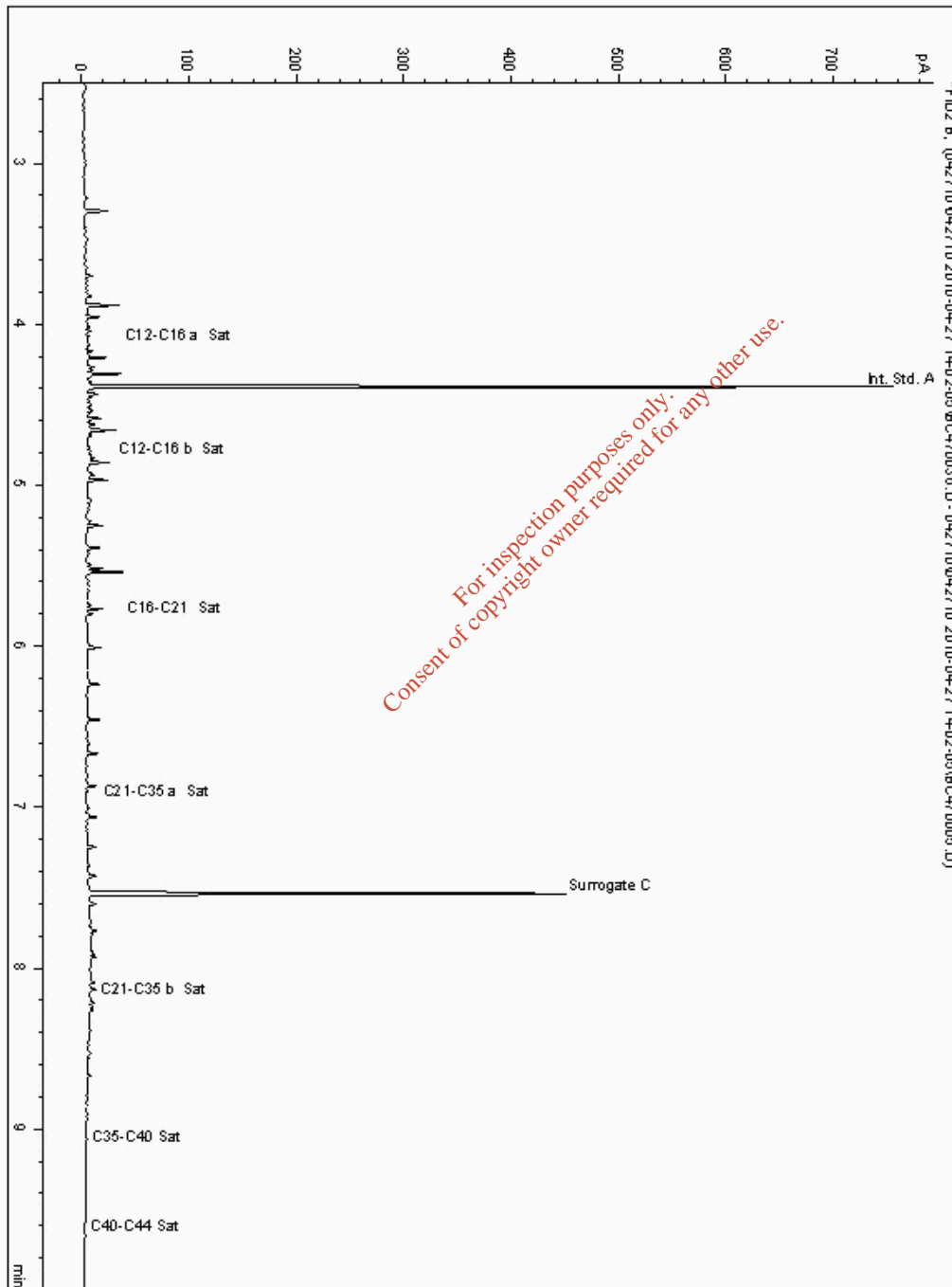
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439526
Sample ID A11
Depth 1.00 - 2.50

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

Sample Identity: 1560307-1439526
Date Acquired : 28/04/10 01:00:34
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

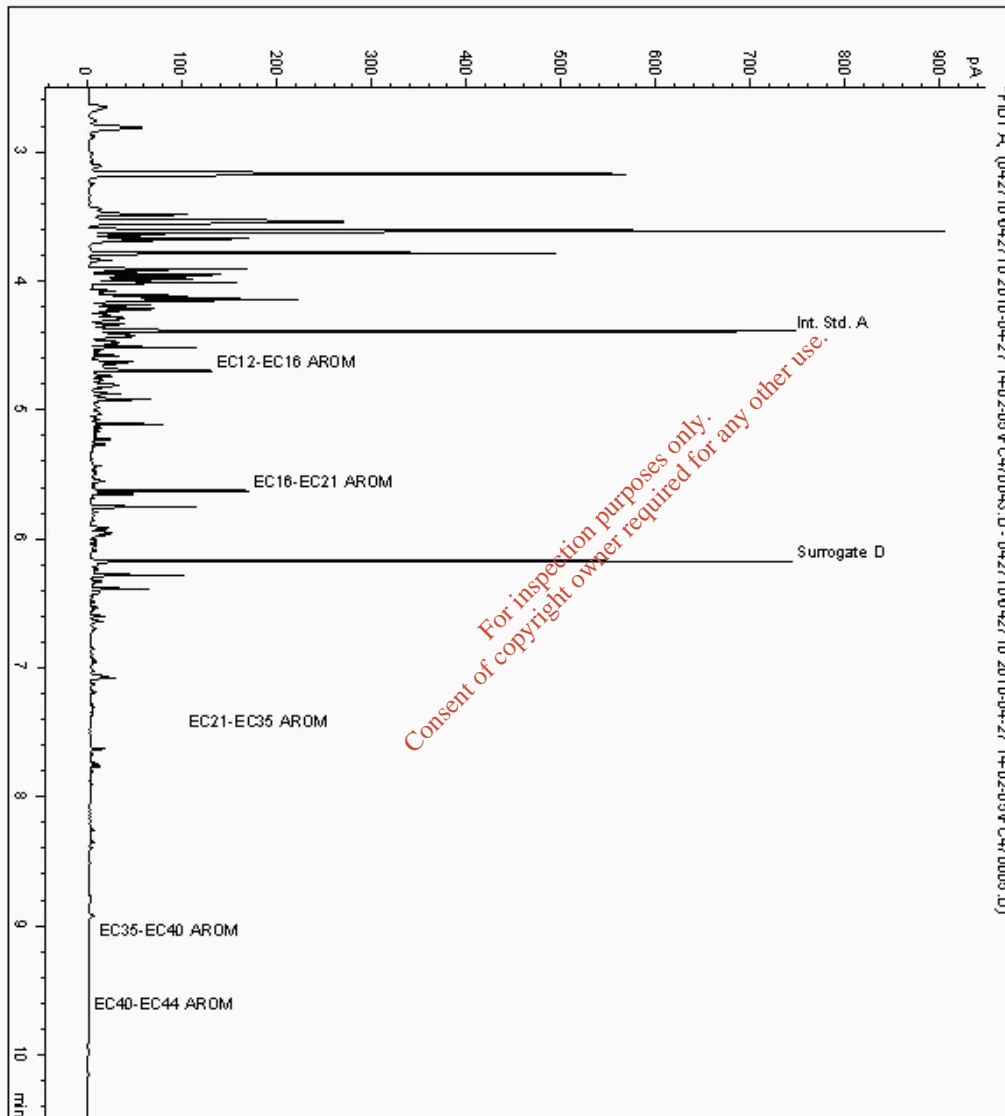
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439400
Sample ID E8
Depth 1.50 - 6.00

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

Sample Identity: 1560248-1439400
Date Acquired : 28/04/10 02:57:33
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

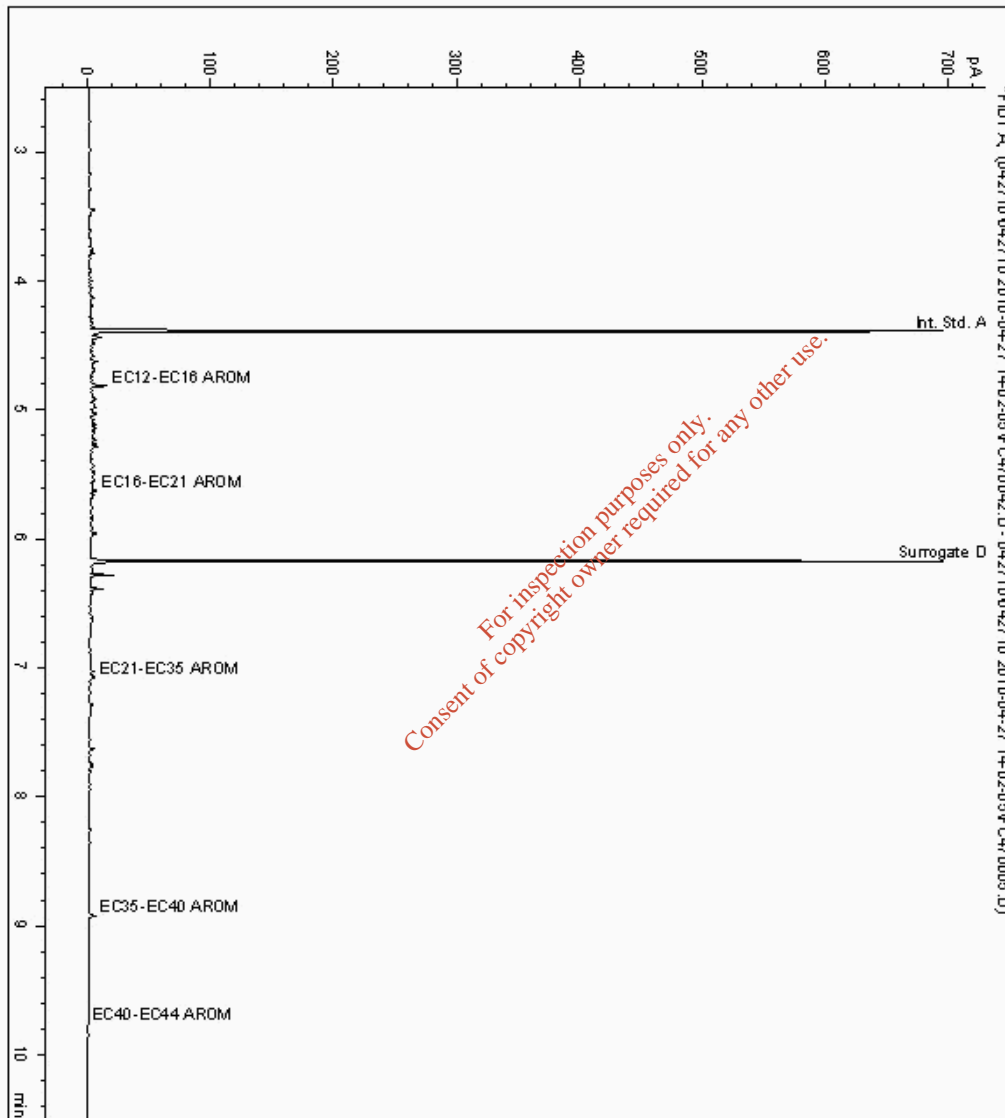
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439437
Sample ID C11
Depth 1.50 - 2.50

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

Sample Identity: 1560263-1439437
Date Acquired : 28/04/10 02:38:45
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

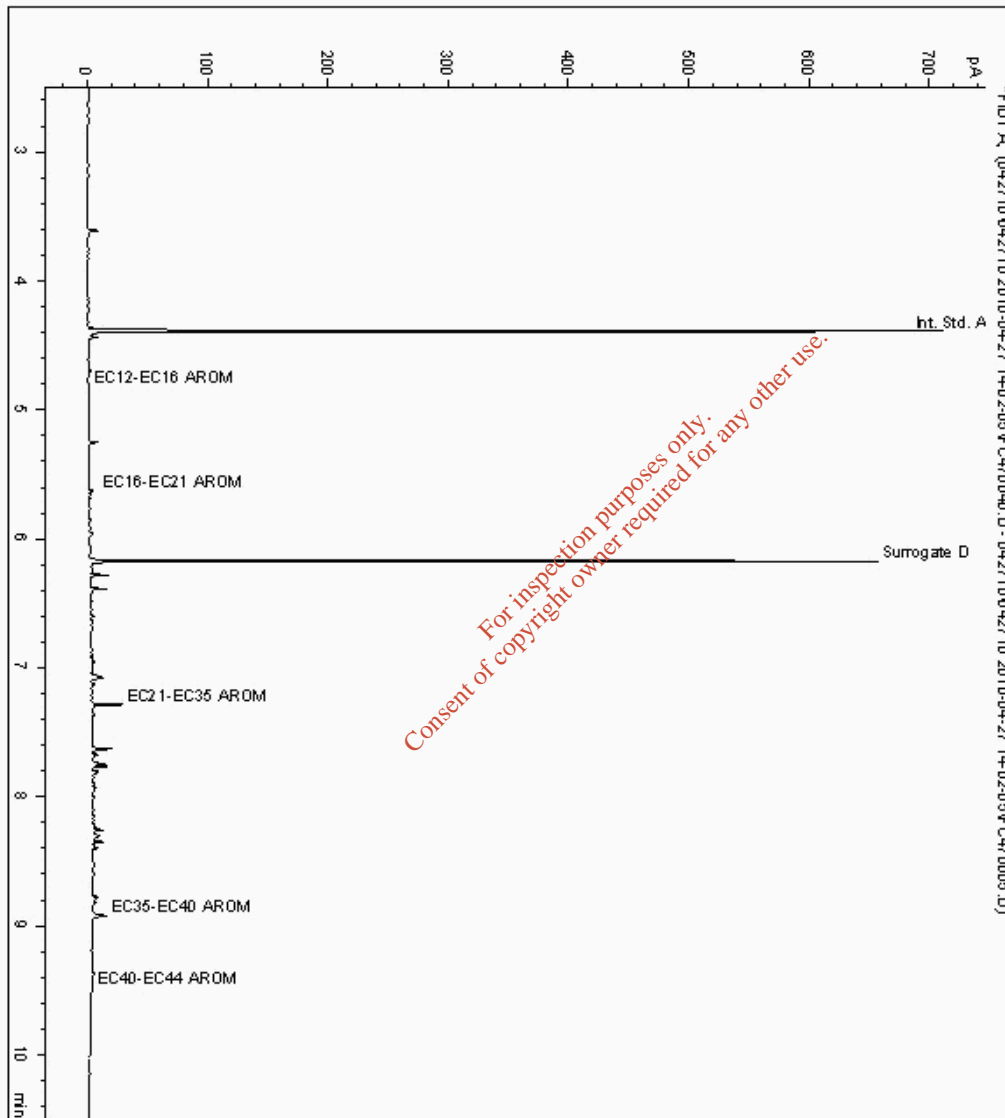
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439475
Sample ID F11
Depth 1.00 - 4.00

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

Sample Identity: 1560293-1439475
Date Acquired : 28/04/10 02:05:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

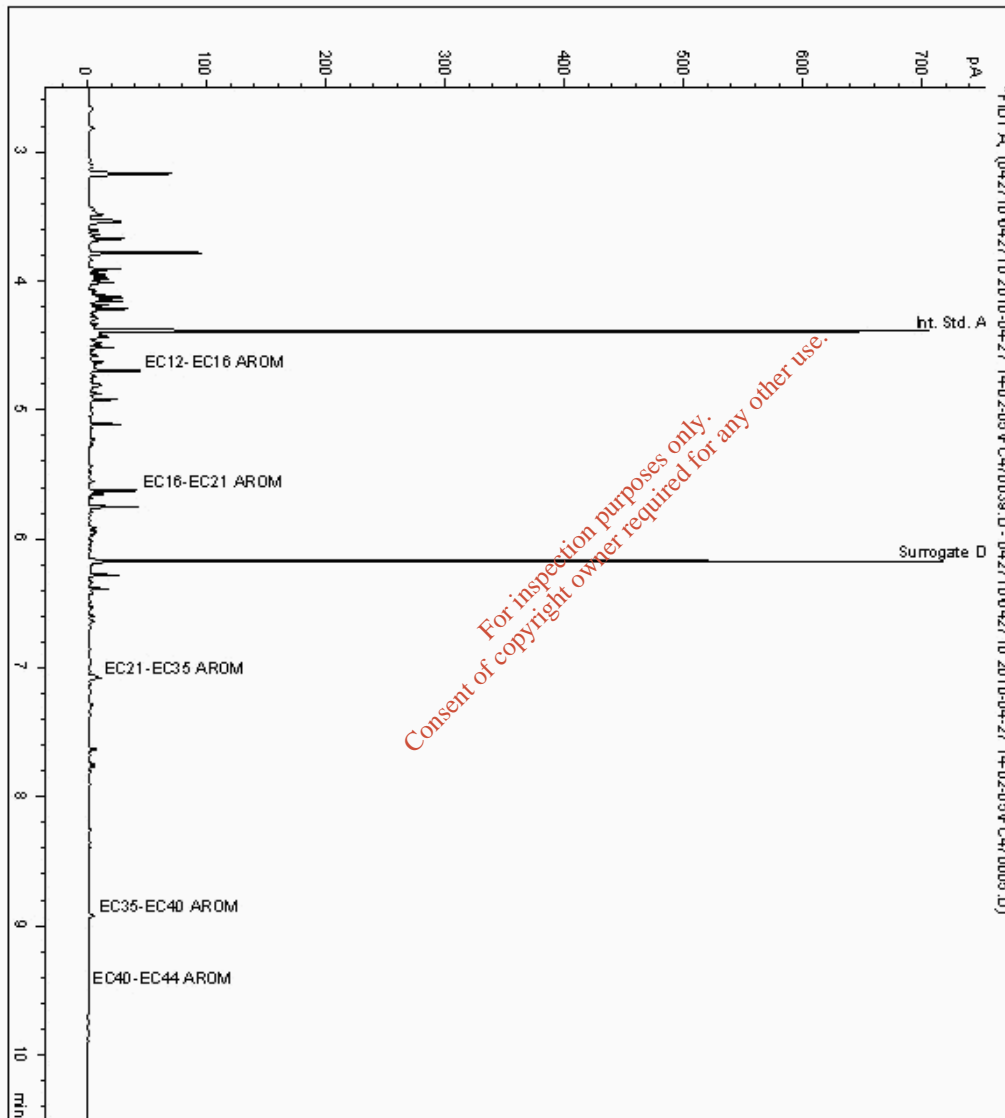
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439510
Sample ID G8
Depth 1.00 - 2.00

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

Sample Identity: 1560278-1439510
Date Acquired : 28/04/10 01:47:05
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

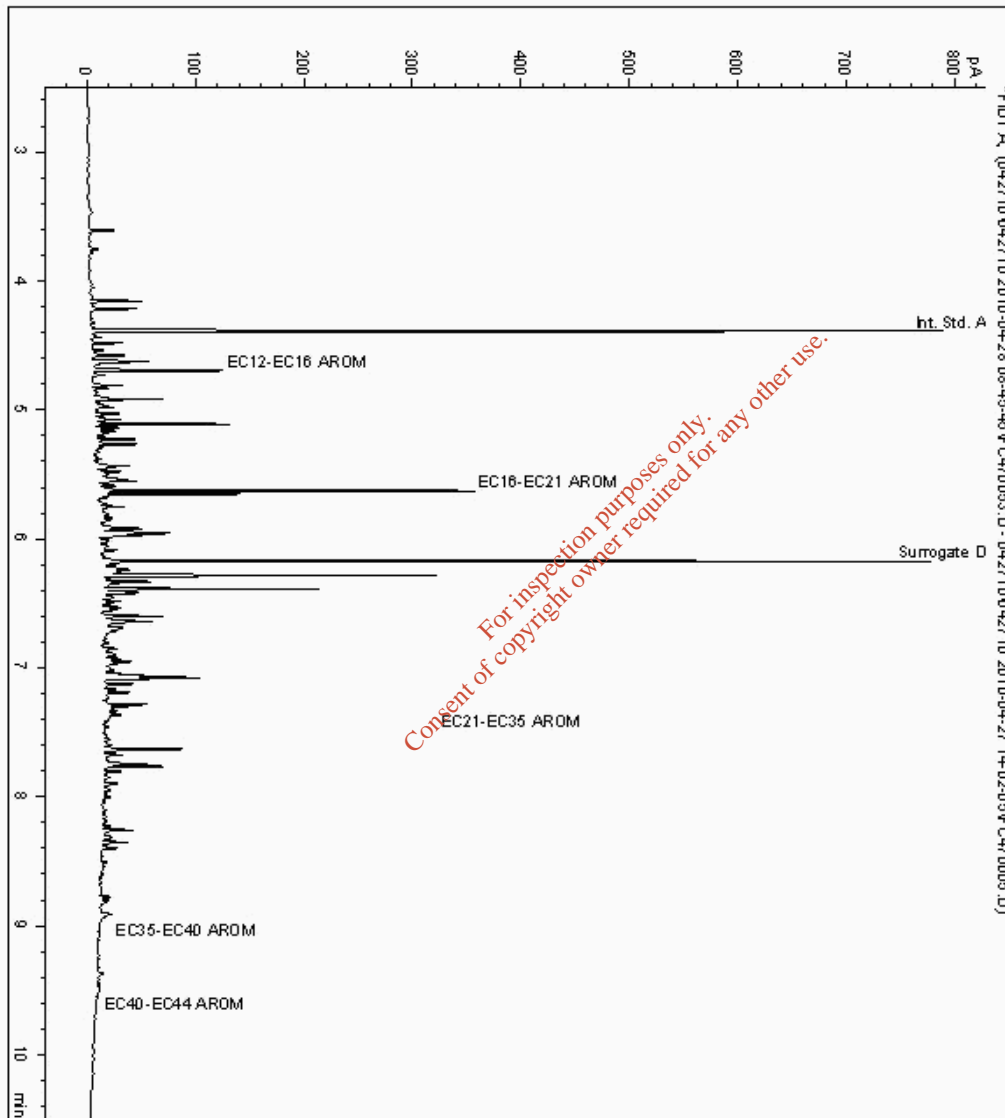
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

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

Sample No 1439526
Sample ID A11
Depth 1.00 - 2.50

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

Sample Identity: 1560308-1439526
Date Acquired : 28/04/10 08:56:11
Units : ppb
Dilution :
CF : 1
Multiplier : 0.033



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

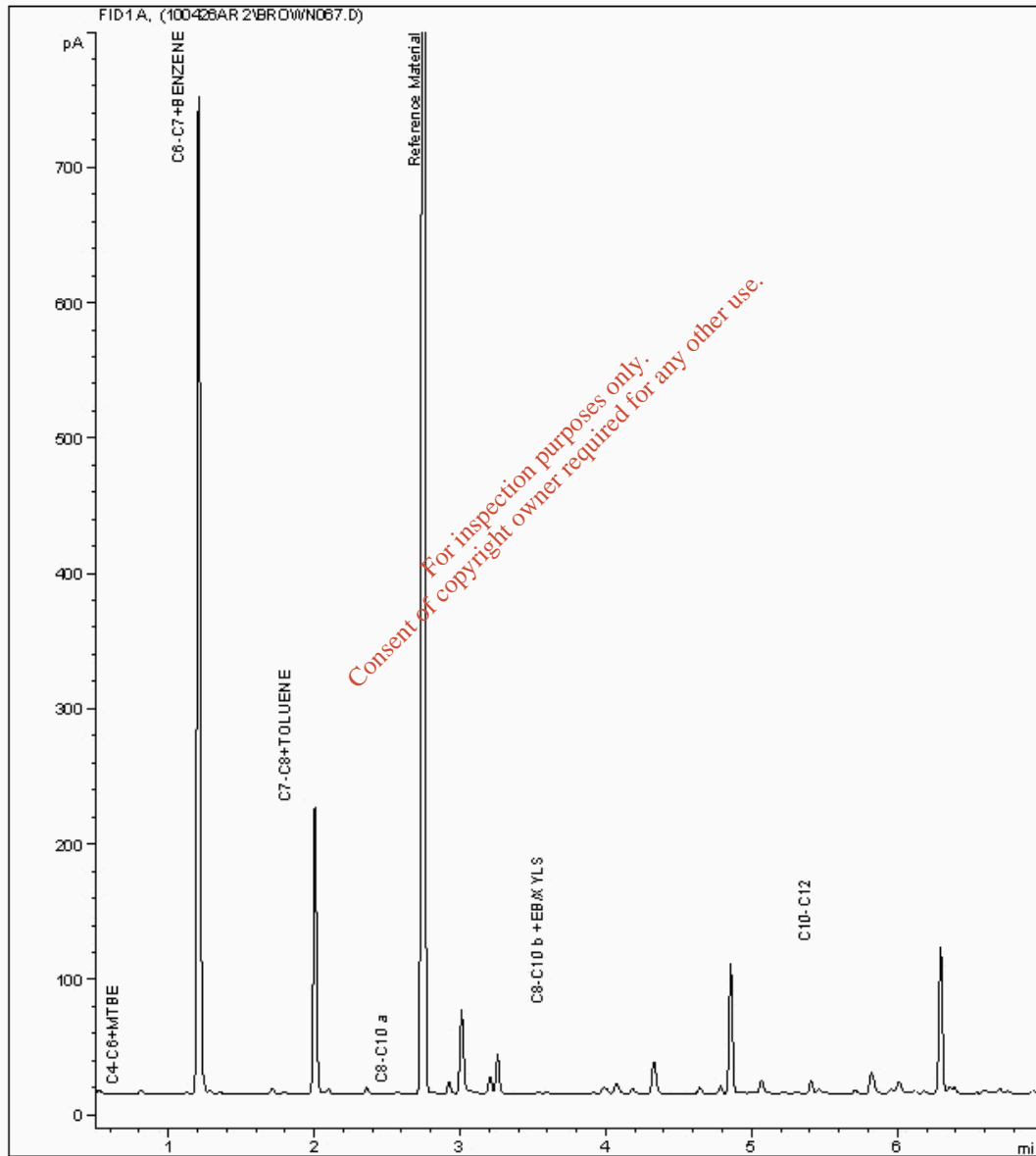
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436123
Sample ID E8
Depth 1.50 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560249-1436123
Date Acquired : 27/04/10 10:12:09
Units : ppb
Dilution : 5



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

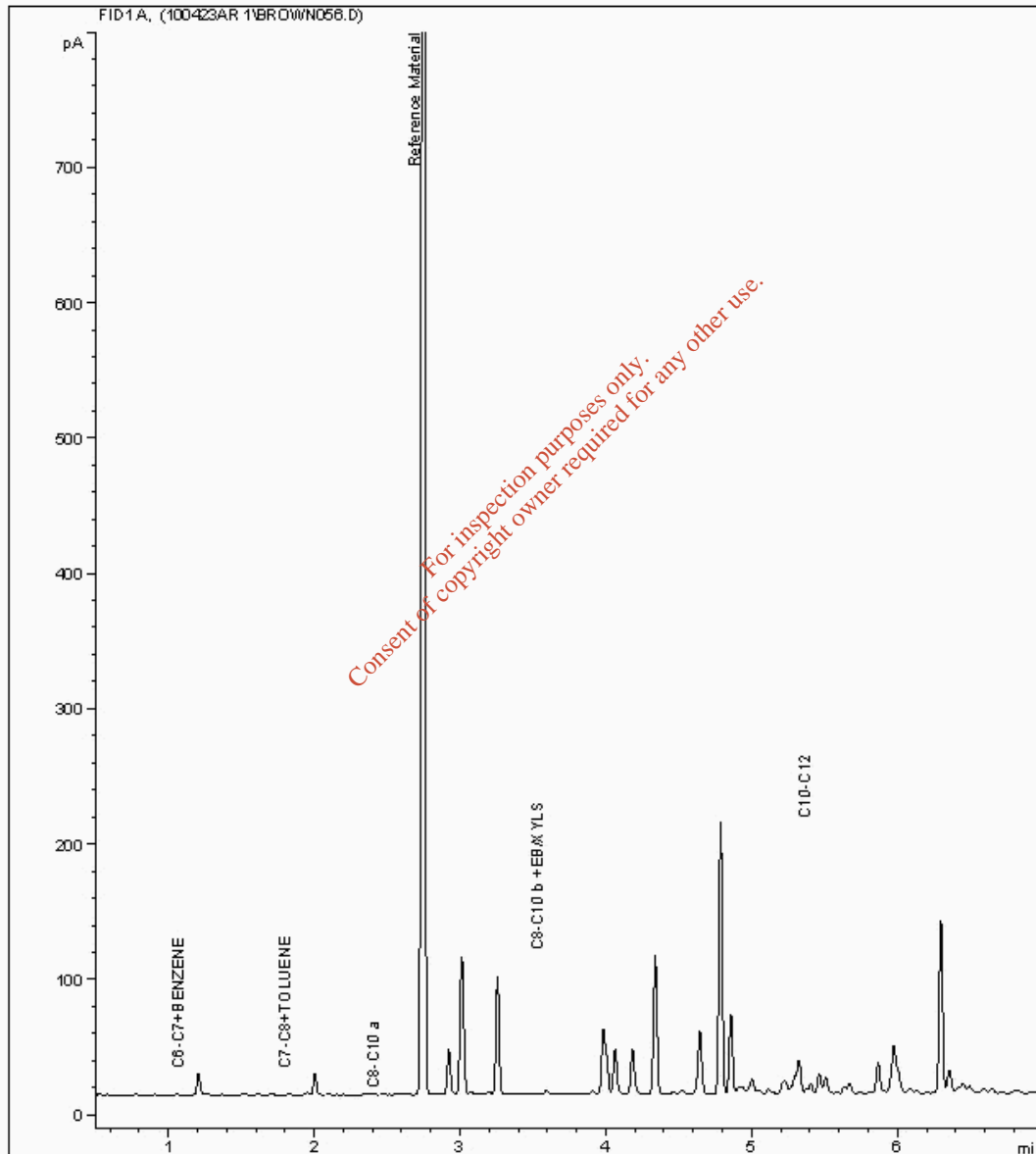
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436154
Sample ID C11
Depth 1.50 - 2.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560264-1436154
Date Acquired : 24/04/10 02:25:37
Units : ppb
Dilution : 1



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

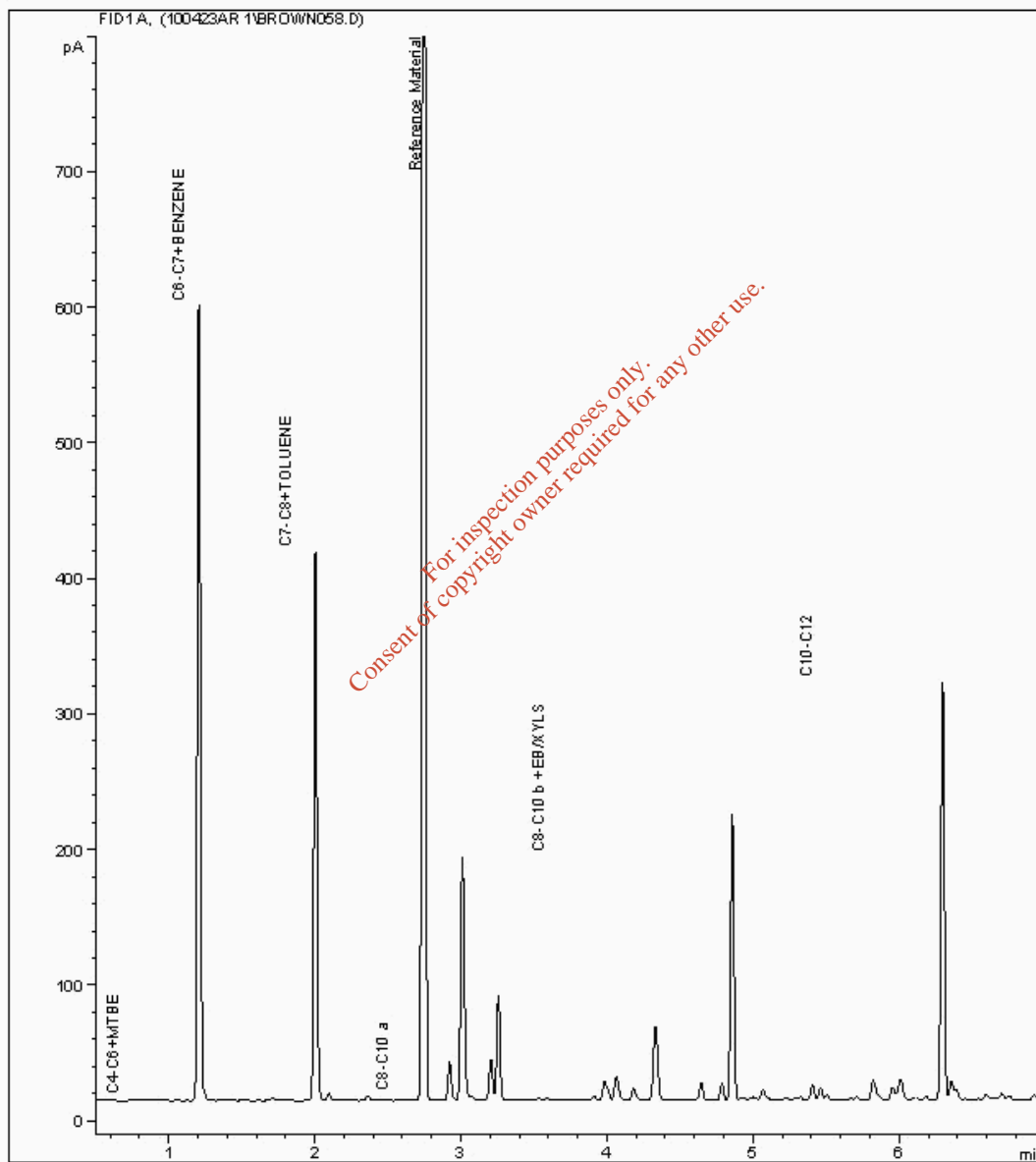
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436195
Sample ID G8
Depth 1.00 - 2.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560279-1436195
Date Acquired : 24/04/10 02:53:45
Units : ppb
Dilution : 1



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

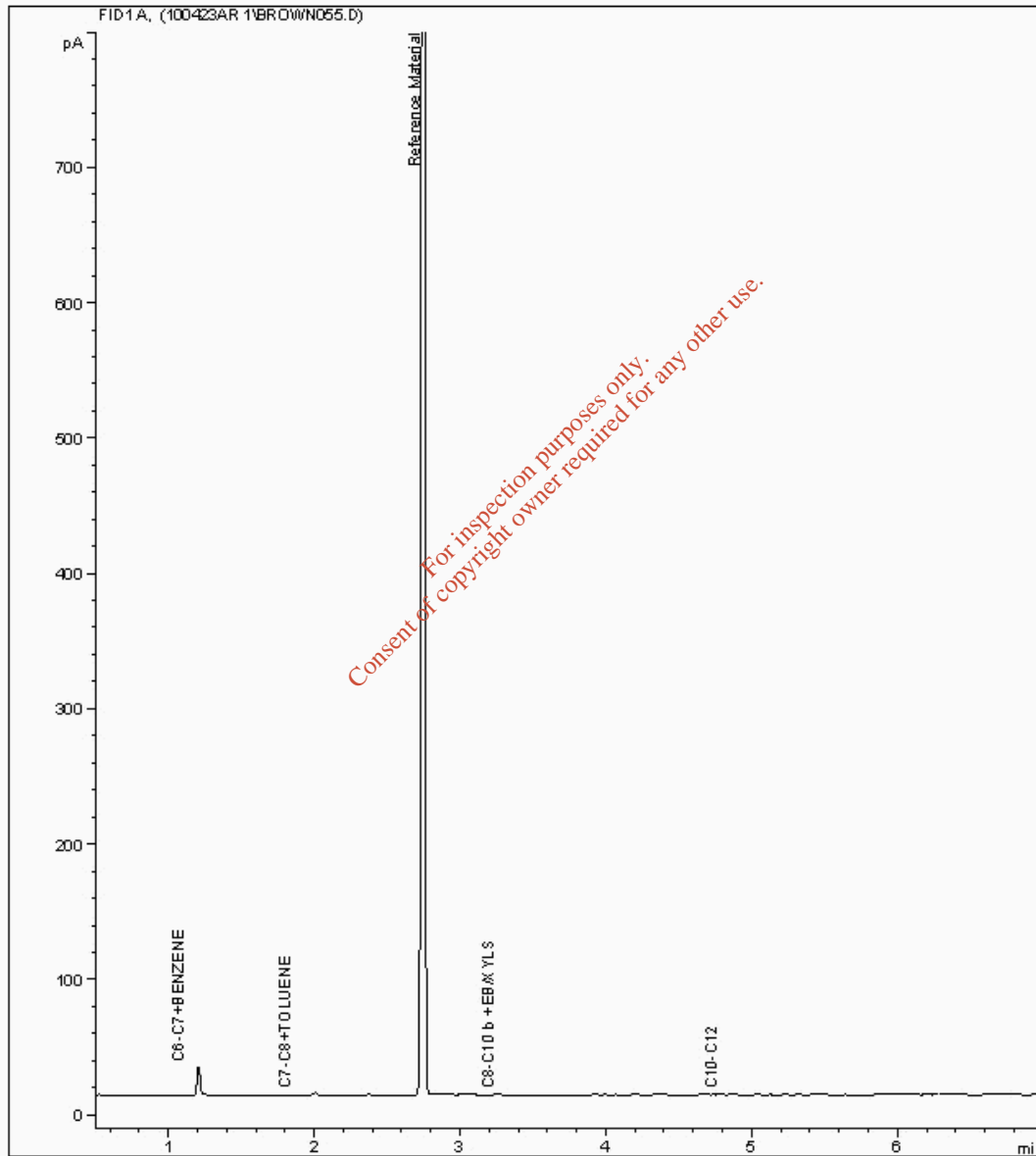
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82119

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436275
Sample ID F11
Depth 1.00 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560294-1436275
Date Acquired : 24/04/10 02:11:36
Units : ppb
Dilution : 1



SDG: 100422-73
Job: D_MOUCHEL_ELE-102
Client Ref.: 21.4.10
Location: Limerick Gasworks

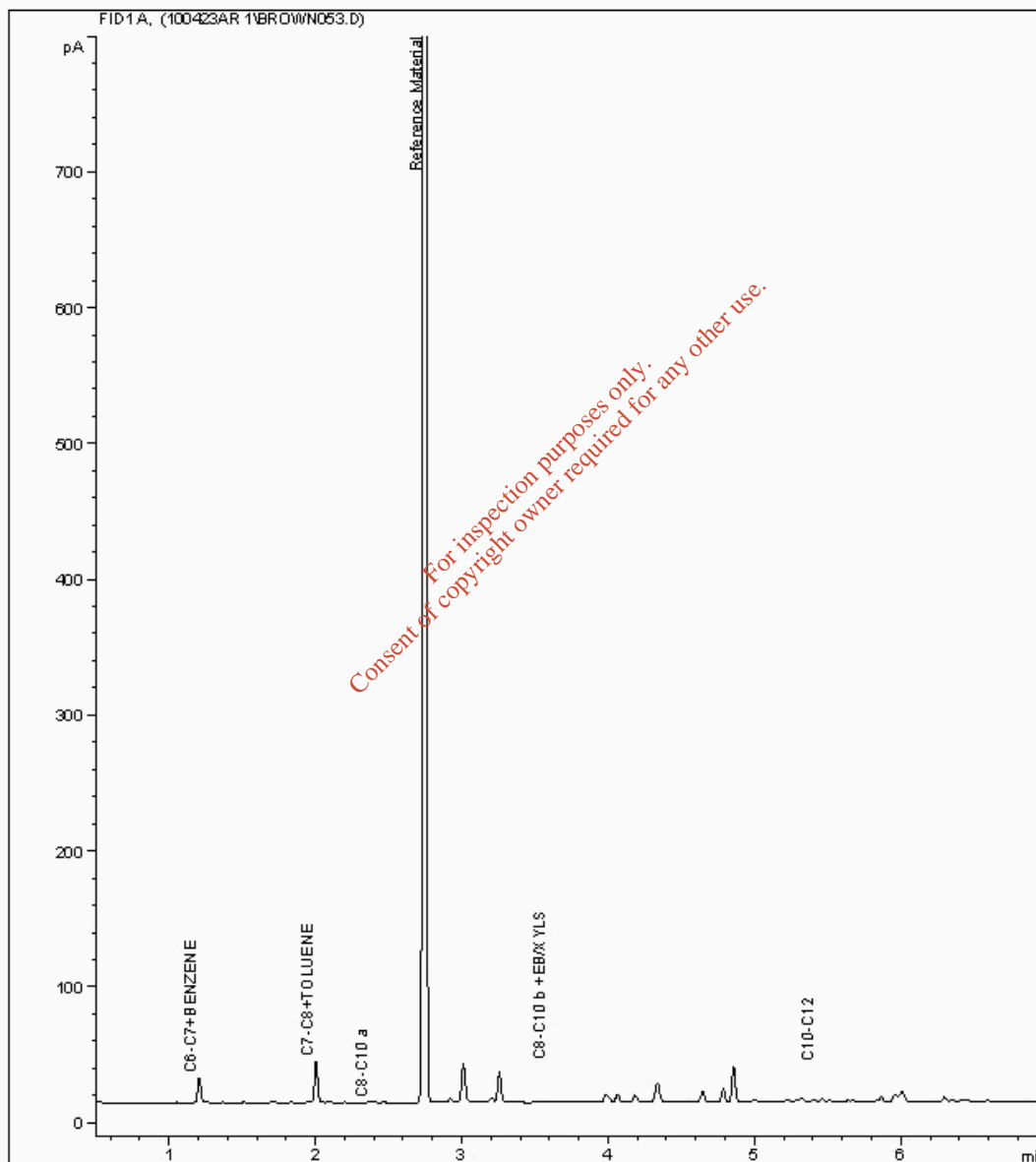
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82119

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436327
Sample ID A11
Depth 1.00 - 2.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560309-1436327
Date Acquired : 24/04/10 01:43:28
Units : ppb
Dilution : 1



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:
NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 30 April 2010
Customer: D_MOUCHEL_ELE-103
Sample Delivery Group (SDG): 100422-76 **Report No.:** 82278
Your Reference: 22/04/10
Location: Limerick Gasworks

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Friday April 30, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Operations Director - Land UK & Ireland



SDG:	100422-76	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-103	Attention:	Verity Sankey
Client Reference:	22/04/10	Order No.:	
Location:	Limerick Gasworks	Report No:	82278

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436660	H12 EW003	1.50 - 4.00	21/04/2010
1436467	J10 EW003	1.00 - 2.00	21/04/2010
1436508	K1 EW003	2.50 - 4.40	21/04/2010
1436325	K5 SW003	1.00 - 5.00	21/04/2010
1436697	M3 EW003	3.50 - 6.00	21/04/2010

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

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 82278

LIQUID

Results Legend	Lab Sample No(s)	1436325	1436467	1436508	1436660	1436697	Total
	Customer Sample Ref.	K5 SW003	J10 EW003	K1 EW003	H12 EW003	M3 EW003	
	Depth (m)	1.00 - 5.00	1.00 - 2.00	2.50 - 4.40	1.50 - 4.00	3.50 - 6.00	
	Container	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	
Ammonium	All	X	X	X	X	X	0 5
Anions by ion Chromatography	All	X					0 1
Anions by Kone (w)	All		X	X	X	X	0 4
Cyanide Comp/Free/Total/Thiocyanate	All	X	X	X	X	X	0 5
Dissolved Metals by ICP-MS	All	X	X	X	X	X	0 5
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	0 5
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	0 5
GRO BTEX MTBE GC (W)	All		X	X	X	X	0 5
Hexavalent Chromium (w)	All	N	X	X	X	X	1 4
Mercury Dissolved	All	X	X	X	X	X	0 5
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	0 5
pH Value	All	X	X	X	X	X	0 5
Phenols by HPLC (W)	All	X	X	X	X	X	0 5
Sulphide	All	X	X	X	X	X	0 5
TPH CWG (W)	All	X	X	X	X	X	0 5
VOC MS (W)	All					X	0 2

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SDG:	100422-76	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-103	Attention:	Verity Sankey
Client Reference:	22/04/10	Order No.:	
Location:	Limerick Gasworks	Report No.:	82278

Test Completion dates

SDG reference: 100422-76

Lab Sample No(s)	1436325	1436467	1436508	1436660	1436697
Customer Sample Ref.	K5	J10	K1	H12	M3
Depth	1.00 - 5.00	1.00 - 2.00	2.50 - 4.40	1.50 - 4.00	3.50 - 6.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by ion Chromatography	26/04/2010				
Anions by Kone (w)		23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	26/04/2010	23/04/2010	23/04/2010	23/04/2010	27/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
EPH CWG (Aromatic) Aqueous GC	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
GRO BTEX MTBE GC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Hexavalent Chromium (w)		23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
pH Value	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Phenols by HPLC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
VOC MS (W)	28/04/2010				26/04/2010

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

Results Legend		Customer Sample Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
diss.filt	Dissolved / filtered sample.		22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
tot.unfilt	Total / unfiltered sample.		100422-76	100422-76	100422-76	100422-76	100422-76
*	subcontracted test.		1436660	1436467	1436508	1436325	1436697
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099				119	
	<0.2 mg/l as N	TM099	8.14 #	1.13 #	6.79 #		0.83 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	10.5 #	1.45 #	8.73 #	153 #	1.07 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	<0.1 #	<0.1 #	0.117 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	3.38 #	5.25 #	2.2 #	121 #	3.8 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	0.118 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	12.8 #	14.8 #	10 #	26.1 #	4.63 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	<0.85 #	2.37 #	5.2 #	5.4 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.091 #	0.042 #	0.321 #	0.836 #	0.146 #
Nickel (diss.filt)	<0.15 µg/l	TM152	4.78 #	6.21 #	8.64 #	33.9 #	5.4 #
Selenium (diss.filt)	<0.39 µg/l	TM152	2.26 #	1.99 #	1.92 #	35.7 #	2.54 #
Zinc (diss.filt)	<0.41 µg/l	TM152	1.31 #	1.18 #	2.49 #	20.3 #	1.37 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.144 #	<0.01 #
Sulphate	3 mg/l	TM184	188 #	58.4 #	733 #		530 #
Sulphate	<0.1 mg/l	TM226				698 #	
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	<0.05 #	0.411 #	9.53 #	0.946 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #		<0.03 #
pH	<1 pH Units	TM256	7.57 #	7.45 #	7.68 #	9.76 #	7.76 #
Resorcinol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<1 #	<0.01 #
Catechol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<1 #	<0.01 #
Phenol	<0.002 mg/l	TM259	<0.002 #	<0.002 #	<0.002 #	368 #	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	645 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	<0.008 #	262 #	<0.008 #
1-Naphthol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<1 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.003 #	<0.3 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	<0.6 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259	<0.025 #	<0.025 #	<0.025 #	1280 #	<0.025 #

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
		Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Component	LOD/Units	Method					
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	186	328	<10	2360	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	142	186	<10	1770	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	685	276	<10	2000	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	1010	790	<10	6130	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	3220	3320	<10	72900	<10

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SDG: 100422-76
 Job: D_MOUCHEL_ELE-103
 Client Reference: 22/04/10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 82278

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
		Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Component	LOD/Units	Method					
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	117	118	<10	40600	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	353	413	<10	12300	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	1740	2000	<10	13900	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	2210	2530	<10	66800	<10

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
		Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Component	LOD/Units	Method					
Benzene	<7 µg/l	TM245	<7 #	13 #	<7 #	16700 #	<7 #
Toluene	<4 µg/l	TM245	<4 #	<4 #	<4 #	5930 #	<4 #
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	<5 #	359 #	<5 #
m,p-Xylene	<8 µg/l	TM245	<8 #	<8 #	<8 #	2220 #	<8 #
o-Xylene	<3 µg/l	TM245	<3 #	11 #	<3 #	922 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245	<10 #	11 #	<10 #	3140 #	<10 #
BTEX, Total	<10 µg/l	TM245	<10 #	24 #	<10 #	26100 #	<10 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<15 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10	489	<10
Aliphatics >C6-C8	<10 µg/l	TM245	<10	<10	<10	4660	<10
Aliphatics >C8-C10	<10 µg/l	TM245	24.5	51.1	<10	1860	27.6
Aliphatics >C10-C12	<10 µg/l	TM245	45.7	124	<10	5990	60.8
Total Aliphatics >C5-C12	<10 µg/l	TM245	70.2	176	<10	13000	88.4
Aromatics >C6-C7	<10 µg/l	TM245	<10	13	<10	16700	<10
Aromatics >C7-C8	<10 µg/l	TM245	<10	<10	<10	5930	<10
Aromatics >EC8-EC10	<10 µg/l	TM245	36.7	87.7	<10	6300	41.4
Aromatics >EC10-EC12	<10 µg/l	TM245	68.6	187	<10	8980	91.2
Total Aromatics >C6-C12	<10 µg/l	TM245	105	287	<10	37900	133

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
		Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
		SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
		Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Component	LOD/Units	Method					
Naphthalene (aq)	<0.1 µg/l	TM178	10.3	6.43	0.108	5960	0.228
Acenaphthene (aq)	<0.015 µg/l	TM178	2.32	2.53	0.0366	129	<0.015
Acenaphthylene (aq)	<0.011 µg/l	TM178	9.78	13.3	0.145	543	0.105
Fluoranthene (aq)	<0.014 µg/l	TM178	53.7	88.9	1.17	471	1.4
Anthracene (aq)	<0.015 µg/l	TM178	7.78	15.7	0.123	245	0.0962
Phenanthrene (aq)	<0.022 µg/l	TM178	18.5	53.8	0.318	794	0.18
Fluorene (aq)	<0.014 µg/l	TM178	5.7	11.1	0.0477	374	0.0315
Chrysene (aq)	<0.013 µg/l	TM178	13.1	23.7	0.59	107	0.892
Pyrene (aq)	<0.015 µg/l	TM178	41.1	61.2	1.21	309	1.25
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	24.5	54.2	1.11	113	1.51
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	32.4	51.9	2.06	105	2.98
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	11.6	18.5	0.681	48.2	0.949
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	28.2	46.2	1.54	79.2	2.23
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	5.12	7.94	0.312	9.6	0.455
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	17.3	17.9	1.31	46.4	1.95
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	15.3	17.9	1.06	34.9	1.56
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	297	391	11.8	9370	14.9

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

TPH CWG (W)

Results Legend		Customer Sample Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003	
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00	
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
		Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010	
		Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010	
		SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76	
		Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697	
Component		LOD/Units						
Total Aliphatics >C5-C35 (aq)		<10 µg/l	TM174					
			1080	966	<10	19100	88.4	
Total Aromatics >C6-C35 (aq)		<10 µg/l	TM174					
			2320	2820	<10	105000	133	
Total Aliphatics & Aromatics >C5-35 (aq)		<10 µg/l	TM174					
			3400	3780	<10	124000	221	

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SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

VOC MS (W)

Results Legend		Customer Sample Ref.	K5 SW003	M3 EW003			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	1.00 - 5.00	3.50 - 6.00			
		Sample Type	Water(GW/SW)	Water(GW/SW)			
		Date Sampled	21/04/2010	21/04/2010			
		Date Received	22/04/2010	22/04/2010			
		SDG Ref	100422-76	100422-76			
		Lab Sample No.(s)	1436325	1436697			
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	36.6	115			
Toluene-d8**	%	TM208	89	98.5			
4-Bromofluorobenzene**	%	TM208	65.1	101			
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3	<1.3			
Chloromethane	<1.7 µg/l	TM208	<1.7	<1.7			
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2			
Bromomethane	<2 µg/l	TM208	<2	<2			
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5			
Trichlorofluoromethane	<1.3 µg/l	TM208	1.82	<1.3			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2			
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3			
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7			
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8			
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9			
Chloroform	<1.8 µg/l	TM208	2.2	<1.8			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	7.07	<1.3			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3			
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3			
Benzene	<1.3 µg/l	TM208	16900	3.94			
Trichloroethene	<2.5 µg/l	TM208	11.3	<2.5			
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3			
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7			
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9			
Toluene	<1.4 µg/l	TM208	5440	<1.4			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2			
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5			
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3			
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3			
Ethylbenzene	<2.5 µg/l	TM208	282	<2.5			

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SDG: 100422-76
 Job: D_MOUCHEL_ELE-103
 Client Reference: 22/04/10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 82278

VOC MS (W)

Results Legend		Customer Sample Ref.	K5 SW003	M3 EW003				
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 5.00	3.50 - 6.00				
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)				
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010				
*	subcontracted test.	Date Received	22/04/2010	22/04/2010				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-76	100422-76				
		Lab Sample No.(s)	1436325	1436697				
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	1620	<2.5	#	#		
o-Xylene	<1.7 µg/l	TM208	722	<1.7	#	#		
Styrene	<1.2 µg/l	TM208	337	<1.2	#	#		
Bromoform	<3 µg/l	TM208	<3	<3	#	#		
Isopropylbenzene	<1.4 µg/l	TM208	11.6	<1.4	#	#		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2	#	#		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	<7.8	#	#		
Bromobenzene	<2 µg/l	TM208	<2	<2	#	#		
Propylbenzene	<2.6 µg/l	TM208	14.5	<2.6	#	#		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	66.5	<1.8	#	#		
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
tert-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	156	<1.7	#	#		
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	<1.7	#	#		
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6	<2.6	#	#		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	<2.7	#	#		
n-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7	#	#		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8	#	#		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	<2.5	#	#		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	#	#		
Naphthalene	<3.5 µg/l	TM208	5950	<3.5	#	#		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	<3.1	#	#		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10	#	#		

Table of Results - Appendix

SDG Number : 100422-76

Client : Mouchel

Client Ref : 22/04/10

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

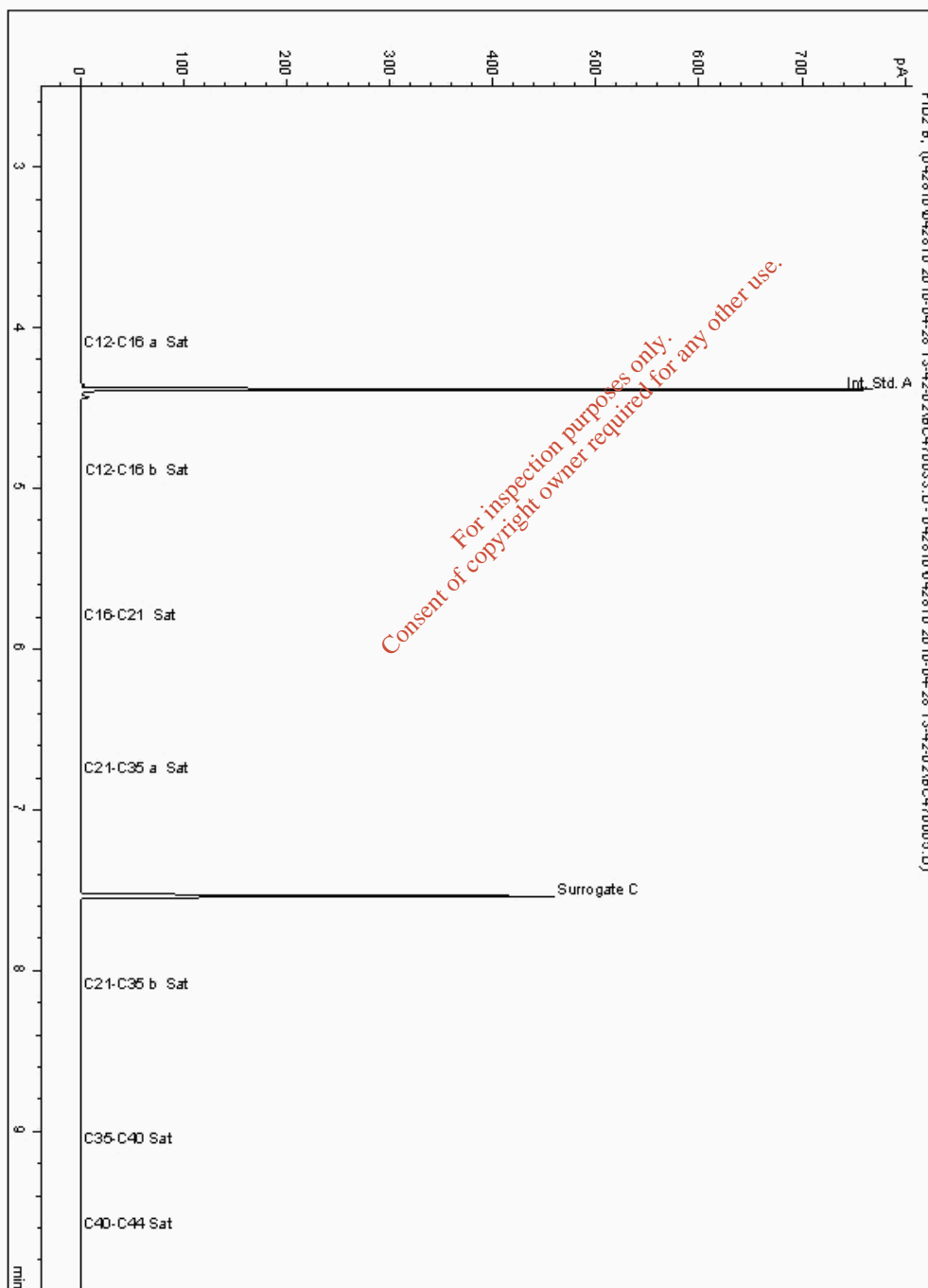
Chromatogram

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

Sample No 1438427
Sample ID K1
Depth 2.50 - 4.40

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

Sample Identity: 1560702-1438427
Date Acquired : 28/04/10 23:46:28
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

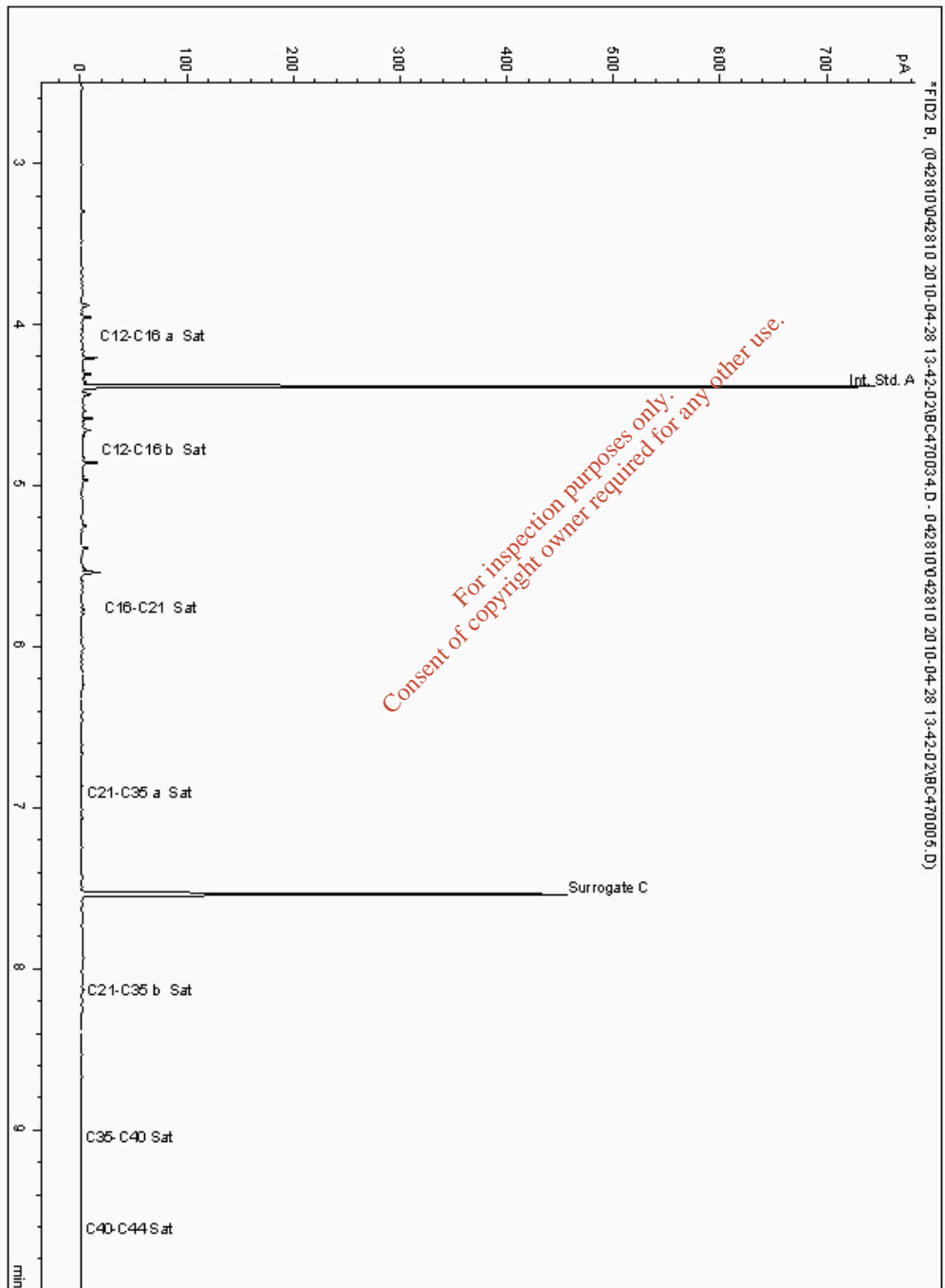
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438451
Sample ID J10
Depth 1.00 - 2.00

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

Sample Identity: 1560681-1438451
Date Acquired : 29/04/10 00:05:16
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

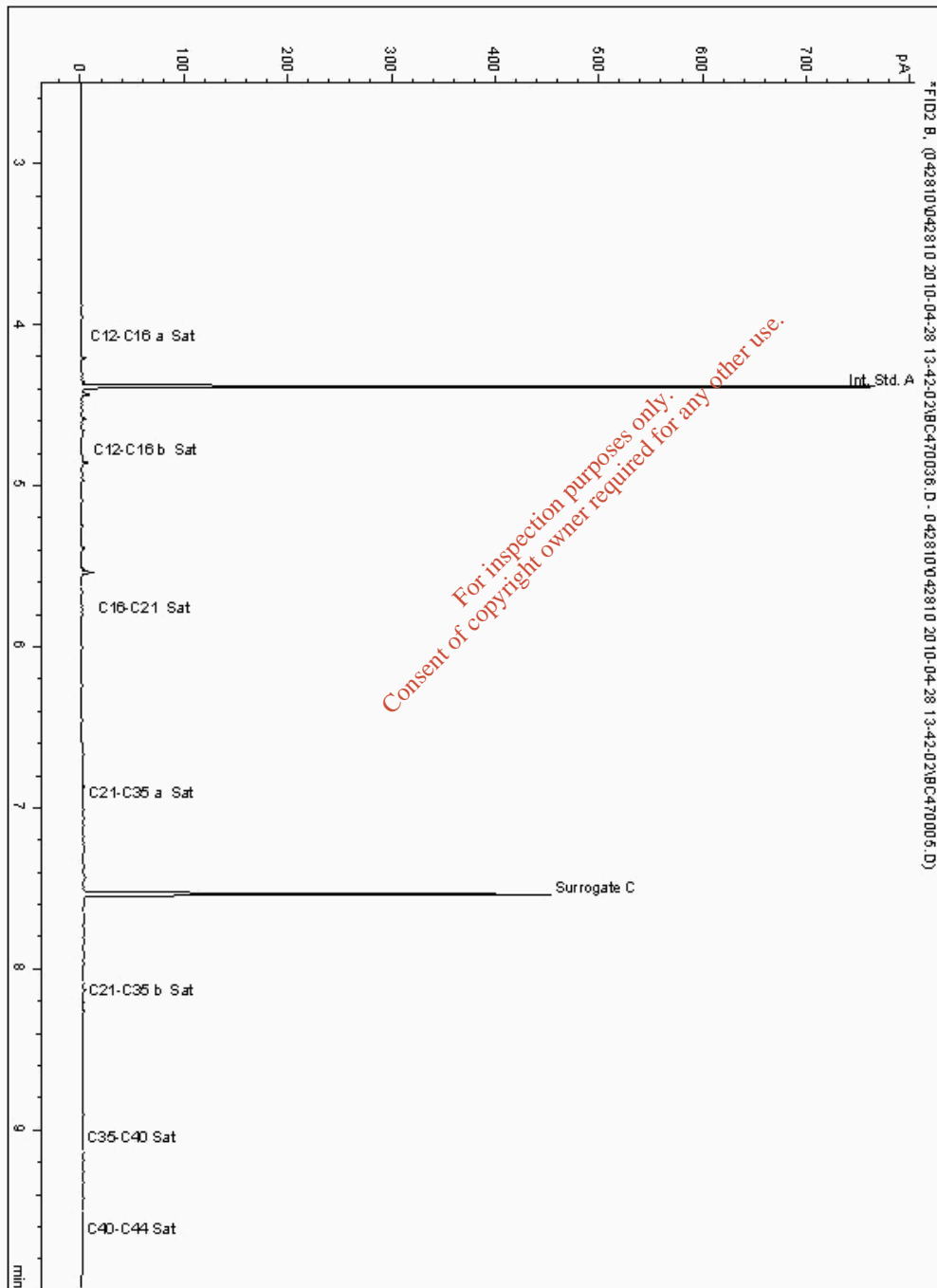
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438479
Sample ID H12
Depth 1.50 - 4.00

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

Sample Identity: 1560717-1438479
Date Acquired : 29/04/10 00:38:16
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

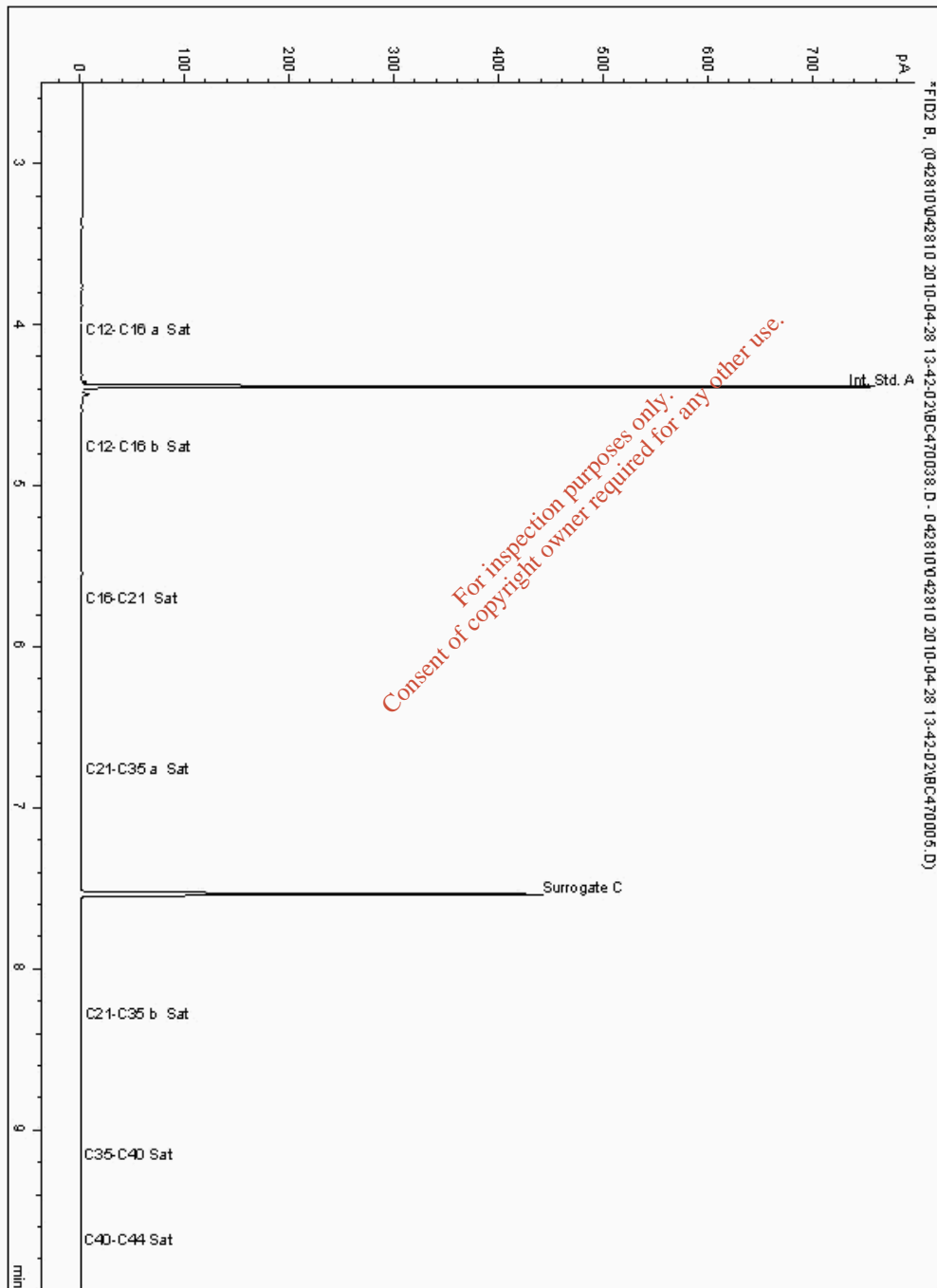
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438505
Sample ID M3
Depth 3.50 - 6.00

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

Sample Identity: 1560732-1438505
Date Acquired : 29/04/10 01:11:04
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

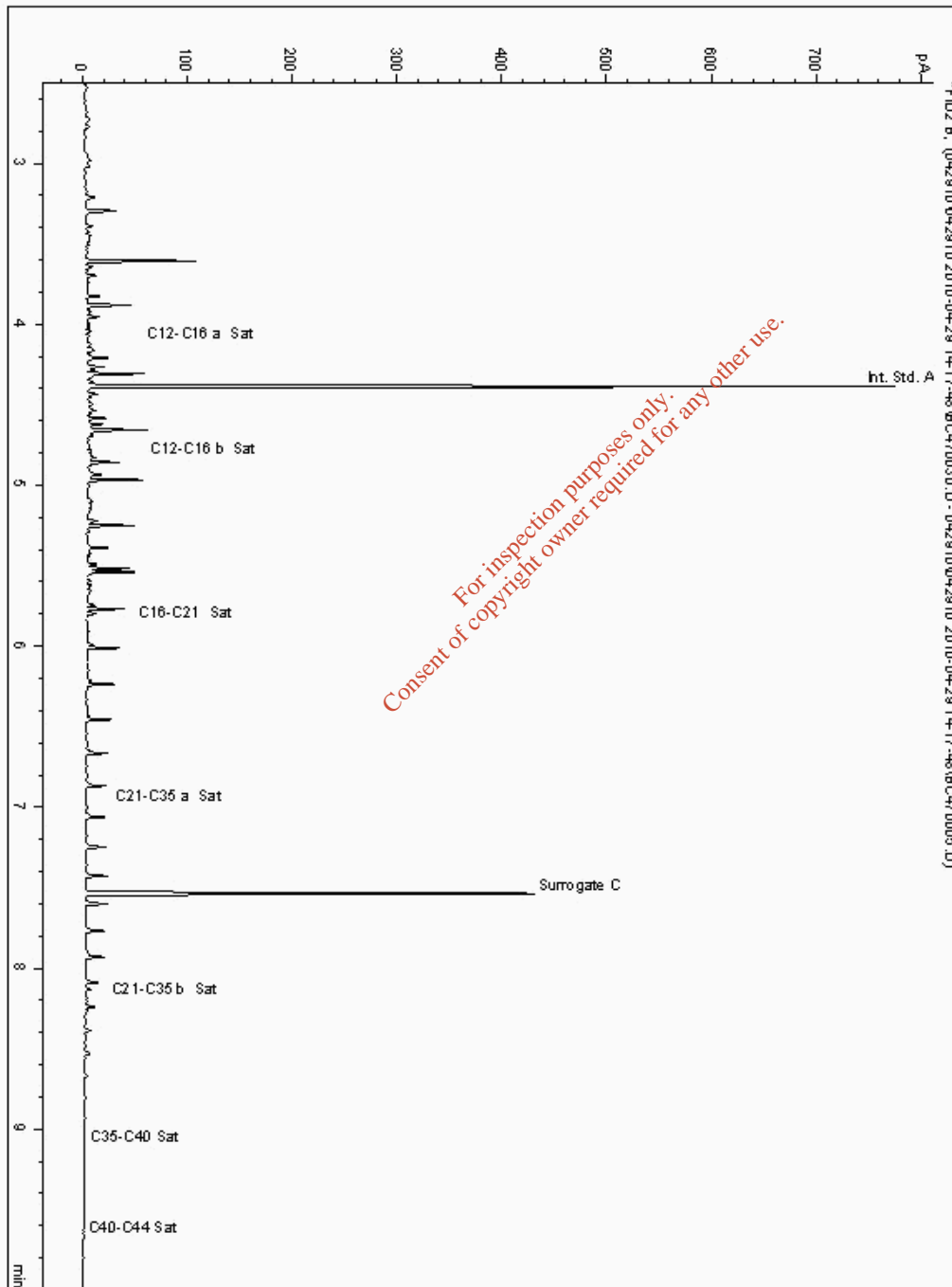
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438715
Sample ID K5
Depth 1.00 - 5.00

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

Sample Identity: 1560661-1438715
Date Acquired : 29/04/10 23:22:03
Units :
Dilution :
CF : 1
Multiplier : 0.033



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

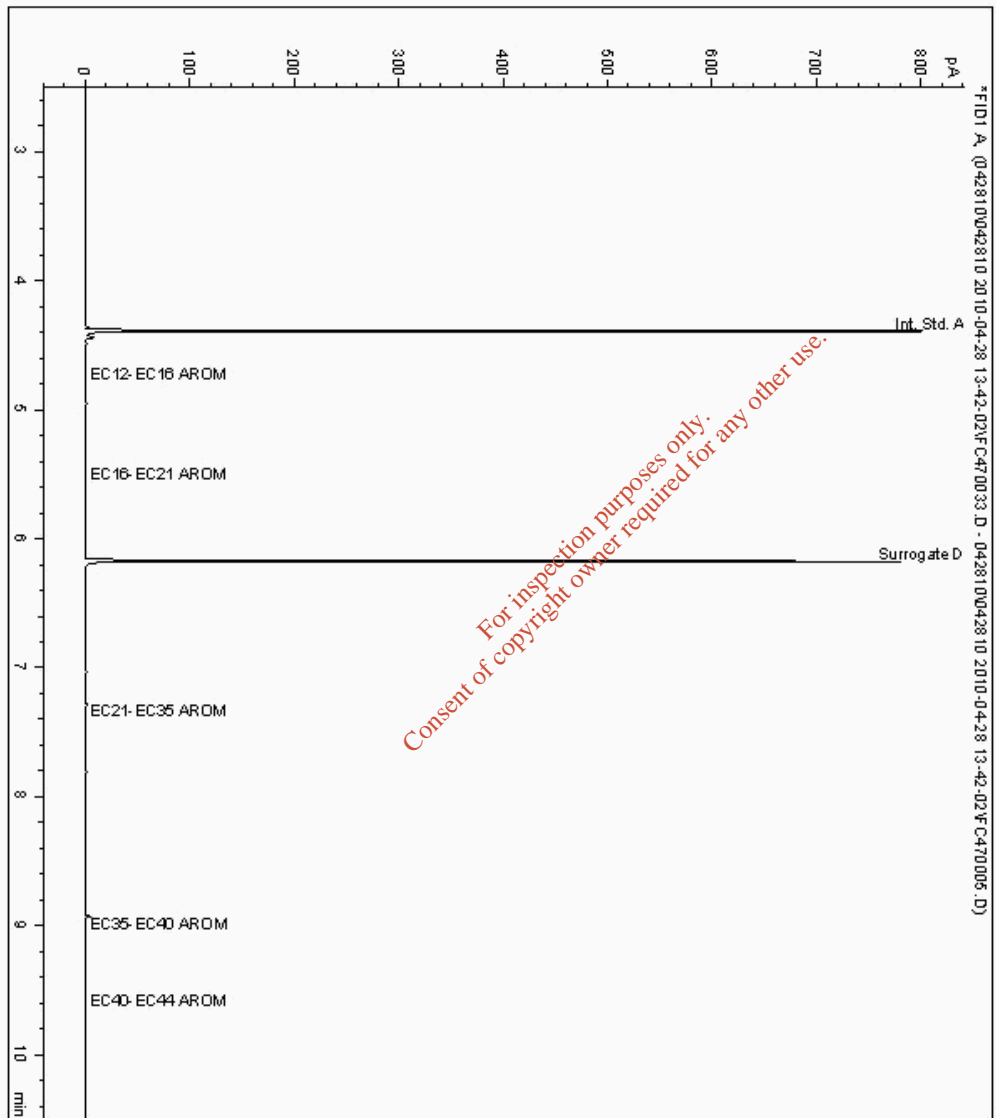
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438427
Sample ID K1
Depth 2.50 - 4.40

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

Sample Identity: 1560703-1438427
Date Acquired : 28/04/10 23:46:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

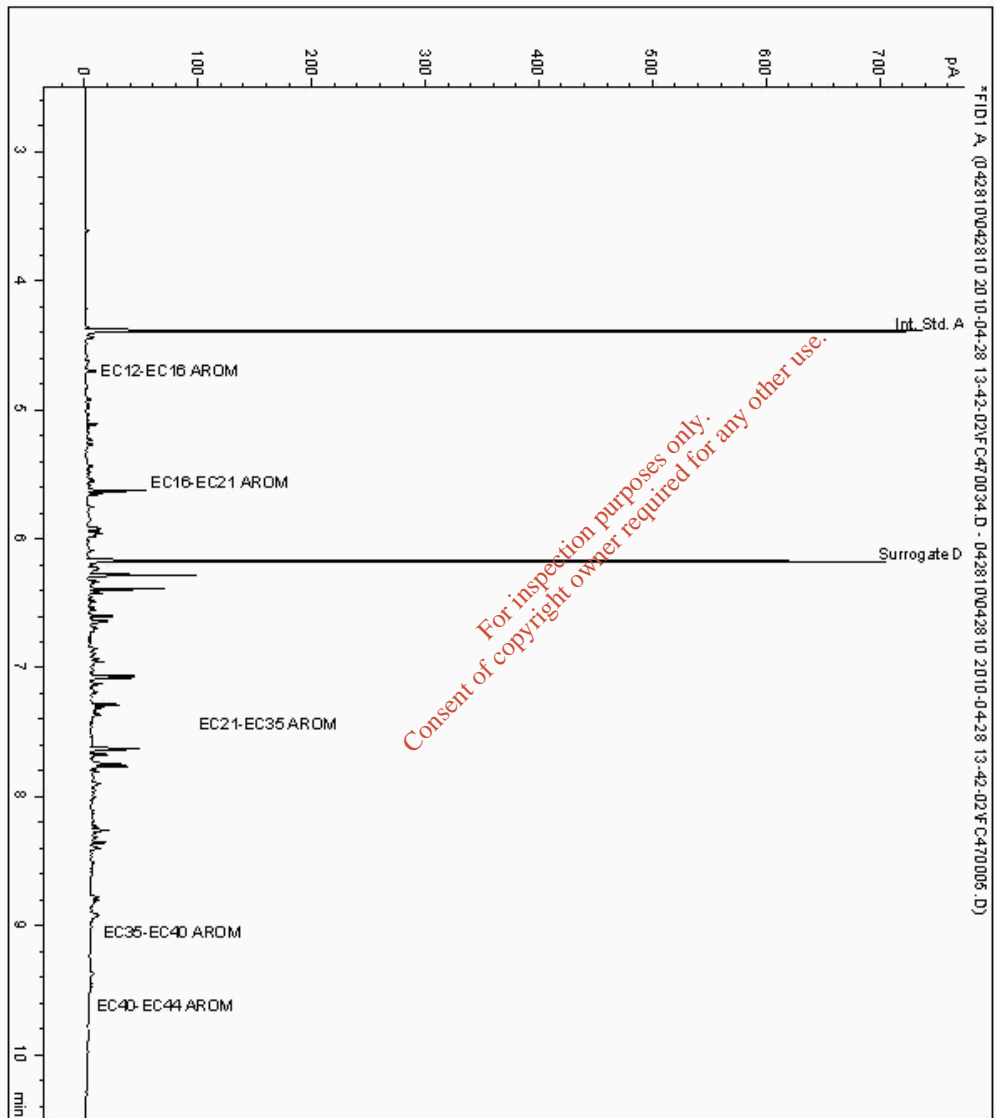
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438451
Sample ID J10
Depth 1.00 - 2.00

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

Sample Identity: 1560682-1438451
Date Acquired : 29/04/10 00:05:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

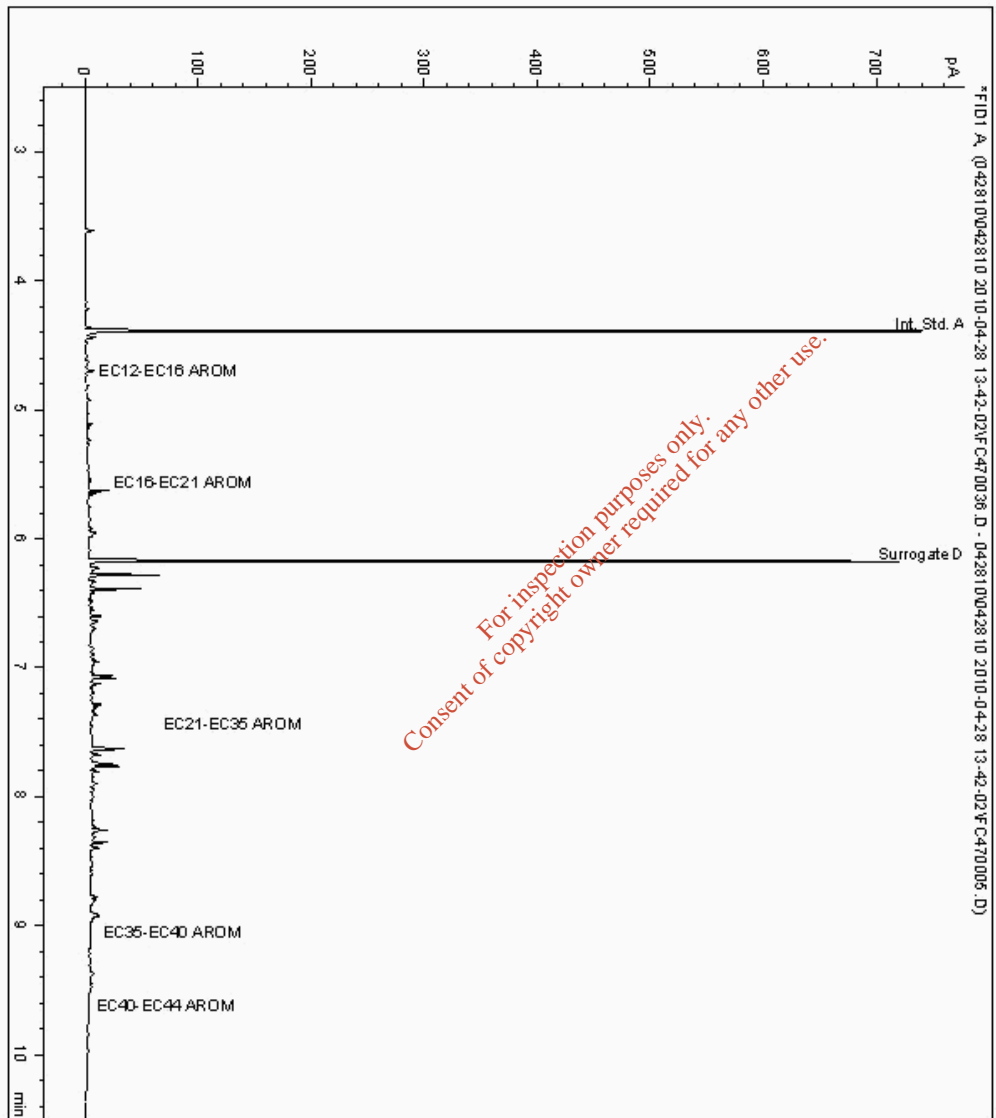
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438479
Sample ID H12
Depth 1.50 - 4.00

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

Sample Identity: 1560718-1438479
Date Acquired : 29/04/10 00:38:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

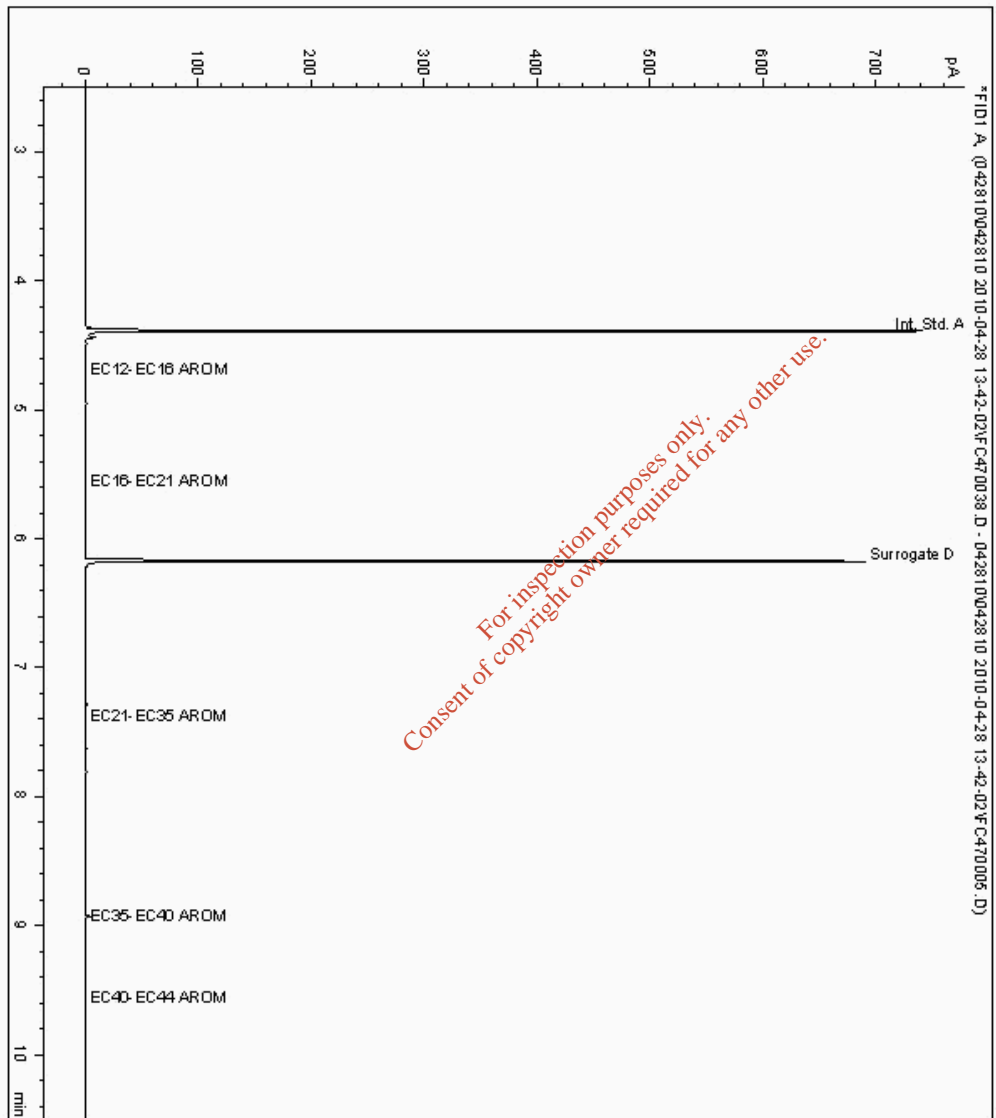
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

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

Sample No 1438505
Sample ID M3
Depth 3.50 - 6.00

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

Sample Identity: 1560733-1438505
Date Acquired : 29/04/10 01:11:04
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

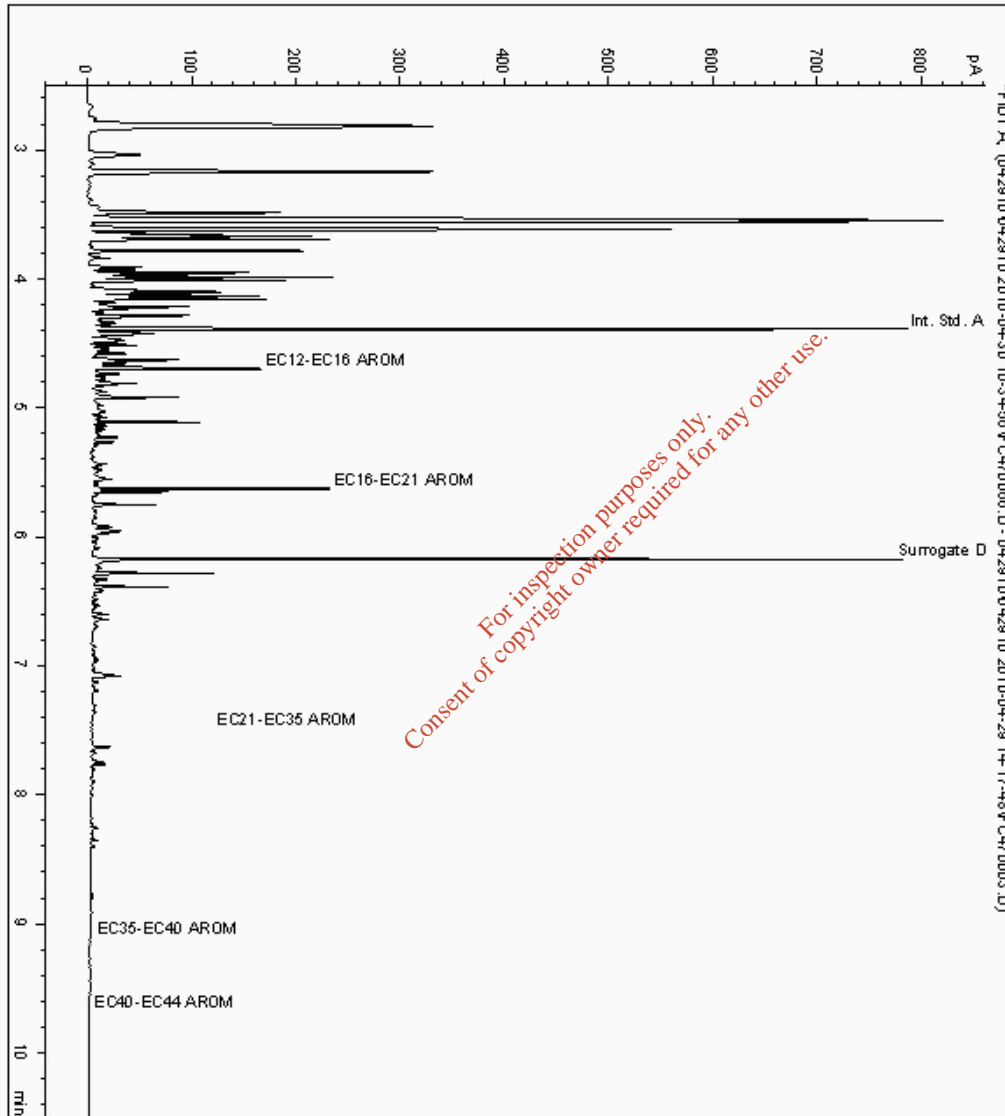
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

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

Sample No 1438715
Sample ID K5
Depth 1.00 - 5.00

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

Sample Identity: 1560662-1438715
Date Acquired : 30/04/10 11:37:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.167



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

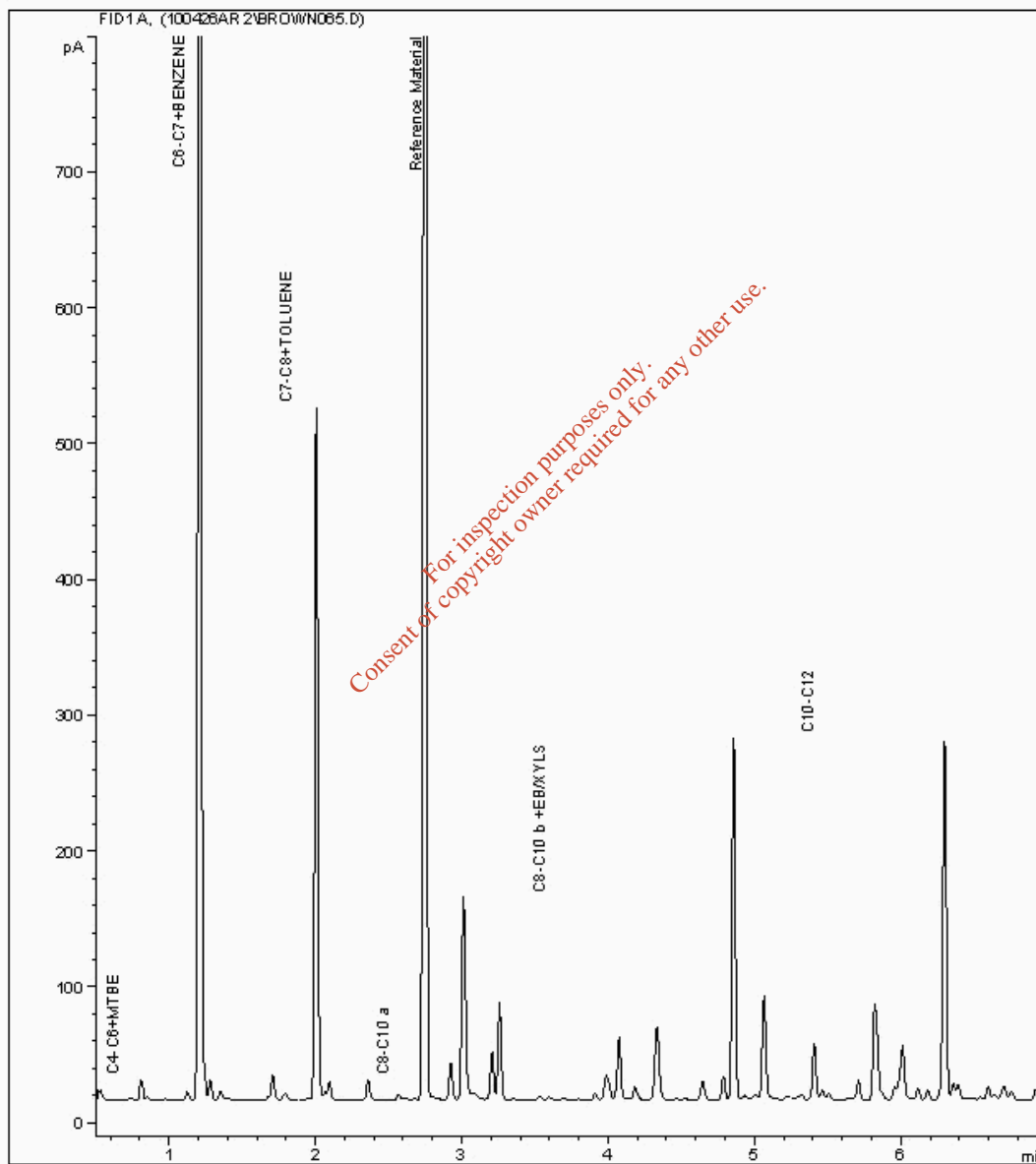
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436322
Sample ID K5
Depth 1.00 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560663-1436322
Date Acquired : 27/04/10 09:44:03
Units : ppb
Dilution : 5



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

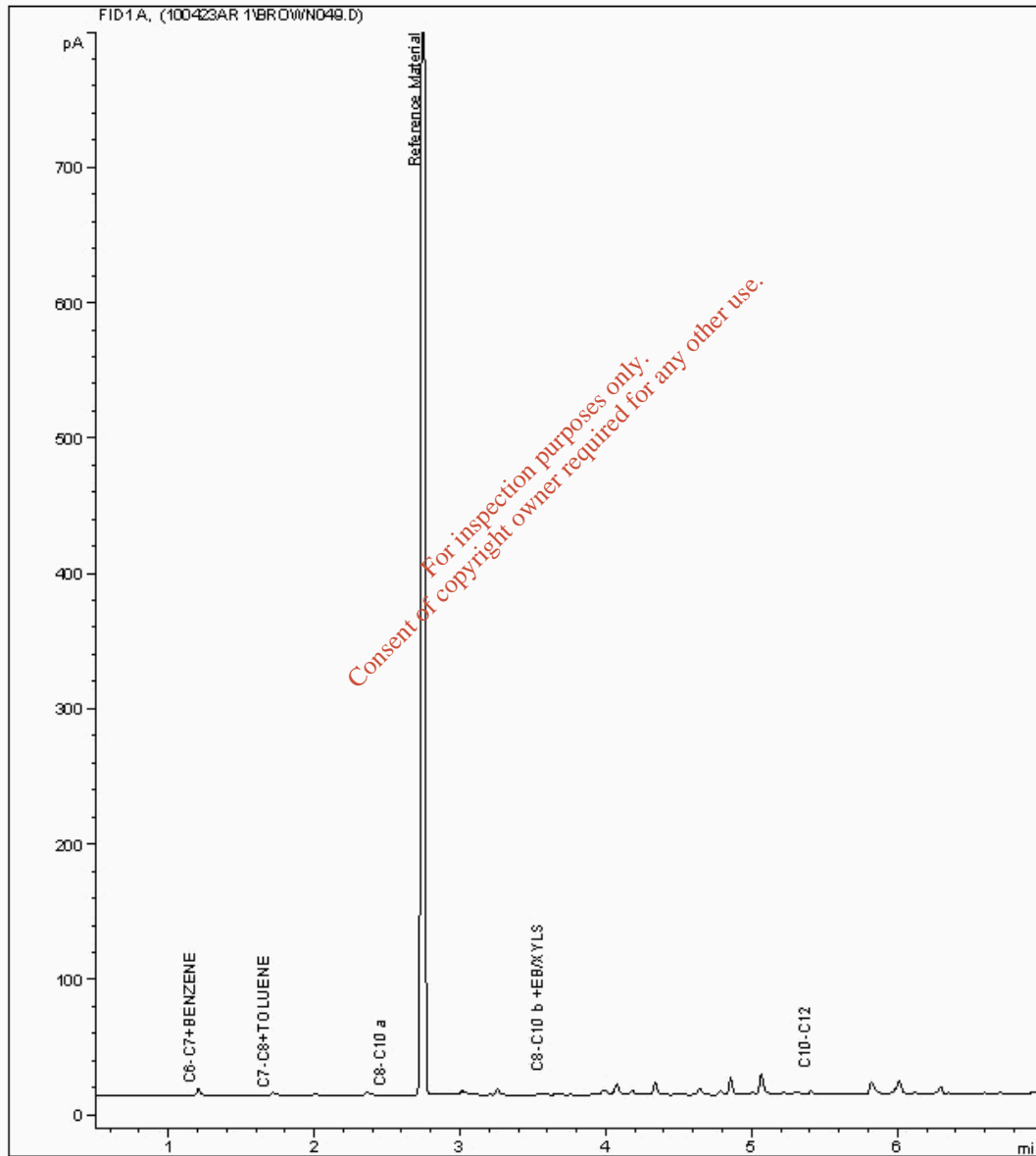
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436465
Sample ID J10
Depth 1.00 - 2.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560683-1436465
Date Acquired : 24/04/10 00:47:11
Units : ppb
Dilution : 1



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

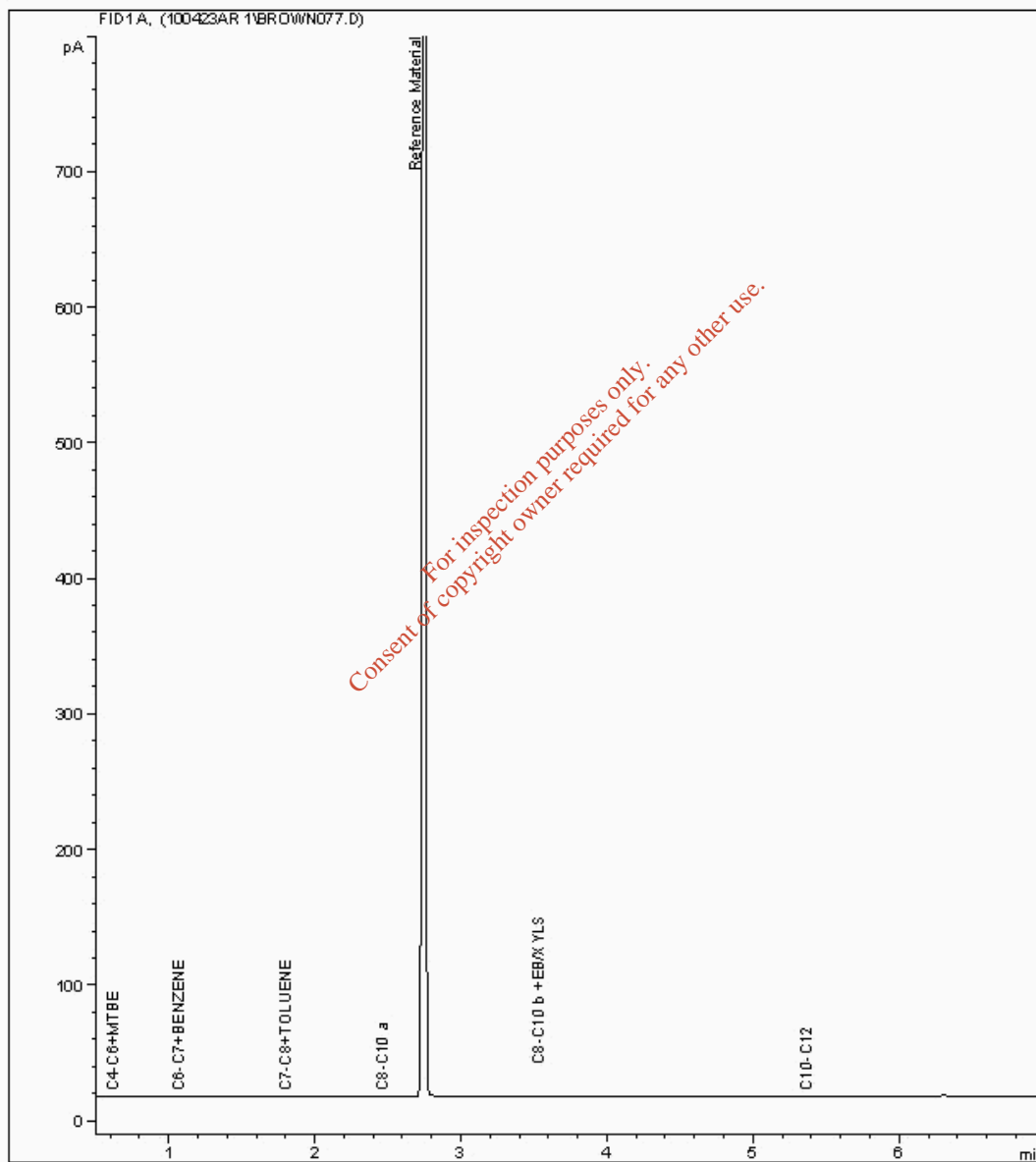
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82278

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436505
Sample ID K1
Depth 2.50 - 4.40

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560704-1436505
Date Acquired : 24/04/10 07:20:50
Units : ppb
Dilution : 1



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

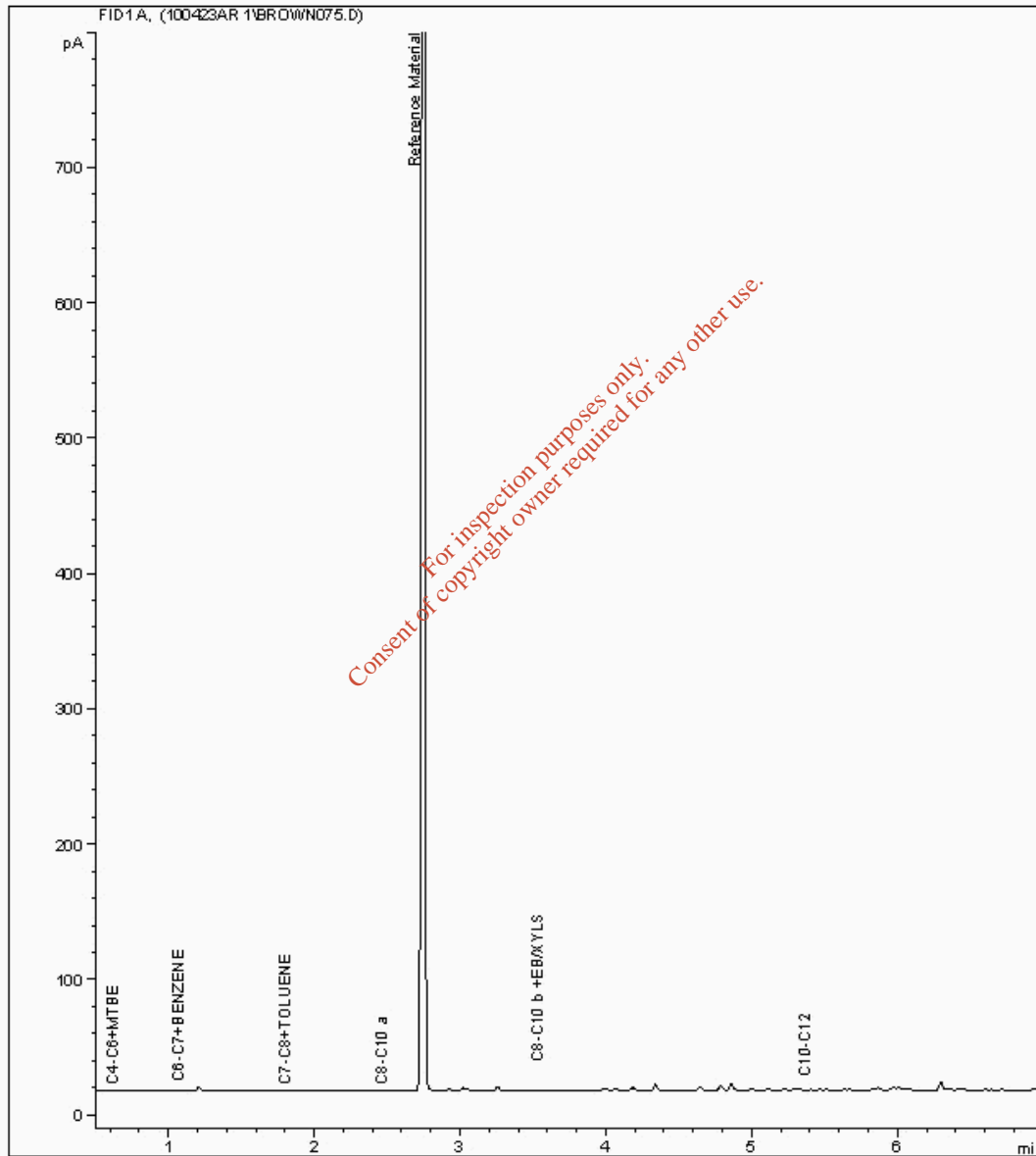
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436658
Sample ID H12
Depth 1.50 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560719-1436658
Date Acquired : 24/04/10 06:52:43
Units : ppb
Dilution : 1



SDG: 100422-76
Job: D_MOUCHEL_ELE-103
Client Ref.: 22/04/10
Location: Limerick Gasworks

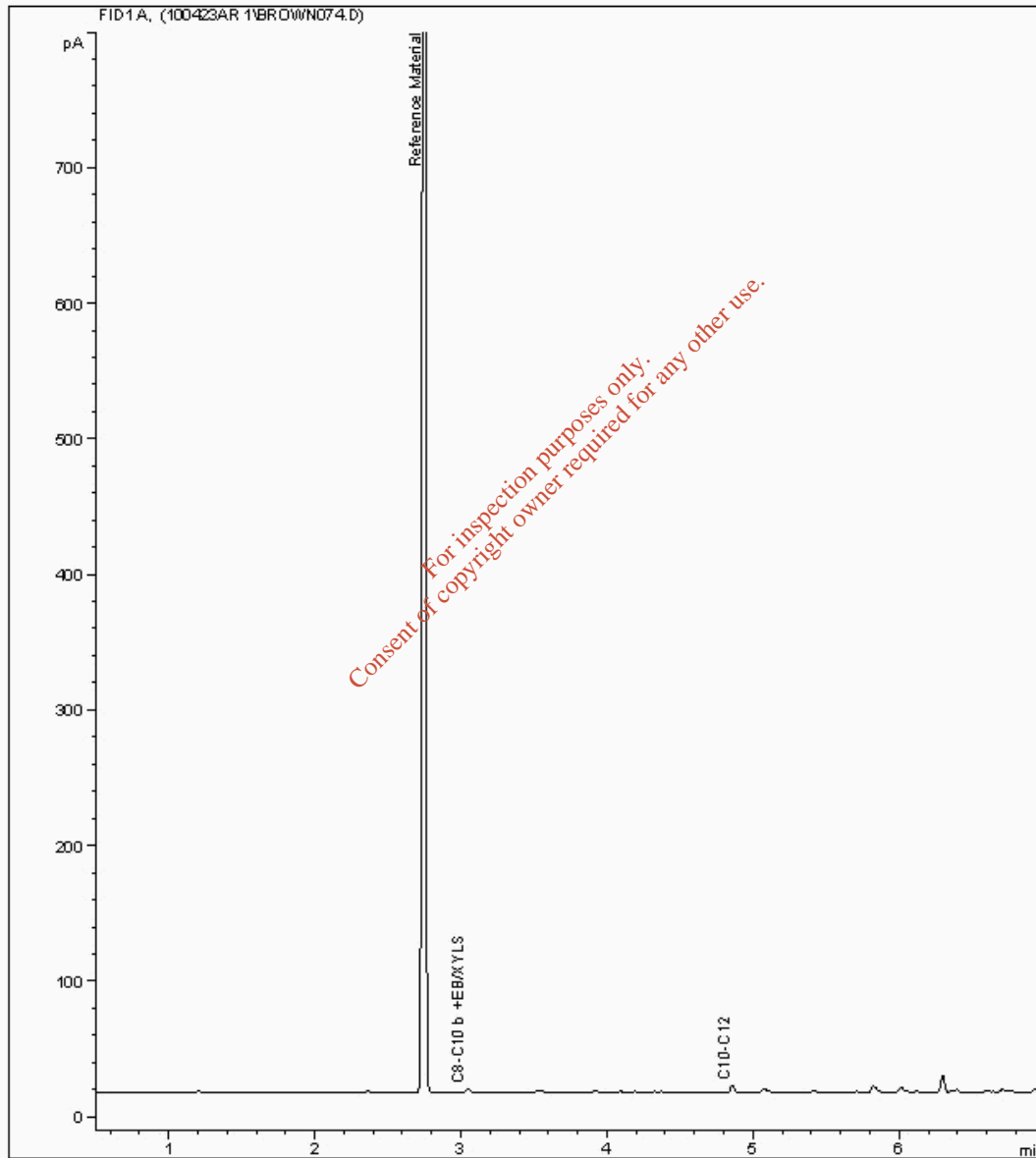
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82278

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436696
Sample ID M3
Depth 3.50 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560734-1436696
Date Acquired : 24/04/10 06:38:39
Units : ppb
Dilution : 1



Notification of NDPs (No determination possible)

SDG Number	100422-76	Location	Limerick Gasworks
Client	D_MOUCHEL_ELE	Order No.	
Client Reference	22/04/10	Report No.	45708-0
Attention	Dave Watts	Date Received	22/04/2010 15:21:20

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1436325	K5 EW003	1.00 - 5.00	Hexavalent Chromium (w)	Sample too coloured
1436325	K5 EW003	1.00 - 5.00	Hexavalent Chromium (w)	Sample too coloured
1436325	K5 EW003	1.00 - 5.00	Hexavalent Chromium (w)	Sample too coloured

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date: 01 May 2010
Customer: D_MOUCHEL_ELE-104
Sample Delivery Group (SDG): 100422-86 **Report No.:** 82282
Your Reference: 22/04/10
Location: Limerick Gasworks

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Saturday May 01, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland



SDG:	100422-86	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-104	Attention:	Verity Sankey
Client Reference:	22/04/10	Order No.:	
Location:	Limerick Gasworks	Report No:	82282

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436891	A3 EW003	1.50 - 4.50	21/04/2010
1436916	A4 EW003	1.50 - 2.30	21/04/2010
1436862	B8 EW003	1.60 - 2.80	21/04/2010
1436933	C7 EW003	2.00 - 6.50	21/04/2010
1436836	D5 EW003	2.00 - 3.00	21/04/2010

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

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SDG: 100422-86
Job: D_MOUHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Verity Sankey
Order No.:
Report No: 82282

LIQUID

Results Legend	Lab Sample No(s)	1436936	1436962	1436991	1436916	1436933	Total						
								Customer Sample Ref.	D5 EWM03	B8 EWM03	A3 EWM03	A4 EWM03	C7 EWM03
								Depth (m)	2.00 - 3.00	1.60 - 2.80	1.50 - 4.50	1.50 - 2.30	2.00 - 6.50
								Container	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial	11 green glass bottle 500ml Plastic Vial
								Test	No Determination Possible				
Ammonium	All	X	X	X	X	X	0 5						
Anions by Kone (w)	All	X	X	X	X	X	0 5						
Cyanide Comp/Free/Total/Thiocyanate	All	X	X	X	X	X	0 5						
Dissolved Metals by ICP-MS	All	X	X	X	X	X	0 5						
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	0 5						
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	0 5						
GRO BTEX MTBE GC (W)	All		X	X	X	X	0 5						
Hexavalent Chromium (w)	All	X	X	X	X	X	0 5						
Mercury Dissolved	All	X	X	X	X	X	0 5						
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	0 5						
pH Value	All	X	X	X	X	X	0 5						
Phenols by HPLC (W)	All	X	X	X	X	X	0 5						
Sulphide	All	X	X	X	X	X	0 5						
TPH CWG (W)	All	X	X	X	X	X	0 5						
VOC MS (W)	All			X	X	X	0 4						

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SDG:	100422-86	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-104	Attention:	Verity Sankey
Client Reference:	22/04/10	Order No.:	
Location:	Limerick Gasworks	Report No.:	82282

Test Completion dates

SDG reference: 100422-86

Lab Sample No(s) Customer Sample Ref. Depth Type	1436836	1436862	1436891	1436916	1436933
	D5	B8	A3	A4	C7
	2.00 - 3.00	1.60 - 2.80	1.50 - 4.50	1.50 - 2.30	2.00 - 6.50
	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by Kone (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
EPH CWG (Aromatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
GRO BTEX MTBE GC (W)	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Hexavalent Chromium (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	29/04/2010	30/04/2010	29/04/2010	29/04/2010	01/05/2010
pH Value	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Phenols by HPLC (W)	26/04/2010	26/04/2010	26/04/2010	26/04/2010	27/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
VOC MS (W)		29/04/2010	29/04/2010	26/04/2010	28/04/2010

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
diss.filt	Dissolved / filtered sample.		22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
tot.unfilt	Total / unfiltered sample.		100422-86	100422-86	100422-86	100422-86	100422-86
*	subcontracted test.		1436891	1436916	1436862	1436933	1436836
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	9.65 #	3.27 #	138 #	100 #	0.483 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	12.4 #	4.2 #	177 #	129 #	0.621 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	39.2 #	7.31 #	52.8 #	27.9 #	3.7 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	21.3 #	14.5 #	22.7 #	15.5 #	9.27 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	<0.85 #	<0.85 #	<0.85 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.034 #	0.054 #	0.143 #	0.046 #	0.034 #
Nickel (diss.filt)	<0.15 µg/l	TM152	7.05 #	4.86 #	9.62 #	2.92 #	7.47 #
Selenium (diss.filt)	<0.39 µg/l	TM152	2.14 #	2.8 #	26.7 #	27 #	1.34 #
Zinc (diss.filt)	<0.41 µg/l	TM152	1.18 #	1.76 #	1.21 #	0.755 #	0.655 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	0.0188 #	0.0321 #	<0.01 #
Sulphate	3 mg/l	TM184	375 #	277 #	102 #	36.8 #	32.1 #
Cyanide, Total	<0.05 mg/l	TM227	0.267 #	0.154 #	0.259 #	0.522 #	0.295 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.15 #	<0.15 #	<0.03 #
pH	<1 pH Units	TM256	7.98 #	7.82 #	8.64 #	8.82 #	7.89 #
Resorcinol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.1 #	<0.2 #	<0.01 #
Catechol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.1 #	<0.2 #	<0.01 #
Phenol	<0.002 mg/l	TM259	0.01 #	<0.002 #	24.3 #	29.6 #	0.08 #
Cresols	<0.006 mg/l	TM259	0.01 #	<0.006 #	47.2 #	81.1 #	0.65 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	46.4 #	81.4 #	1.4 #
1-Naphthol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.1 #	<0.2 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.03 #	<0.06 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.06 #	23.2 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259	<0.025 #	<0.025 #	118 #	215 #	2.13 #

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
		Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Component	LOD/Units	Method					
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	89	174	<10	225
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	230	156	<10	255
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	106	188	<10	876
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	425	518	<10	1360
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	794	529	16000	20500	4090

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
		Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836

Component	LOD/Units	Method	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	196	13	10700	19100	161
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	177	61	2200	1250	411
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	421	30	2590	142	2170
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	794	104	15500	20500	2740

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
		Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Component	LOD/Units	Method					
Benzene	<7 µg/l	TM245	574 #	<7 #	10900 #	28400 #	405 #
Toluene	<4 µg/l	TM245	30 #	<4 #	5450 #	12500 #	91 #
Ethylbenzene	<5 µg/l	TM245	189 #	<5 #	312 #	527 #	39 #
m,p-Xylene	<8 µg/l	TM245	87 #	<8 #	2130 #	3560 #	107 #
o-Xylene	<3 µg/l	TM245	71 #	<3 #	910 #	1470 #	79 #
m,p,o-Xylene	<10 µg/l	TM245	158 #	<10 #	3040 #	5030 #	186 #
BTEX, Total	<10 µg/l	TM245	951 #	<10 #	19700 #	46500 #	721 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<15 #	<30 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	118	240	<10
Aliphatics >C6-C8	<10 µg/l	TM245	121	<10	3400	8370	91.4
Aliphatics >C8-C10	<10 µg/l	TM245	150	13.4	1390	2550	105
Aliphatics >C10-C12	<10 µg/l	TM245	498	23.8	4710	7840	233
Total Aliphatics >C5-C12	<10 µg/l	TM245	769	37.2	9620	19000	429
Aromatics >C6-C7	<10 µg/l	TM245	574	<10	10900	28400	405
Aromatics >C7-C8	<10 µg/l	TM245	30	<10	5450	12500	91
Aromatics >EC8-EC10	<10 µg/l	TM245	572	20.7	5430	9380	383
Aromatics >EC10-EC12	<10 µg/l	TM245	747	35.7	7060	11800	349
Total Aromatics >C6-C12	<10 µg/l	TM245	1920	55.8	28900	62100	1230

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
		Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
		SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
		Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Component	LOD/Units	Method					
Naphthalene (aq)	<0.1 µg/l	TM178	0.295	<0.1	4500	23600	2.3
Acenaphthene (aq)	<0.015 µg/l	TM178	0.979	<0.015	45.7	125	1.28
Acenaphthylene (aq)	<0.011 µg/l	TM178	6.24	0.124	258	1050	9.82
Fluoranthene (aq)	<0.014 µg/l	TM178	21	0.963	153	41.4	58.7
Anthracene (aq)	<0.015 µg/l	TM178	1.66	0.0872	84.9	64.9	7.57
Phenanthrene (aq)	<0.022 µg/l	TM178	0.759	0.0257	290	252	16
Fluorene (aq)	<0.014 µg/l	TM178	0.613	0.0442	144	314	2.95
Chrysene (aq)	<0.013 µg/l	TM178	8.35	0.131	37.9	8.47	18.7
Pyrene (aq)	<0.015 µg/l	TM178	40.5	0.99	105	26.6	39.3
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	16.6	0.334	39.5	8.72	33.4
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	13.1	0.354	44.1	7.74	37.7
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	4.84	0.113	14.2	4.29	13.4
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	18.8	0.227	26.8	6.07	34
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	1.97	0.0245	4.25	2.34	5.25
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	8.44	0.0812	20.8	6.43	18.4
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	6.61	0.0718	15	4.67	16.9
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	151	2.47	5790	25600	316

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

TPH CWG (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
*	subcontracted test.	Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
		Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836

Component	LOD/Units	Method	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	769	462	10100	19000	1790
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	2720	160	44400	82600	3960
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	3490	622	54500	102000	5750

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SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

VOC MS (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50		
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
		Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010		
		Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010		
		SDG Ref	100422-86	100422-86	100422-86	100422-86		
		Lab Sample No.(s)	1436891	1436916	1436862	1436933		
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208	105	120	107	103		
Toluene-d8**	%	TM208	95.2	96.9	97.7	97.7		
4-Bromofluorobenzene**	%	TM208	101	101	91.1	84		
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Chloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	<1.7	#	#
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
Bromomethane	<2 µg/l	TM208	<2	<2	<2	<2	#	#
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	#	#
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	<3.7	<3.7	#	#
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	<1.6	<1.6	#	#
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	#	#
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	<3.8	<3.8	#	#
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	<1.8	<1.8	#	#
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	<1.4	<1.4	#	#
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	<3.3	<3.3	#	#
Benzene	<1.3 µg/l	TM208	<1.3	<1.3	13500	24700	#	#
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	#	#
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	<3	<3	#	#
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	<2.7	<2.7	#	#
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	<0.9	<0.9	#	#
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
Toluene	<1.4 µg/l	TM208	<1.4	<1.4	6170	9900	#	#
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	#	#
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	#	#
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	#	#
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	<1.5	<1.5	#	#
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	<1.7	#	#
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	#	#
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	#	#
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Ethylbenzene	<2.5 µg/l	TM208	<2.5	2.94	294	396	#	#

SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Reference: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

VOC MS (W)

Results Legend		Customer Sample Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50		
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
		Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010		
		Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010		
		SDG Ref	100422-86	100422-86	100422-86	100422-86		
		Lab Sample No.(s)	1436891	1436916	1436862	1436933		
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	68.1 #	3.37 #	2200 #	2650 #		
o-Xylene	<1.7 µg/l	TM208	59.4 #	5.55 #	913 #	1130 #		
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	538 #		
Bromoform	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #		
Isopropylbenzene	<1.4 µg/l	TM208	<1.4 #	<1.4 #	14.3 #	14.9 #		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2 #	<5.2 #	<5.2 #	<5.2 #		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #	<7.8 #	<7.8 #		
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
Propylbenzene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	19.2 #	19.8 #		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	9.69 #	1.91 #	133 #	123 #		
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	29.8 #	2.73 #	325 #	299 #		
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	<2.6 #	<2.6 #		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #		
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8 #	<9.8 #	<9.8 #	<9.8 #		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #		
Naphthalene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	8680 #	9170 #		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #	<3.1 #	<3.1 #		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10 #	<10 #	<10 #	<10 #		

Table of Results - Appendix

SDG Number : 100422-86

Client : Mouchel

Client Ref : 22/04/10

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978 ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

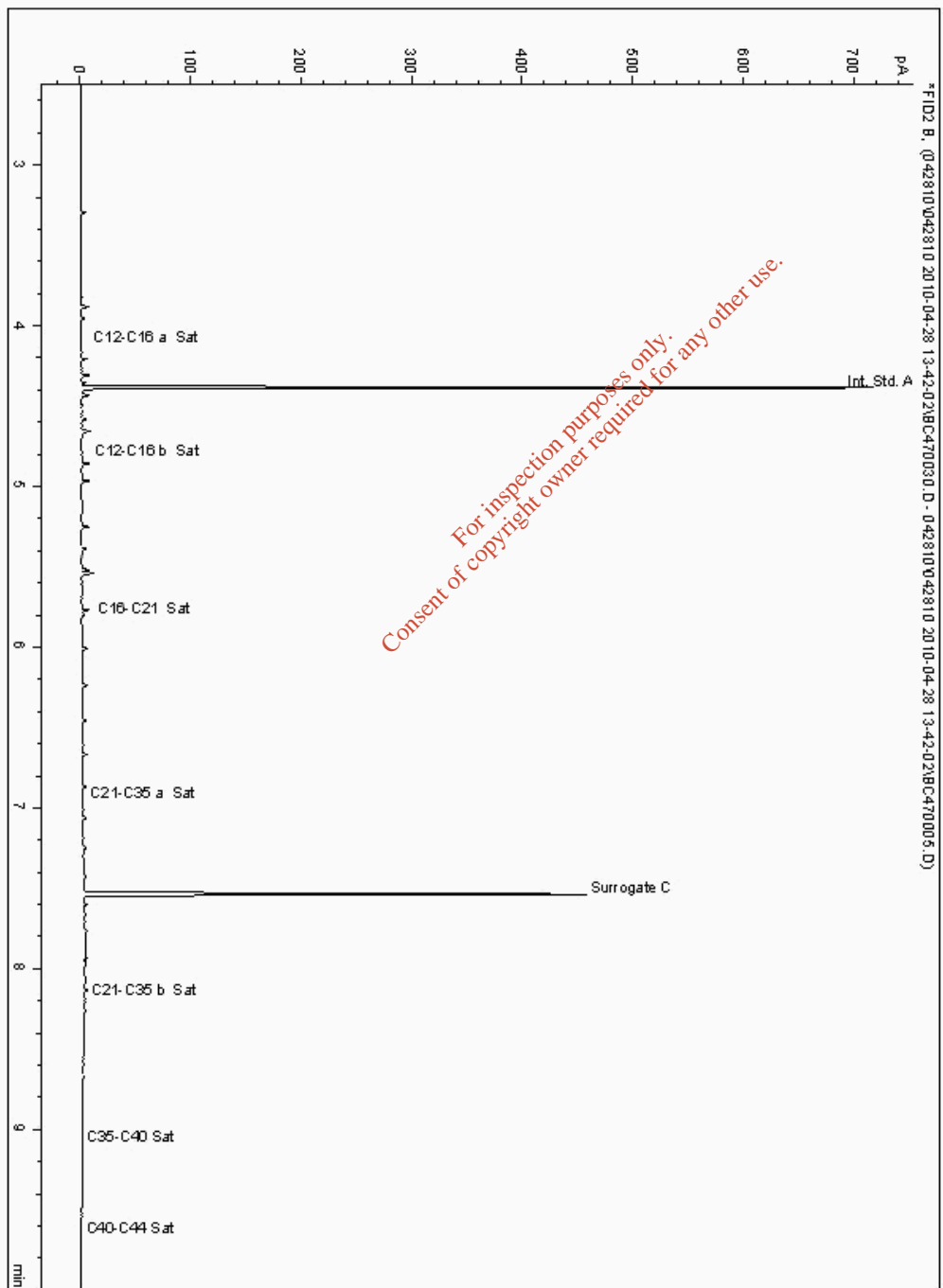
Chromatogram

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

Sample No 1438327
Sample ID D5
Depth 2.00 - 3.00

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

Sample Identity: 1561075-1438327
Date Acquired : 28/04/10 22:54:42
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

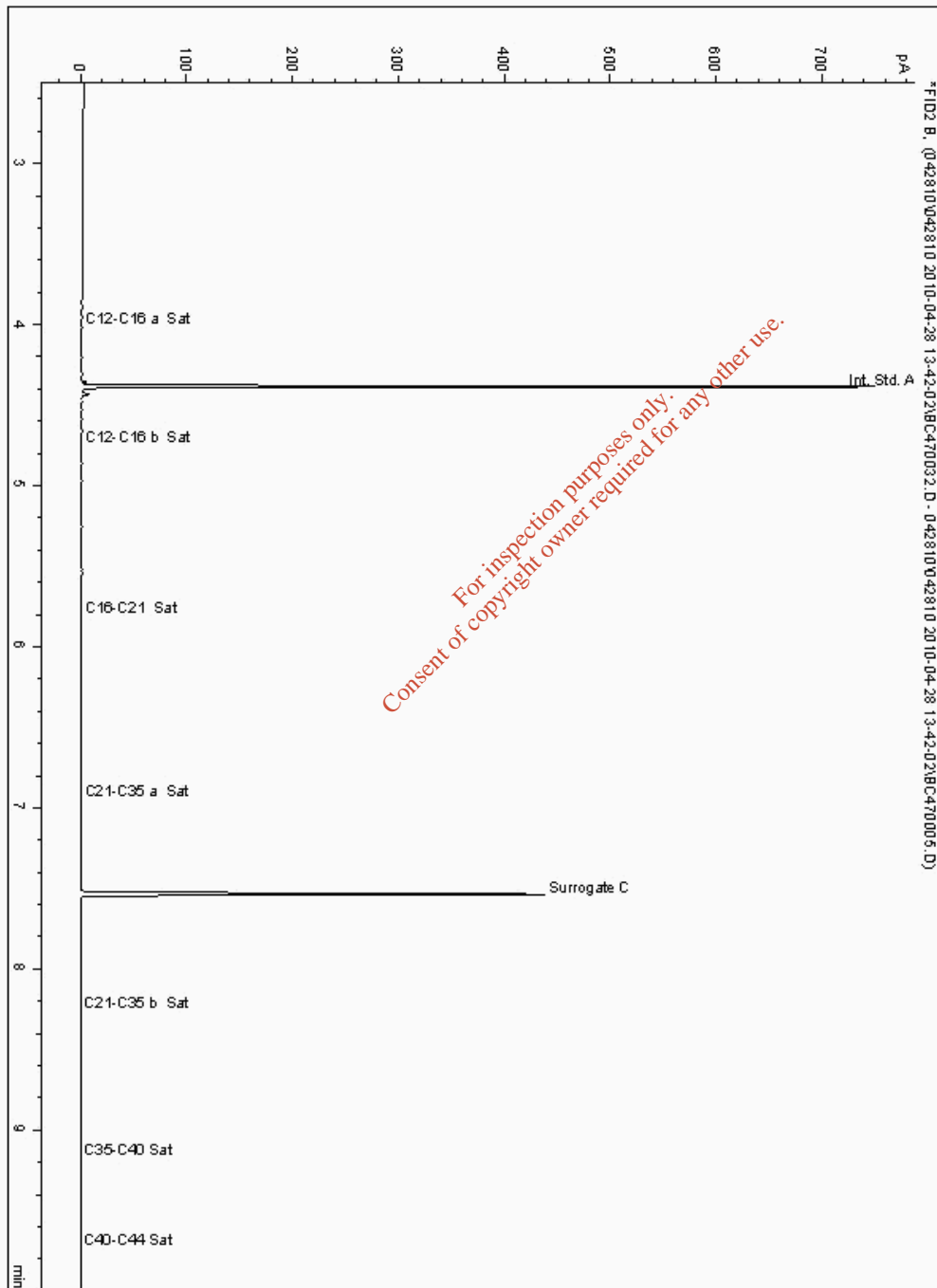
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

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

Sample No 1438399
Sample ID A3
Depth 1.50 - 4.50

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

Sample Identity: 1561106-1438399
Date Acquired : 28/04/10 23:27:38
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

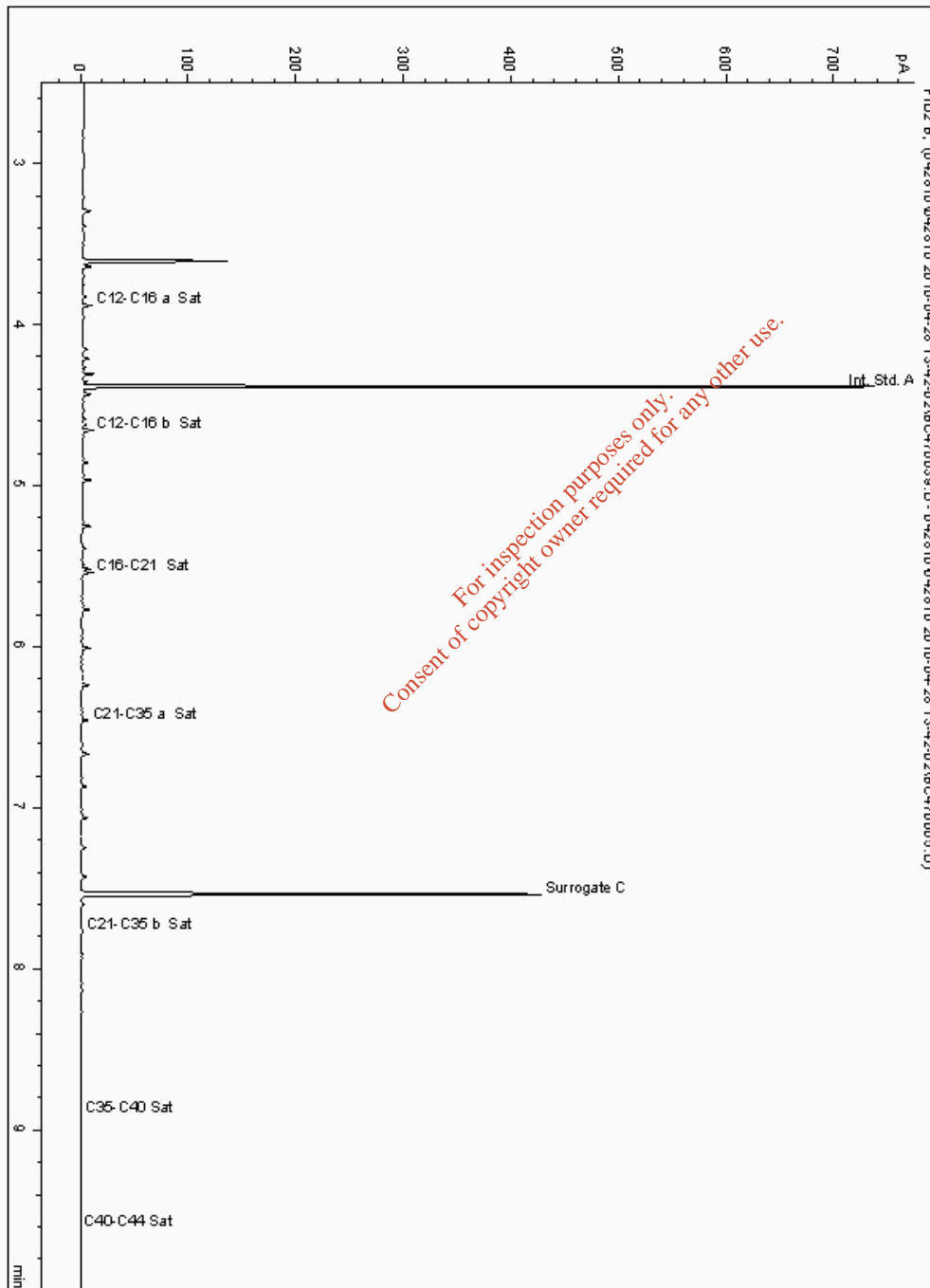
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

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

Sample No 1438534
Sample ID B8
Depth 1.60 - 2.80

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

Sample Identity: 1561090-1438534
Date Acquired : 29/04/10 01:30:07
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

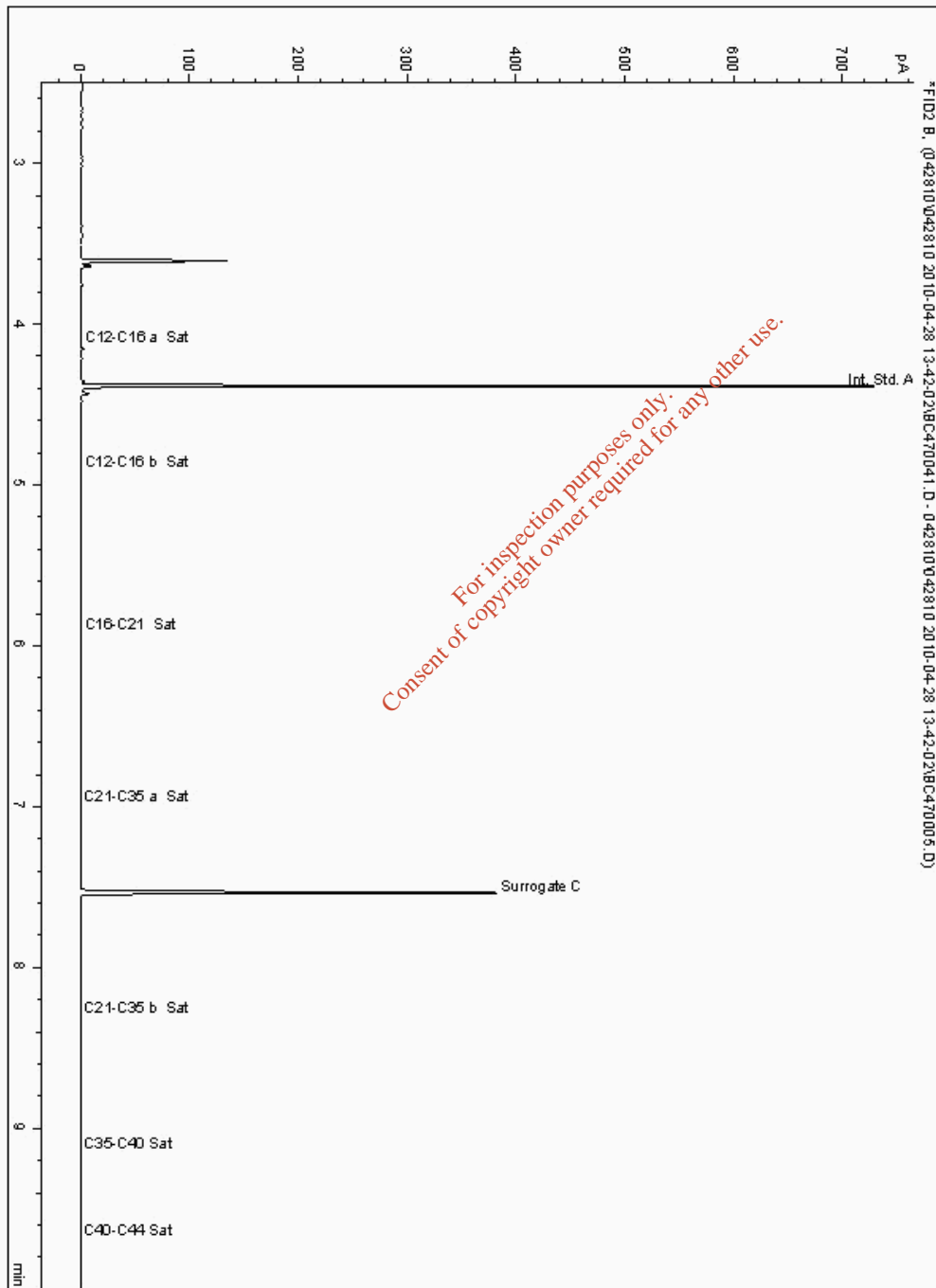
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

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

Sample No 1439570
Sample ID C7
Depth 2.00 - 6.50

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

Sample Identity: 1561138-1439570
Date Acquired : 29/04/10 02:02:54
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

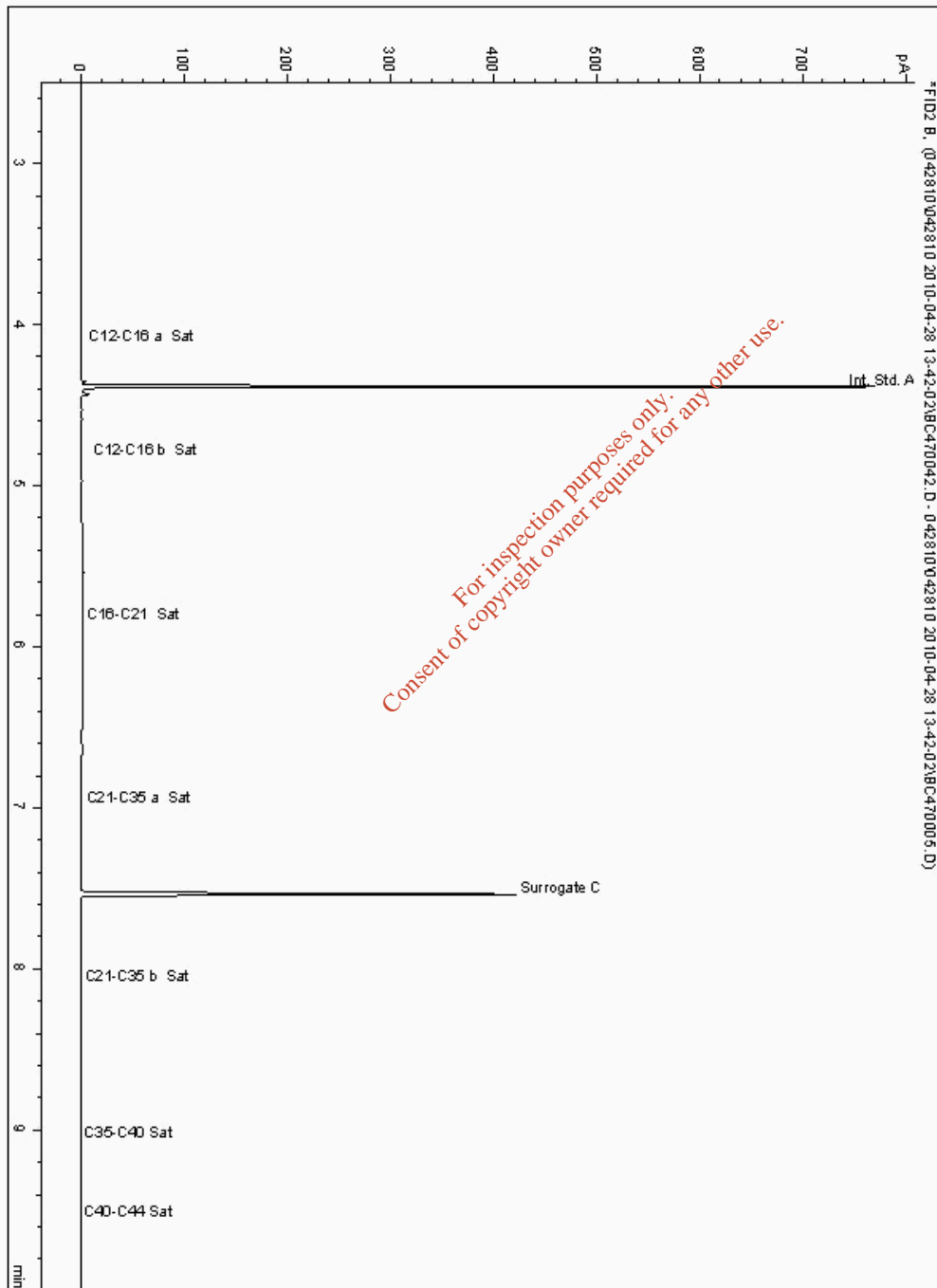
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

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

Sample No 1439645
Sample ID A4
Depth 1.50 - 2.30

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

Sample Identity: 1561122-1439645
Date Acquired : 29/04/10 02:21:44
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

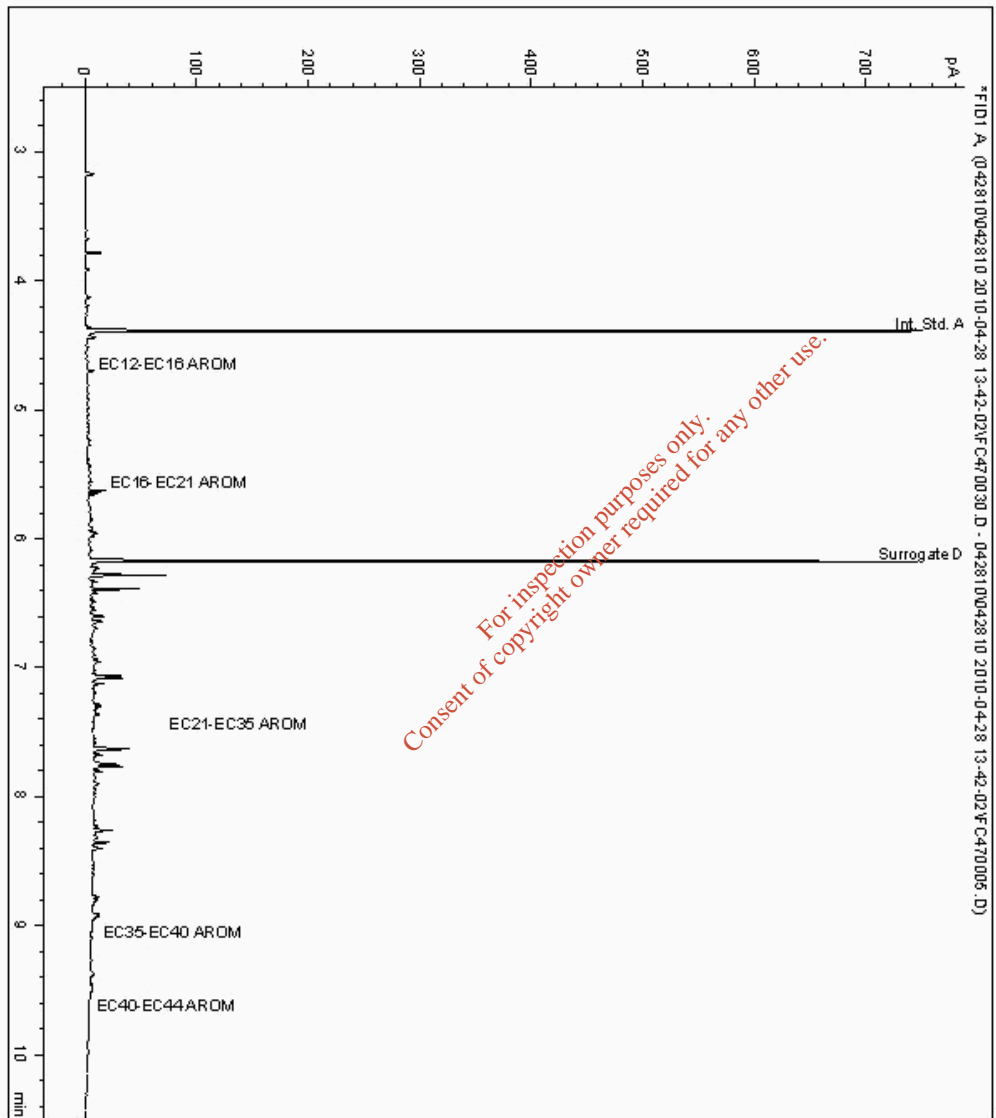
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

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

Sample No 1438327
Sample ID D5
Depth 2.00 - 3.00

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

Sample Identity: 1561076-1438327
Date Acquired : 28/04/10 22:54:42
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

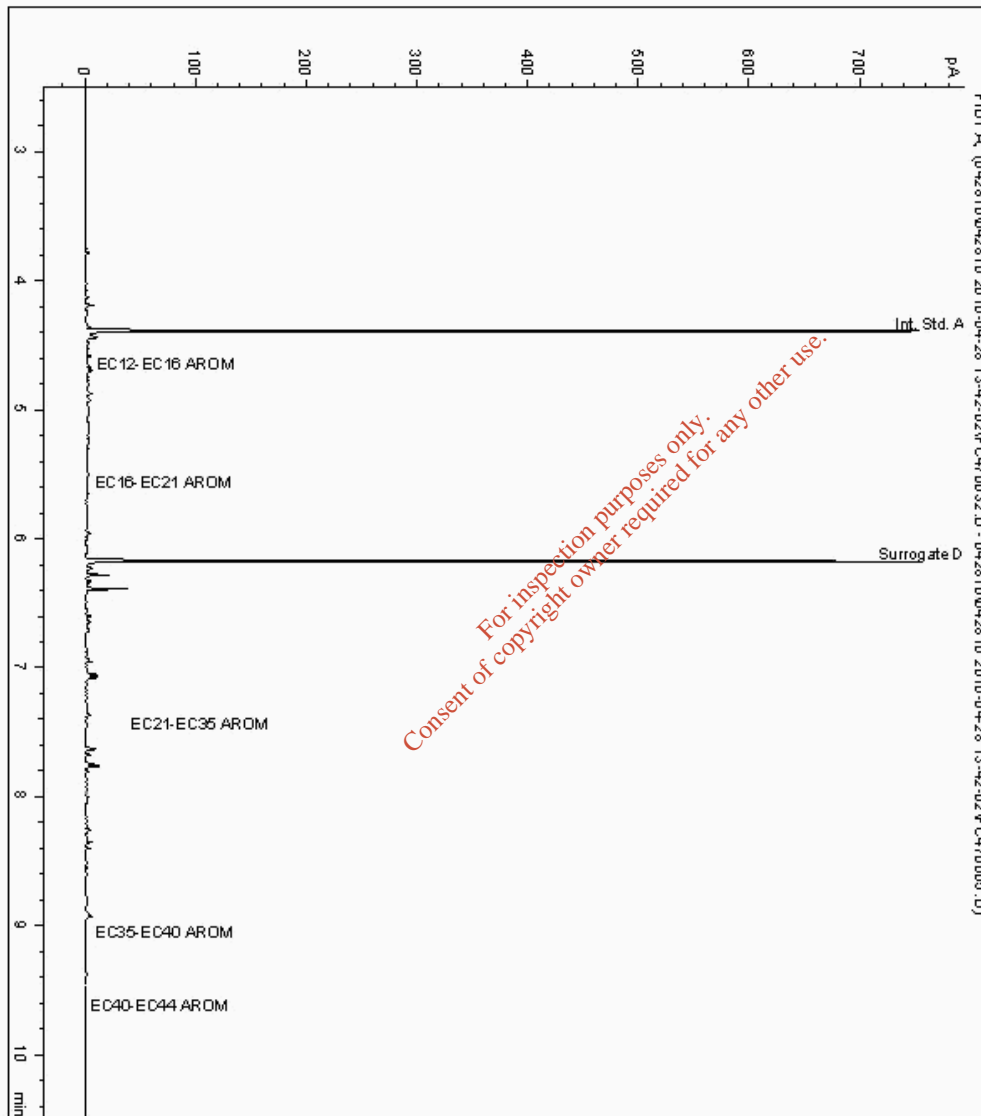
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

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

Sample No 1438399
Sample ID A3
Depth 1.50 - 4.50

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

Sample Identity: 1561107-1438399
Date Acquired : 28/04/10 23:27:38
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

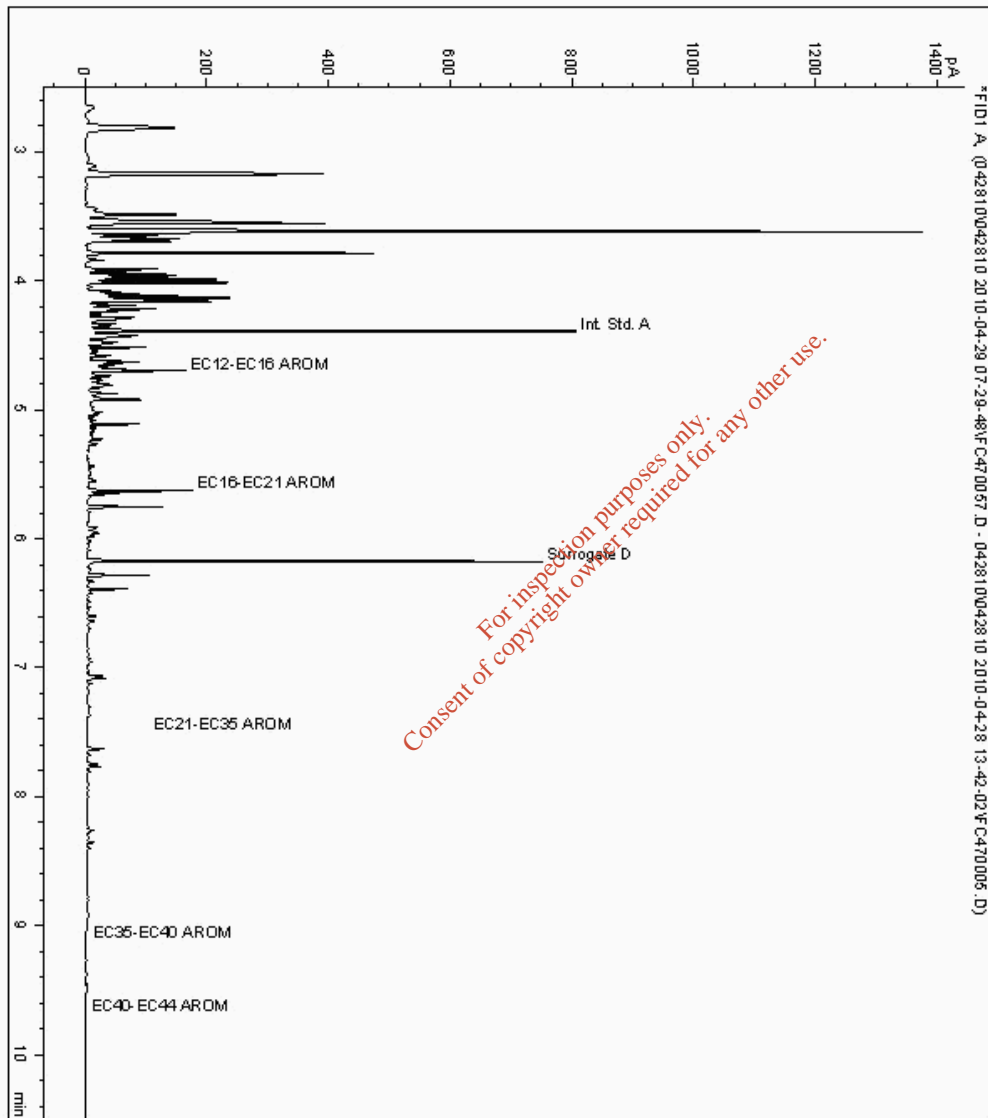
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

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

Sample No 1438534
Sample ID B8
Depth 1.60 - 2.80

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

Sample Identity: 1561091-1438534
Date Acquired : 29/04/10 07:39:29
Units : ppb
Dilution :
CF : 1
Multiplier : 0.033



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

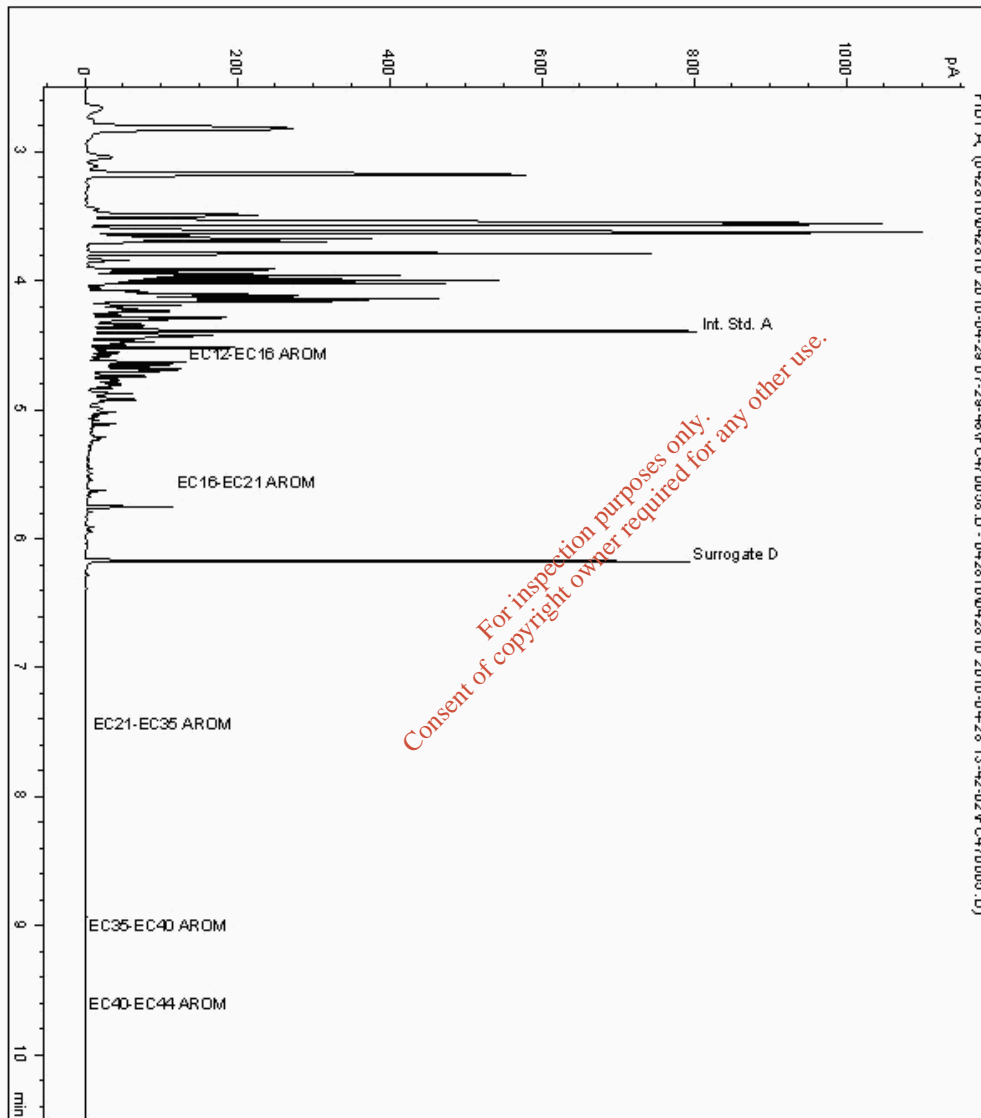
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

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

Sample No 1439570
Sample ID C7
Depth 2.00 - 6.50

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

Sample Identity: 1561139-1439570
Date Acquired : 29/04/10 07:58:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.033



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

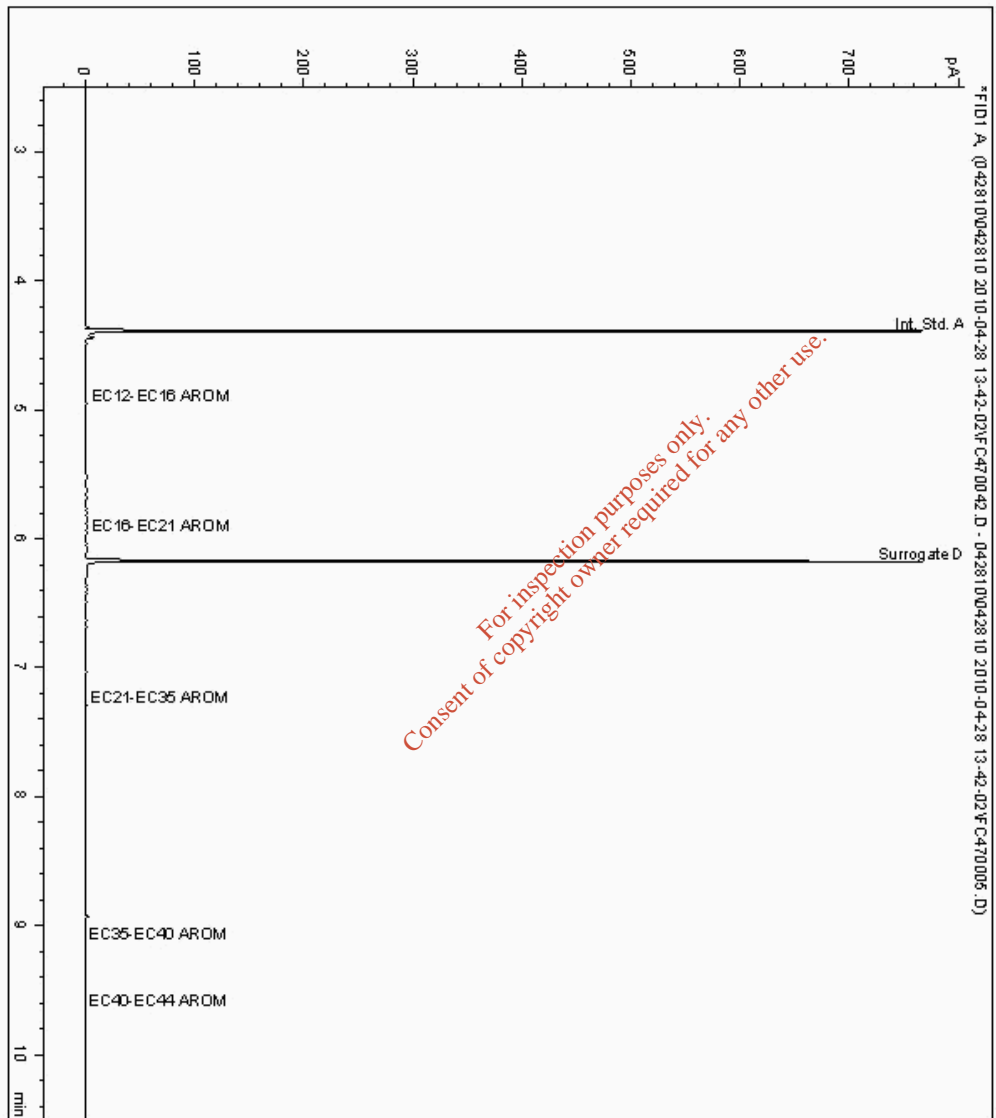
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

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

Sample No 1439645
Sample ID A4
Depth 1.50 - 2.30

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

Sample Identity: 1561123-1439645
Date Acquired : 29/04/10 02:21:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

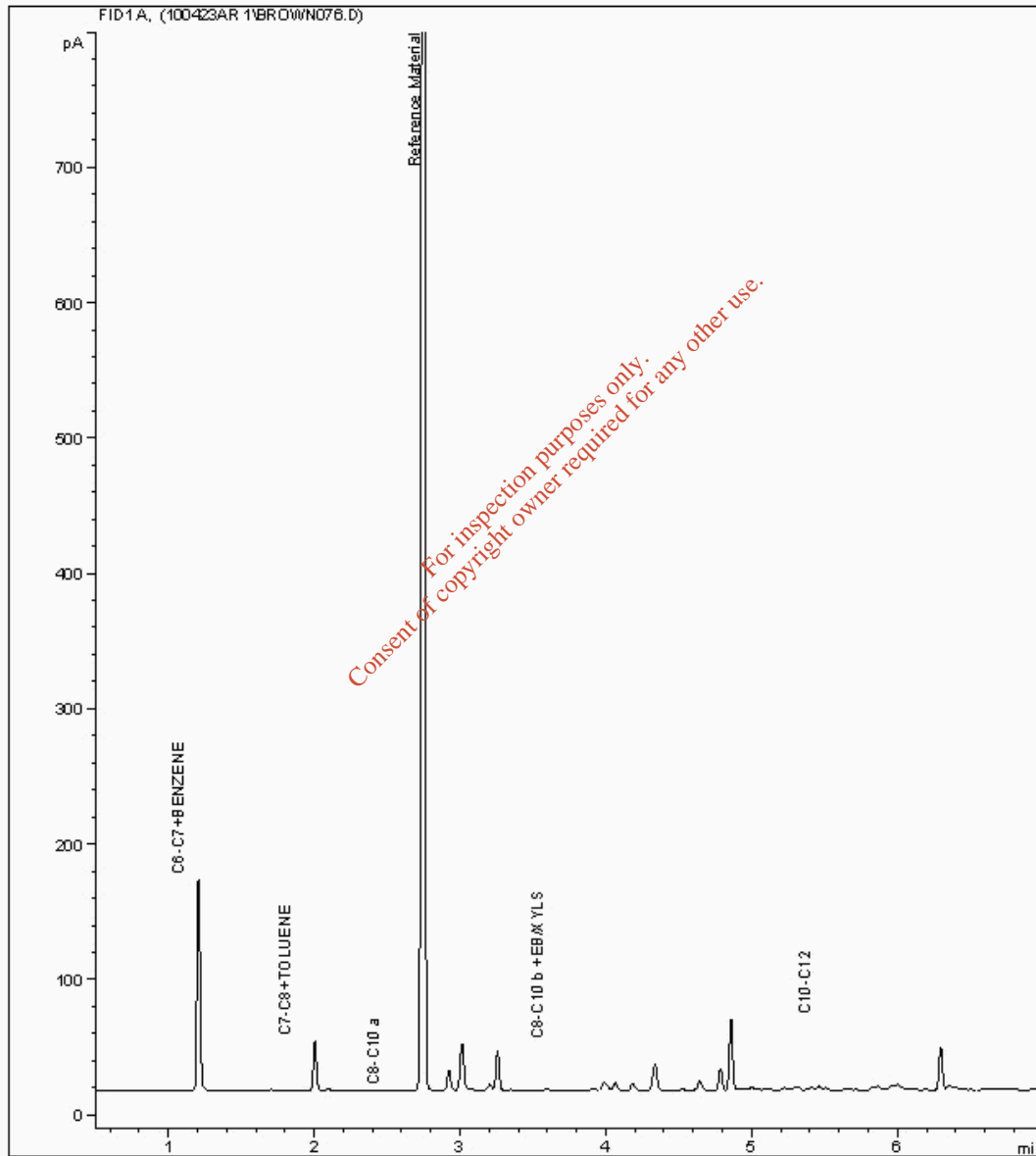
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436833
Sample ID D5
Depth 2.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561077-1436833
Date Acquired : 24/04/10 07:06:46
Units : ppb
Dilution : 1



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

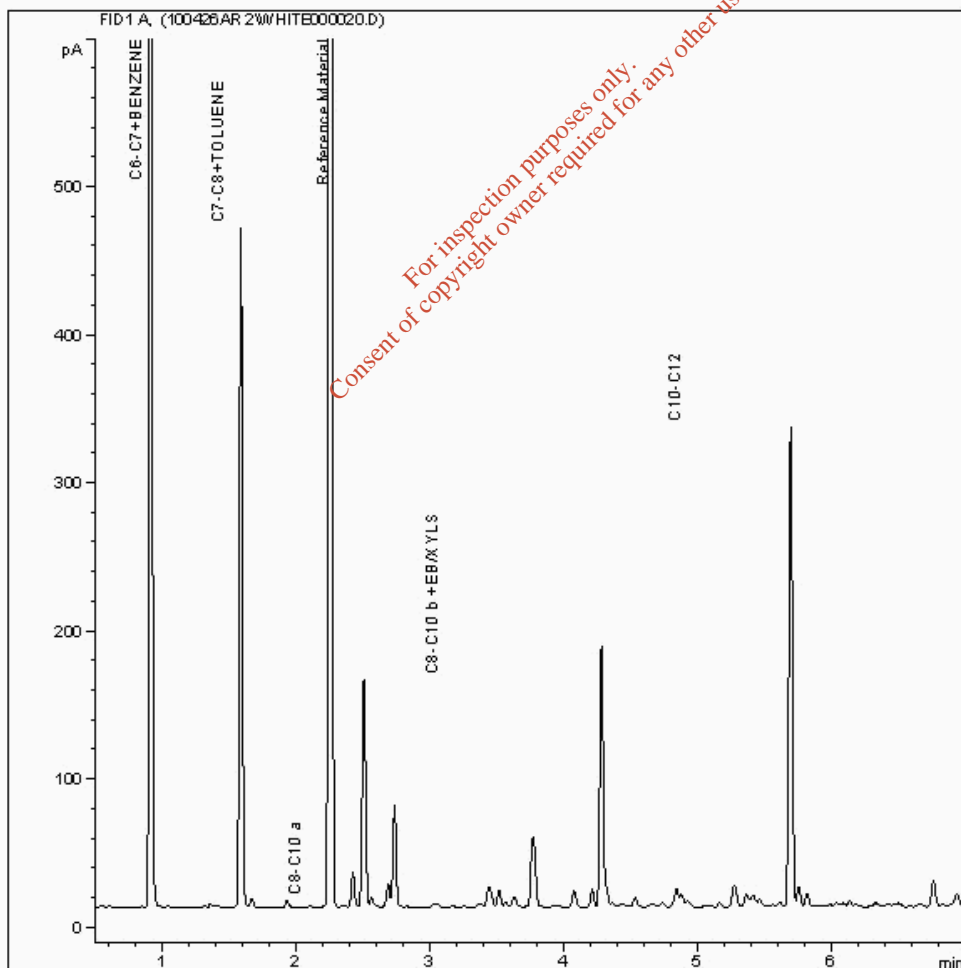
Analysis: GRO BTEX MTBE GC (W)

Sample No 1436861
Sample ID B8
Depth 1.60 - 2.80

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561092-1436861
Date Acquired : 26/04/10 14:48:45
Units : ppb
Dilution : 5

#	Compound Name	Amount
1	C4-C6+MTBE	1336
2	C6-C7+BENZENE	146253
3	C7-C8+TOLUENE	77307
4	C8-C10 a	1469
5	Reference Material	116486
6	C8-C10 b +EB/XYLS	75490
7	C10-C12	132980



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

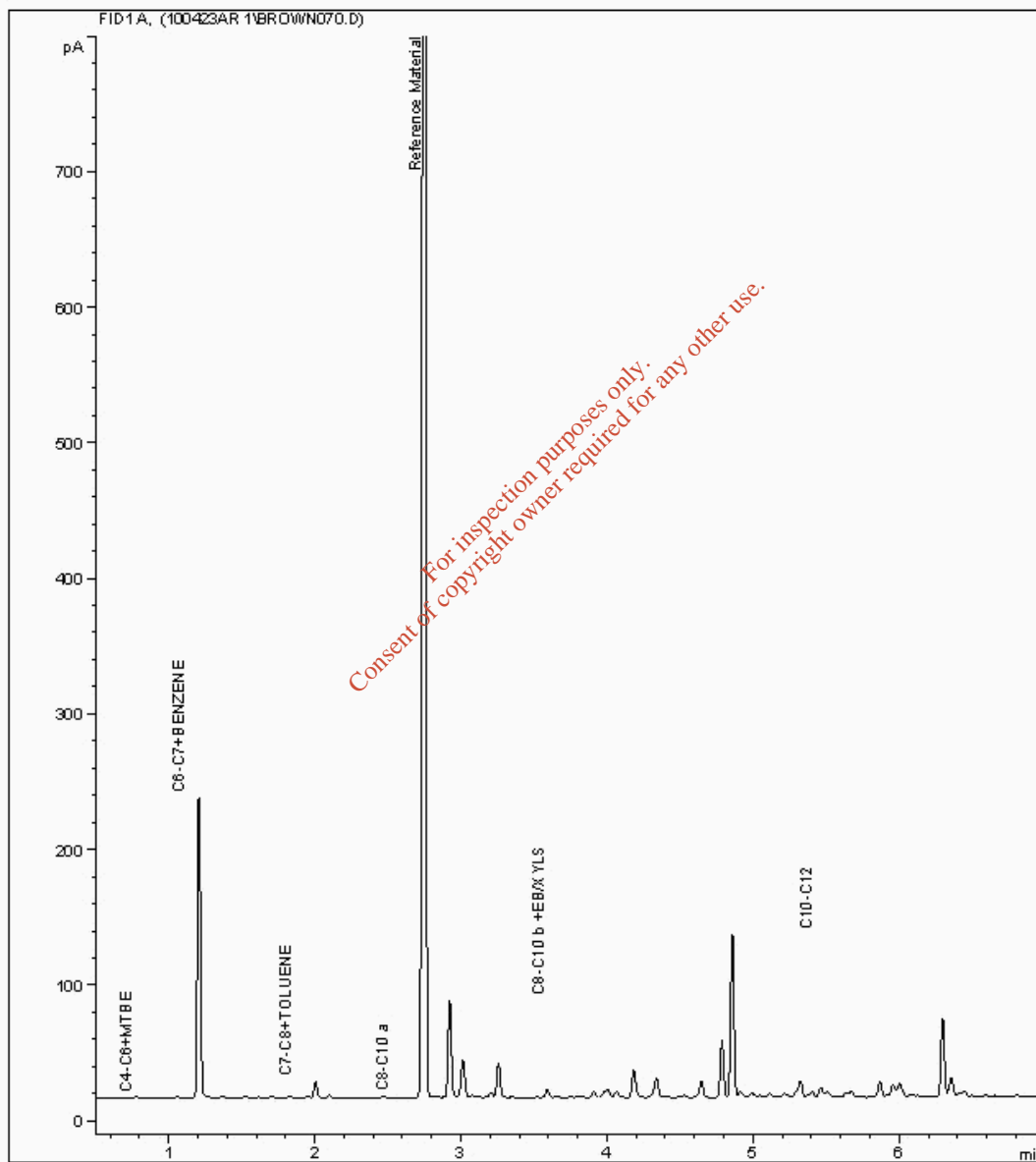
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436889
Sample ID A3
Depth 1.50 - 4.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561108-1436889
Date Acquired : 24/04/10 05:42:27
Units : ppb
Dilution : 1



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

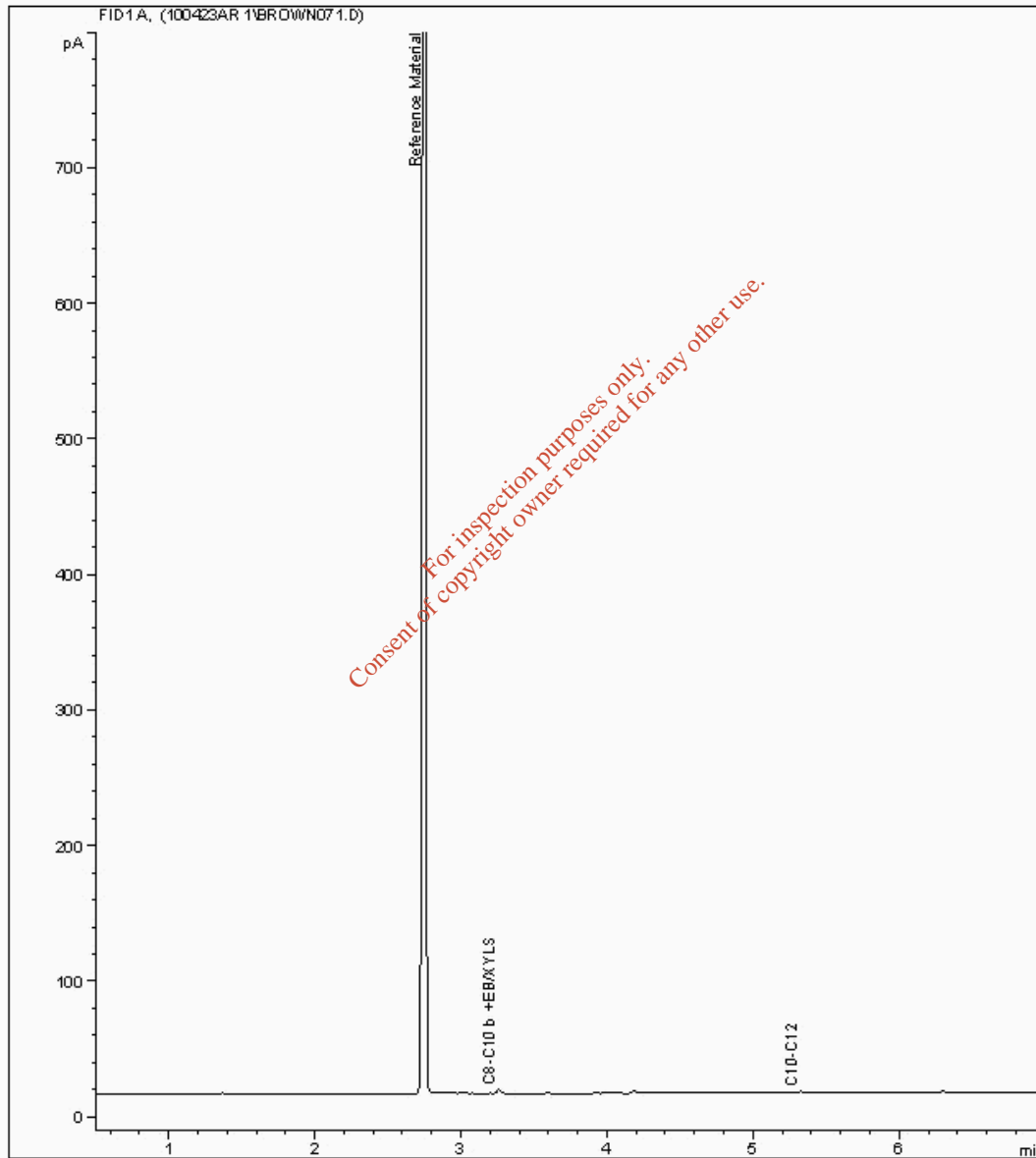
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 82282

Analysis: GRO BTEX MTBE GC (W)

Sample No 1436915
Sample ID A4
Depth 1.50 - 2.30

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561124-1436915
Date Acquired : 24/04/10 05:56:30
Units : ppb
Dilution : 1



SDG: 100422-86
Job: D_MOUCHEL_ELE-104
Client Ref.: 22/04/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 82282

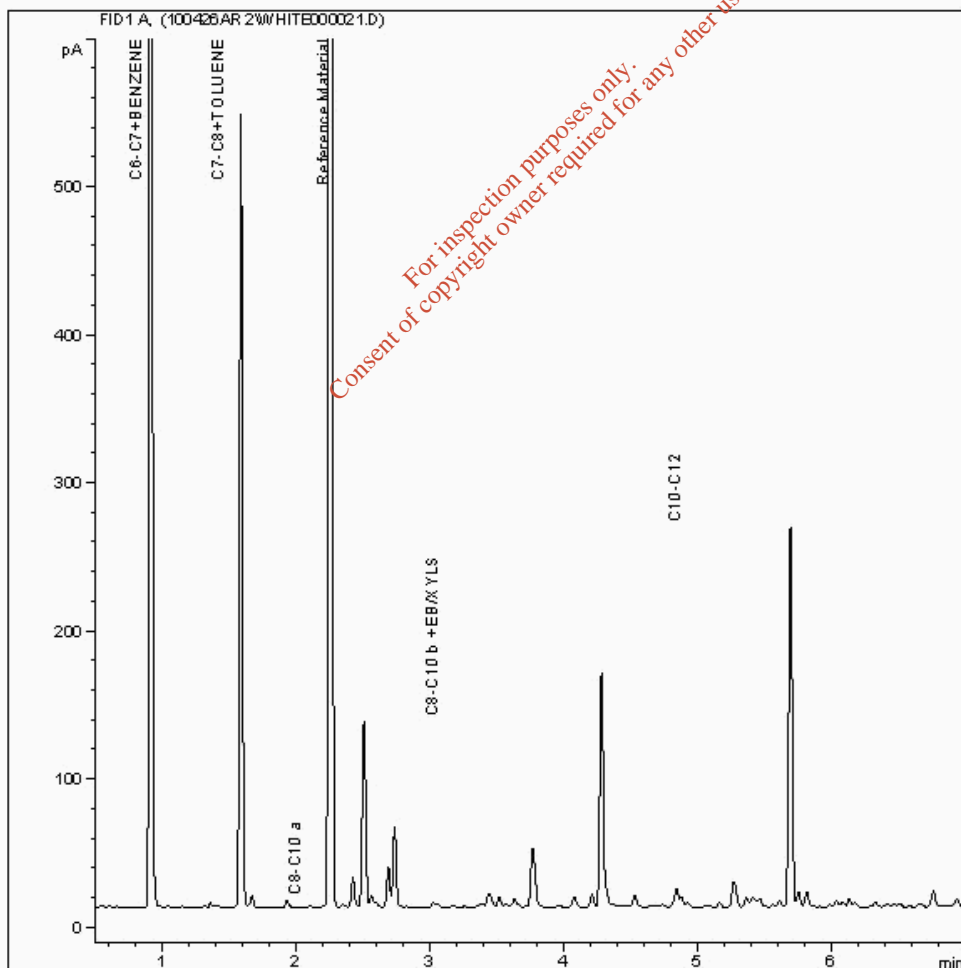
Analysis: GRO BTEX MTBE GC (W)

Sample No 1436931
Sample ID C7
Depth 2.00 - 6.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561140-1436931
Date Acquired : 26/04/10 15:02:21
Units : ppb
Dilution : 10

#	Compound Name	Amount
1	C4-C6+MTBE	2709
2	C6-C7+BENZENE	379617
3	C7-C8+TOLUENE	177879
4	C8-C10 a	3064
5	Reference Material	253413
6	C8-C10 b +EB/XYLS	131718
7	C10-C12	221506



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: David Megson

CERTIFICATE OF ANALYSIS

Date: 22 July 2010
Customer: D_MOUCHEL_ELE-105
Sample Delivery Group (SDG): 100715-55 **Report No.:** 91179
Your Reference: 15/07/10
Location: Limerick Gasworks

We received 10 samples on Thursday July 15, 2010 and 10 of these samples were scheduled for analysis which was completed on Thursday July 22, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Operations Director - Land UK & Ireland



SDG:	100715-55	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-105	Attention:	David Megson
Client Reference:	15/07/10	Order No.:	22541
Location:	Limerick Gasworks	Report No.:	91179

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1823349	A3 W004	1.50 - 3.50	14/07/2010
1823419	A4 W004	1.50 - 3.00	14/07/2010
1823304	B8 W004	2.00 - 2.70	14/07/2010
1824006	C7 W004	5.00 - 6.00	14/07/2010
1823229	D5 W004	2.00 - 3.50	14/07/2010
1824196	H12 W004	1.00 - 3.00	14/07/2010
1824106	J10 W004	0.00 - 0.10	14/07/2010
1824138	K1 W004	3.00 - 4.00	14/07/2010
1824074	K5 W004	1.50 - 3.00	14/07/2010
1824262	M3 W004	4.50 - 6.00	14/07/2010

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

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SDG: 100715-55
 Job: D_MOUCHEL_ELE-105
 Client Reference: 15/07/10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: David Megson
 Order No.: 22541
 Report No: 91179

LIQUID

Results Legend	Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Container	Total
X Test	1823229	D5 W004	2.00 - 3.50	11 green glass bottle 11 plastic	
N No Determination Possible	1823304	B8 W004	2.00 - 2.70	11 green glass bottle 11 plastic	
	1823349	A3 W004	1.50 - 3.50	11 green glass bottle 11 plastic	
	1823419	A4 W004	1.50 - 3.00	11 green glass bottle 11 plastic	
	1824006	C7 W004	5.00 - 6.00	11 green glass bottle 11 plastic	
	1824074	K5 W004	1.50 - 3.00	11 green glass bottle 11 plastic	
	1824106	J10 W004	0.00 - 0.10	11 green glass bottle 11 plastic	
	1824138	K1 W004	3.00 - 4.00	11 green glass bottle 11 plastic	
	1824196	H12 W004	1.00 - 3.00	11 green glass bottle 11 plastic	
	1824262	M3 W004	4.50 - 6.00	11 green glass bottle 11 plastic	
Ammonium	All				0
Anions by ion Chromatography	All				10
Anions by Kone (w)	All				0
Cyanide Comp/Free/Total/Thiocyanate	All				7
Dissolved Metals by ICP-MS	All				0
EPH CWG (Aliphatic) Aqueous GC (W)	All				10
EPH CWG (Aromatic) Aqueous GC (W)	All				10
GRO BTEX MTBE GC (W)	All				0
Hexavalent Chromium (w)	All				10
Mercury Dissolved	All				0
PAH Spec MS - Aqueous (W)	All				10
pH Value	All				0
Phenols by HPLC (W)	All				10
Sulphide	All				0
TPH CWG (W)	All				10
VOC MS (W)	All				0
					6

SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: David Megson
Order No.: 22541
Report No.: 91179

Test Completion dates

SDG reference: 100715-55

Lab Sample No(s)	1823229	1823304	1823349	1823419	1824006	1824074	1824106	1824138	1824196	1824262
Customer Sample Ref.	D5	B8	A3	A4	C7	K5	J10	K1	H12	M3
Depth	2.00 - 3.50	2.00 - 2.70	1.50 - 3.50	1.50 - 3.00	5.00 - 6.00	1.50 - 3.00	0.00 - 0.10	3.00 - 4.00	1.00 - 3.00	4.50 - 6.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	16/07/2010	16/07/2010	16/07/2010
Anions by ion Chromatography		19/07/2010			19/07/2010	19/07/2010				
Anions by Kone (w)	20/07/2010		20/07/2010	20/07/2010			20/07/2010	19/07/2010	19/07/2010	19/07/2010
Cyanide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
Dissolved Metals by ICP-MS	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	22/07/2010	21/07/2010	19/07/2010	19/07/2010	19/07/2010
EPH CWG (Aliphatic) Aqueous GC	20/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010
EPH CWG (Aromatic) Aqueous GC	20/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010
GRO by GC-FID (W)	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010
Hexavalent Chromium (w)	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	20/07/2010	19/07/2010	16/07/2010	16/07/2010	16/07/2010
Mercury Dissolved	19/07/2010	19/07/2010	19/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
PAH Spec MS - Aqueous (W)	18/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
pH Value	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
Phenols by HPLC (W)	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
Sulphide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
TPH CWG (W)	21/07/2010	22/07/2010	21/07/2010	21/07/2010	22/07/2010	22/07/2010	21/07/2010	21/07/2010	21/07/2010	22/07/2010
VOC MS (W)		21/07/2010	21/07/2010	19/07/2010	21/07/2010	21/07/2010				21/07/2010

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
diss.filt	Dissolved / filtered sample.		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
tot.unfilt	Total / unfiltered sample.		100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
*	subcontracted test.		1823349	1823419	1823304	1824006	1823229	1824196
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	9.5 #	2.83 #	103 #	83.3 #	0.605 #	13.5 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	12.2 #	3.64 #	132 #	107 #	0.778 #	17.4 #
Sulphide	<0.01 mg/l	TM101	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	31.8 #	7.35 #	38.3 #	23.9 #	1.68 #	3.44 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	7.49 #	5.34 #	6.43 #	5.21 #	1.45 #	6.83 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	0.915 #	<0.85 #	<0.85 #	1.52 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.02 #	0.05 #	0.054 #	0.422 #	0.341 #	0.055 #
Nickel (diss.filt)	<0.15 µg/l	TM152	4.93 #	3.84 #	9.24 #	2.28 #	2.17 #	3.53 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.08 #	1.02 #	5.73 #	16.9 #	0.928 #	1.07 #
Zinc (diss.filt)	<0.41 µg/l	TM152	10.8 #	4.29 #	3.48 #	3.16 #	3.79 #	2.1 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.0179 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	324 #	233 #			13.7 #	189 #
Sulphate	<0.1 mg/l	TM226			130 #	49.4 #		
Cyanide, Total	<0.05 mg/l	TM227	0.241 #	0.166 #	0.206 #	0.363 #	0.097 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.06 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	8.26 #	8.32 #	8.45 #	8.37 #	8.04 #	8.04 #
Resorcinol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	<0.1 #	<2 #	<0.02 #	<0.02 #
Catechol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	<3 #	<0.03 #	<0.03 #
Phenol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	24.2 #	62.3 #	<0.02 #	<0.02 #
Cresols	<0.07 mg/l	TM259	<0.07 #	<0.07 #	54 #	121 #	<0.07 #	<0.07 #
Xylenols	<0.17 mg/l	TM259	<0.17 #	<0.17 #	48.8 #	97.8 #	<0.17 #	<0.17 #
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	<3 #	<0.03 #	<0.03 #
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	<3 #	<0.03 #	<0.03 #
2-Isopropylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	22.9 #	<0.03 #	<0.03 #
Phenols, Total 5 speciated	<0.2 mg/l	TM259	<0.2 #	<0.2 #	127 #	304 #	<0.2 #	<0.2 #

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Component	LOD/Units	Method						
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	334	35	<10	65	26
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	580	14	<10	72	43
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	328	<10	<10	203	281
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	1240	49	<10	340	350
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	1260	1710	14600	30600	1670	751

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No: 91179

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196

Component	LOD/Units	Method	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	615	43	12700	28300	52	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	377	139	1510	1980	174	54
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	272	288	385	348	1100	347
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	1260	470	14600	30600	1330	401

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
		Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
		SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Component	LOD/Units	Method						
Benzene	<7 µg/l	TM245	117 #	<7 #	8020 #	16300 #	<7 #	<7 #
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	275 #	203 #	<5 #	<5 #
Toluene	<4 µg/l	TM245	<4 #	<4 #	4550 #	5220 #	<4 #	<4 #
m,p-Xylene	<8 µg/l	TM245	24 #	<8 #	1810 #	1390 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245	25 #	<3 #	779 #	597 #	<3 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245	49 #	<10 #	2590 #	1990 #	<10 #	<10 #
BTEX, Total	<10 µg/l	TM245	166 #	<10 #	15400 #	23700 #	<10 #	<10 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<6 #	<15 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	83.9	124	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245	58.9	<10	651	2900	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245	53.2	15	777	1110	<10	10.2
Aliphatics >C10-C12	<10 µg/l	TM245	190	46.4	3500	3990	<10	30.6
Aromatics >C6-C7	<10 µg/l	TM245	117	<10	8020	16300	<10	<10
Aromatics >C7-C8	<10 µg/l	TM245	<10	<10	4550	5220	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245	129	22.4	4030	3850	12.1	15.4
Aromatics >EC10-EC12	<10 µg/l	TM245	286	69.5	5250	5990	14.1	45.9
Total Aliphatics >C5-C12	<10 µg/l	TM245	303	67.3	5010	8120	<10	40.8
Total Aromatics >C6-C12	<10 µg/l	TM245	531	92	21800	31300	26.3	61.3

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
		Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
		SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	1.97	0.59	2860	5040	3.86	3.03
Acenaphthene (aq)	<0.015 µg/l	TM178	26.7	0.17	23.2	36.3	2.94	1.93
Acenaphthylene (aq)	<0.011 µg/l	TM178	7.54	1.49	174	277	9.41	4.1
Fluoranthene (aq)	<0.014 µg/l	TM178	13.8	8.31	33.4	47	37.7	19
Anthracene (aq)	<0.015 µg/l	TM178	1.48	0.65	28.6	42.6	6.19	1.83
Phenanthrene (aq)	<0.022 µg/l	TM178	1.71	0.94	95.9	155	12.1	5.77
Fluorene (aq)	<0.014 µg/l	TM178	3.63	0.3	68.6	114	3.78	1.81
Chrysene (aq)	<0.013 µg/l	TM178	4.25	2.08	5.46	5.31	11.9	5.04
Pyrene (aq)	<0.015 µg/l	TM178	20	8.08	22.5	31.8	25.3	13
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	6.06	3.43	6.75	6.06	15.4	7.24
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	4.86	5.6	5.65	3.52	17.4	12.3
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	1.83	2.17	2.18	<2.7	7.37	4.33
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	6.92	4.73	4.09	2.18	16.1	9.57
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	0.73	0.78	<0.64	<1.6	2.68	1.47
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	3.45	2.93	2.01	<1.6	10.1	5.26
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	2.57	2.85	1.67	<1.4	8.97	5.22
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	108	85.1	3340	5760	191	101

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No: 91179

TPH CWG (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196

Component	LOD/Units	Method	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	303	1300	5060	8120	340	391
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	1800	562	36400	62000	1350	462
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2100	1870	41500	70100	1690	853

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

VOC MS (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		14/07/2010	14/07/2010	14/07/2010	14/07/2010		
dis.filt	Dissolved / filtered sample.		15/07/2010	15/07/2010	15/07/2010	15/07/2010		
tot.unfilt	Total / unfiltered sample.		100715-55	100715-55	100715-55	100715-55		
*	subcontracted test.		1823349	1823419	1823304	1824006		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208	108	112	111	108		
Toluene-d8**	%	TM208	96.4	98.4	100	97.2		
4-Bromofluorobenzene**	%	TM208	107	101	92.4	87.3		
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	<7	<7	#	#
Chloromethane	<9 µg/l	TM208	<9	<9	<9	<9	#	#
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
Bromomethane	<2 µg/l	TM208	<2	<2	<2	<2	#	#
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	#	#
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	<3.7	<3.7	#	#
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	<1.6	<1.6	#	#
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	#	#
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	#	#
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	<3.8	<3.8	#	#
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	<1.8	<1.8	#	#
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	<1.4	<1.4	#	#
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	<3.3	<3.3	#	#
Benzene	<1.3 µg/l	TM208	307	<1.3	6880	11100	#	#
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	#	#
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	<3	<3	#	#
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	<2.7	<2.7	#	#
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	<0.9	<0.9	#	#
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	#	#
Toluene	<1.4 µg/l	TM208	4.42	<1.4	4220	3860	#	#
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	#	#
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	#	#
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	#	#
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	<1.5	<1.5	#	#
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	<1.7	#	#
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	#	#
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	#	#
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	#	#
Ethylbenzene	<2.5 µg/l	TM208	<2.5	<2.5	211	158	#	#

SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No: 91179

VOC MS (W)

Results Legend		Customer Sample Ref.	A3 W004	A4 W004	B8 W004	C7 W004		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00		
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55		
		Lab Sample No.(s)	1823349	1823419	1823304	1824006		
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	41.9 #	3.48 #	1450 #	1070 #		
o-Xylene	<1.7 µg/l	TM208	45.8 #	4.33 #	621 #	472 #		
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	161 #	237 #		
Bromoform	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #		
Isopropylbenzene	<1.4 µg/l	TM208	<1.4 #	<1.4 #	11.2 #	6.27 #		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2 #	<5.2 #	<5.2 #	<5.2 #		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #	<7.8 #	<7.8 #		
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
Propylbenzene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	14.1 #	8.72 #		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	6.29 #	<1.8 #	88.8 #	52.5 #		
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #		
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	19.1 #	2.63 #	217 #	131 #		
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #		
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	<2.6 #	<2.6 #		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #		
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8 #	<9.8 #	<9.8 #	<9.8 #		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #		
Naphthalene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	4430 #	5070 #		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #	<3.1 #	<3.1 #		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10 #	<10 #	<10 #	<10 #		

SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

Results Legend		Customer Sample Ref.	J10 W004	K1 W004	K5 W004	M3 W004		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		14/07/2010	14/07/2010	14/07/2010	14/07/2010		
diss.filt	Dissolved / filtered sample.		15/07/2010	15/07/2010	15/07/2010	15/07/2010		
tot.unfilt	Total / unfiltered sample.		100715-55	100715-55	100715-55	100715-55		
*	subcontracted test.		1824106	1824138	1824074	1824262		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.444 #	8.45 #	167 #	1.28 #		
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	0.571 #	10.9 #	215 #	1.65 #		
Sulphide	<0.01 mg/l	TM101	<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Arsenic (diss.filt)	<0.12 µg/l	TM152	1.73 #	2.5 #	167 #	2.91 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.172 #	<0.1 #	0.32 #	<0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152	3.74 #	5.5 #	22.9 #	2.51 #		
Copper (diss.filt)	<0.85 µg/l	TM152	7.73 #	1.47 #	3.84 #	4.84 #		
Lead (diss.filt)	<0.02 µg/l	TM152	0.144 #	0.212 #	4.15 #	0.122 #		
Nickel (diss.filt)	<0.15 µg/l	TM152	5.61 #	6.69 #	35.4 #	3.6 #		
Selenium (diss.filt)	<0.39 µg/l	TM152	1.56 #	1.08 #	26.1 #	1.69 #		
Zinc (diss.filt)	<0.41 µg/l	TM152	4.82 #	2.9 #	173 #	2.49 #		
Mercury (diss.filt)	<0.01 µg/l	TM183	0.0101 #	<0.01 #	0.0677 #	<0.01 #		
Sulphate	<3 mg/l	TM184	266 #	800 #		564 #		
Sulphate	<0.1 mg/l	TM226			728 #			
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	0.267 #	14.6 #	0.771 #		
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.3 #	<0.03 #		
pH	<1 pH Units	TM256	8.19 #	7.72 #	9.33 #	7.94 #		
Resorcinol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	<20 #	<0.02 #		
Catechol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #		
Phenol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	587 #	<0.02 #		
Cresols	<0.07 mg/l	TM259	<0.07 #	<0.07 #	879 #	<0.07 #		
Xylenols	<0.17 mg/l	TM259	<0.17 #	<0.17 #	355 #	<0.17 #		
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #		
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #		
2-Isopropylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #		
Phenols, Total 5 speciated	<0.2 mg/l	TM259	<0.2 #	<0.2 #	1820 #	<0.2 #		

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No: 91179

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	J10 W004	K1 W004	K5 W004	M3 W004
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.	Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1824106	1824138	1824074	1824262

Component	LOD/Units	Method	J10 W004	K1 W004	K5 W004	M3 W004
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10	<10	62200	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10	<10	3500	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10	20	756	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10	20	66500	<10

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	J10 W004	K1 W004	K5 W004	M3 W004		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00		
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55		
		Lab Sample No.(s)	1824106	1824138	1824074	1824262		
Component	LOD/Units	Method						
Benzene	<7 µg/l	TM245	<7 #	<7 #	14300 #	<7 #		
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	271 #	<5 #		
Toluene	<4 µg/l	TM245	<4 #	<4 #	4870 #	<4 #		
m,p-Xylene	<8 µg/l	TM245	<8 #	<8 #	1920 #	<8 #		
o-Xylene	<3 µg/l	TM245	<3 #	<3 #	732 #	<3 #		
m,p,o-Xylene	<10 µg/l	TM245	<10 #	<10 #	2650 #	<10 #		
BTEX, Total	<10 µg/l	TM245	<10 #	<10 #	22100 #	<10 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<15 #	<3 #		
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	868	<10		
Aliphatics >C6-C8	<10 µg/l	TM245	<10	<10	3910	<10		
Aliphatics >C8-C10	<10 µg/l	TM245	<10	<10	1850	<10		
Aliphatics >C10-C12	<10 µg/l	TM245	<10	<10	8230	<10		
Aromatics >C6-C7	<10 µg/l	TM245	<10	<10	14300	<10		
Aromatics >C7-C8	<10 µg/l	TM245	<10	<10	4870	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	<10	5700	<10		
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	<10	12300	<10		
Total Aliphatics >C5-C12	<10 µg/l	TM245	<10	<10	14900	<10		
Total Aromatics >C6-C12	<10 µg/l	TM245	<10	<10	37200	<10		

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	J10 W004	K1 W004	K5 W004	M3 W004
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.	Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55	100715-55	100715-55
		Lab Sample No.(s)	1824106	1824138	1824074	1824262
Component	LOD/Units	Method				
Naphthalene (aq)	<0.1 µg/l	TM178	<0.1	0.15	2580	0.22
Acenaphthene (aq)	<0.015 µg/l	TM178	<0.015	0.1	31.6	<0.015
Acenaphthylene (aq)	<0.011 µg/l	TM178	0.16	0.22	190	0.07
Fluoranthene (aq)	<0.014 µg/l	TM178	0.21	2.01	14.9	1.38
Anthracene (aq)	<0.015 µg/l	TM178	0.05	0.2	21.6	0.09
Phenanthrene (aq)	<0.022 µg/l	TM178	0.1	0.57	72.5	0.18
Fluorene (aq)	<0.014 µg/l	TM178	0.04	0.1	67.2	0.03
Chrysene (aq)	<0.013 µg/l	TM178	0.1	1.02	<1.3	0.77
Pyrene (aq)	<0.015 µg/l	TM178	0.17	2.03	9.42	1.23
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	0.16	1.26	<1.7	0.97
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	0.32	2.34	<2.3	1.97
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	0.11	0.85	<2.7	0.67
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	0.3	1.7	30.9	1.39
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	0.06	0.34	<1.6	0.27
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	0.22	1.43	<1.6	1.3
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	0.18	1.21	<1.4	1.06
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	2.08	15.5	2990	10.9

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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

VOC MS (W)

Results Legend		Customer Sample Ref.	K5 W004	M3 W004			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.50 - 3.00	4.50 - 6.00			
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)			
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010			
*	subcontracted test.	Date Received	15/07/2010	15/07/2010			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-55	100715-55			
		Lab Sample No.(s)	1824074	1824262			
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	7.8	109			
Toluene-d8**	%	TM208	81.6	98.2			
4-Bromofluorobenzene**	%	TM208	62.1	97.7			
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	#	#	
Chloromethane	<9 µg/l	TM208	<9	<9	#	#	
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	#	#	
Bromomethane	<2 µg/l	TM208	<2	<2	#	#	
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	#	#	
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	#	#	
Carbon disulphide	<1.3 µg/l	TM208	5.51	<1.3	#	#	
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	#	#	
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	#	#	
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	#	#	
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	#	#	
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	#	#	
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	#	#	
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	#	#	
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	#	#	
1,1,1-Trichloroethane	<1.3 µg/l	TM208	4.67	<1.3	#	#	
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	#	#	
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	#	#	
Benzene	<1.3 µg/l	TM208	13000	<1.3	#	#	
Trichloroethene	<2.5 µg/l	TM208	8.52	<2.5	#	#	
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	#	#	
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	#	#	
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	#	#	
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	#	#	
Toluene	<1.4 µg/l	TM208	4260	<1.4	#	#	
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	#	#	
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	#	#	
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	#	#	
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	#	#	
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	#	#	
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	#	#	
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	#	#	
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
Ethylbenzene	<2.5 µg/l	TM208	206	<2.5	#	#	

SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Reference: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

VOC MS (W)

Results Legend		Customer Sample Ref.	K5 W004	M3 W004				
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 3.00	4.50 - 6.00				
		Sample Type	Water(GW/SW)	Water(GW/SW)				
		Date Sampled	14/07/2010	14/07/2010				
		Date Received	15/07/2010	15/07/2010				
		SDG Ref	100715-55	100715-55				
		Lab Sample No.(s)	1824074	1824262				
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	1310	<2.5	#	#		
o-Xylene	<1.7 µg/l	TM208	515	<1.7	#	#		
Styrene	<1.2 µg/l	TM208	247	<1.2	#	#		
Bromoform	<3 µg/l	TM208	<3	<3	#	#		
Isopropylbenzene	<1.4 µg/l	TM208	8.7	<1.4	#	#		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2	#	#		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	<7.8	#	#		
Bromobenzene	<2 µg/l	TM208	<2	<2	#	#		
Propylbenzene	<2.6 µg/l	TM208	9.99	<2.6	#	#		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	50.6	<1.8	#	#		
4-Chlorotoluene	<1.9 µg/l	TM208	2.28	<1.9	#	#		
tert-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	116	<1.7	#	#		
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	<1.7	#	#		
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6	<2.6	#	#		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	<2.7	#	#		
n-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7	#	#		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8	#	#		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	<2.5	#	#		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	#	#		
Naphthalene	<3.5 µg/l	TM208	4590	<3.5	#	#		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	<3.1	#	#		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10	#	#		

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Table of Results - Appendix

SDG Number : 100715-55

Client : Mouchel

Client Ref : 15/07/10

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

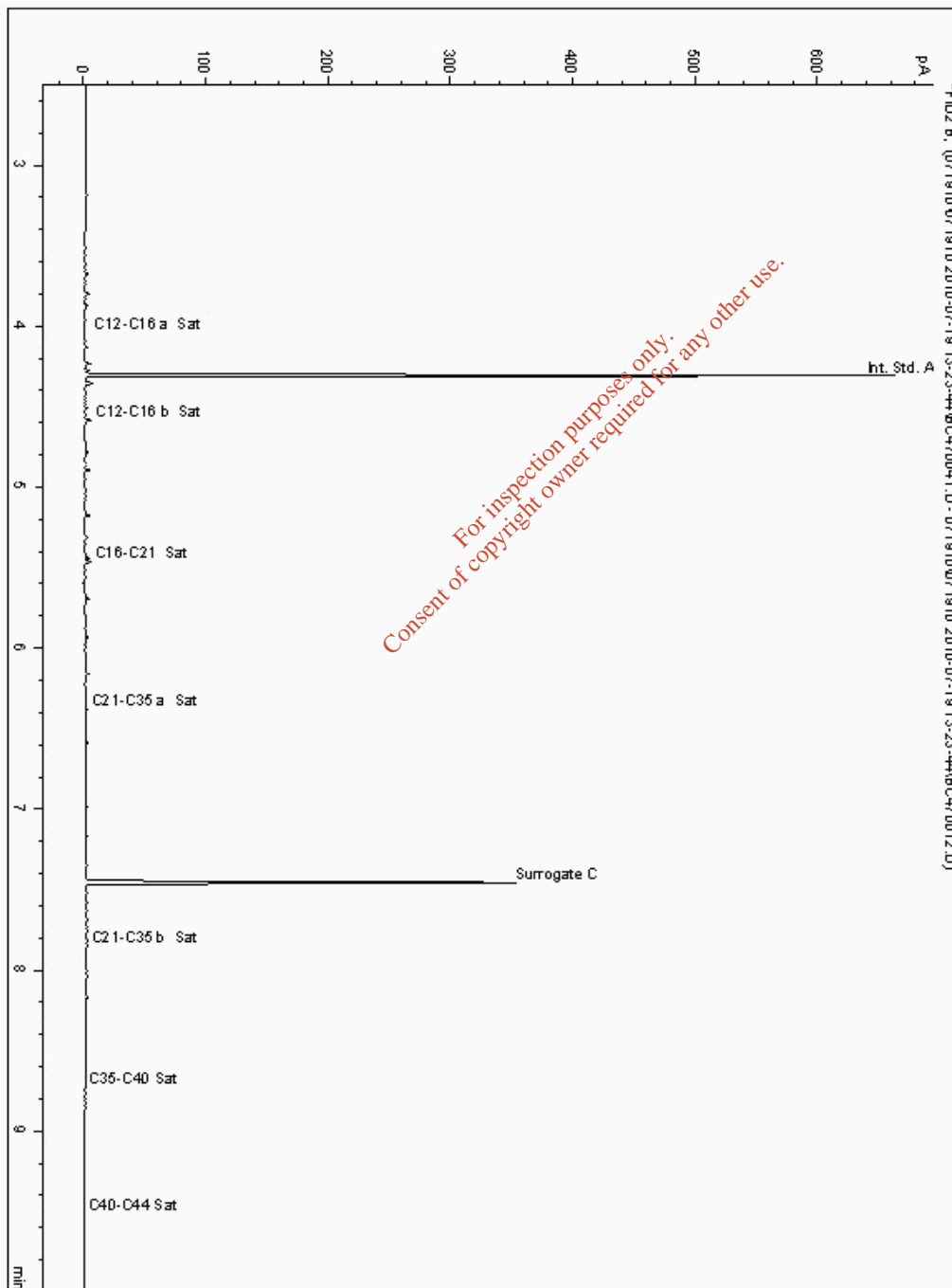
Chromatogram

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

Sample No 1830454
Sample ID D5
Depth 2.00 - 3.50

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

Sample Identity: 1939156-1830454
Date Acquired : 20/07/10 01:42:55
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

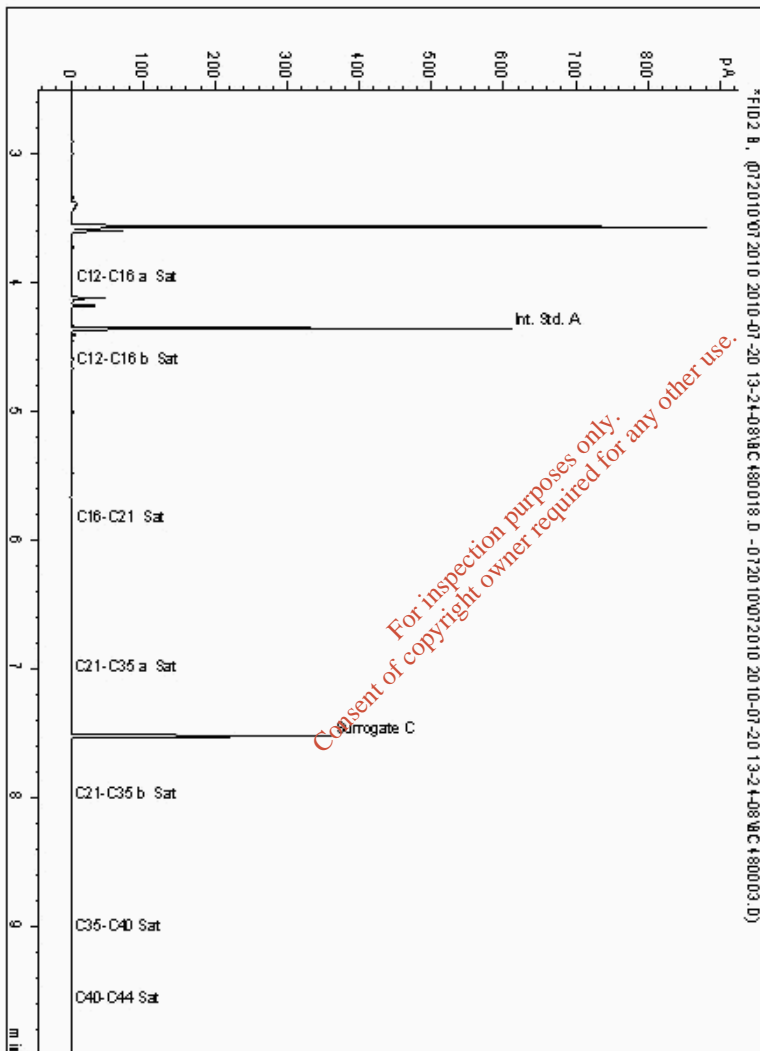
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1830469
Sample ID B8
Depth 2.00 - 2.70

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

Sample Identity: 1939174-1830469
Date Acquired : 20/07/10 18:46:41
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

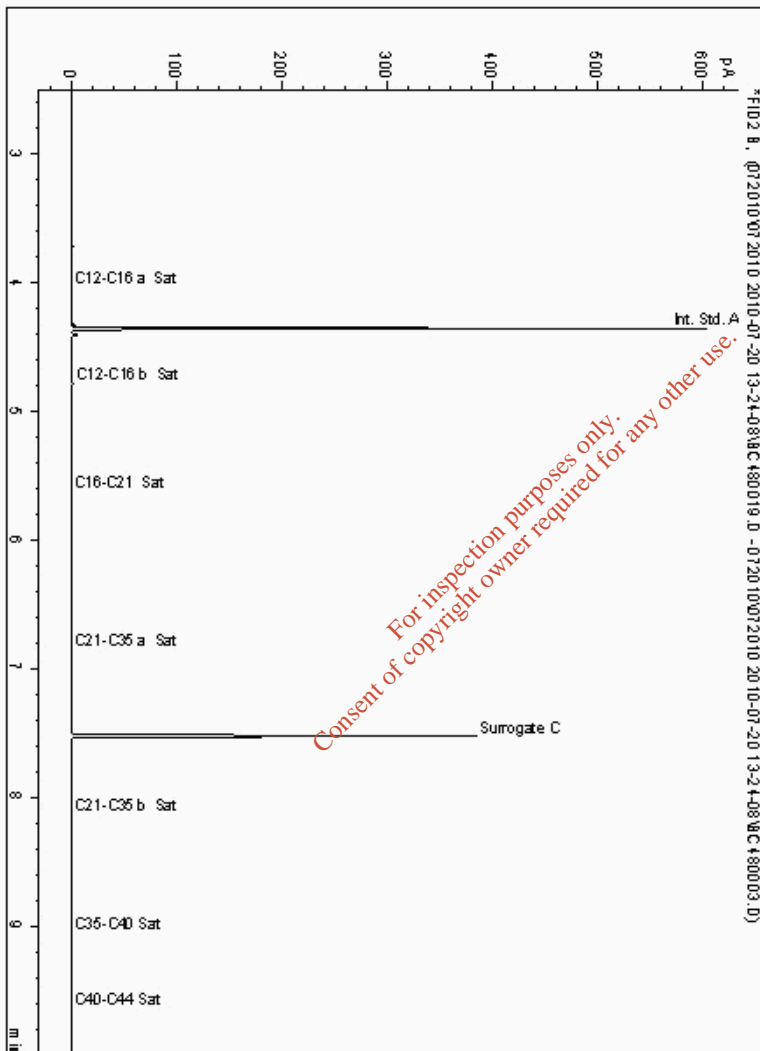
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1830483
Sample ID A3
Depth 1.50 - 3.50

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

Sample Identity: 1939193-1830483
Date Acquired : 20/07/10 19:05:32
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

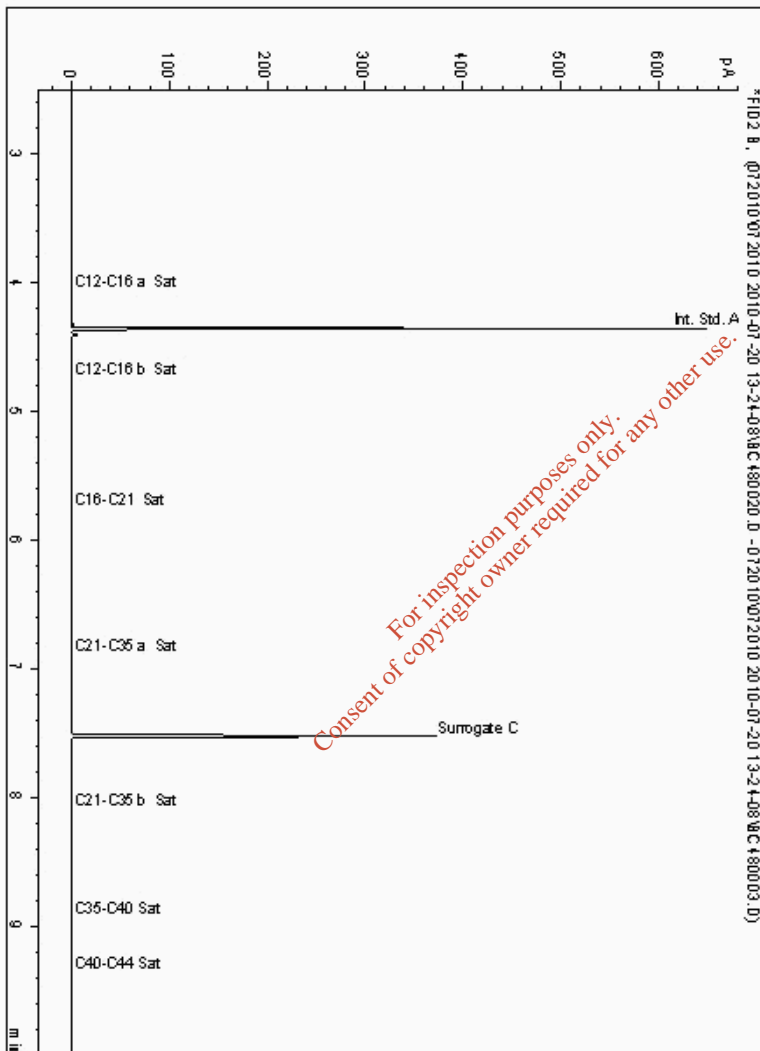
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832109
Sample ID M3
Depth 4.50 - 6.00

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

Sample Identity: 1939318-1832109
Date Acquired : 20/07/10 19:24:23
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

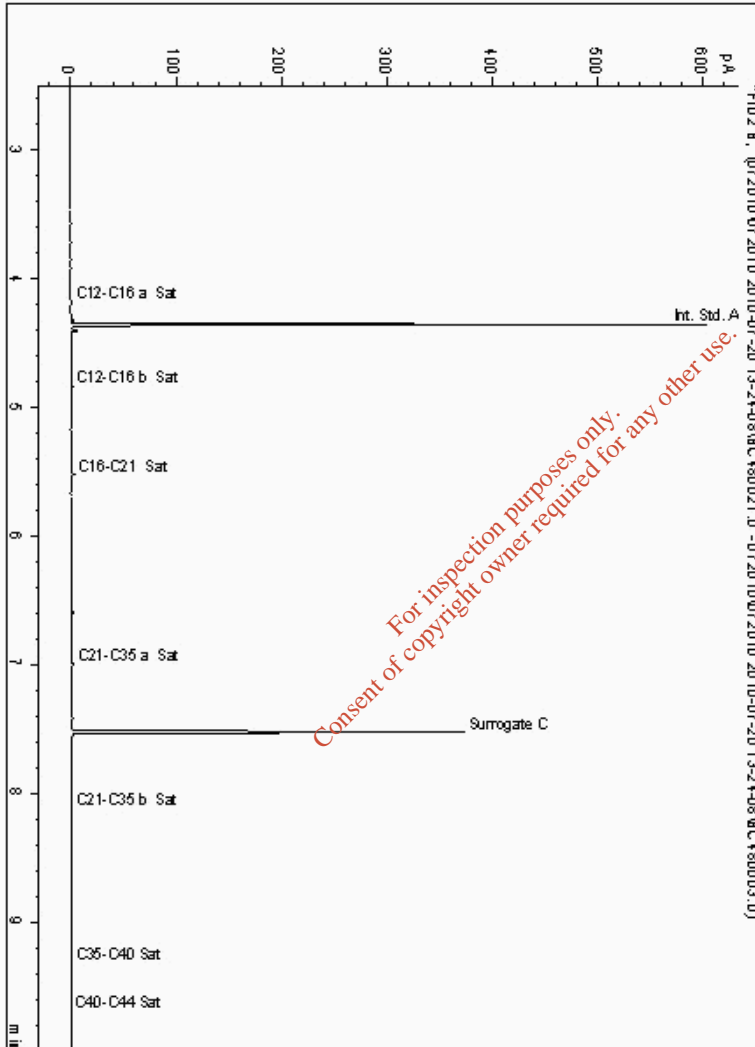
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832165
Sample ID H12
Depth 1.00 - 3.00

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

Sample Identity: 1939303-1832165
Date Acquired : 20/07/10 19:43:26
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

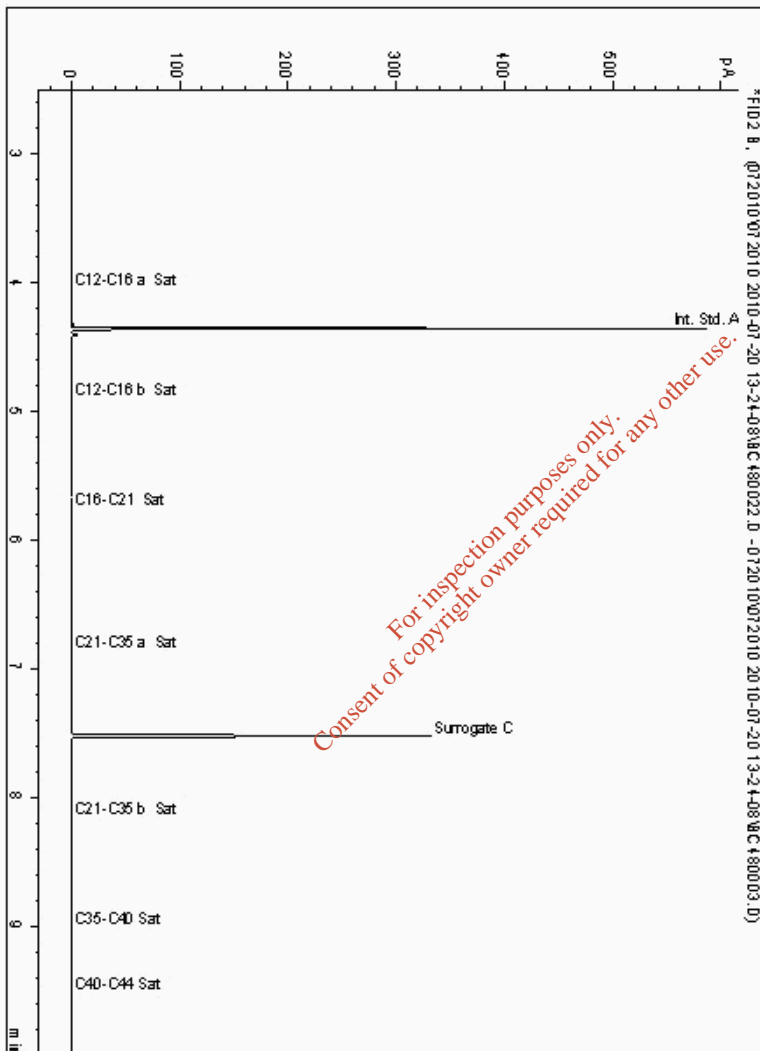
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832208
Sample ID J10
Depth 0.00 - 0.10

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

Sample Identity: 1939271-1832208
Date Acquired : 20/07/10 20:02:17
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

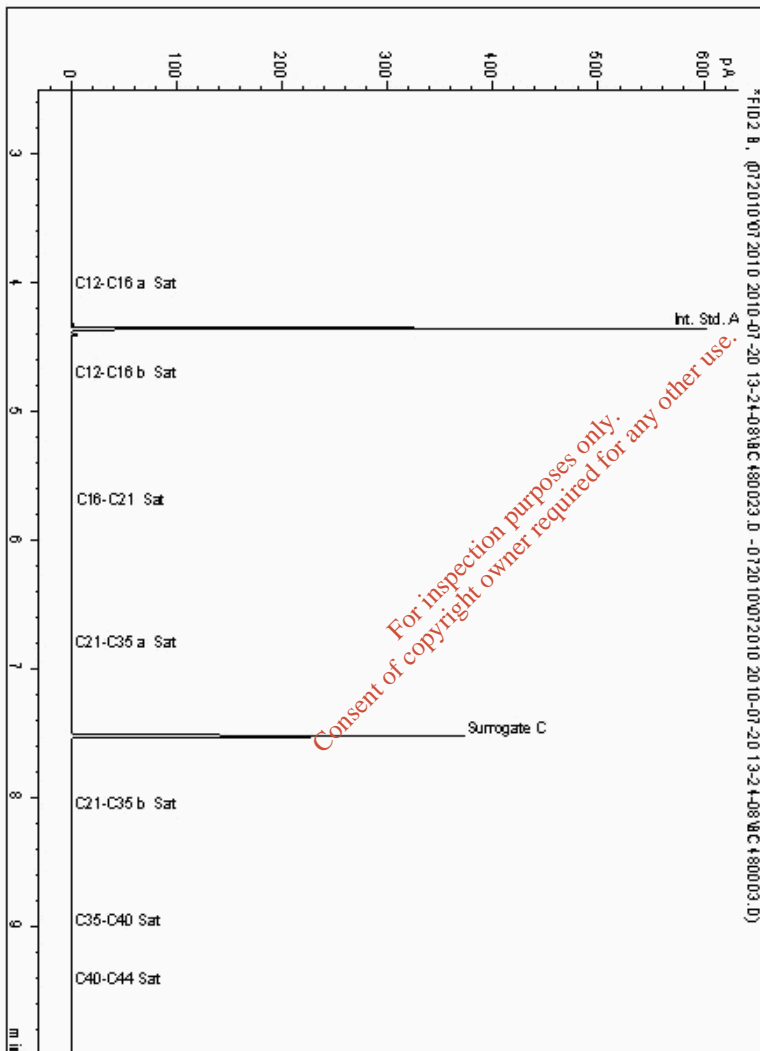
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832248
Sample ID K1
Depth 3.00 - 4.00

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

Sample Identity: 1939286-1832248
Date Acquired : 20/07/10 20:21:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

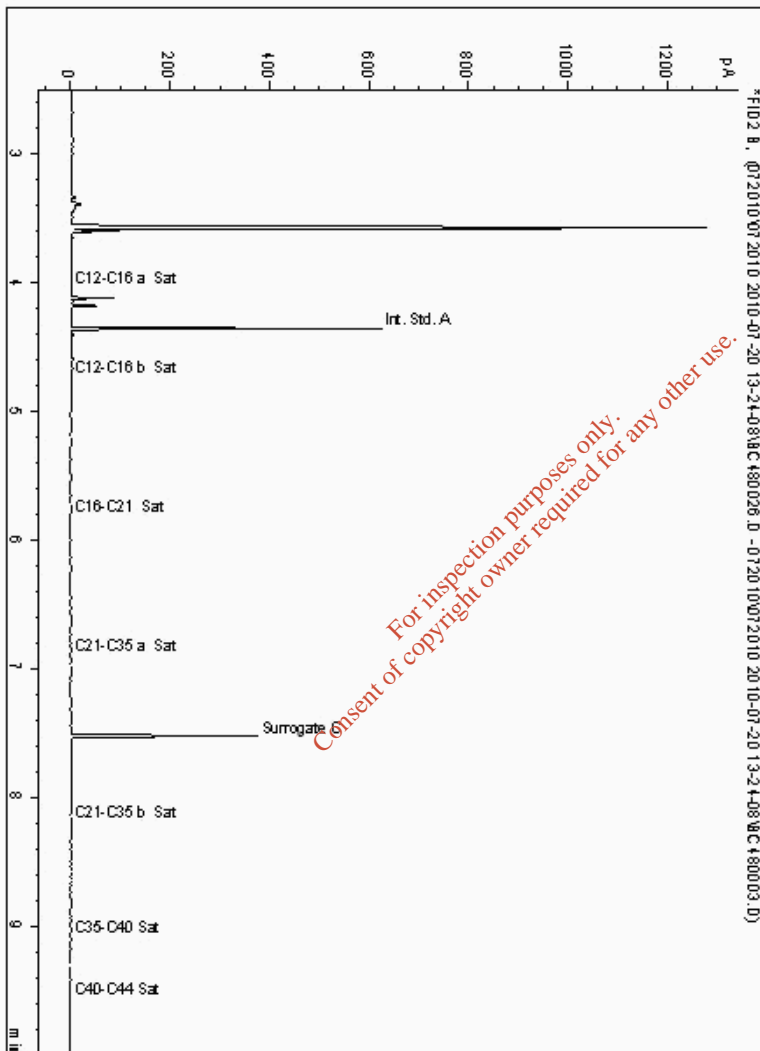
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832618
Sample ID C7
Depth 5.00 - 6.00

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

Sample Identity: 1939239-1832618
Date Acquired : 20/07/10 21:17:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

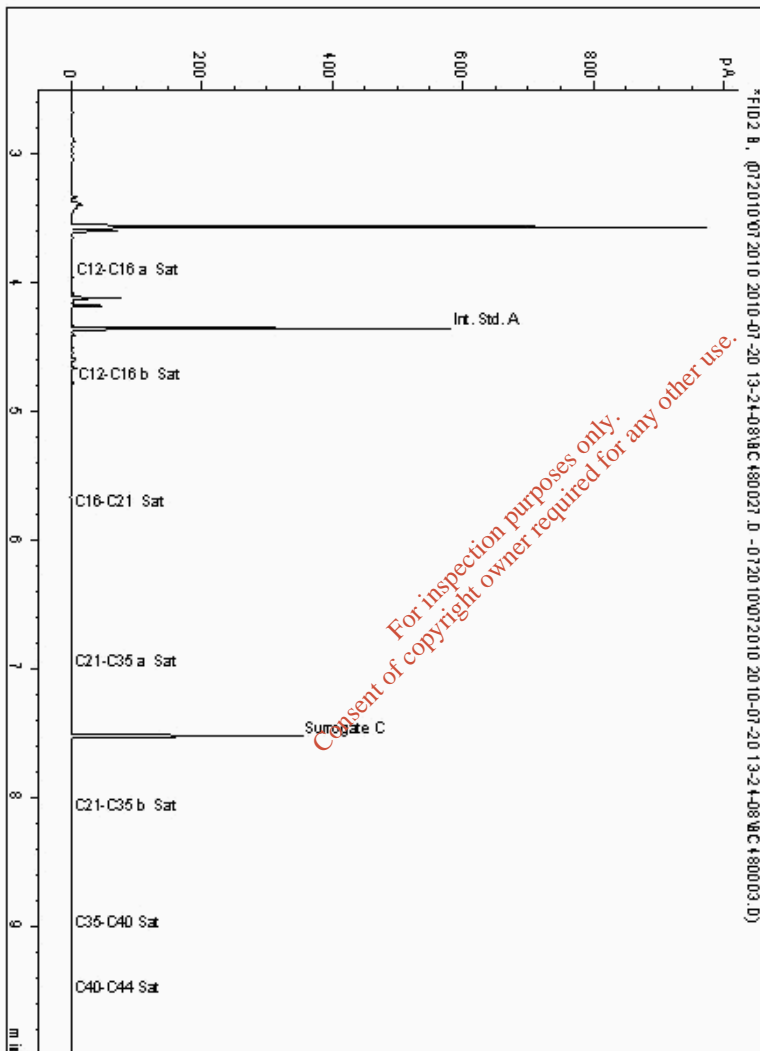
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832660
Sample ID K5
Depth 1.50 - 3.00

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

Sample Identity: 1939255-1832660
Date Acquired : 20/07/10 21:37:29
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

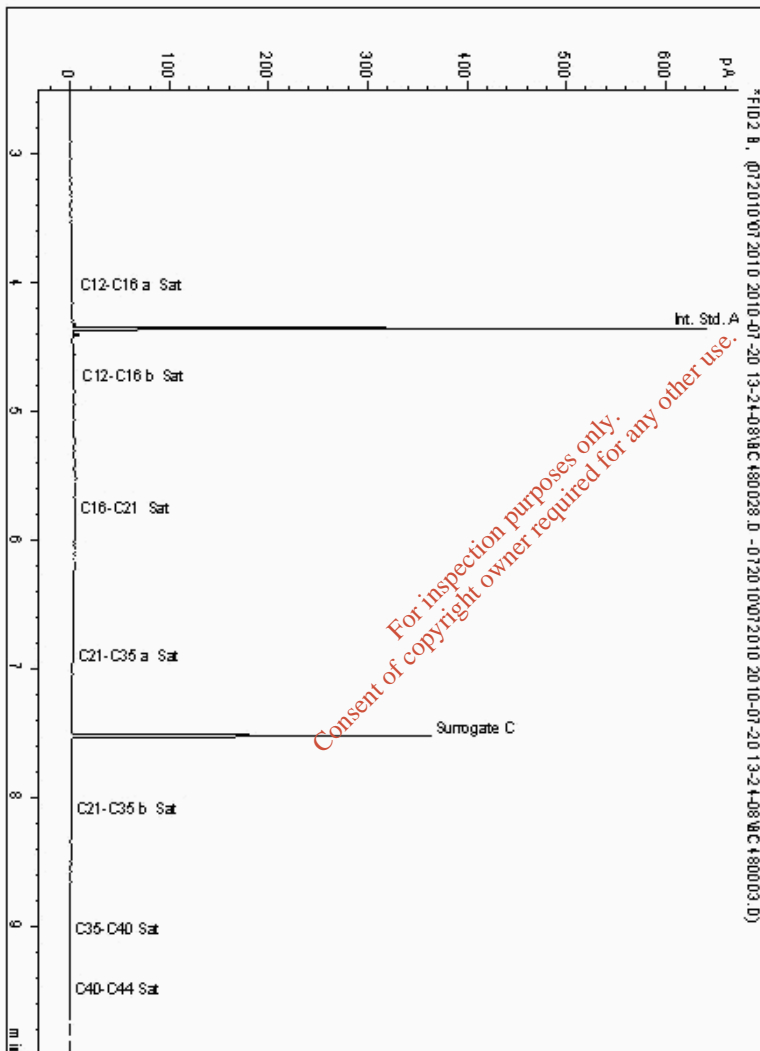
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832689
Sample ID A4
Depth 1.50 - 3.00

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

Sample Identity: 1939209-1832689
Date Acquired : 20/07/10 21:56:17
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

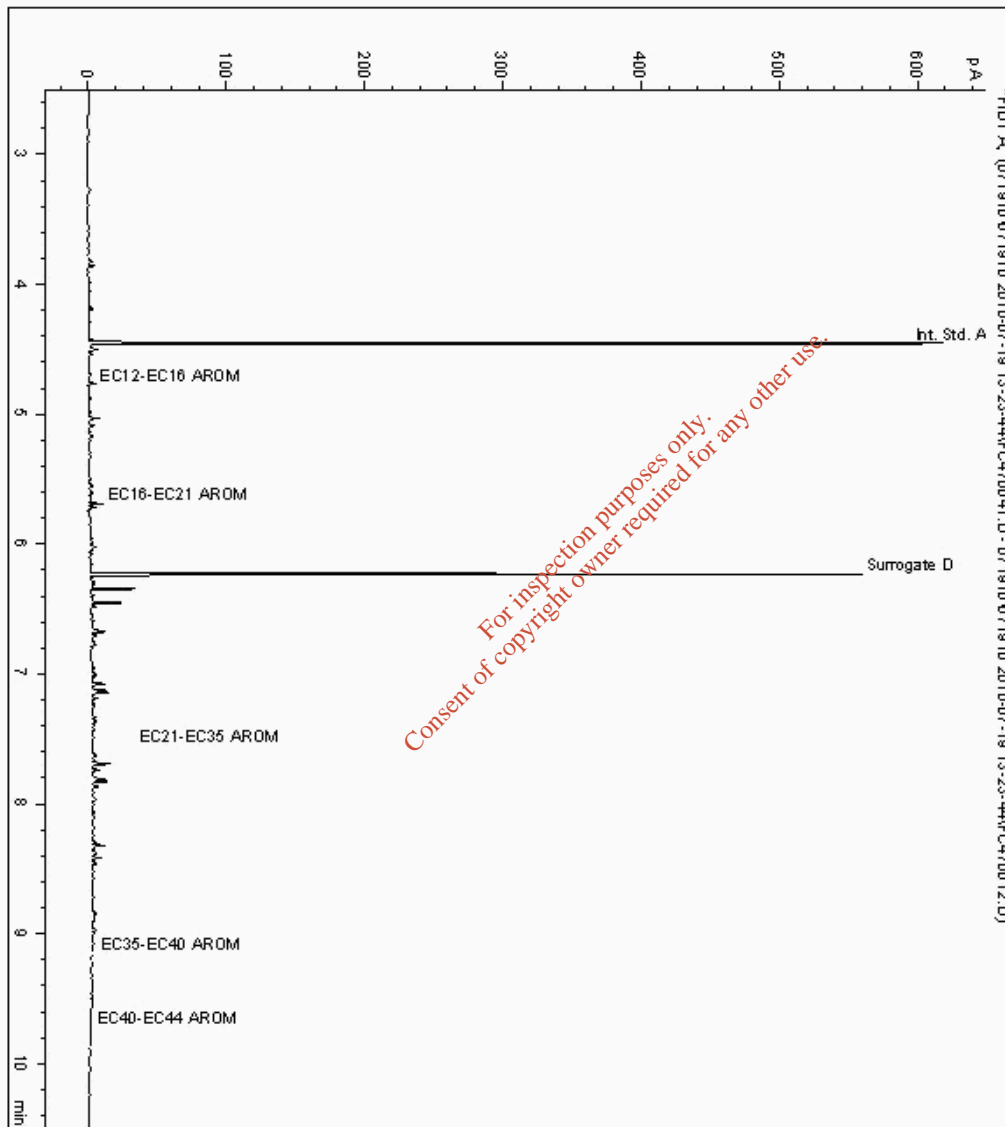
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1830454
Sample ID D5
Depth 2.00 - 3.50

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

Sample Identity: 1939157-1830454
Date Acquired : 20/07/10 01:42:56
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

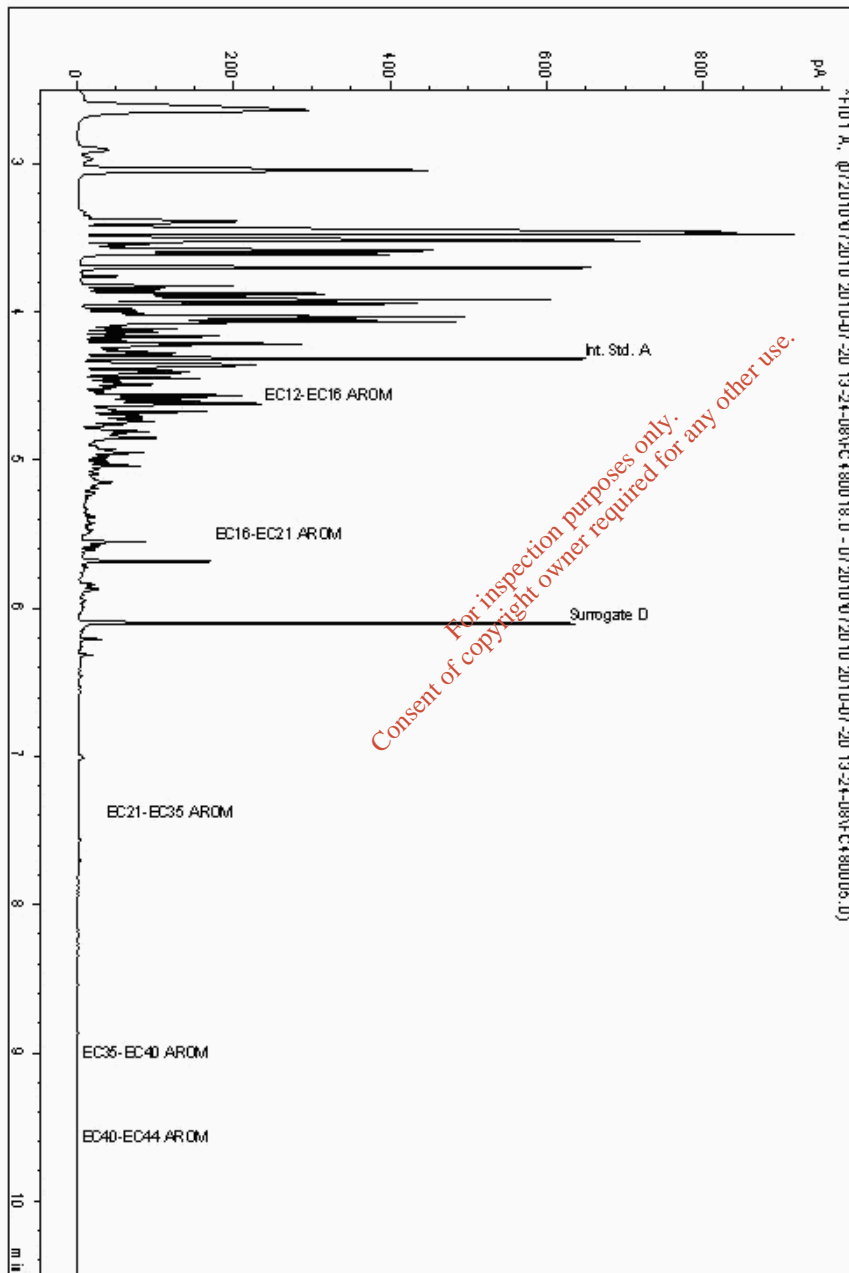
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1830469
Sample ID B8
Depth 2.00 - 2.70

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

Sample Identity: 1939175-1830469
Date Acquired : 20/07/10 18:46:41
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

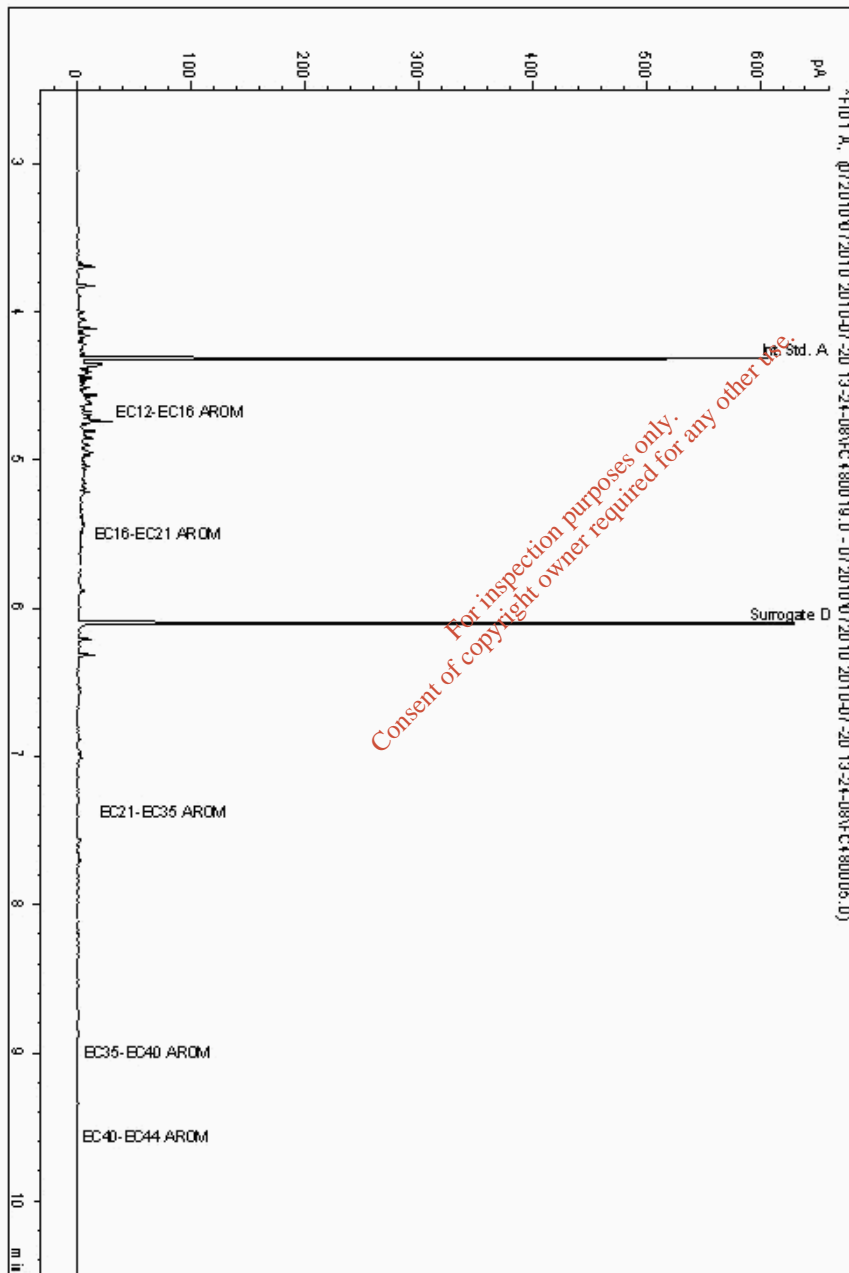
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1830483
Sample ID A3
Depth 1.50 - 3.50

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

Sample Identity: 1939194-1830483
Date Acquired : 20/07/10 19:05:32
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

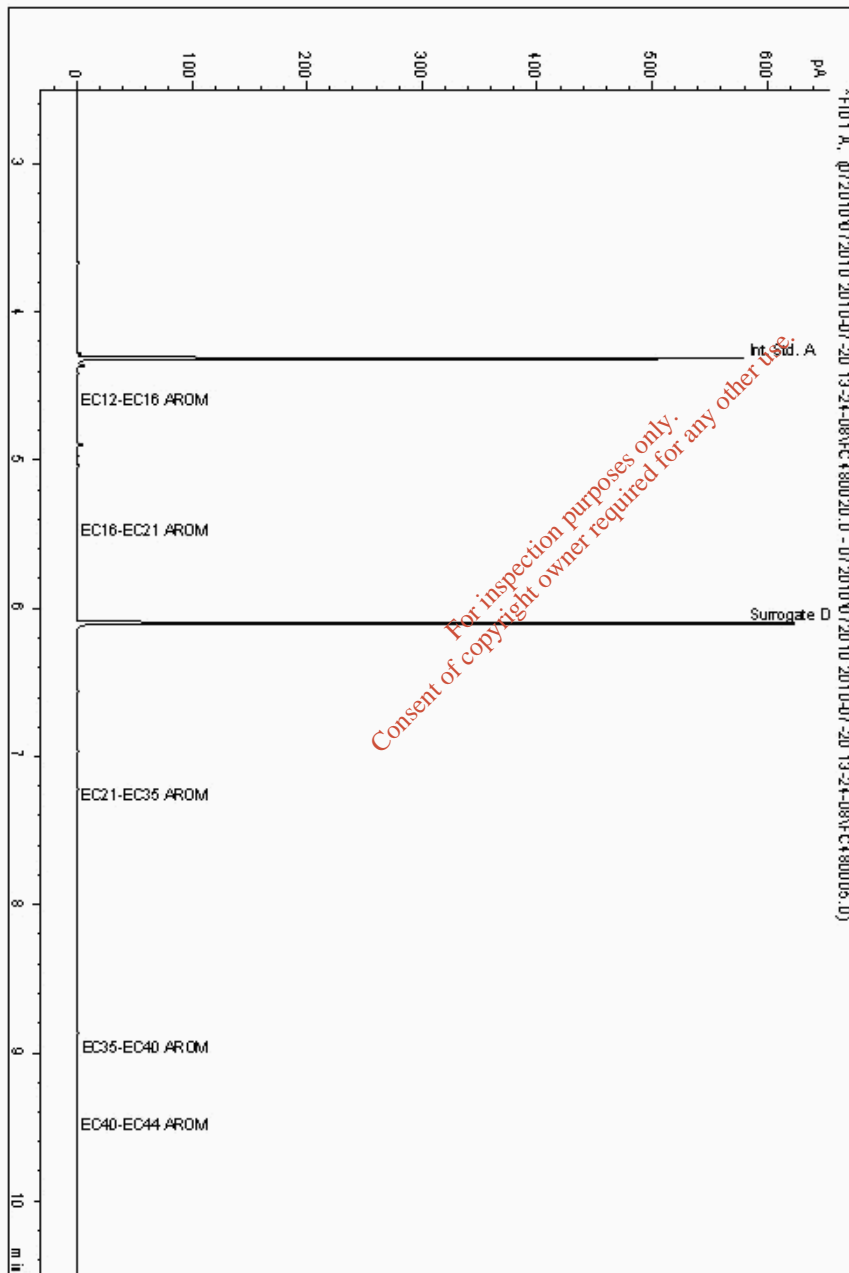
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832109
Sample ID M3
Depth 4.50 - 6.00

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

Sample Identity: 1939319-1832109
Date Acquired : 20/07/10 19:24:23
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

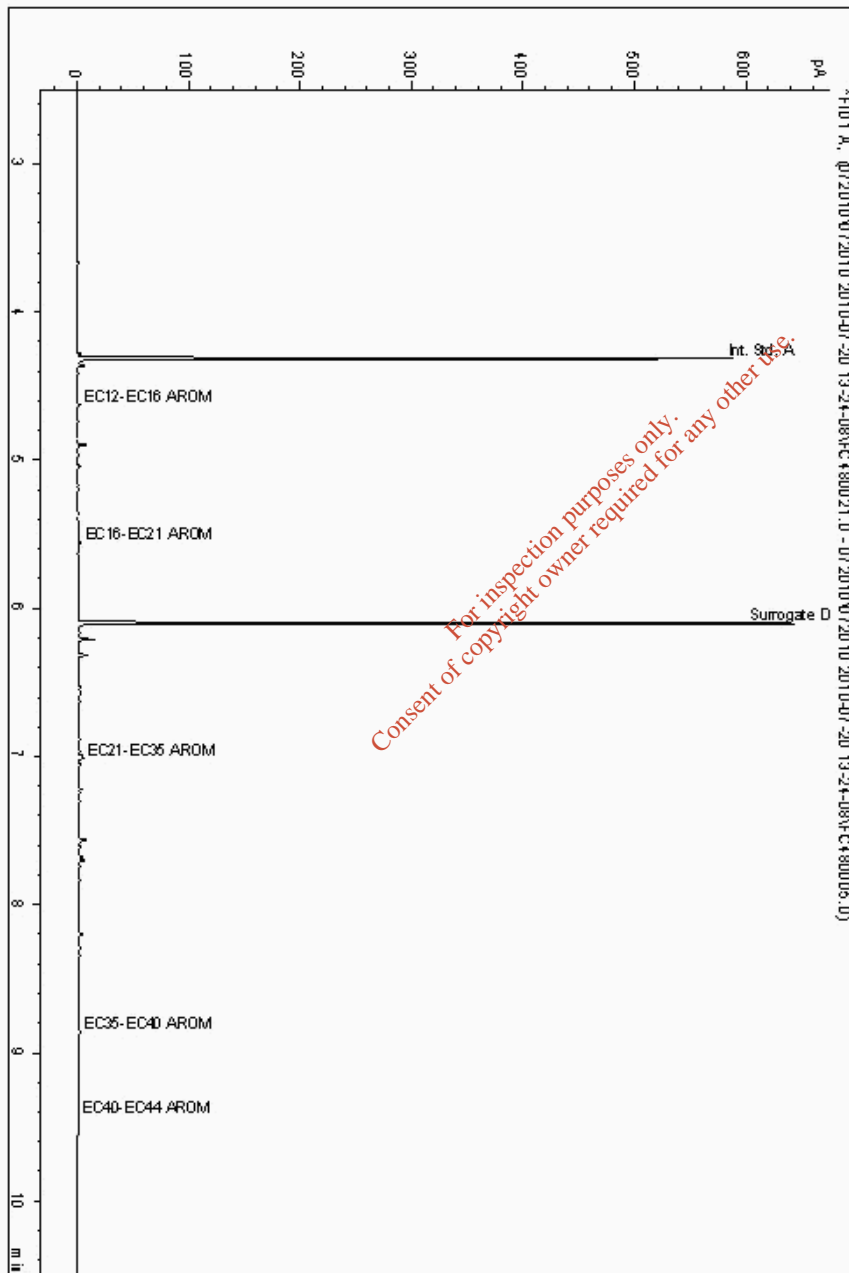
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832165
Sample ID H12
Depth 1.00 - 3.00

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

Sample Identity: 1939304-1832165
Date Acquired : 20/07/10 19:43:26
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

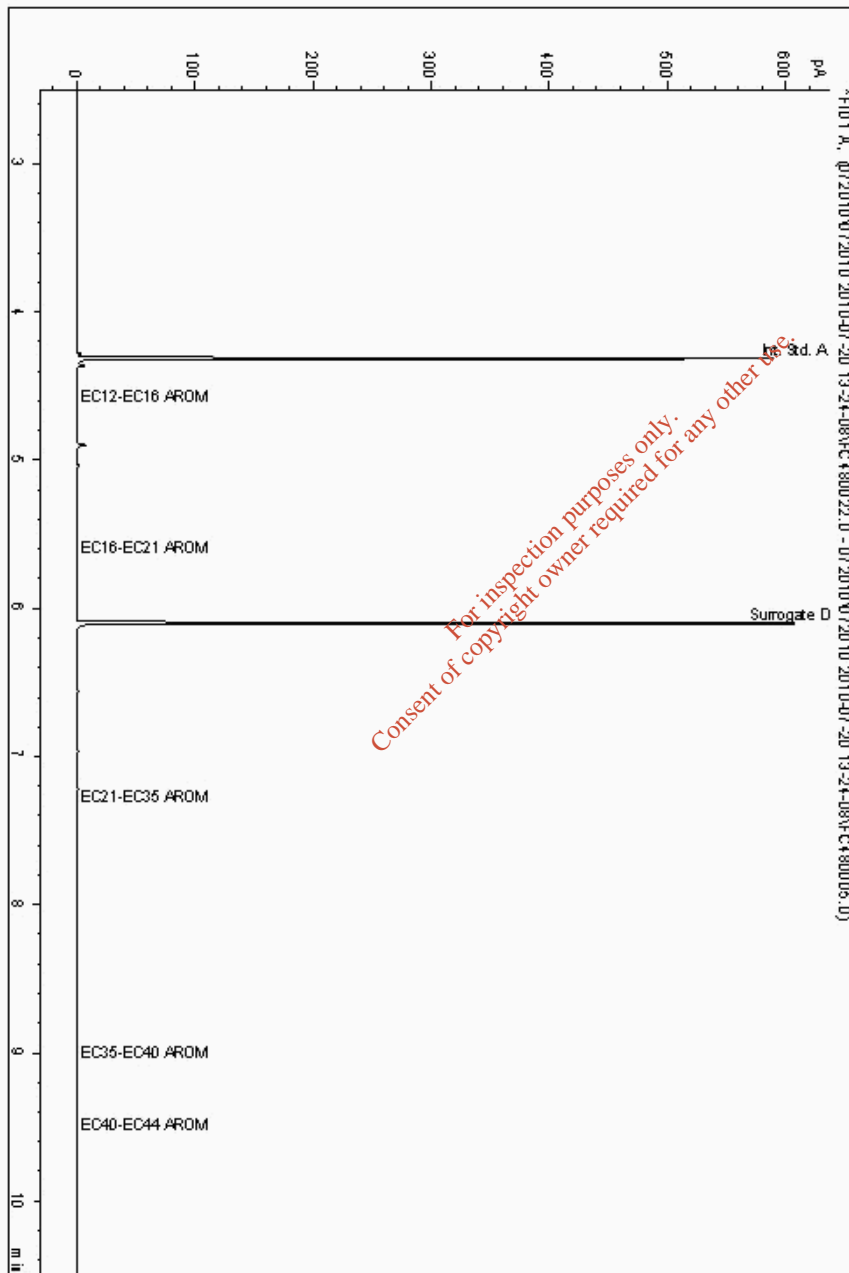
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832208
Sample ID J10
Depth 0.00 - 0.10

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

Sample Identity: 1939272-1832208
Date Acquired : 20/07/10 20:02:17
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
 Job: D_MOUCHEL_ELE-105
 Client Ref.: 15/07/10
 Location: Limerick Gasworks

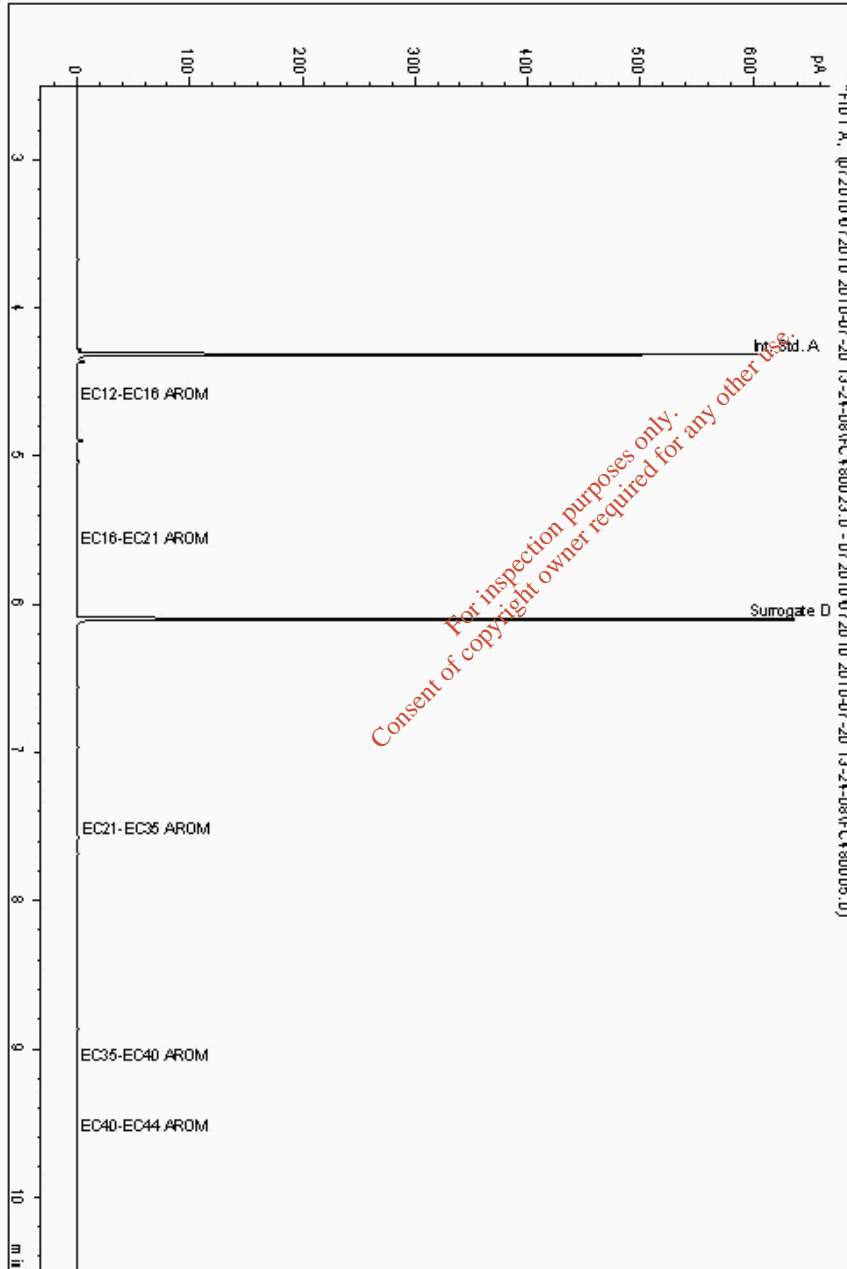
Customer: Mouchel
 Attention: Dave Watts
 Order No.: 22541
 Report No.: 91179

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

Sample No 1832248
 Sample ID K1
 Depth 3.00 - 4.00

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

Sample Identity: 1939287-1832248
 Date Acquired : 20/07/10 20:21:07
 Units :
 Dilution :
 CF : 1
 Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

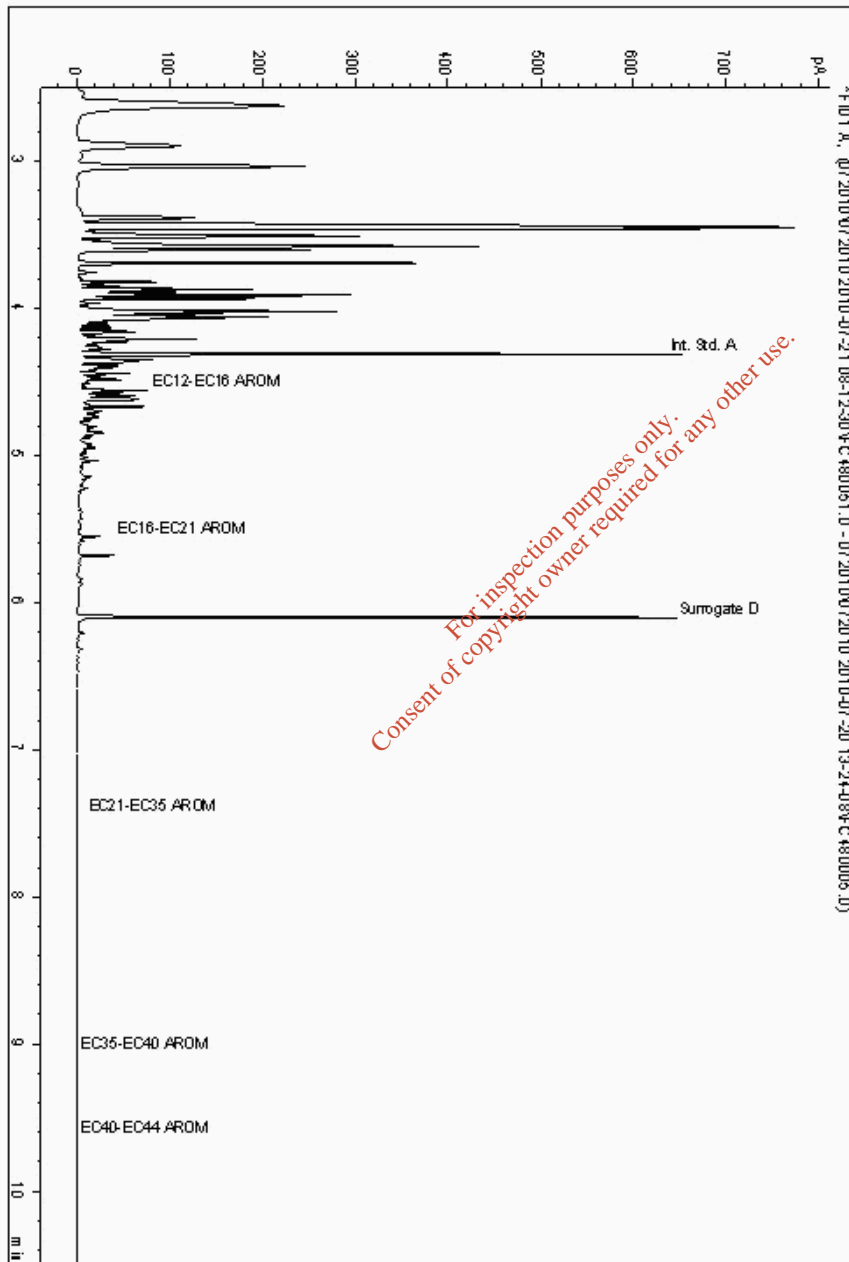
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832618
Sample ID C7
Depth 5.00 - 6.00

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

Sample Identity: 1939240-1832618
Date Acquired : 21/07/10 08:22:42
Units :
Dilution :
CF : 1
Multiplier : 0.083



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

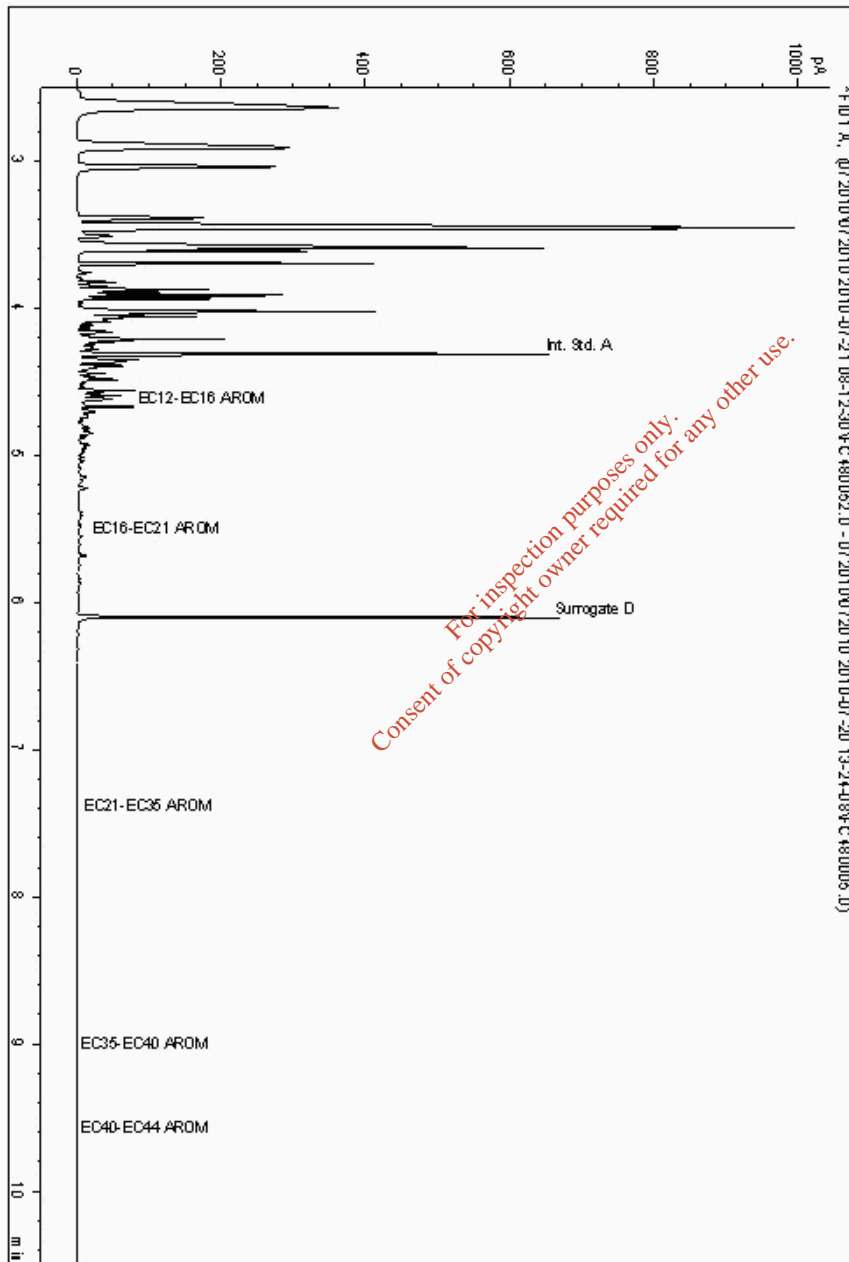
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832660
Sample ID K5
Depth 1.50 - 3.00

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

Sample Identity: 1939256-1832660
Date Acquired : 21/07/10 08:41:30
Units :
Dilution :
CF : 1
Multiplier : 0.167



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

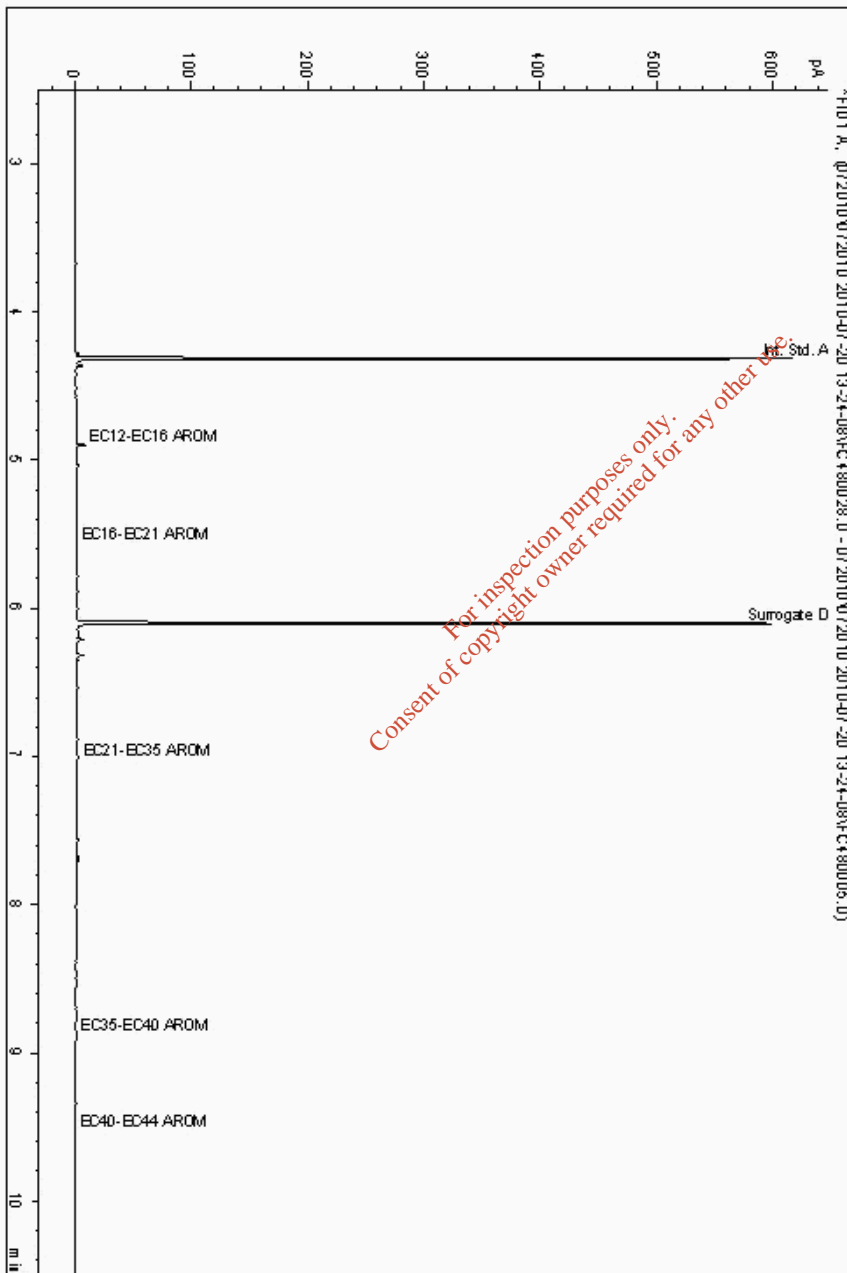
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

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

Sample No 1832689
Sample ID A4
Depth 1.50 - 3.00

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

Sample Identity: 1939210-1832689
Date Acquired : 20/07/10 21:56:18
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

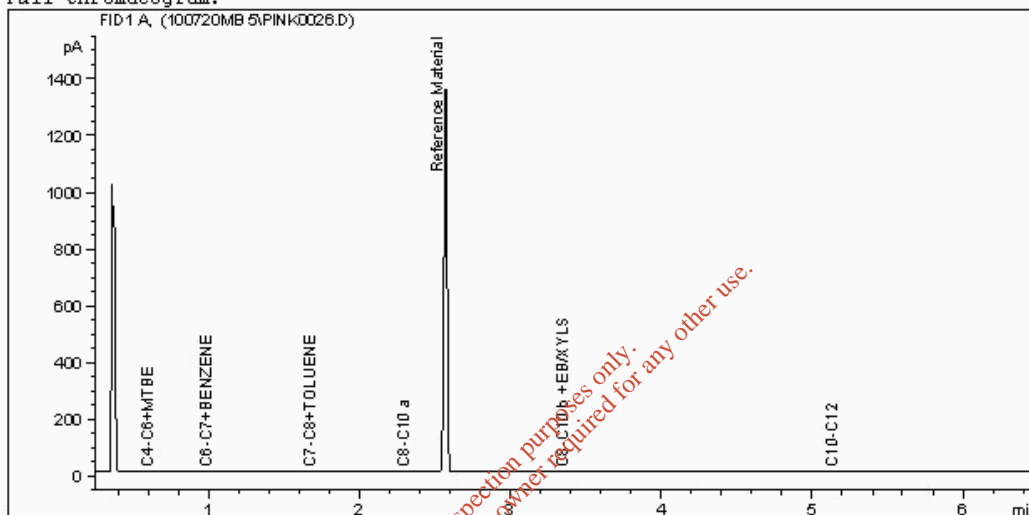
Analysis: GRO by GC-FID (W)

Sample No 1823228
Sample ID D5
Depth 2.00 - 3.50

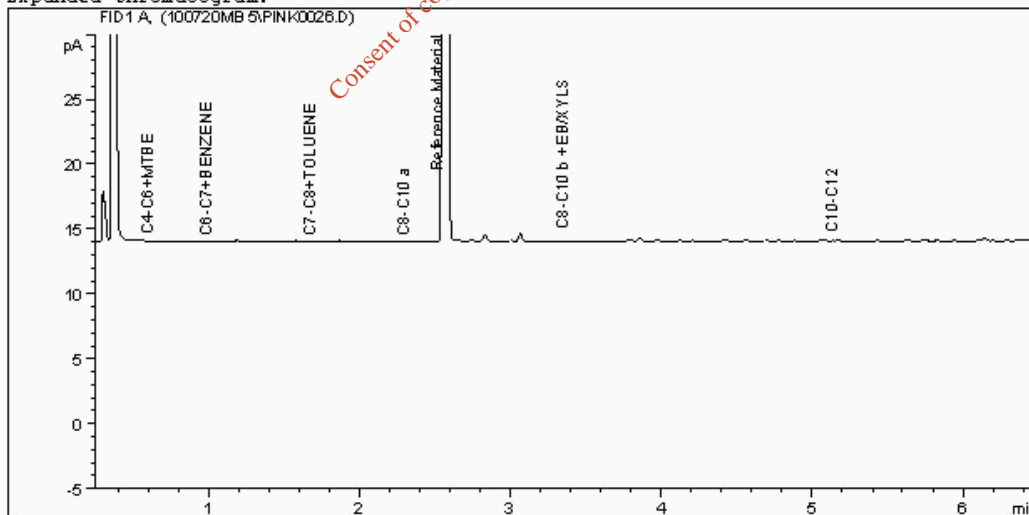
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939158-1823228
Date Acquired : 20/07/10 23:00:34
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

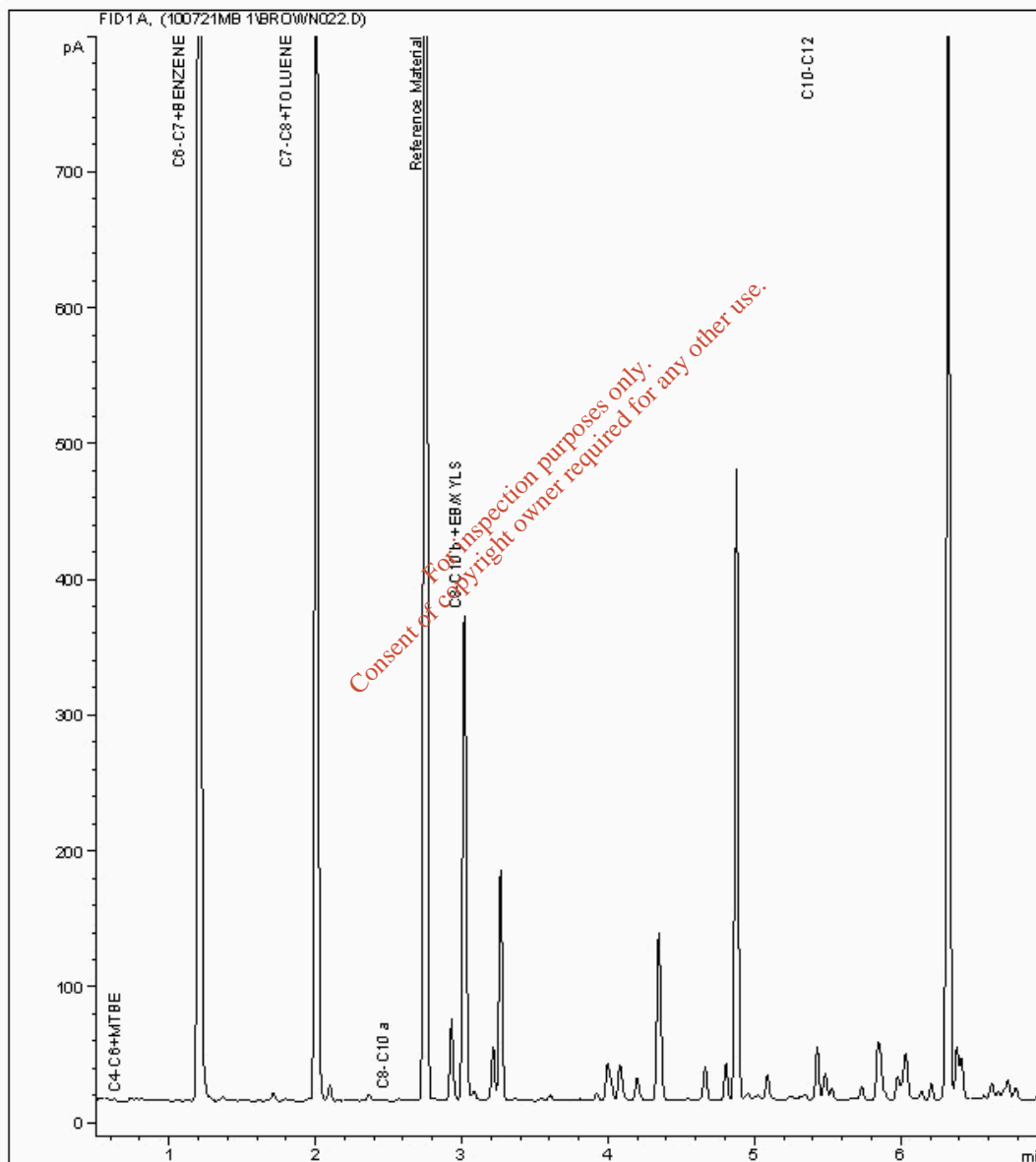
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

Analysis: GRO by GC-FID (W)

Sample No 1823301
Sample ID B8
Depth 2.00 - 2.70

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939176-1823301
Date Acquired : 21/07/10 14:51:26
Units : ppb
Dilution : 2



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

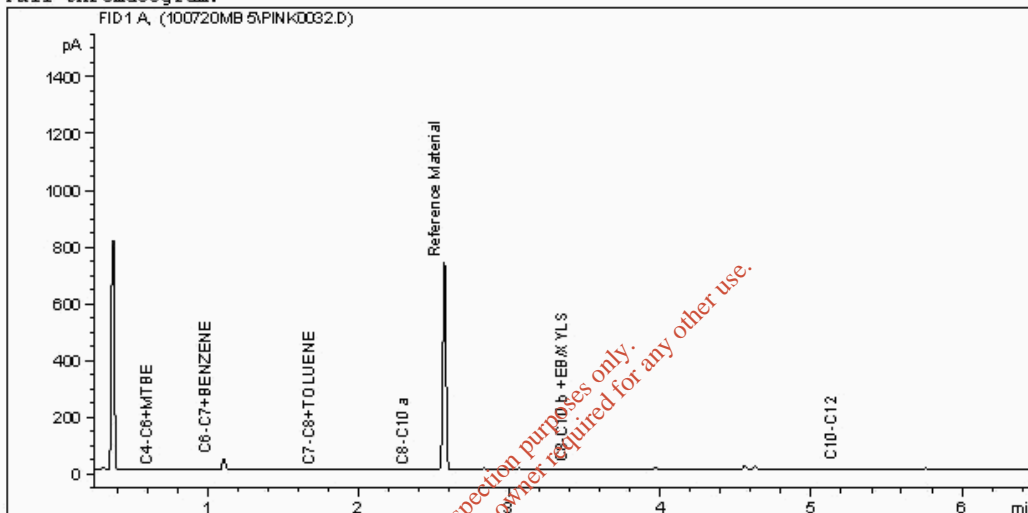
Analysis: GRO by GC-FID (W)

Sample No 1823348
Sample ID A3
Depth 1.50 - 3.50

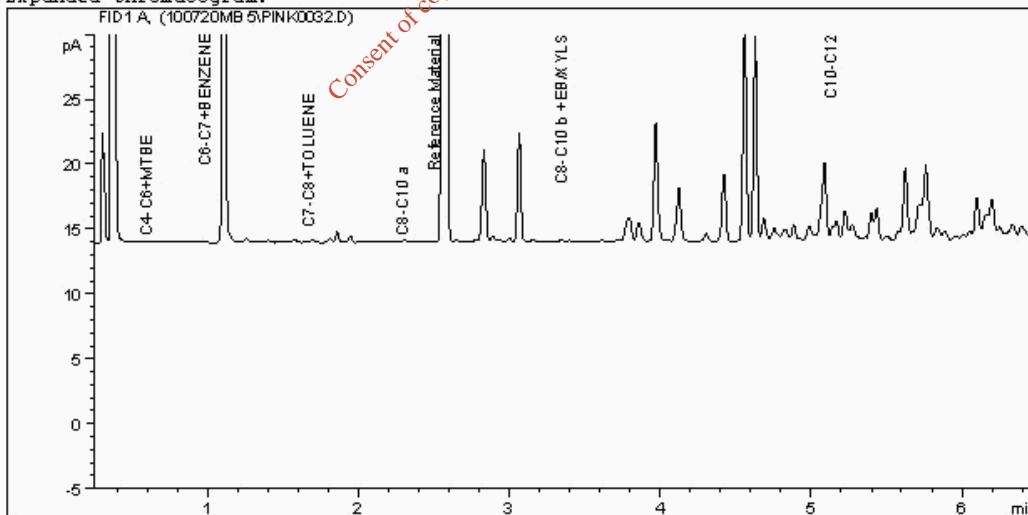
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939195-1823348
Date Acquired : 21/07/10 00:25:01
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

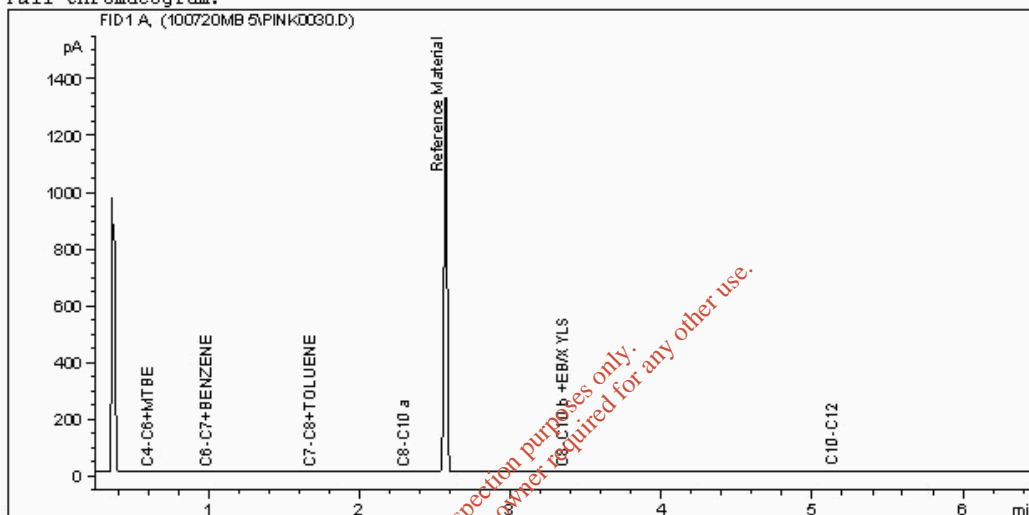
Analysis: GRO by GC-FID (W)

Sample No 1823417
Sample ID A4
Depth 1.50 - 3.00

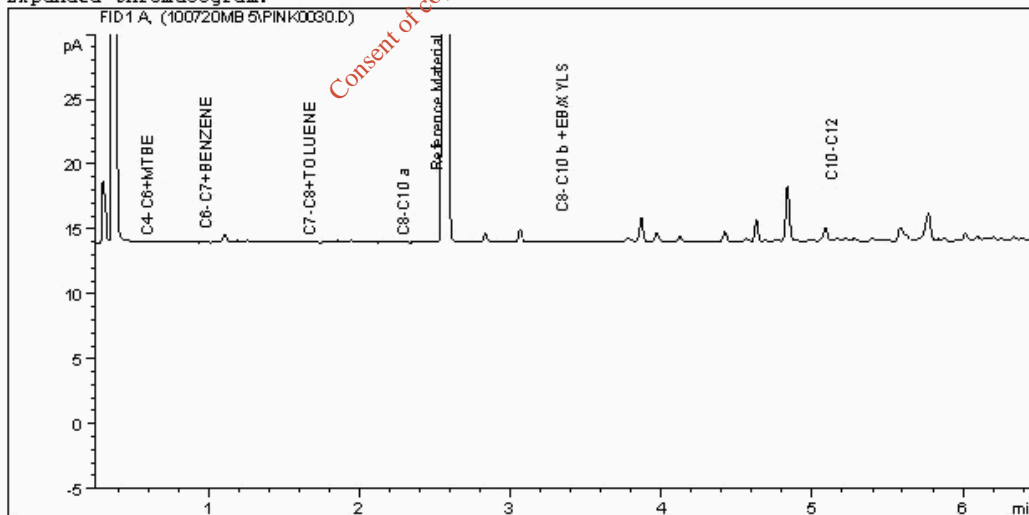
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939211-1823417
Date Acquired : 20/07/10 23:56:53
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

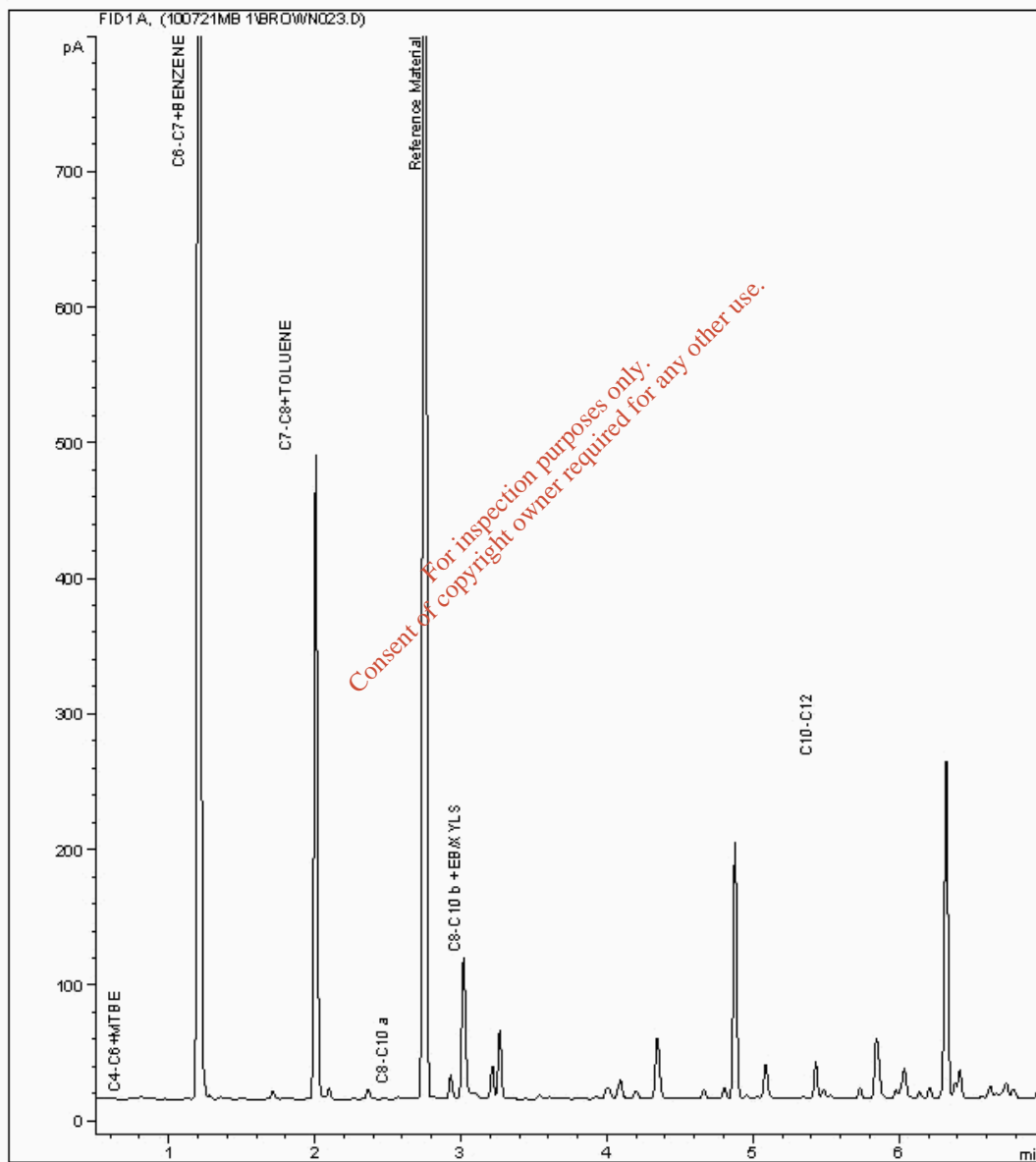
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

Analysis: GRO by GC-FID (W)

Sample No 1824005
Sample ID C7
Depth 5.00 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939241-1824005
Date Acquired : 21/07/10 15:05:32
Units : ppb
Dilution : 5



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

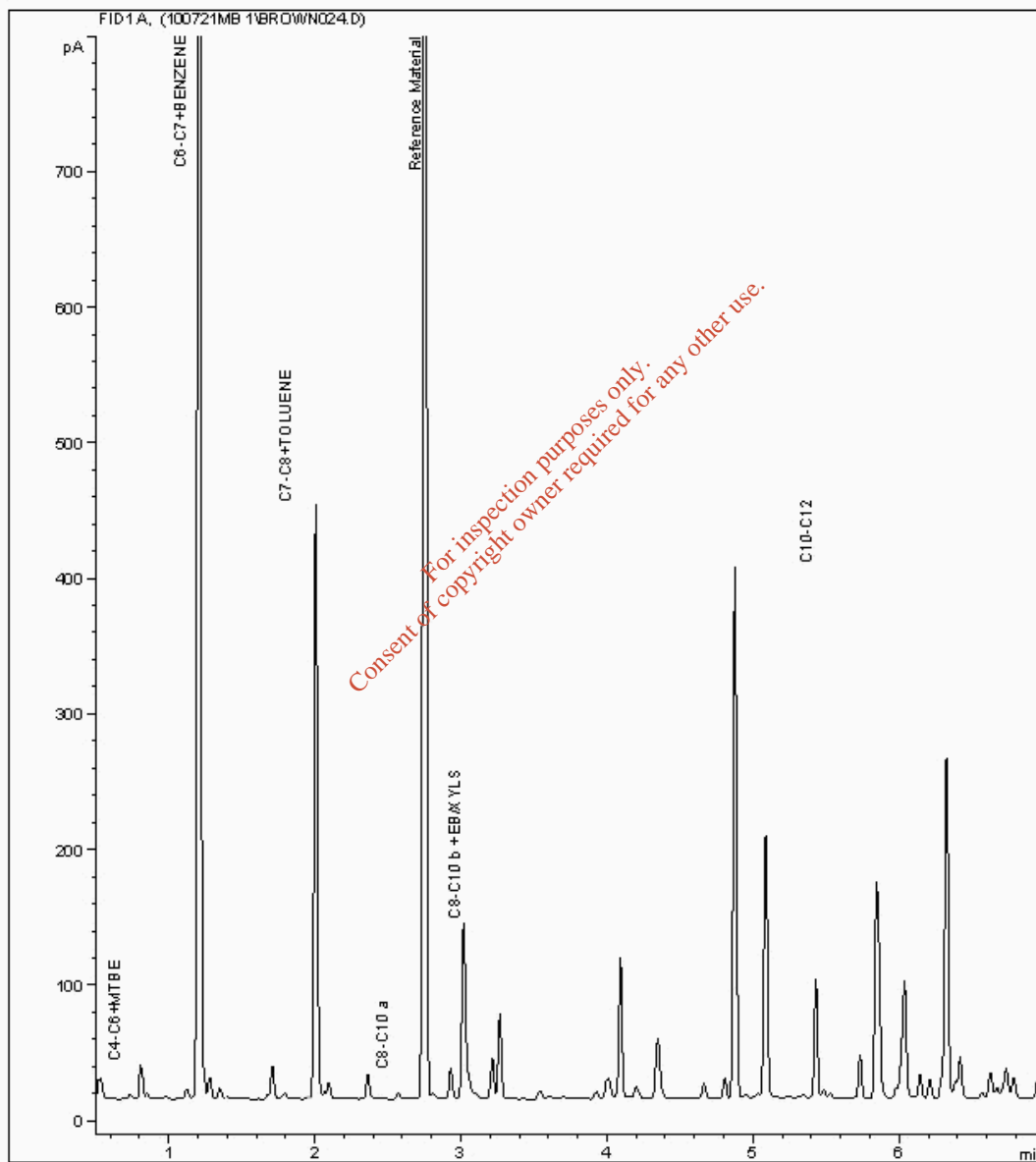
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

Analysis: GRO by GC-FID (W)

Sample No 1824073
Sample ID K5
Depth 1.50 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939257-1824073
Date Acquired : 21/07/10 15:19:35
Units : ppb
Dilution : 5



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

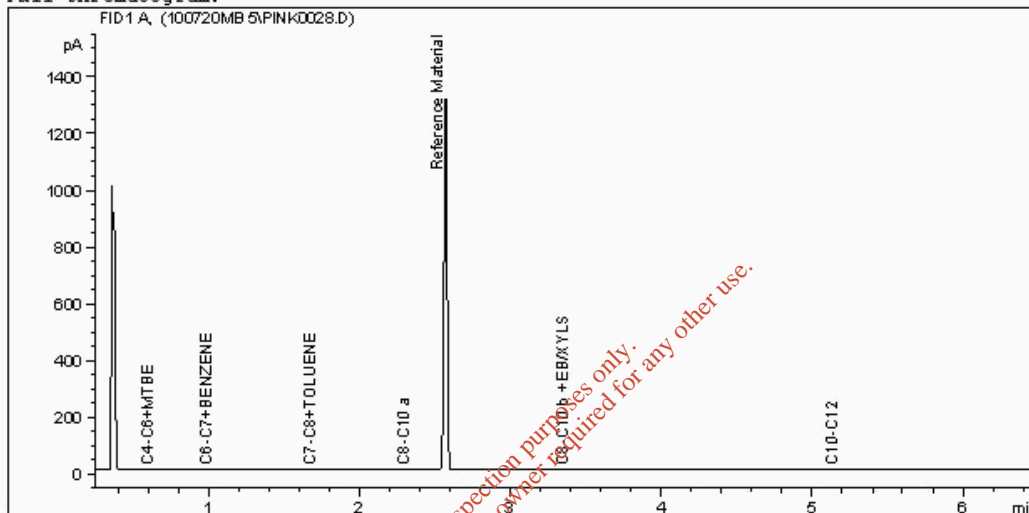
Analysis: GRO by GC-FID (W)

Sample No 1824105
Sample ID J10
Depth 0.00 - 0.10

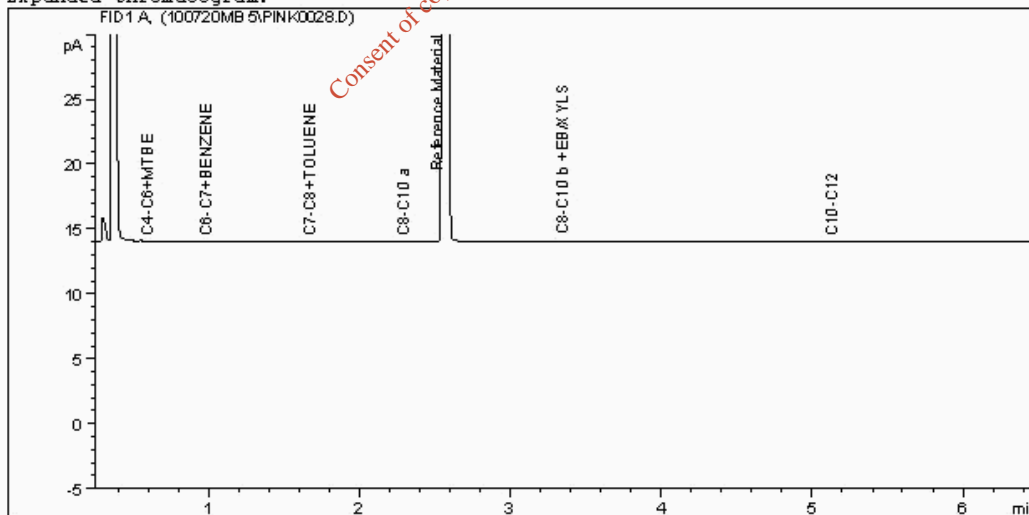
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939273-1824105
Date Acquired : 20/07/10 23:28:44
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

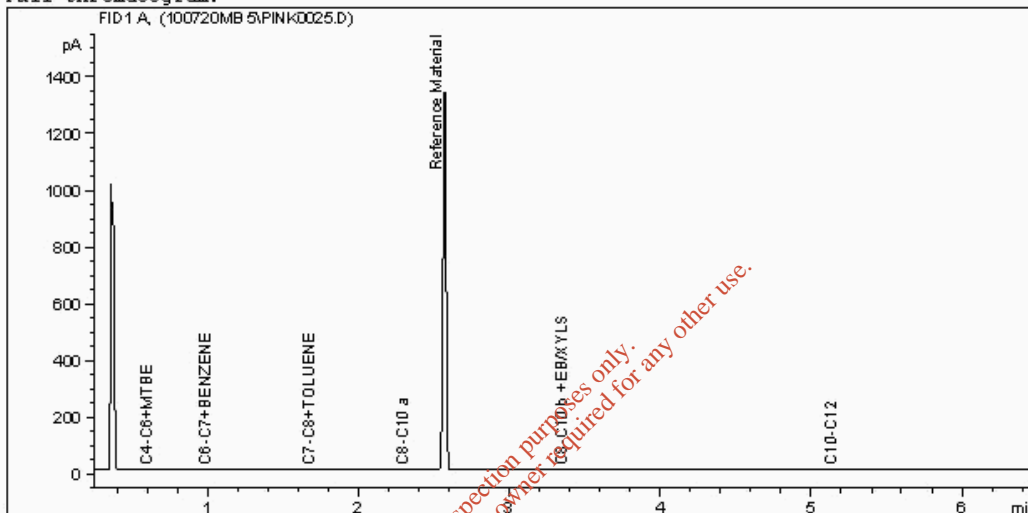
Analysis: GRO by GC-FID (W)

Sample No 1824136
Sample ID K1
Depth 3.00 - 4.00

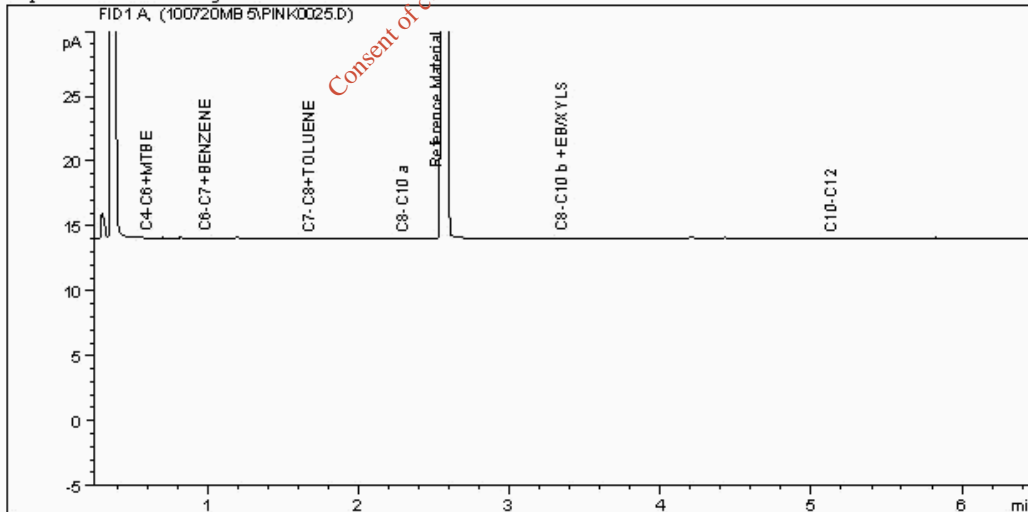
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939288-1824136
Date Acquired : 20/07/10 22:46:32
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

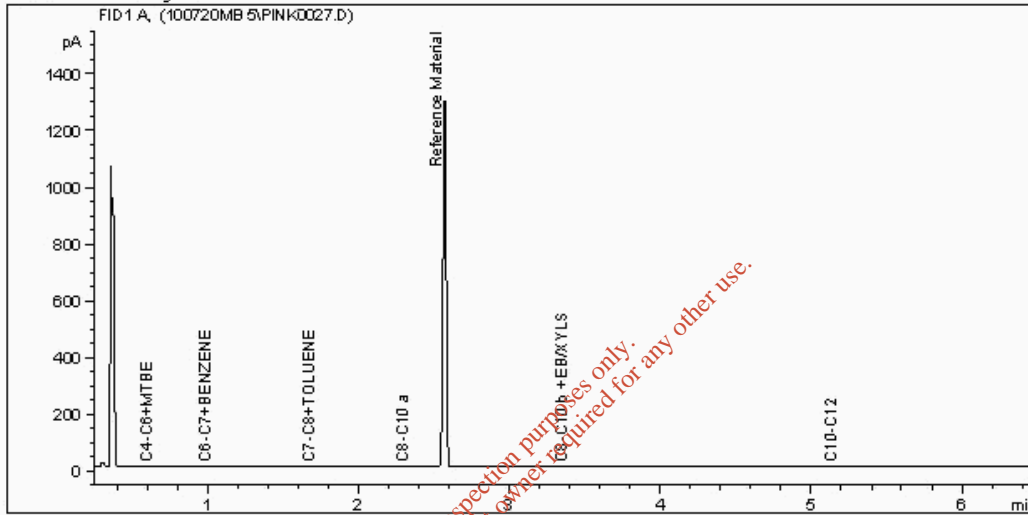
Analysis: GRO by GC-FID (W)

Sample No 1824192
Sample ID H12
Depth 1.00 - 3.00

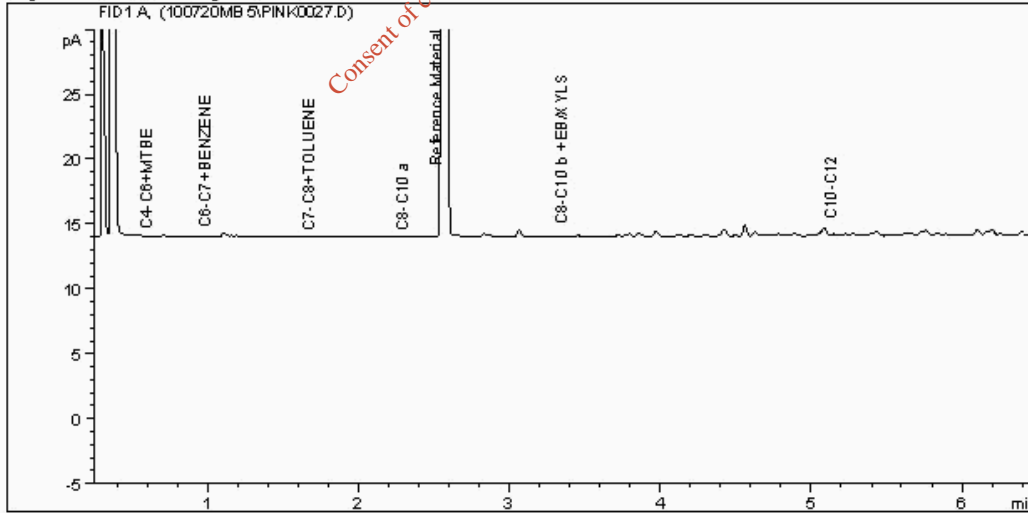
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939305-1824192
Date Acquired : 20/07/10 23:14:41
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



SDG: 100715-55
Job: D_MOUCHEL_ELE-105
Client Ref.: 15/07/10
Location: Limerick Gasworks

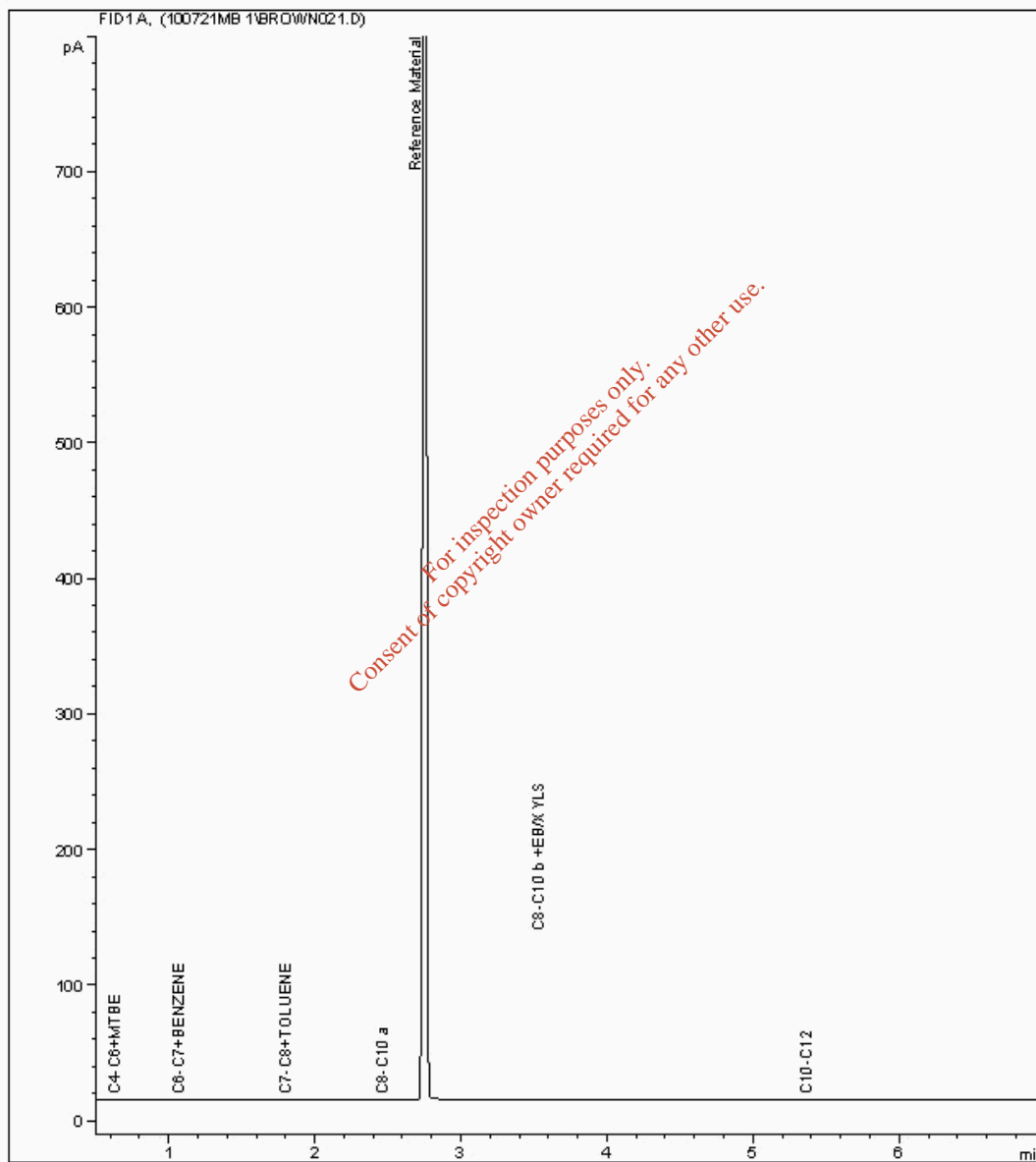
Customer: Mouchel
Attention: Dave Watts
Order No.: 22541
Report No.: 91179

Analysis: GRO by GC-FID (W)

Sample No 1824261
Sample ID M3
Depth 4.50 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939320-1824261
Date Acquired : 21/07/10 14:37:21
Units : ppb
Dilution : 1



Notification of NDPs (No determination possible)

SDG Number	100715-55	Location	Limerick Gasworks
Client	D_MOUCHEL_ELE	Order No.	22541
Client Reference	15/07/10	Report No.	52912-1
Attention	David Meqson	Date Received	15/07/2010 11:40:52

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1824074	K5 W004	1.50 - 3.00	Dissolved Metals by ICP-MS	Sample precipitated

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:
NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: David Megson

CERTIFICATE OF ANALYSIS

Date: 23 July 2010
Customer: D_MOUCHEL_ELE-106
Sample Delivery Group (SDG): 100715-75 **Report No.:** 91383
Your Reference: E8 - G5
Location: Limerick Gasworks

We received 10 samples on Thursday July 15, 2010 and 10 of these samples were scheduled for analysis which was completed on Friday July 23, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Operations Director - Land UK & Ireland



SDG:	100715-75	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-106	Attention:	David Megson
Client Reference:	E8 - G5	Order No.:	
Location:	Limerick Gasworks	Report No.:	91383

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1824728	A11 W004	1.00 - 3.00	14/07/2010
1824523	C11 W004	1.00 - 3.00	14/07/2010
1824882	D1 W004	3.50 - 5.00	14/07/2010
1824498	E8 W004	1.00 - 3.00	14/07/2010
1824633	F11 W004	0.00 - 2.00	14/07/2010
1824845	G2 W004	3.50 - 5.00	14/07/2010
1824812	G3 W004	3.00 - 4.50	14/07/2010
1824768	G4 W004	3.00 - 5.00	14/07/2010
1824915	G5 W004	2.50 - 4.00	14/07/2010
1824547	G8 W004	1.50 - 3.50	14/07/2010

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

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: David Megson
Order No.:
Report No.: 91383

LIQUID

Results Legend	Lab Sample No(s)		Customer Sample Ref.		Depth (m)		Container		Total
	X Test	N No Determination Possible							
			1824915	G5 W004	2.50 - 4.00	Vial	11 green glass bottle	0	
			1824882	D1 W004	3.50 - 5.00	Vial	11 green glass bottle	10	
			1824845	G2 W004	3.50 - 5.00	Vial	11 green glass bottle	10	
			1824812	G3 W004	3.00 - 4.50	Vial	11 green glass bottle	10	
			1824768	G4 W004	3.00 - 5.00	Vial	11 green glass bottle	10	
			1824728	A11 W004	1.00 - 3.00	Vial	11 green glass bottle	10	
			1824633	F11 W004	0.00 - 2.00	Vial	11 green glass bottle	10	
			1824547	G8 W004	1.50 - 3.50	Vial	11 green glass bottle	10	
			1824523	C11 W004	1.00 - 3.00	Vial	11 green glass bottle	10	
			1824498	E8 W004	1.00 - 3.00	Vial	11 green glass bottle	10	
Ammonium	All							0	
Anions by ion Chromatography	All							10	
Anions by Kone (w)	All							0	
Cyanide Comp/Free/Total/Thiocyanate	All							9	
Dissolved Metals by ICP-MS	All							0	
EPH CWG (Aliphatic) Aqueous GC (W)	All							10	
EPH CWG (Aromatic) Aqueous GC (W)	All							10	
GRO BTEX MTBE GC (W)	All							0	
Hexavalent Chromium (w)	All							10	
Mercury Dissolved	All							0	
PAH Spec MS - Aqueous (W)	All							10	
pH Value	All							0	
Phenols by HPLC (W)	All							10	
Sulphide	All							0	
TPH CWG (W)	All							10	
VOC MS (W)	All							0	
								5	

SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: David Megson
Order No.:
Report No.: 91383

Test Completion dates

SDG reference: 100715-75

Lab Sample No(s)	1824498	1824523	1824547	1824633	1824728	1824768	1824812	1824845	1824882	1824915
Customer Sample Ref.	E8	C11	G8	F11	A11	G4	G3	G2	D1	G5
Depth	1.00 - 3.00	1.00 - 3.00	1.50 - 3.50	0.00 - 2.00	1.00 - 3.00	3.00 - 5.00	3.00 - 4.50	3.50 - 5.00	3.50 - 5.00	2.50 - 4.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	16/07/2010	21/07/2010	16/07/2010	21/07/2010	21/07/2010
Anions by Ion Chromatography	19/07/2010									
Anions by Kone (w)		20/07/2010	20/07/2010	20/07/2010	20/07/2010	19/07/2010	20/07/2010	19/07/2010	20/07/2010	20/07/2010
Cyanide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
Dissolved Metals by ICP-MS	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	19/07/2010	20/07/2010	19/07/2010	20/07/2010	20/07/2010
EPH CWG (Aliphatic) Aqueous GC	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	20/07/2010	20/07/2010	21/07/2010	20/07/2010
EPH CWG (Aromatic) Aqueous GC	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	20/07/2010	20/07/2010	21/07/2010	20/07/2010
GRO by GC-FID (W)	23/07/2010	21/07/2010	21/07/2010	21/07/2010	23/07/2010	21/07/2010	23/07/2010	23/07/2010	21/07/2010	21/07/2010
Hexavalent Chromium (w)	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010
Mercury Dissolved	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
PAH Spec MS - Aqueous (W)	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	19/07/2010	18/07/2010	19/07/2010	20/07/2010	19/07/2010
pH Value	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	19/07/2010	16/07/2010	16/07/2010
Phenols by HPLC (W)	20/07/2010	19/07/2010	20/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	20/07/2010	19/07/2010	19/07/2010
Sulphide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
TPH CWG (W)	23/07/2010	22/07/2010	22/07/2010	22/07/2010	23/07/2010	22/07/2010	23/07/2010	23/07/2010	23/07/2010	22/07/2010
VOC MS (W)					21/07/2010	22/07/2010		22/07/2010	22/07/2010	21/07/2010

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SDG: 100715-75
 Job: D_MOUCHEL_ELE-106
 Client Reference: E8 - G5
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 91383

Results Legend		Customer Sample Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
diss.filt	Dissolved / filtered sample.		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
tot.unfilt	Total / unfiltered sample.		100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
*	subcontracted test.		1824728	1824523	1824882	1824498	1824633	1824845
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	16.5 #	5.18 #	11 #	46.6 #	0.245 #	52.1 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	21.2 #	6.66 #	14.1 #	59.9 #	0.315 #	67 #
Sulphide	<0.01 mg/l	TM101	0.365 #	<0.01 #	1.03 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	11.2 #	7.8 #	9.07 #	104 #	<0.12 #	17.6 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	0.567 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	2.63 #	2.57 #	4.39 #	1.7 #	0.577 #	15.9 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	<0.85 #	<0.85 #	3.95 #	2.03 #	1.29 #
Lead (diss.filt)	<0.02 µg/l	TM152	<0.02 #	<0.02 #	<0.02 #	0.06 #	<0.02 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152	7.73 #	6.18 #	5.8 #	53.4 #	1.94 #	4.39 #
Selenium (diss.filt)	<0.39 µg/l	TM152	2.86 #	1.19 #	1.48 #	22.7 #	<0.39 #	13.6 #
Zinc (diss.filt)	<0.41 µg/l	TM152	3.63 #	4.23 #	1.57 #	24.7 #	3.07 #	2.04 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.0283 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	319 #	344 #	384 #		123 #	545 #
Sulphate	<0.1 mg/l	TM226				416 #		
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	0.129 #	0.826 #	5.99 #	<0.05 #	0.783 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.06 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	7.75 #	7.96 #	7.96 #	9.12 #	7.95 #	7.75 #
Resorcinol	<0.02 mg/l	TM259	0.07 #	<0.02 #	<0.02 #	<0.4 #	<0.02 #	<0.04 #
Catechol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.6 #	<0.03 #	<0.06 #
Phenol	<0.02 mg/l	TM259	0.07 #	<0.02 #	0.02 #	37.1 #	<0.02 #	1.24 #
Cresols	<0.07 mg/l	TM259	0.89 #	<0.07 #	<0.07 #	55.1 #	<0.07 #	9.7 #
Xylenols	<0.17 mg/l	TM259	<0.17 #	<0.17 #	0.5 #	28.7 #	<0.17 #	21.7 #
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.6 #	<0.03 #	<0.06 #
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.6 #	<0.03 #	<0.06 #
2-Isopropylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	3.98 #	<0.03 #	<0.06 #
Phenols, Total 5 speciated	<0.2 mg/l	TM259	0.96 #	<0.2 #	0.52 #	125 #	<0.2 #	32.6 #

SDG: 100715-75
 Job: D_MOUCHEL_ELE-106
 Client Reference: E8 - G5
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No.: 91383

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
		Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845

Component	LOD/Units	Method	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	367	99	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	235	162	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	110	108	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	712	369	<10	<10	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	1270	2420	4830	10700	<10	7900

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
		Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
Component	LOD/Units	Method						
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	608	702	2000	9600	<10	6940
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	391	537	1350	809	<10	734
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	267	464	1120	313	<10	223
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	1270	1700	4460	10700	<10	7900

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
		Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
		SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
		Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
Component	LOD/Units	Method						
Benzene	<7 µg/l	TM245	40 #	13 #	618 #	3690 #	<7 #	4940 #
Ethylbenzene	<5 µg/l	TM245	17 #	<5 #	194 #	45 #	<5 #	377 #
Toluene	<4 µg/l	TM245	64 #	<4 #	237 #	954 #	<4 #	3580 #
m,p-Xylene	<8 µg/l	TM245	66 #	31 #	476 #	362 #	<8 #	1620 #
o-Xylene	<3 µg/l	TM245	47 #	43 #	269 #	150 #	<3 #	838 #
m,p,o-Xylene	<10 µg/l	TM245	113 #	74 #	745 #	512 #	<10 #	2460 #
BTEX, Total	<10 µg/l	TM245	234 #	87 #	1790 #	5200 #	<10 #	11400 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<6 #	<3 #	<6 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10	107	<10	20.2
Aliphatics >C6-C8	<10 µg/l	TM245	24.7	<10	11.3	1220	<10	1890
Aliphatics >C8-C10	<10 µg/l	TM245	75.1	190	241	484	<10	940
Aliphatics >C10-C12	<10 µg/l	TM245	190	425	1230	1710	<10	2140
Aromatics >C6-C7	<10 µg/l	TM245	40	13	638	3690	<10	4940
Aromatics >C7-C8	<10 µg/l	TM245	64	<10	237	954	<10	3580
Aromatics >EC8-EC10	<10 µg/l	TM245	243	359	1300	1280	<10	4250
Aromatics >EC10-EC12	<10 µg/l	TM245	285	637	1840	2570	<10	3220
Total Aliphatics >C5-C12	<10 µg/l	TM245	290	675	1480	3530	<10	5000
Total Aromatics >C6-C12	<10 µg/l	TM245	632	1010	3990	8500	<10	16000

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SDG: 100715-75
 Job: D_MOUCHEL_ELE-106
 Client Reference: E8 - G5
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 91383

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
		Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	4.17	0.83	1390	1100	2.86	3270
Acenaphthene (aq)	<0.015 µg/l	TM178	10.9	34.3	63.5	12.5	0.04	49.1
Acenaphthylene (aq)	<0.011 µg/l	TM178	54.5	5	137	89	0.32	75.9
Fluoranthene (aq)	<0.014 µg/l	TM178	13.4	20.5	104	23.6	1.1	12.8
Anthracene (aq)	<0.015 µg/l	TM178	8.87	4.57	52.3	15.9	0.08	4.91
Phenanthrene (aq)	<0.022 µg/l	TM178	30.8	12.2	184	55.3	0.22	48.1
Fluorene (aq)	<0.014 µg/l	TM178	24.6	16.1	108	36.8	0.06	25.4
Chrysene (aq)	<0.013 µg/l	TM178	2.09	3.23	10.3	3.51	0.57	1.69
Pyrene (aq)	<0.015 µg/l	TM178	8.24	13.1	67.1	15.5	1	8.26
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	3.19	5.29	14.9	4.75	0.68	<1.7
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	3.01	5.2	10.5	3.29	1.41	<2.3
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	1.13	1.8	3.73	1.25	0.44	<2.7
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	2.34	4.19	7.32	2.15	1.04	1.28
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	0.28	0.62	0.8	<0.32	0.18	<1.6
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	0.96	2.04	3.14	0.88	0.74	<1.6
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	0.99	2.09	2.79	0.85	0.67	<1.4
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	169	331	2160	1370	11.4	3500

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

TPH CWG (W)

Results Legend		Customer Sample Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
#	ISO17025 accredited.	Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
M	mCERTS accredited.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
diss.filt	Dissolved / filtered sample.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
tot.unfilt	Total / unfiltered sample.	SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
*	subcontracted test.	Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	290	1330	1850	3530	<10	5000
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	1900	2710	8450	19200	<10	23900
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2190	4040	10300	22700	<10	28900

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

VOC MS (W)

Results Legend		Customer Sample Ref.	A11 W004	D1 W004	G2 W004			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.00 - 3.00	3.50 - 5.00	3.50 - 5.00			
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
		Date Sampled	14/07/2010	14/07/2010	14/07/2010			
		Date Received	15/07/2010	15/07/2010	15/07/2010			
		SDG Ref	100715-75	100715-75	100715-75			
		Lab Sample No.(s)	1824728	1824882	1824845			
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208	113	106	110			
Toluene-d8**	%	TM208	100	99.6	98.2			
4-Bromofluorobenzene**	%	TM208	104	101	99.7			
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	<7	#	#	#
Chloromethane	<9 µg/l	TM208	<9	<9	<9	#	#	#
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	#	#	#
Bromomethane	<2 µg/l	TM208	<2	<2	<2	#	#	#
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	#	#	#
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	#	#	#
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	#	#	#
Carbon disulphide	<1.3 µg/l	TM208	<1.3	1.55	4.47	#	#	#
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	<3.7	#	#	#
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	<1.6	#	#	#
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	#	#	#
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	#	#	#
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	#	#	#
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	<3.8	#	#	#
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	#	#	#
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	<1.8	#	#	#
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	#	#	#
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	#	#	#
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	<1.4	#	#	#
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	<3.3	#	#	#
Benzene	<1.3 µg/l	TM208	41.7	608	4890	#	#	#
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	#	#	#
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	<3	#	#	#
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	<2.7	#	#	#
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	<0.9	#	#	#
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	#	#	#
Toluene	<1.4 µg/l	TM208	63.5	297	3870	#	#	#
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	#	#	#
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	#	#	#
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	#	#	#
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	<1.5	#	#	#
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	#	#	#
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	#	#	#
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	#	#	#
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	#	#	#
Ethylbenzene	<2.5 µg/l	TM208	11.5	193	373	#	#	#

SDG: 100715-75
 Job: D_MOUCHEL_ELE-106
 Client Reference: E8 - G5
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 91383

VOC MS (W)

Results Legend		Customer Sample Ref.	A11 W004	D1 W004	G2 W004			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	1.00 - 3.00	3.50 - 5.00	3.50 - 5.00			
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010			
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75	100715-75			
		Lab Sample No.(s)	1824728	1824882	1824845			
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	48.7 #	514 #	1620 #			
o-Xylene	<1.7 µg/l	TM208	38.8 #	306 #	872 #			
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #			
Bromoform	<3 µg/l	TM208	<3 #	<3 #	<3 #			
Isopropylbenzene	<1.4 µg/l	TM208	<1.4 #	19.5 #	22.1 #			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2 #	<5.2 #	<5.2 #			
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #	<7.8 #			
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #			
Propylbenzene	<2.6 µg/l	TM208	<2.6 #	24.1 #	23 #			
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	7.63 #	76 #	94.6 #			
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #			
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	18 #	248 #	338 #			
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #			
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	<2.6 #			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #			
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #			
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8 #	<9.8 #	<9.8 #			
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #	<1 #			
Naphthalene	<3.5 µg/l	TM208	5.71 #	3680 #	5180 #			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #	<3.1 #			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10 #	<10 #	<10 #			

SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

Results Legend		Customer Sample Ref.	G3 W004	G4 W004	G5 W004	G8 W004		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		14/07/2010	14/07/2010	14/07/2010	14/07/2010		
diss.filt	Dissolved / filtered sample.		15/07/2010	15/07/2010	15/07/2010	15/07/2010		
tot.unfilt	Total / unfiltered sample.		100715-75	100715-75	100715-75	100715-75		
*	subcontracted test.		1824812	1824768	1824915	1824547		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	31.3 #	10.9 #	5.14 #	52.3 #		
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	40.2 #	14 #	6.61 #	67.2 #		
Sulphide	<0.01 mg/l	TM101	<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Arsenic (diss.filt)	<0.12 µg/l	TM152	9.3 #	11.8 #	1.27 #	7.57 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152	6.72 #	6.41 #	4.59 #	2.44 #		
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	2.2 #	2.51 #	1.64 #		
Lead (diss.filt)	<0.02 µg/l	TM152	<0.02 #	0.19 #	<0.02 #	<0.02 #		
Nickel (diss.filt)	<0.15 µg/l	TM152	12.3 #	6.01 #	14.3 #	9 #		
Selenium (diss.filt)	<0.39 µg/l	TM152	8.99 #	8.46 #	1.51 #	3.93 #		
Zinc (diss.filt)	<0.41 µg/l	TM152	3.48 #	5.29 #	6 #	2.27 #		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Sulphate	<3 mg/l	TM184	254 #	426 #	942 #	426 #		
Cyanide, Total	<0.05 mg/l	TM227	0.301 #	0.358 #	0.422 #	0.961 #		
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.06 #		
pH	<1 pH Units	TM256	7.73 #	8.05 #	7.59 #	8.18 #		
Resorcinol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	<0.02 #	<0.04 #		
Catechol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.06 #		
Phenol	<0.02 mg/l	TM259	<0.02 #	0.17 #	<0.02 #	2.3 #		
Cresols	<0.07 mg/l	TM259	<0.07 #	2.25 #	<0.07 #	5.21 #		
Xylenols	<0.17 mg/l	TM259	<0.17 #	6.52 #	<0.17 #	1.75 #		
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.06 #		
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.06 #		
2-Isopropylphenol	<0.03 mg/l	TM259	0.12 #	5.19 #	<0.03 #	0.99 #		
Phenols, Total 5 speciated	<0.2 mg/l	TM259	<0.2 #	14.1 #	<0.2 #	10.3 #		

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	G3 W004	G4 W004	G5 W004	G8 W004
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	subcontracted test.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.					
		Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
		Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
		SDG Ref	100715-75	100715-75	100715-75	100715-75
		Lab Sample No.(s)	1824812	1824768	1824915	1824547
Component	LOD/Units	Method				
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	90	625	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	79	389	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	65	448	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	234	1460	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	73	9540	9220	4460

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

GRO BTEX MTBE GC (W)

Results Legend		Customer Sample Ref.	G3 W004	G4 W004	G5 W004	G8 W004		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50		
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75	100715-75	100715-75		
		Lab Sample No.(s)	1824812	1824768	1824915	1824547		
Component	LOD/Units	Method						
Benzene	<7 µg/l	TM245	91 #	3140 #	<7 #	1040 #		
Ethylbenzene	<5 µg/l	TM245	<5 #	269 #	<5 #	36 #		
Toluene	<4 µg/l	TM245	<4 #	2860 #	<4 #	554 #		
m,p-Xylene	<8 µg/l	TM245	<8 #	1720 #	<8 #	260 #		
o-Xylene	<3 µg/l	TM245	<3 #	732 #	<3 #	105 #		
m,p,o-Xylene	<10 µg/l	TM245	<10 #	2450 #	<10 #	365 #		
BTEX, Total	<10 µg/l	TM245	91 #	8710 #	<10 #	1990 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #		
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/l	TM245	14.4	2030	<10	513		
Aliphatics >C8-C10	<10 µg/l	TM245	25.1	1100	<10	201		
Aliphatics >C10-C12	<10 µg/l	TM245	48.3	3380	<10	798		
Aromatics >C6-C7	<10 µg/l	TM245	91	3140	<10	1040		
Aromatics >C7-C8	<10 µg/l	TM245	<10	2860	<10	554		
Aromatics >EC8-EC10	<10 µg/l	TM245	37.7	4360	<10	702		
Aromatics >EC10-EC12	<10 µg/l	TM245	72.5	5070	<10	1200		
Total Aliphatics >C5-C12	<10 µg/l	TM245	87.8	6510	<10	1510		
Total Aromatics >C6-C12	<10 µg/l	TM245	201	15400	<10	3490		

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	G3 W004	G4 W004	G5 W004	G8 W004		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50		
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
*	subcontracted test.	Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75	100715-75	100715-75		
		Lab Sample No.(s)	1824812	1824768	1824915	1824547		
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	29	3690	354	890		
Acenaphthene (aq)	<0.015 µg/l	TM178	4.95	47.1	46	12.5		
Acenaphthylene (aq)	<0.011 µg/l	TM178	2.5	198	131	76.2		
Fluoranthene (aq)	<0.014 µg/l	TM178	7.64	81.4	289	15.8		
Anthracene (aq)	<0.015 µg/l	TM178	1.69	47.7	130	12.9		
Phenanthrene (aq)	<0.022 µg/l	TM178	4.86	165	378	43.9		
Fluorene (aq)	<0.014 µg/l	TM178	1.94	96	142	39.8		
Chrysene (aq)	<0.013 µg/l	TM178	3.31	15.4	67.7	1.82		
Pyrene (aq)	<0.015 µg/l	TM178	6.23	53.5	196	10.4		
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	4.28	19	90.7	2.63		
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	5.15	17	94.3	1.32		
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	2.23	7.69	37.8	0.54		
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	4.22	11.4	76.3	0.81		
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	0.739	2.6	12.6	<0.32		
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	2.45	8.92	43.9	<0.32		
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	2.17	8.23	39.6	<0.28		
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	83.3	4470	2130	1110		

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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

TPH CWG (W)

Table with columns for Component, LOD/Units, Method, and sample types G3 W004 through G8 W004. Includes a Results Legend and a large red watermark: 'For inspection purposes only. Consent of copyright owner required for any other use.'

SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Reference: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

VOC MS (W)

Results Legend		Customer Sample Ref.	G4 W004	G5 W004			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	3.00 - 5.00	2.50 - 4.00			
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)			
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010			
*	subcontracted test.	Date Received	15/07/2010	15/07/2010			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75			
		Lab Sample No.(s)	1824768	1824915			
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	106	106			
Toluene-d8**	%	TM208	99.6	99.8			
4-Bromofluorobenzene**	%	TM208	100	102			
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	#	#	
Chloromethane	<9 µg/l	TM208	<9	<9	#	#	
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	#	#	
Bromomethane	<2 µg/l	TM208	<2	<2	#	#	
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	#	#	
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	#	#	
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	#	#	
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	#	#	
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	#	#	
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	#	#	
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	#	#	
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	#	#	
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	#	#	
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	#	#	
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	#	#	
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	#	#	
Benzene	<1.3 µg/l	TM208	2890	<1.3	#	#	
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	#	#	
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	#	#	
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	#	#	
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	#	#	
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	#	#	
Toluene	<1.4 µg/l	TM208	2830	<1.4	#	#	
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	#	#	
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	#	#	
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	#	#	
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	#	#	
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	#	#	
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	#	#	
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	#	#	
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#	
Ethylbenzene	<2.5 µg/l	TM208	179	<2.5	#	#	

SDG: 100715-75
 Job: D_MOUCHEL_ELE-106
 Client Reference: E8 - G5
 Location: Limerick Gasworks

Customer: Mouchel
 Attention: Dave Watts
 Order No.:
 Report No: 91383

VOC MS (W)

Results Legend		Customer Sample Ref.	G4 W004	G5 W004				
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	3.00 - 5.00	2.50 - 4.00				
diss.filt	Dissolved / filtered sample.	Sample Type	Water(GW/SW)	Water(GW/SW)				
tot.unfilt	Total / unfiltered sample.	Date Sampled	14/07/2010	14/07/2010				
*	subcontracted test.	Date Received	15/07/2010	15/07/2010				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100715-75	100715-75				
		Lab Sample No.(s)	1824768	1824915				
Component	LOD/Units	Method						
m,p-Xylene	<2.5 µg/l	TM208	1680	<2.5	#	#		
o-Xylene	<1.7 µg/l	TM208	745	<1.7	#	#		
Styrene	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
Bromoform	<3 µg/l	TM208	<3	<3	#	#		
Isopropylbenzene	<1.4 µg/l	TM208	15.5	<1.4	#	#		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2	#	#		
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	<7.8	#	#		
Bromobenzene	<2 µg/l	TM208	<2	<2	#	#		
Propylbenzene	<2.6 µg/l	TM208	7.52	<2.6	#	#		
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	127	<1.8	#	#		
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
tert-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	325	<1.7	#	#		
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	<1.7	#	#		
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6	<2.6	#	#		
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	<2.7	#	#		
n-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#		
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7	#	#		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8	#	#		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	<2.5	#	#		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	#	#		
Naphthalene	<3.5 µg/l	TM208	3070	<3.5	#	#		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	<3.1	#	#		
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10	#	#		

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Table of Results - Appendix

SDG Number : 100715-75

Client : Mouchel

Client Ref : E8 - G5

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
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
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	
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	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

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

SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

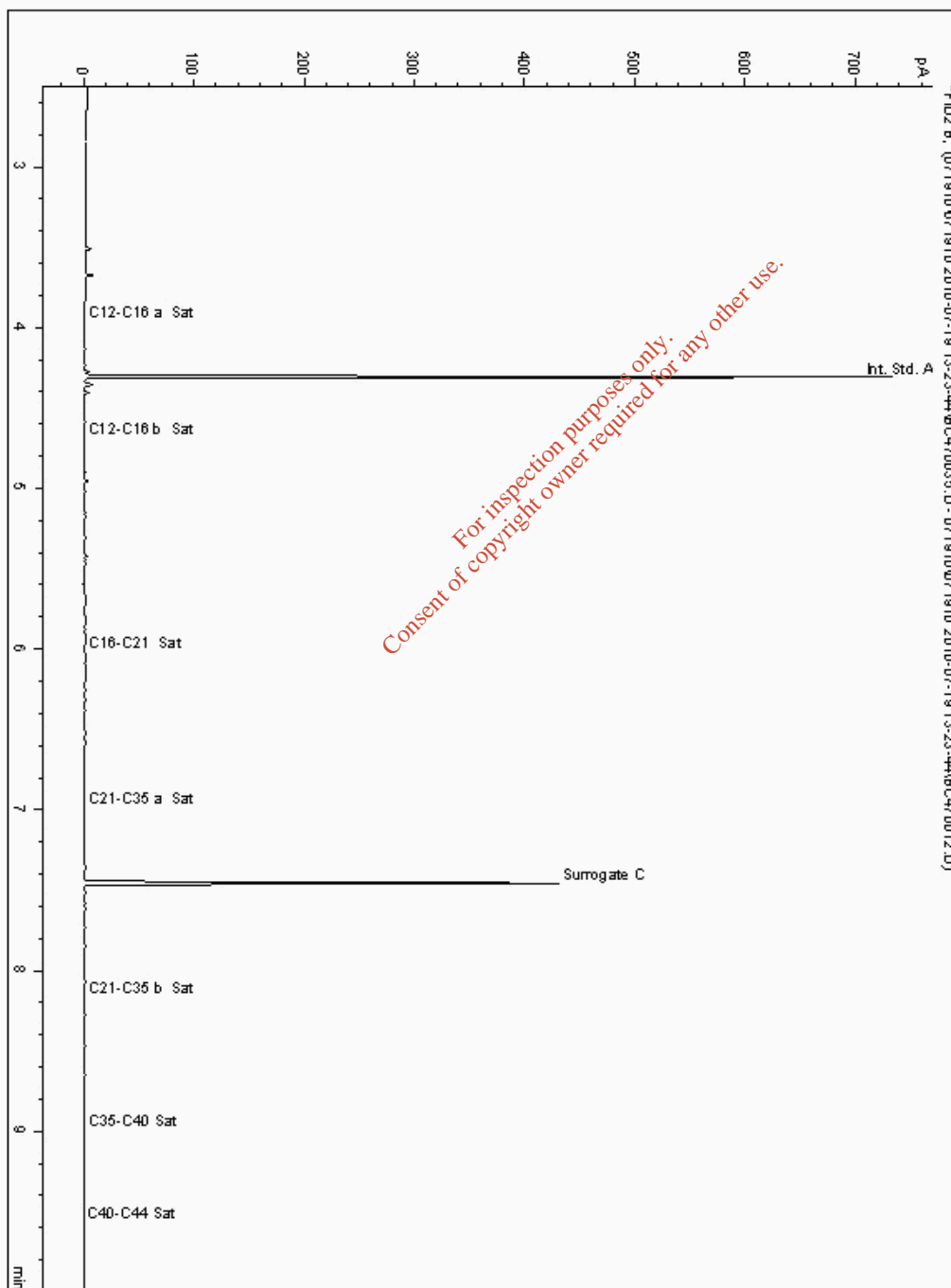
Chromatogram

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

Sample No 1830250
Sample ID G3
Depth 3.00 - 4.50

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

Sample Identity: 1940109-1830250
Date Acquired : 19/07/10 23:58:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

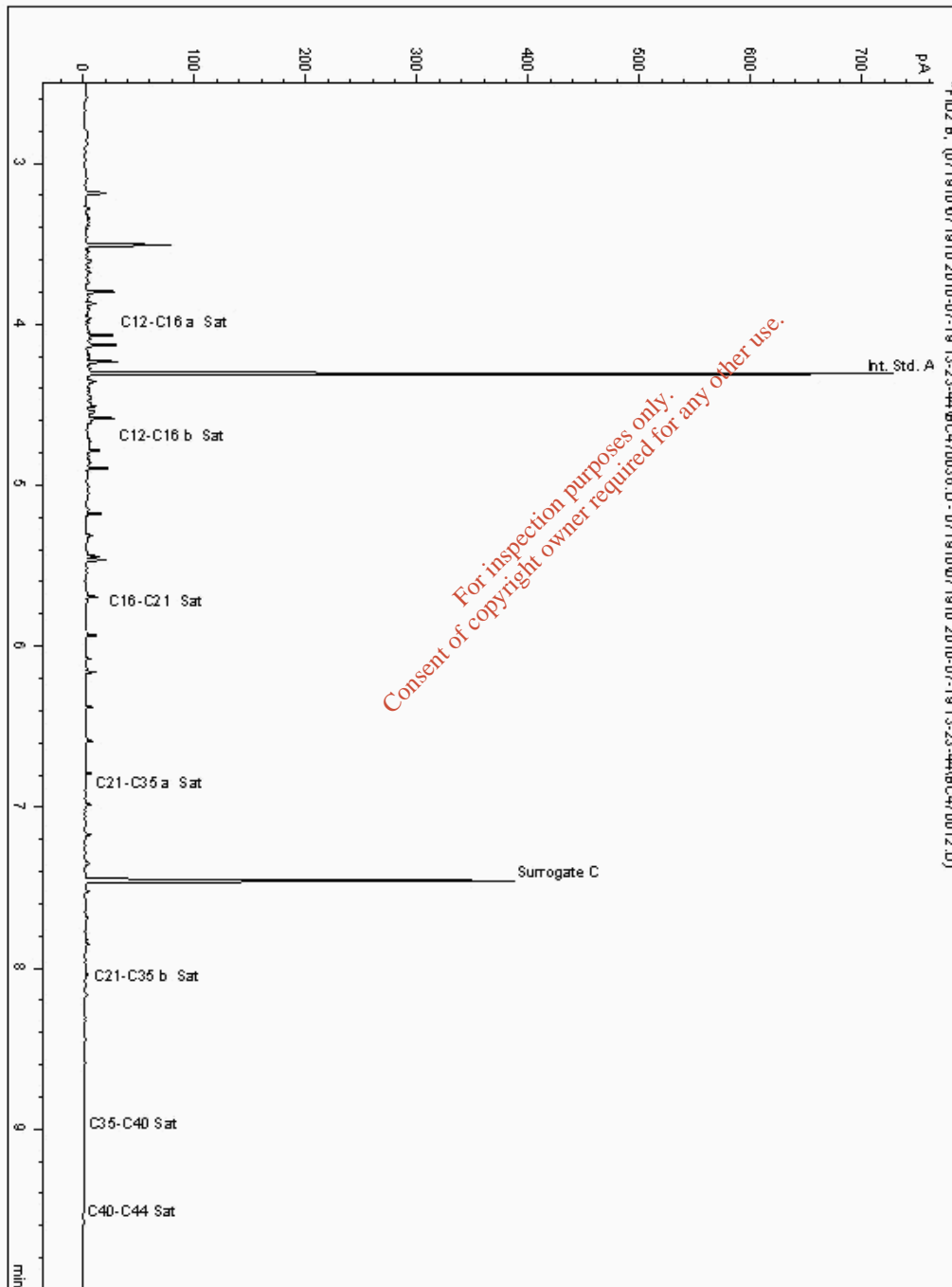
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830273
Sample ID G5
Depth 2.50 - 4.00

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

Sample Identity: 1940156-1830273
Date Acquired : 20/07/10 00:17:43
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

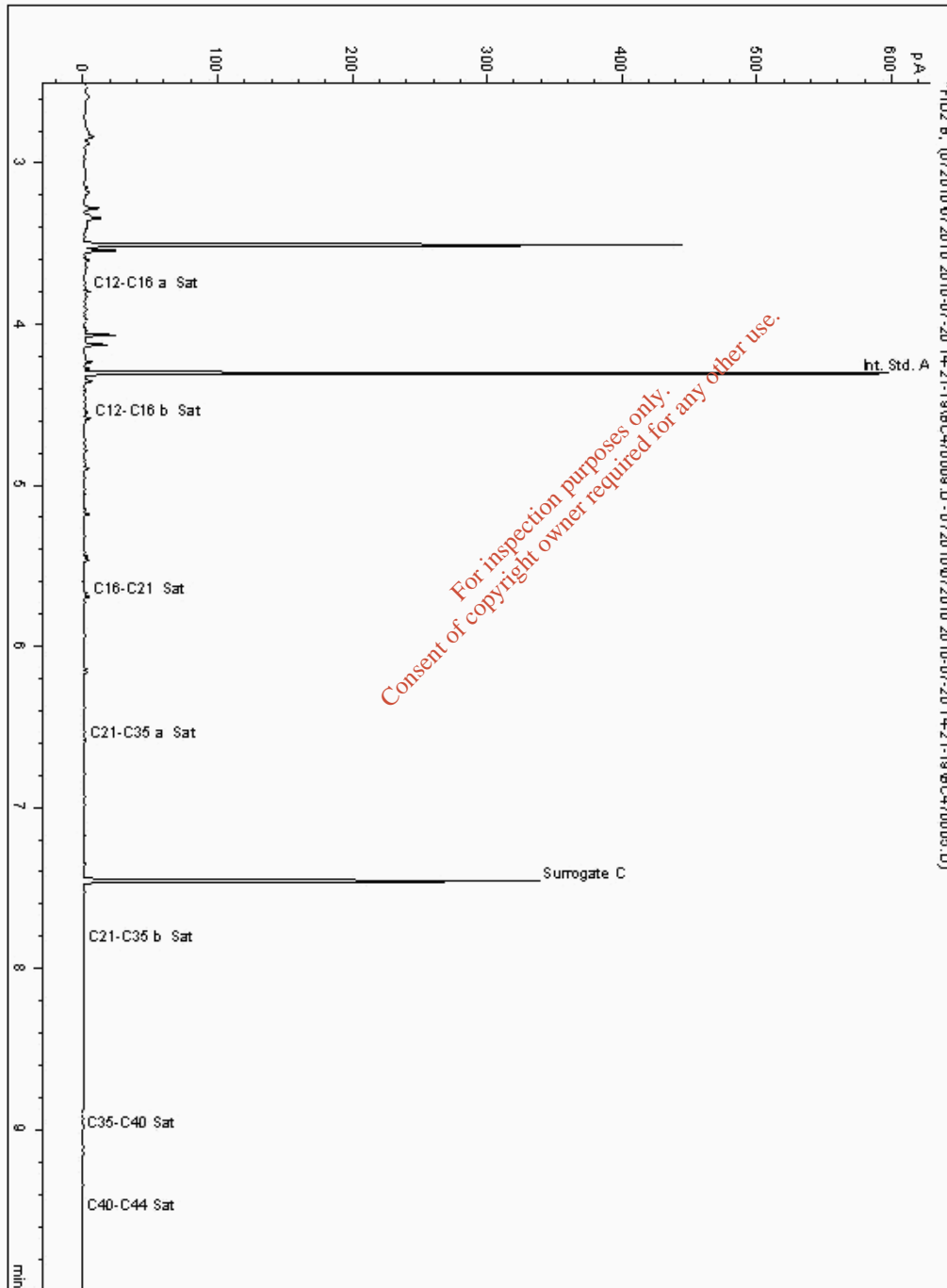
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830290
Sample ID G4
Depth 3.00 - 5.00

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

Sample Identity: 1940090-1830290
Date Acquired : 20/07/10 16:55:52
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

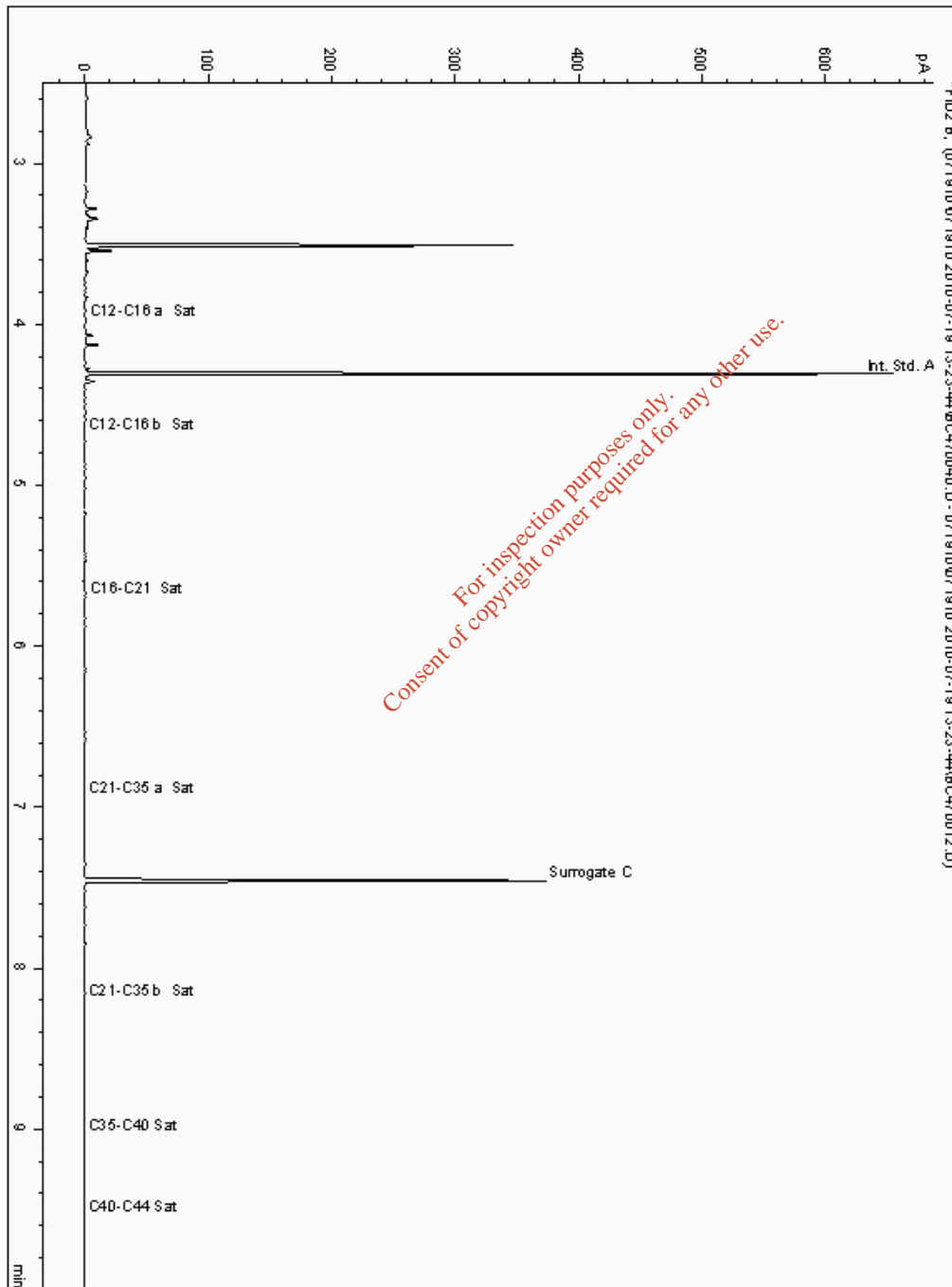
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830313
Sample ID G2
Depth 3.50 - 5.00

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

Sample Identity: 1940124-1830313
Date Acquired : 20/07/10 01:23:44
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

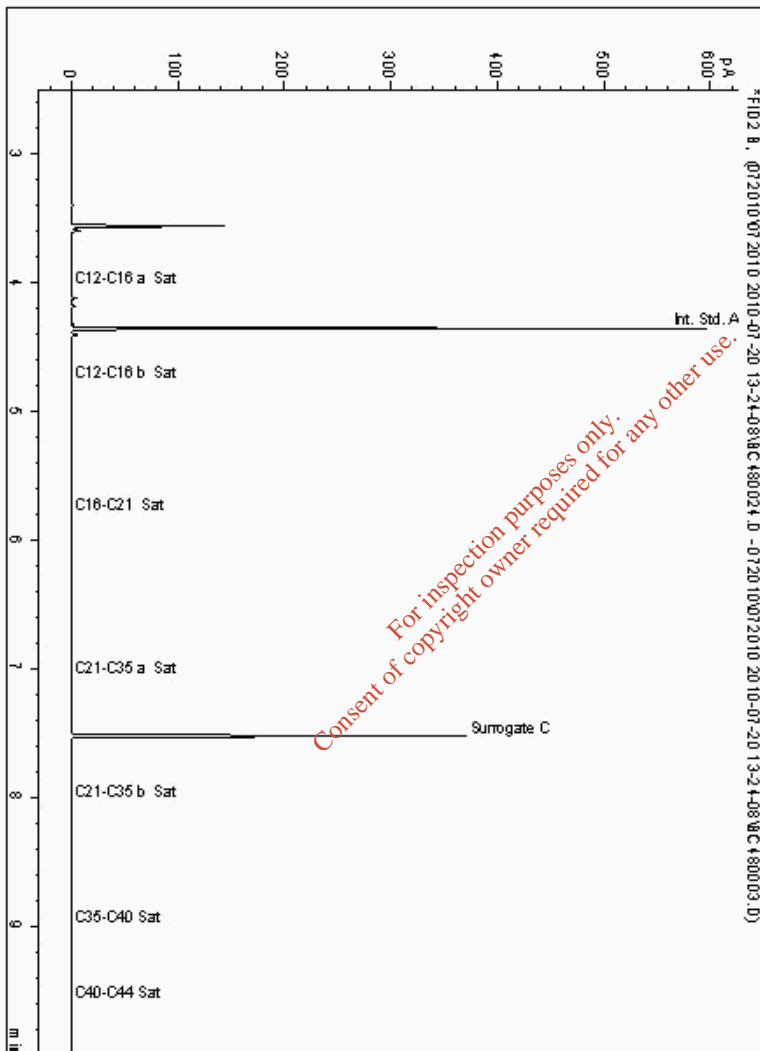
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831603
Sample ID G8
Depth 1.50 - 3.50

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

Sample Identity: 1940044-1831603
Date Acquired : 20/07/10 20:39:55
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

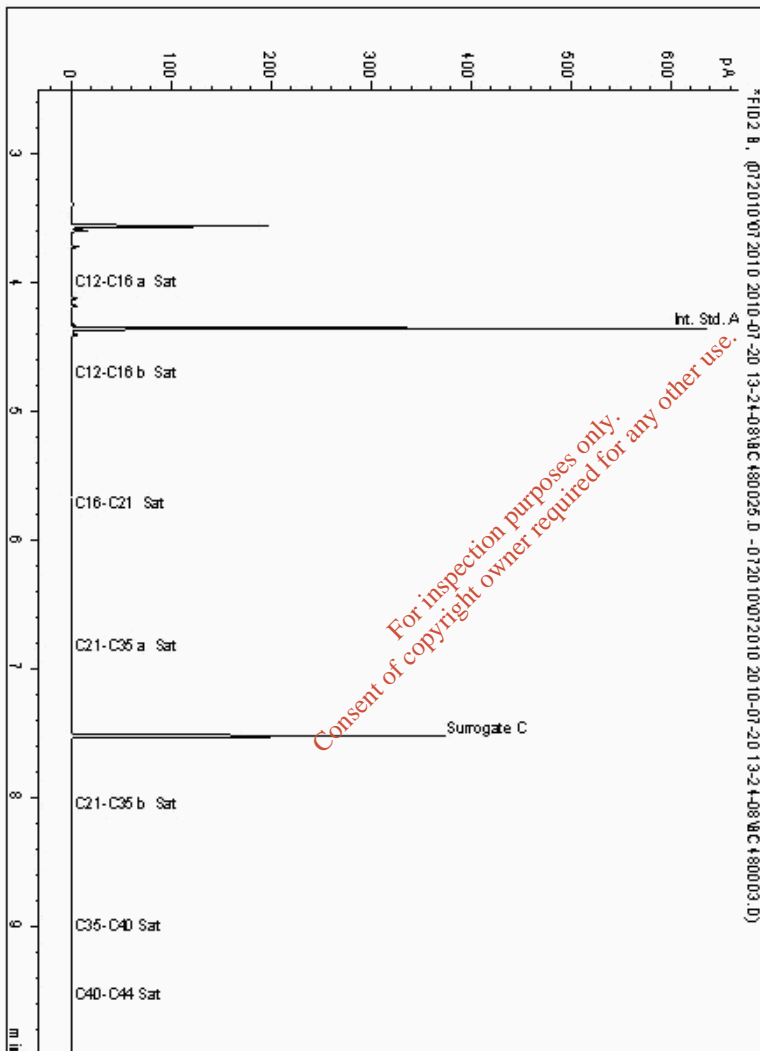
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831654
Sample ID E8
Depth 1.00 - 3.00

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

Sample Identity: 1940014-1831654
Date Acquired : 20/07/10 20:58:57
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

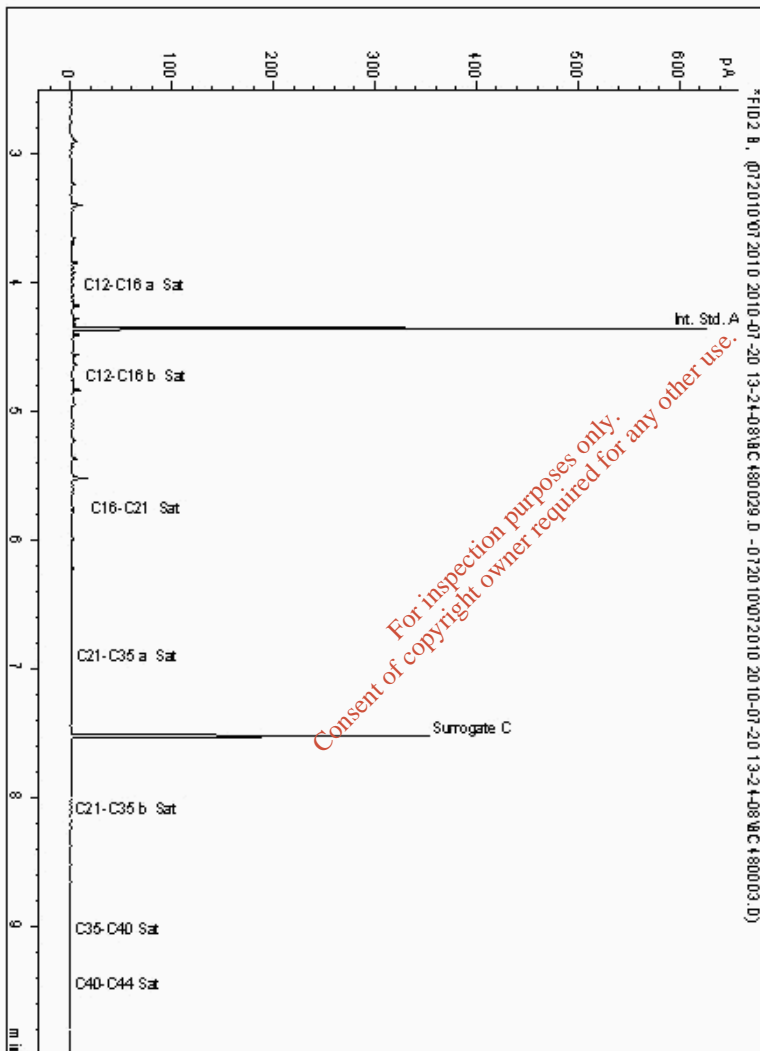
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831700
Sample ID C11
Depth 1.00 - 3.00

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

Sample Identity: 1940029-1831700
Date Acquired : 20/07/10 22:15:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

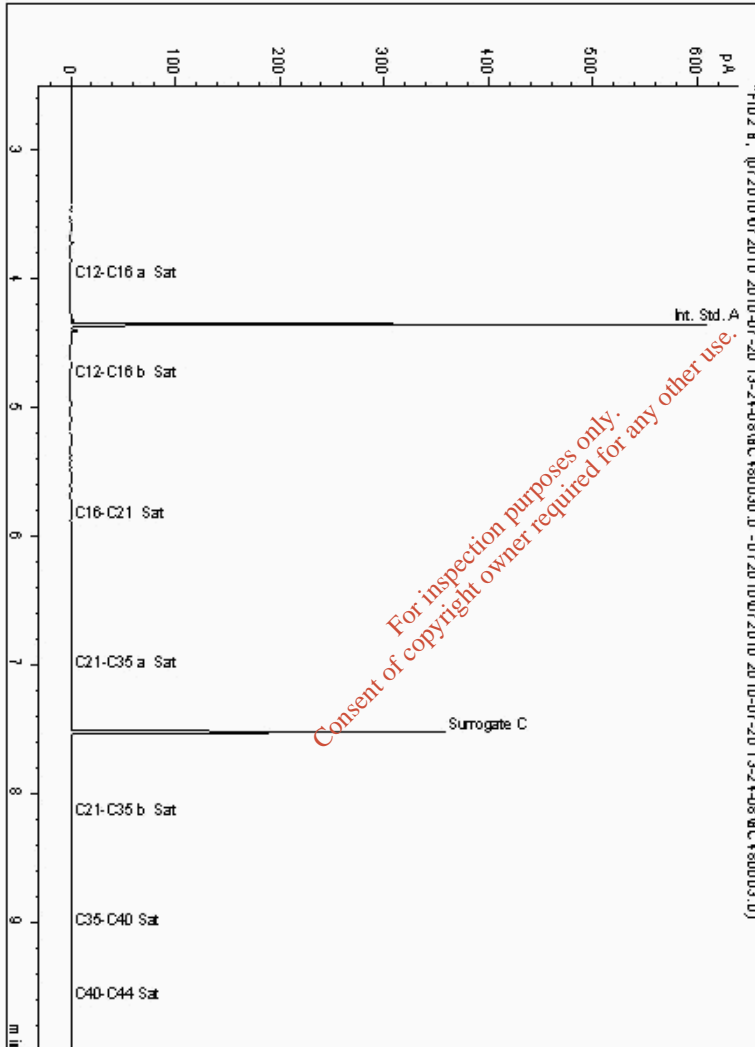
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831737
Sample ID F11
Depth 0.00 - 2.00

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

Sample Identity: 1940059-1831737
Date Acquired : 20/07/10 22:34:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

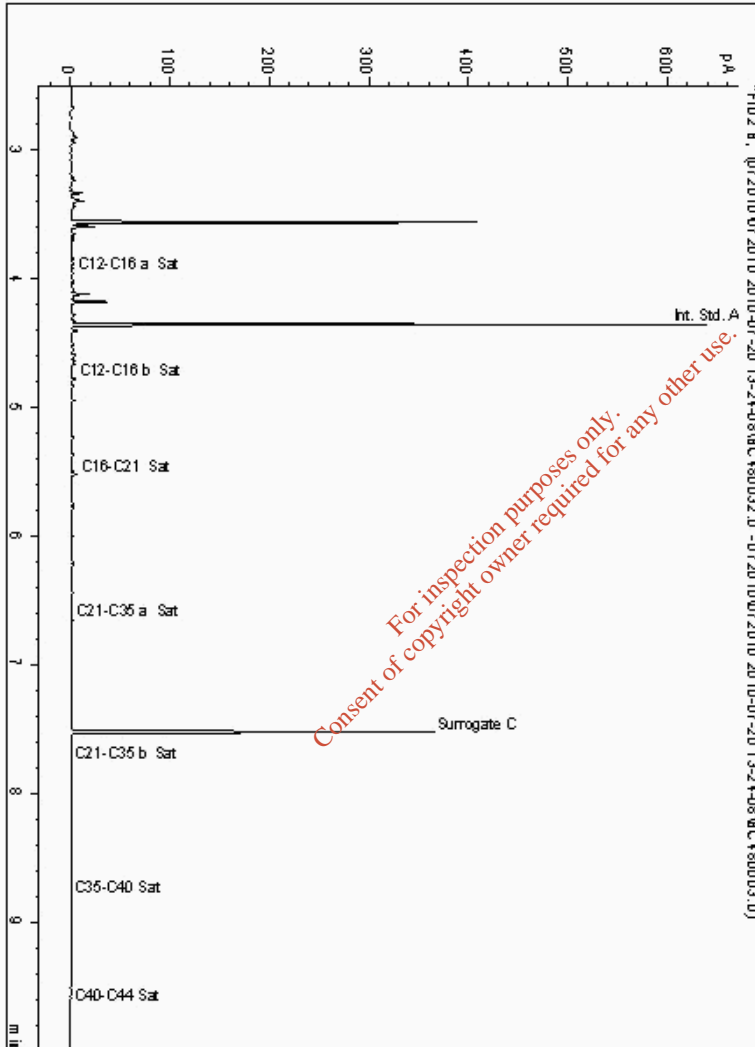
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831777
Sample ID D1
Depth 3.50 - 5.00

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

Sample Identity: 1940140-1831777
Date Acquired : 20/07/10 23:11:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

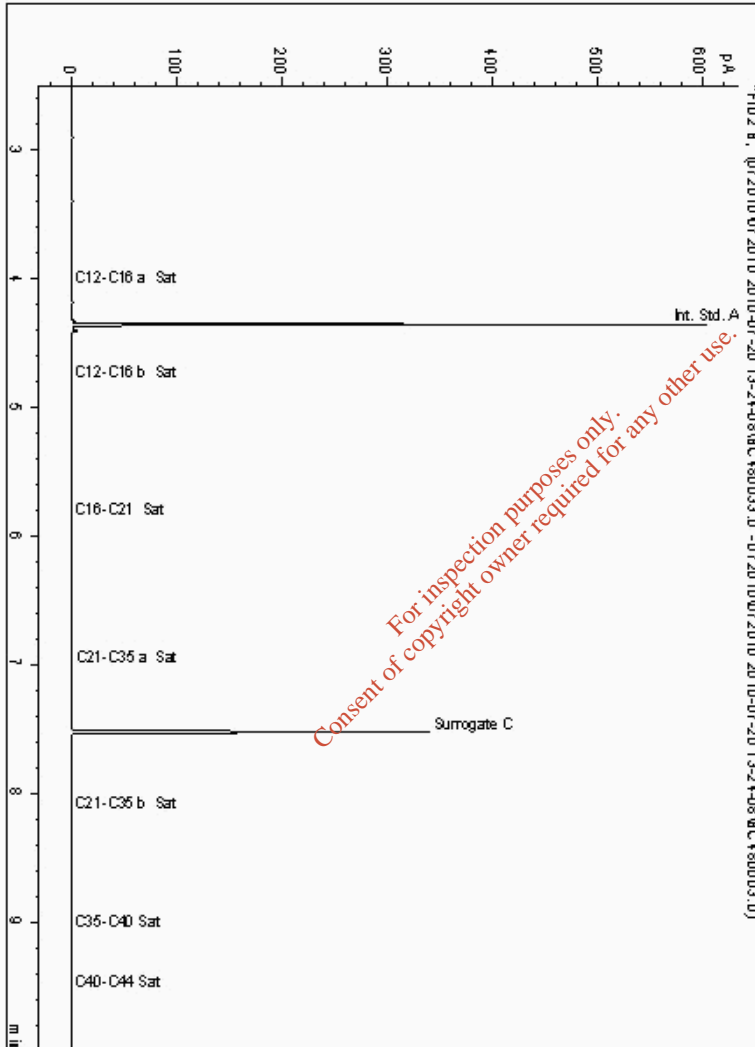
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

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

Sample No 1831814
Sample ID A11
Depth 1.00 - 3.00

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

Sample Identity: 1940074-1831814
Date Acquired : 20/07/10 23:30:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

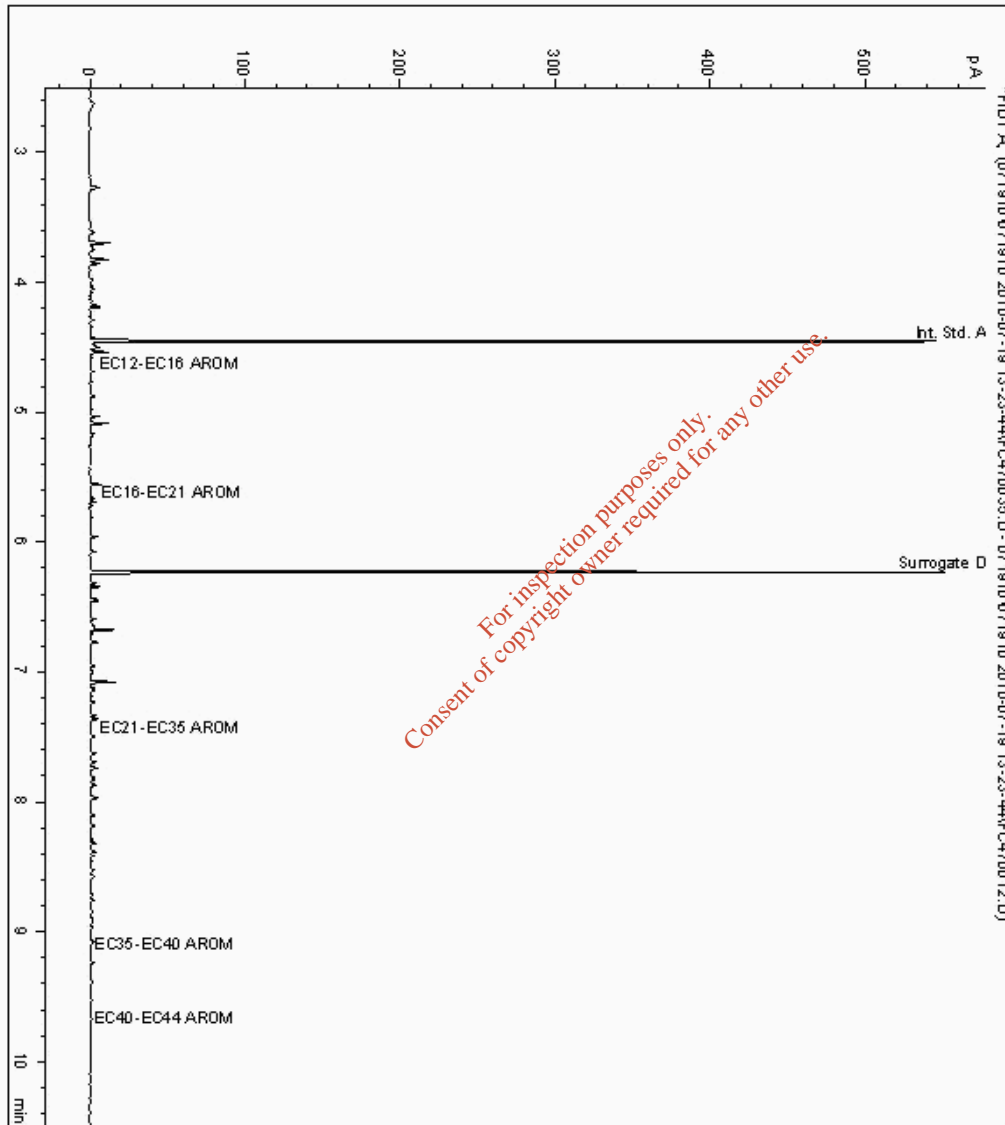
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830250
Sample ID G3
Depth 3.00 - 4.50

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

Sample Identity: 1940110-1830250
Date Acquired : 19/07/10 23:58:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

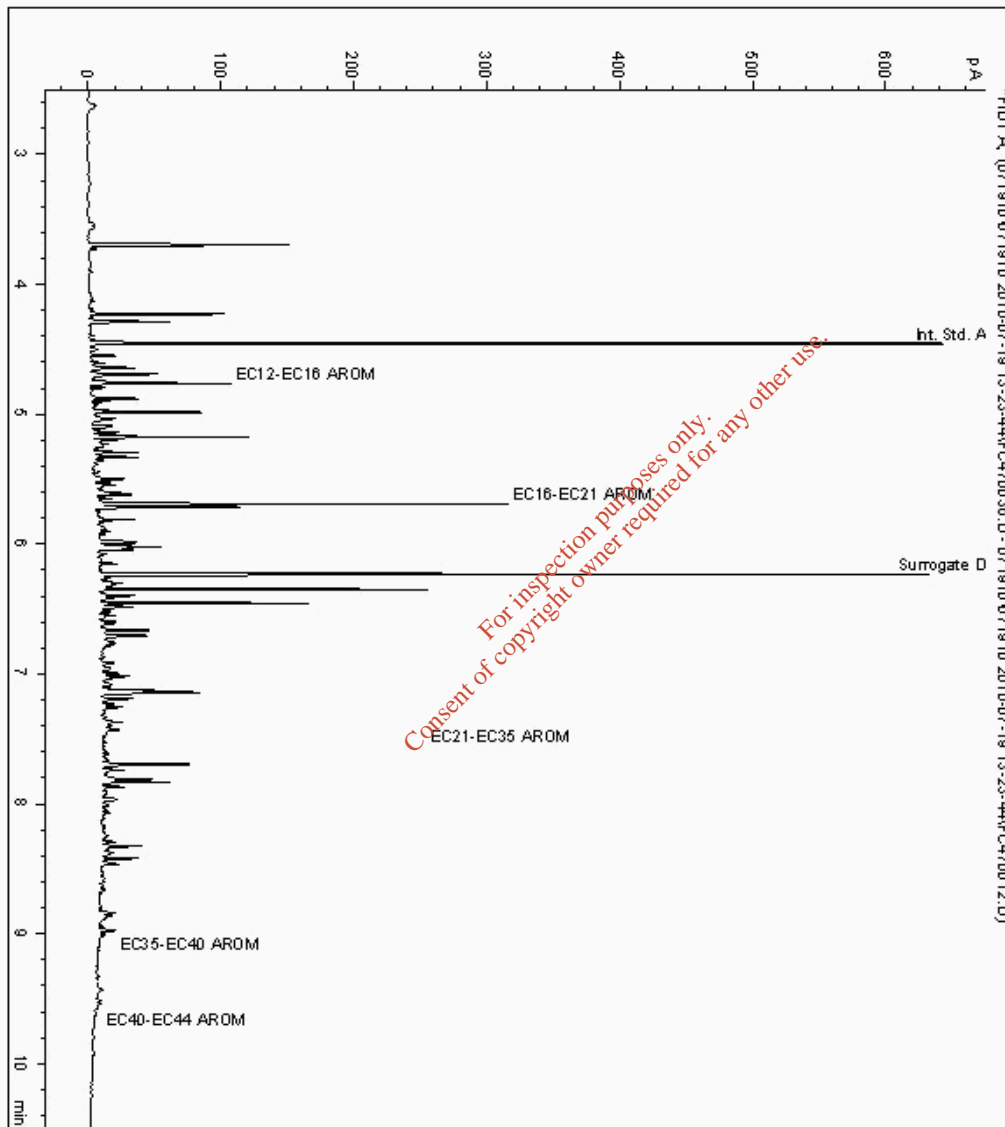
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830273
Sample ID G5
Depth 2.50 - 4.00

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

Sample Identity: 1940157-1830273
Date Acquired : 20/07/10 00:17:43
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

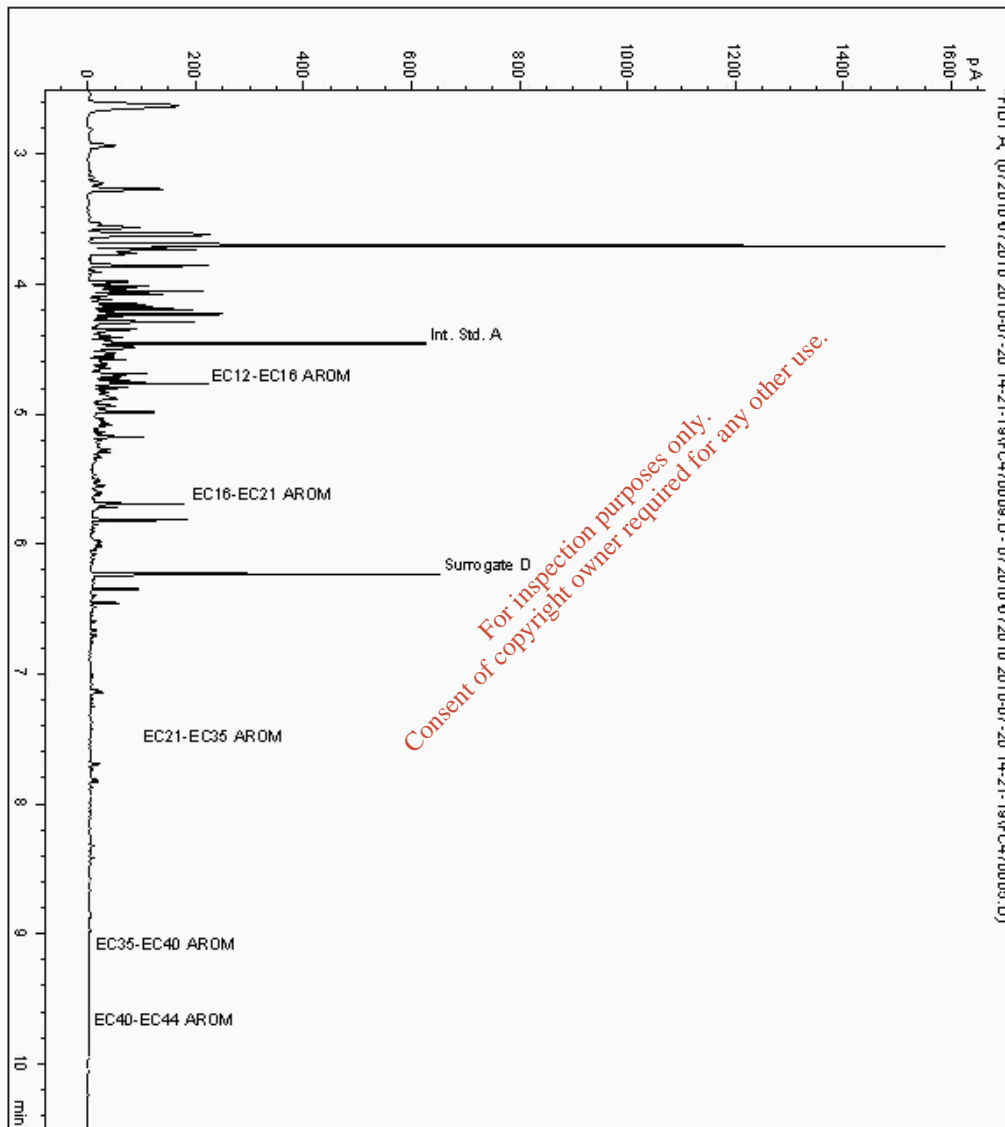
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830290
Sample ID G4
Depth 3.00 - 5.00

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

Sample Identity: 1940091-1830290
Date Acquired : 20/07/10 16:55:52
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

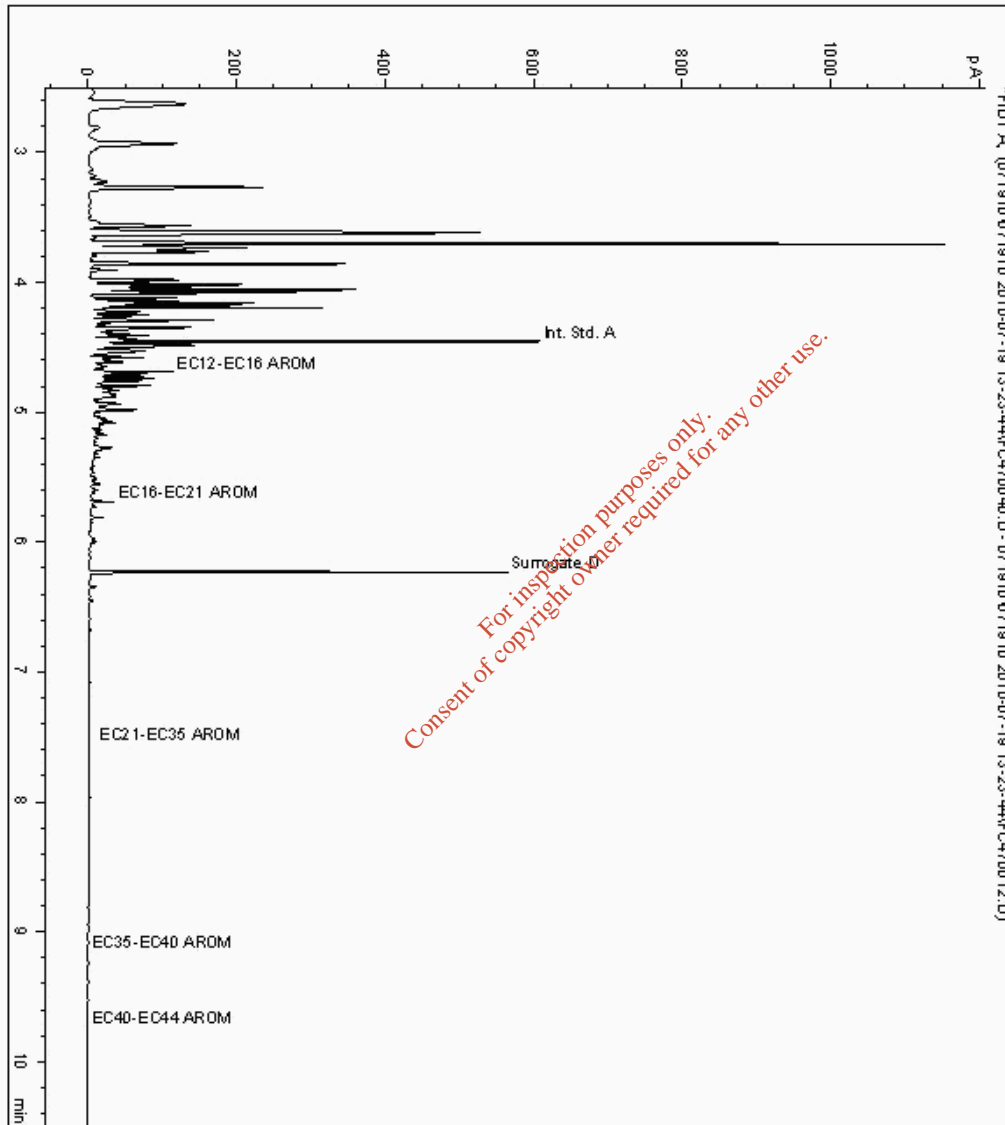
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1830313
Sample ID G2
Depth 3.50 - 5.00

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

Sample Identity: 1940125-1830313
Date Acquired : 20/07/10 01:23:44
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

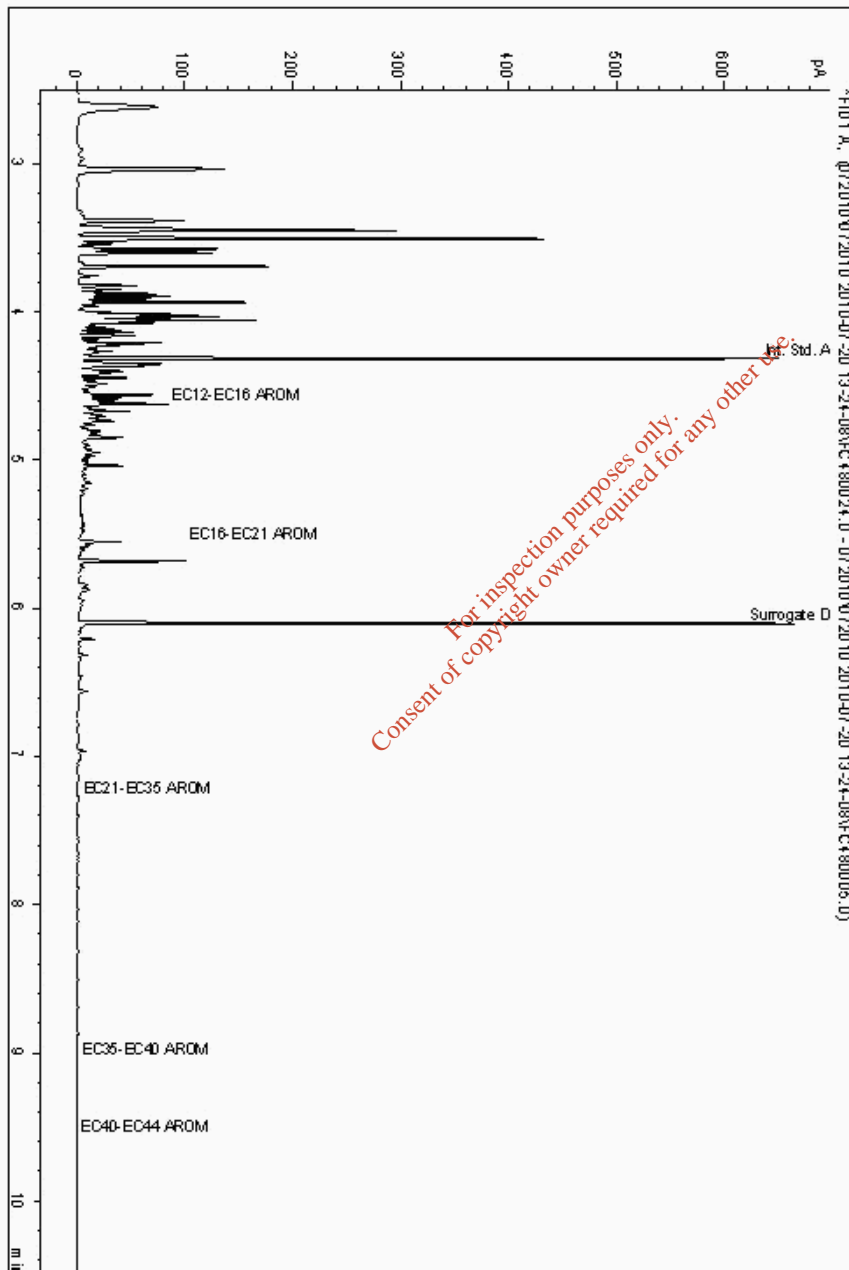
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831603
Sample ID G8
Depth 1.50 - 3.50

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

Sample Identity: 1940045-1831603
Date Acquired : 20/07/10 20:39:56
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

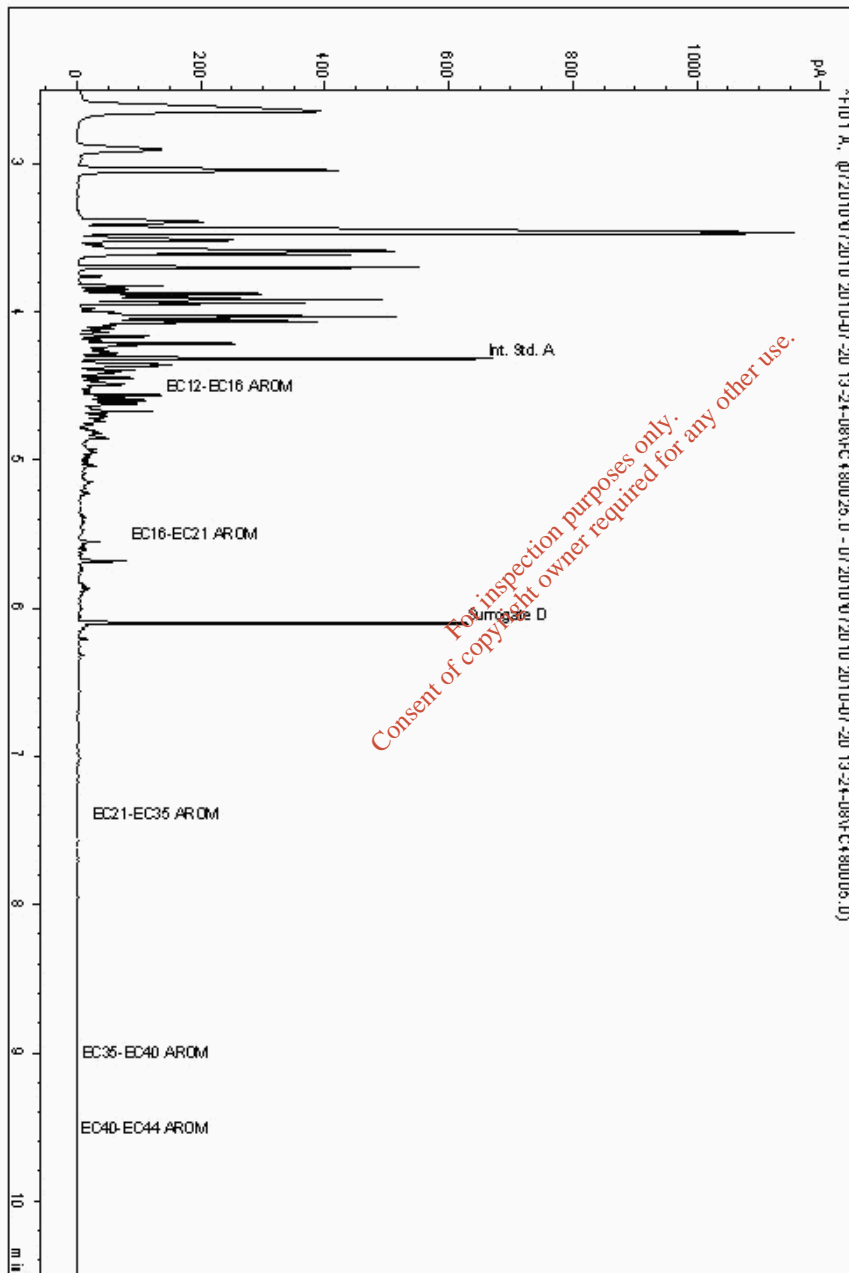
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831654
Sample ID E8
Depth 1.00 - 3.00

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

Sample Identity: 1940015-1831654
Date Acquired : 20/07/10 20:58:58
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

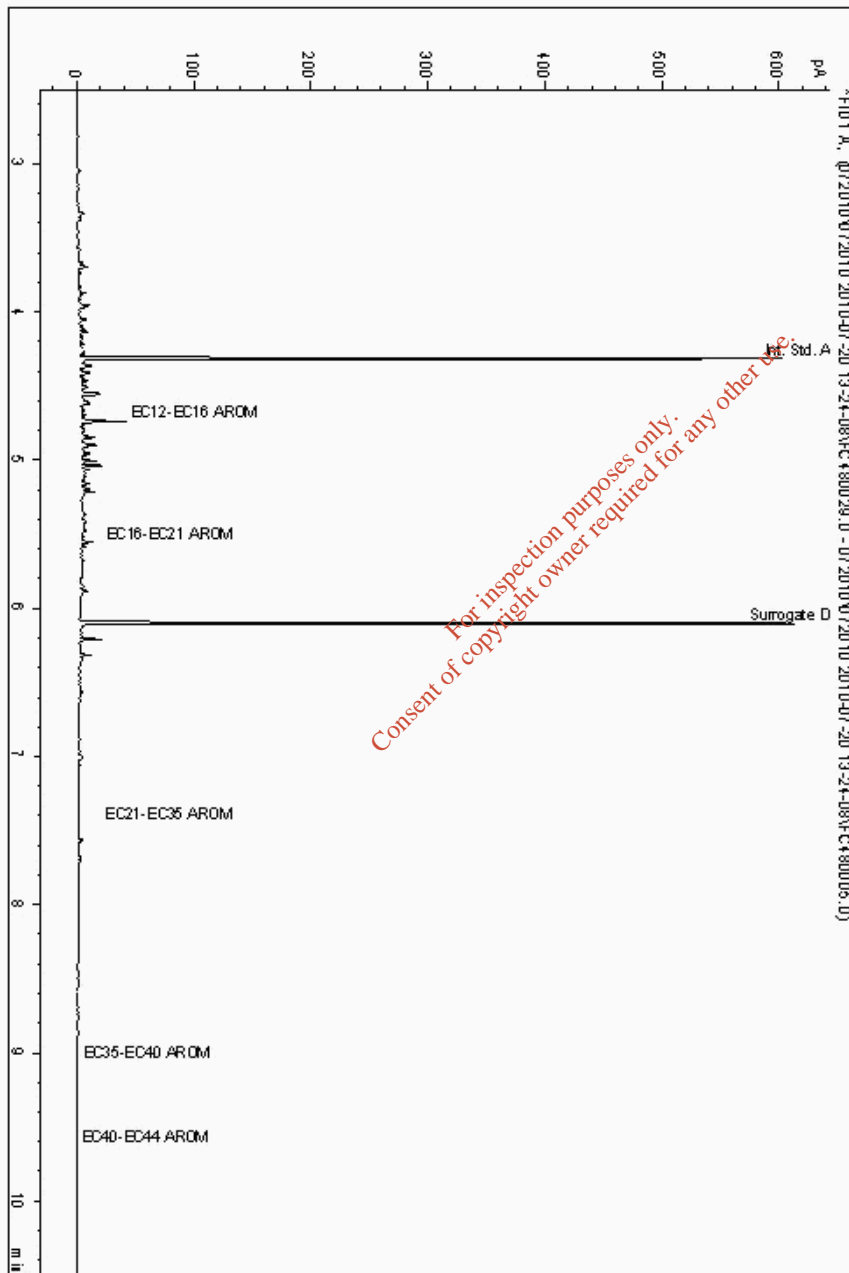
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831700
Sample ID C11
Depth 1.00 - 3.00

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

Sample Identity: 1940030-1831700
Date Acquired : 20/07/10 22:15:20
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

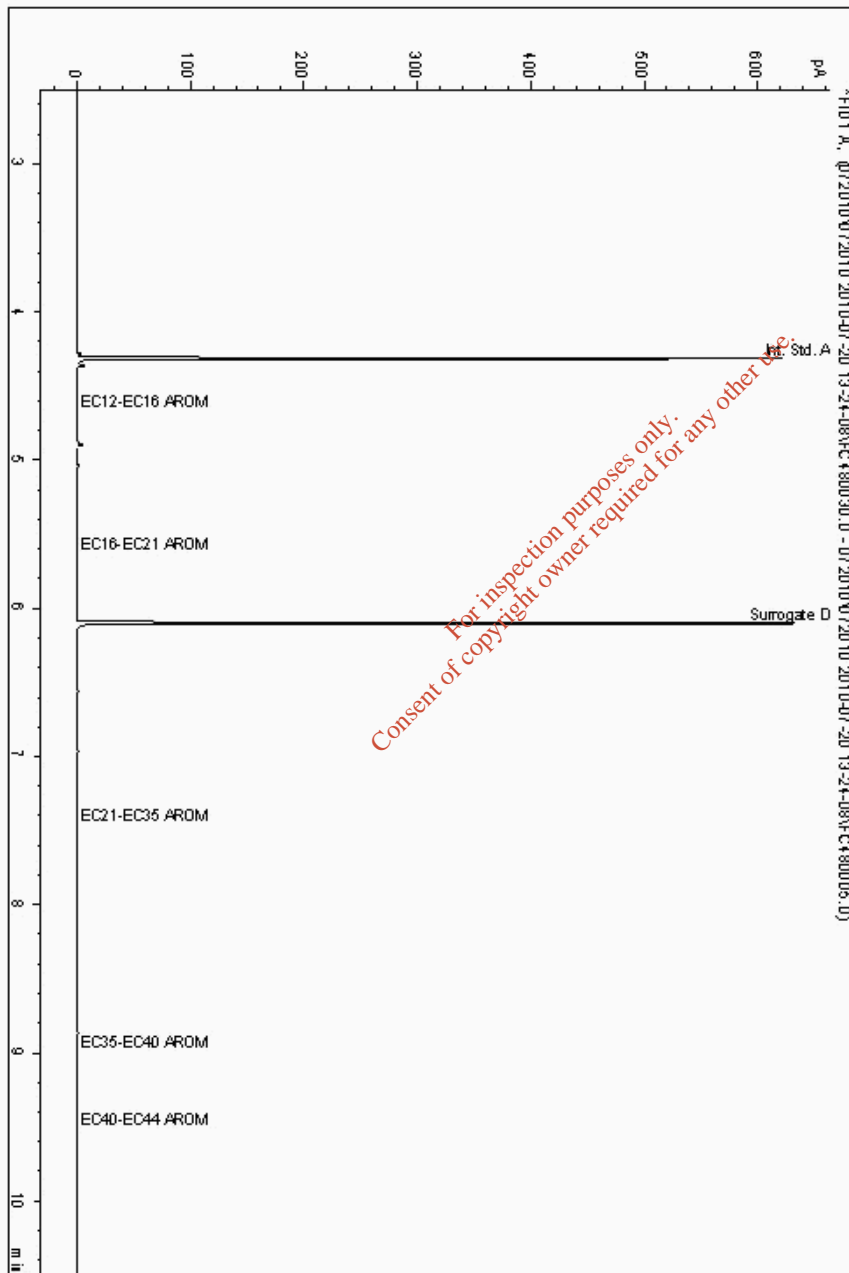
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831737
Sample ID F11
Depth 0.00 - 2.00

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

Sample Identity: 1940060-1831737
Date Acquired : 20/07/10 22:34:16
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

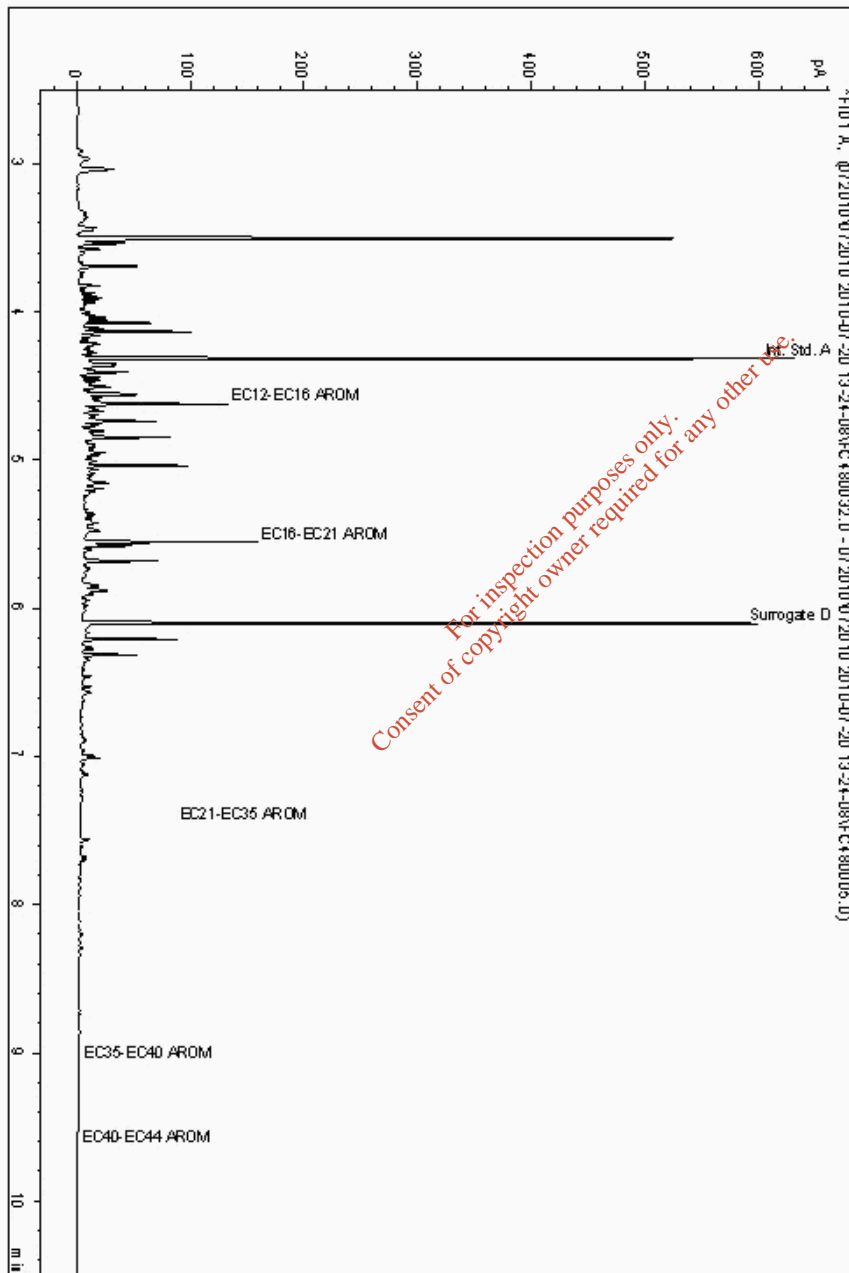
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831777
Sample ID D1
Depth 3.50 - 5.00

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

Sample Identity: 1940141-1831777
Date Acquired : 20/07/10 23:11:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

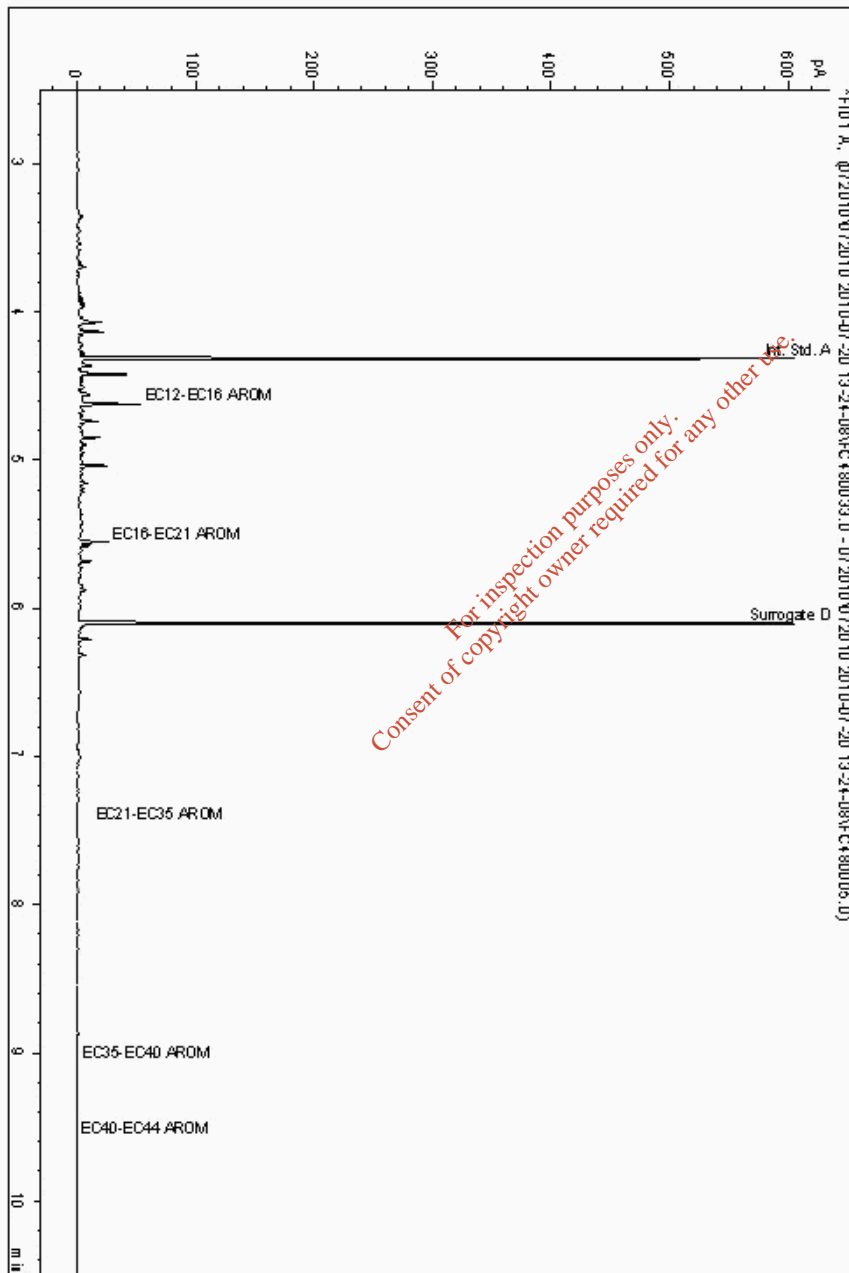
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

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

Sample No 1831814
Sample ID A11
Depth 1.00 - 3.00

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

Sample Identity: 1940075-1831814
Date Acquired : 20/07/10 23:30:48
Units :
Dilution :
CF : 1
Multiplier : 0.017



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

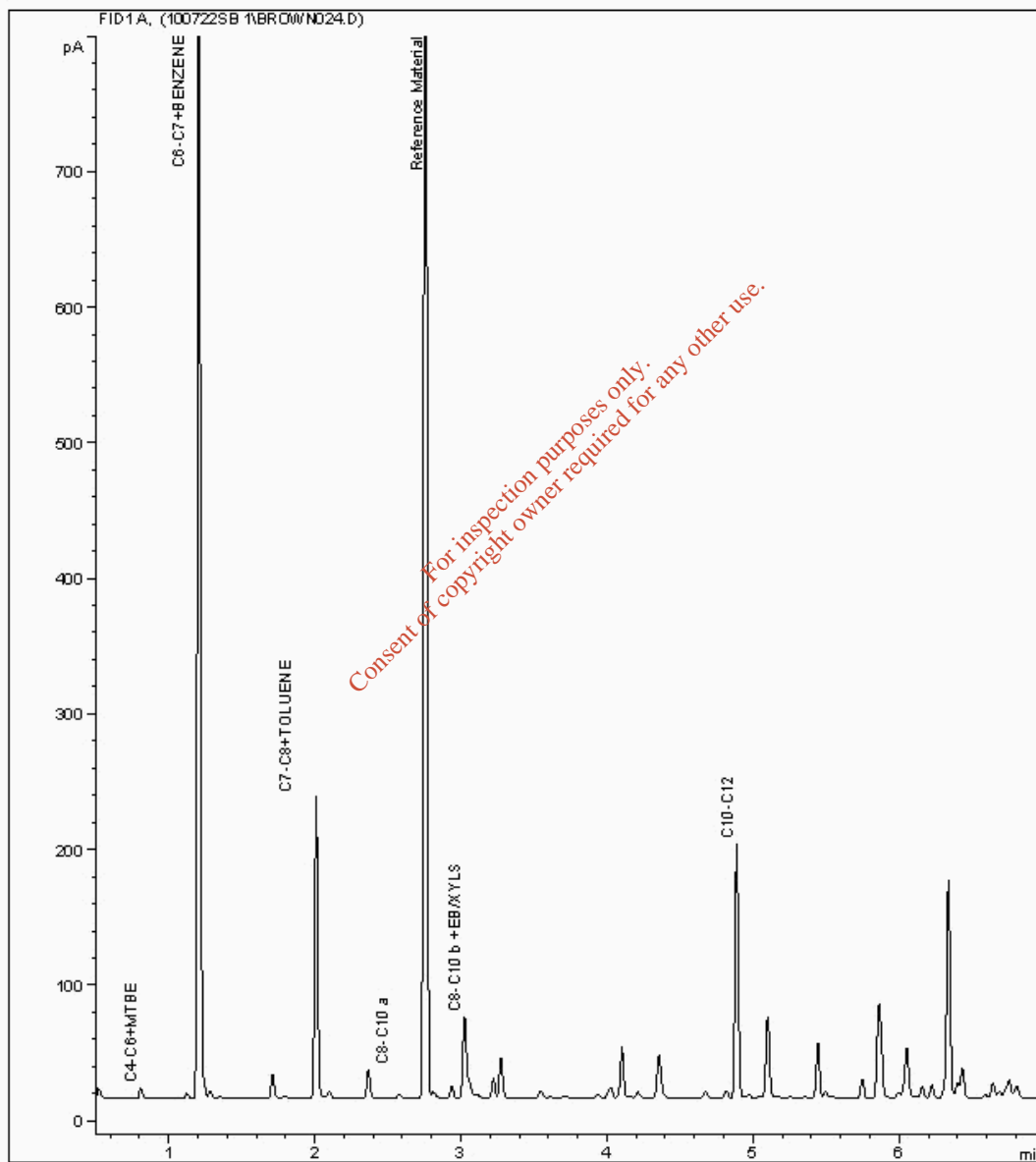
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

Analysis: GRO by GC-FID (W)

Sample No 1824496
Sample ID E8
Depth 1.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940016-1824496
Date Acquired : 22/07/10 17:06:23
Units : ppb
Dilution : 2



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

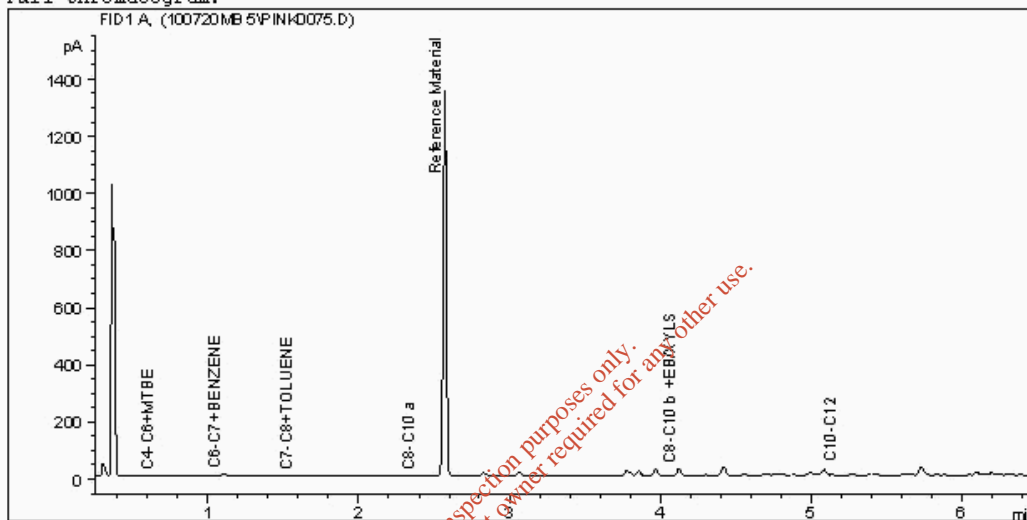
Analysis: GRO by GC-FID (W)

Sample No 1824522
Sample ID C11
Depth 1.00 - 3.00

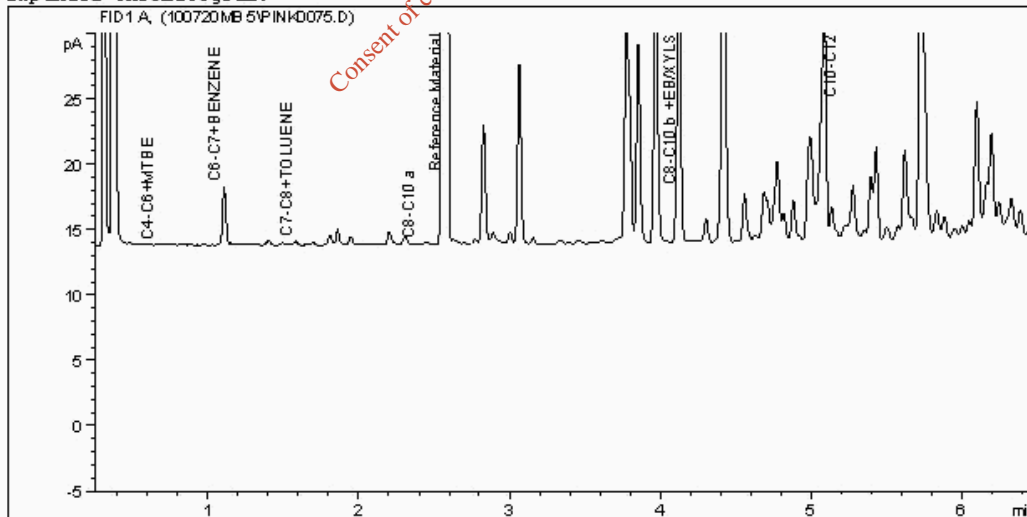
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940031-1824522
Date Acquired : 21/07/10 10:38:28
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

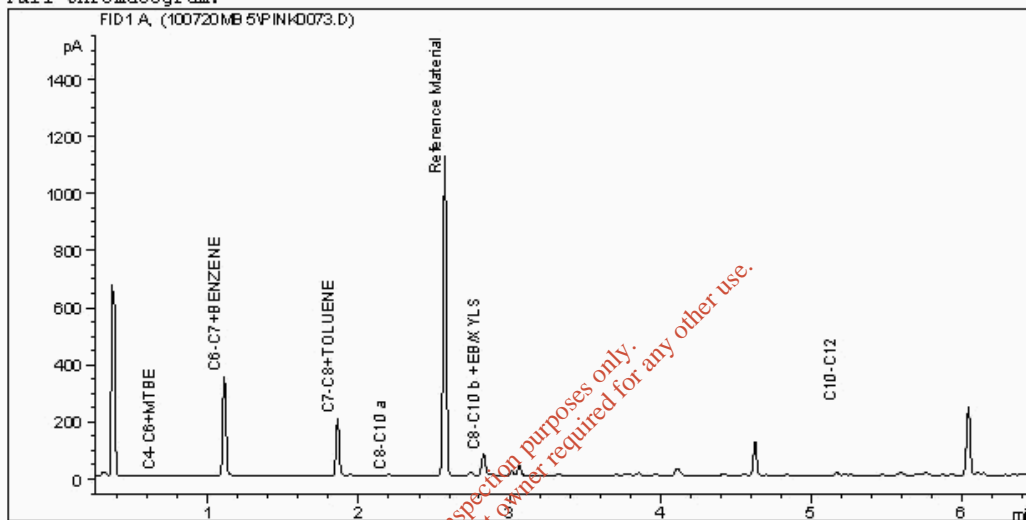
Analysis: GRO by GC-FID (W)

Sample No 1824545
Sample ID G8
Depth 1.50 - 3.50

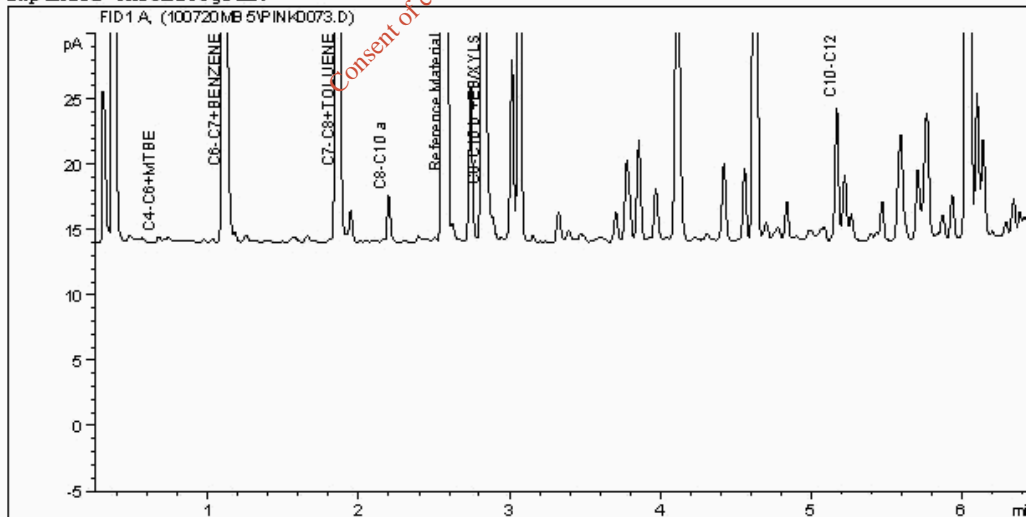
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940046-1824545
Date Acquired : 21/07/10 10:10:20
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

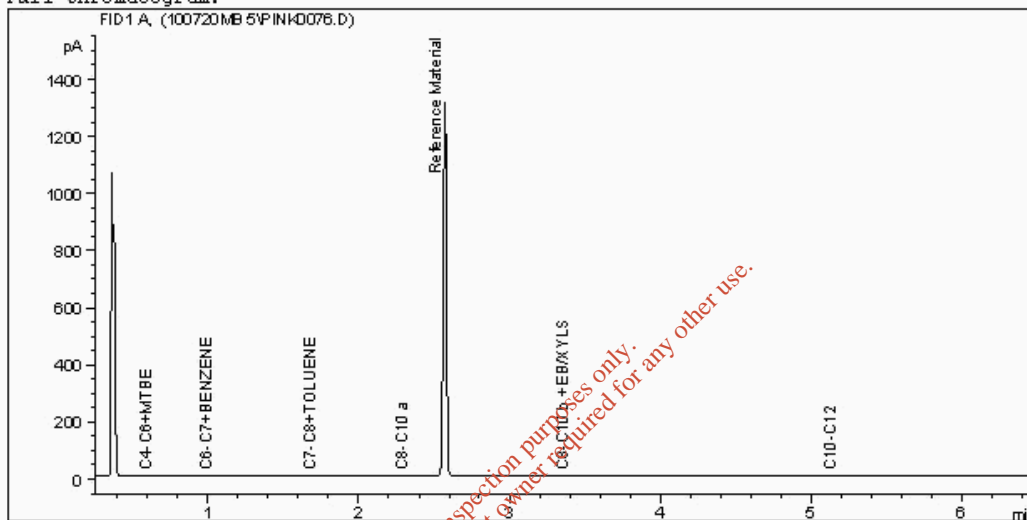
Analysis: GRO by GC-FID (W)

Sample No 1824630
Sample ID F11
Depth 0.00 - 2.00

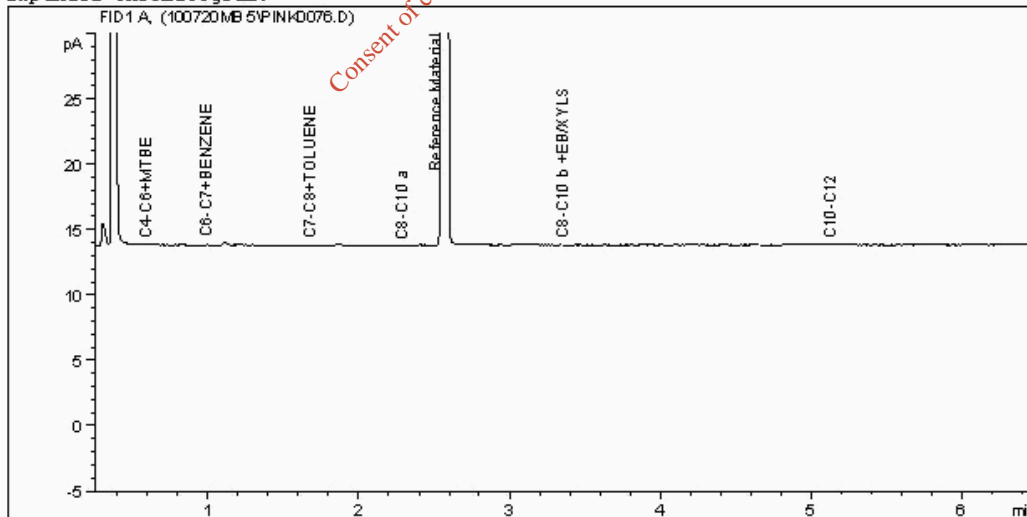
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940061-1824630
Date Acquired : 21/07/10 10:52:30
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

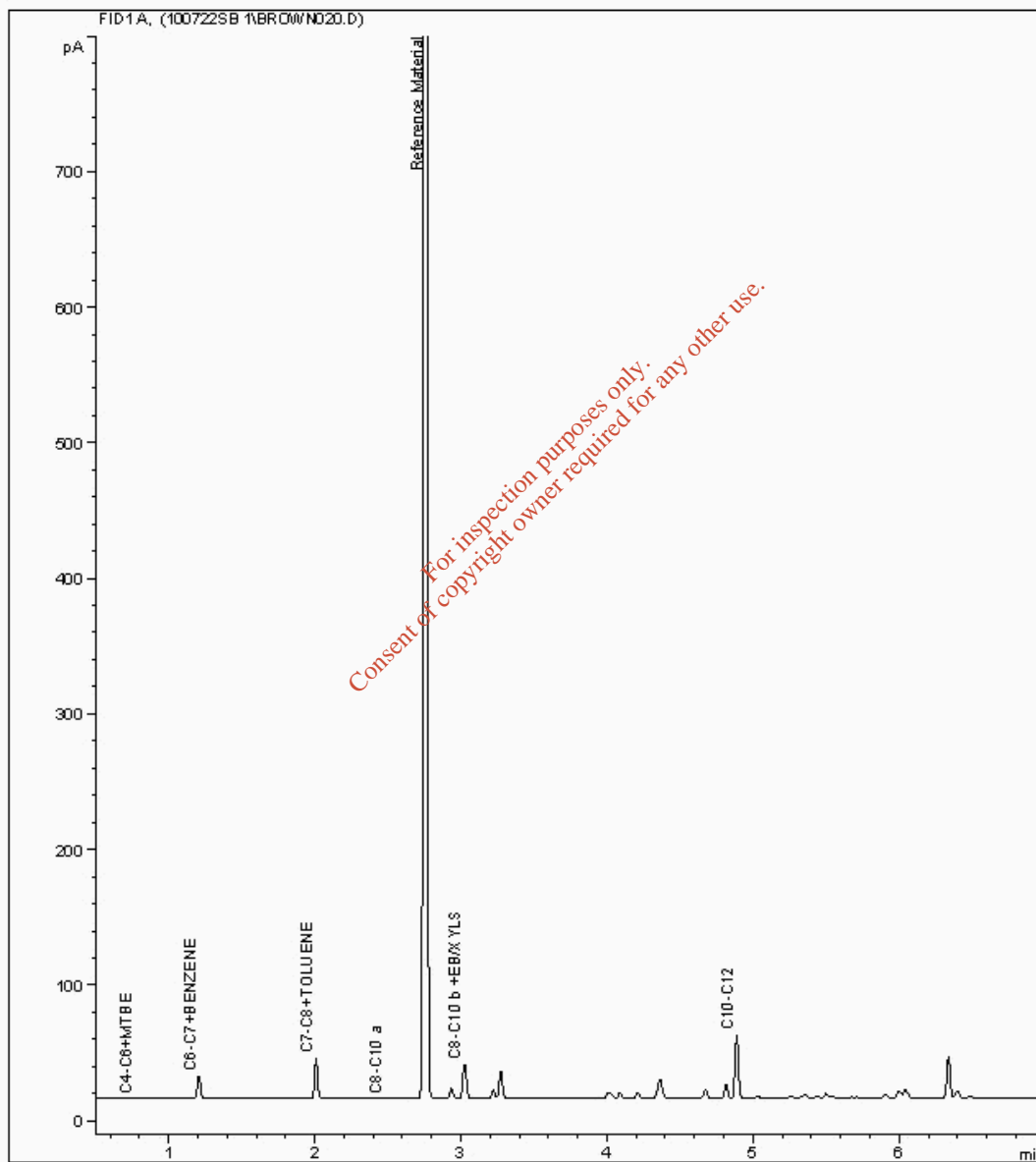
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

Analysis: GRO by GC-FID (W)

Sample No 1824733
Sample ID A11
Depth 1.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940076-1824733
Date Acquired : 22/07/10 16:10:04
Units : ppb
Dilution : 1



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

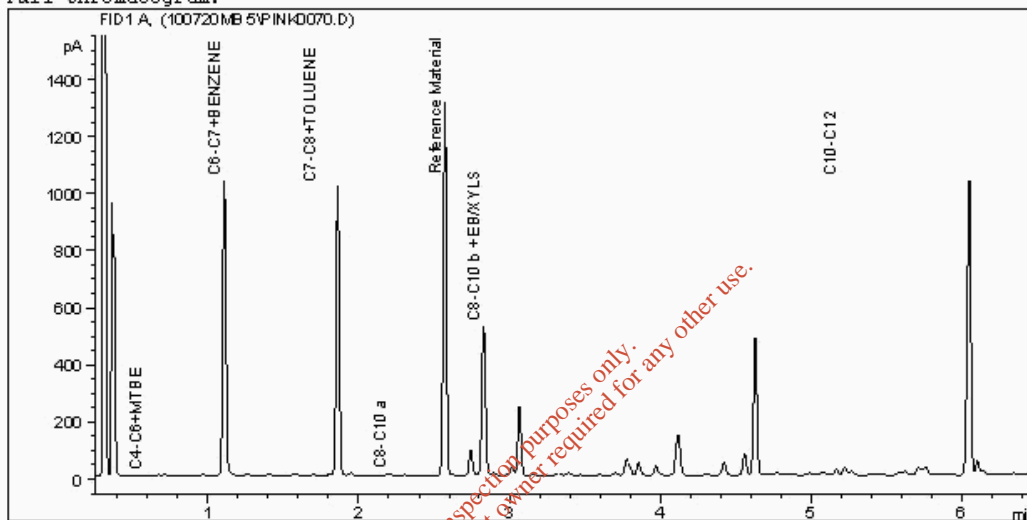
Analysis: GRO by GC-FID (W)

Sample No 1824772
Sample ID G4
Depth 3.00 - 5.00

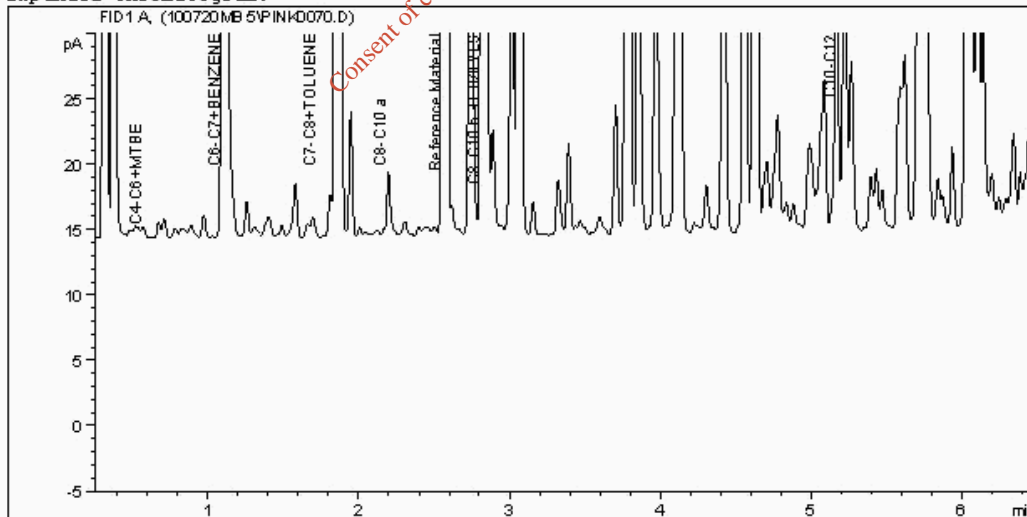
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940092-1824772
Date Acquired : 21/07/10 09:28:05
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

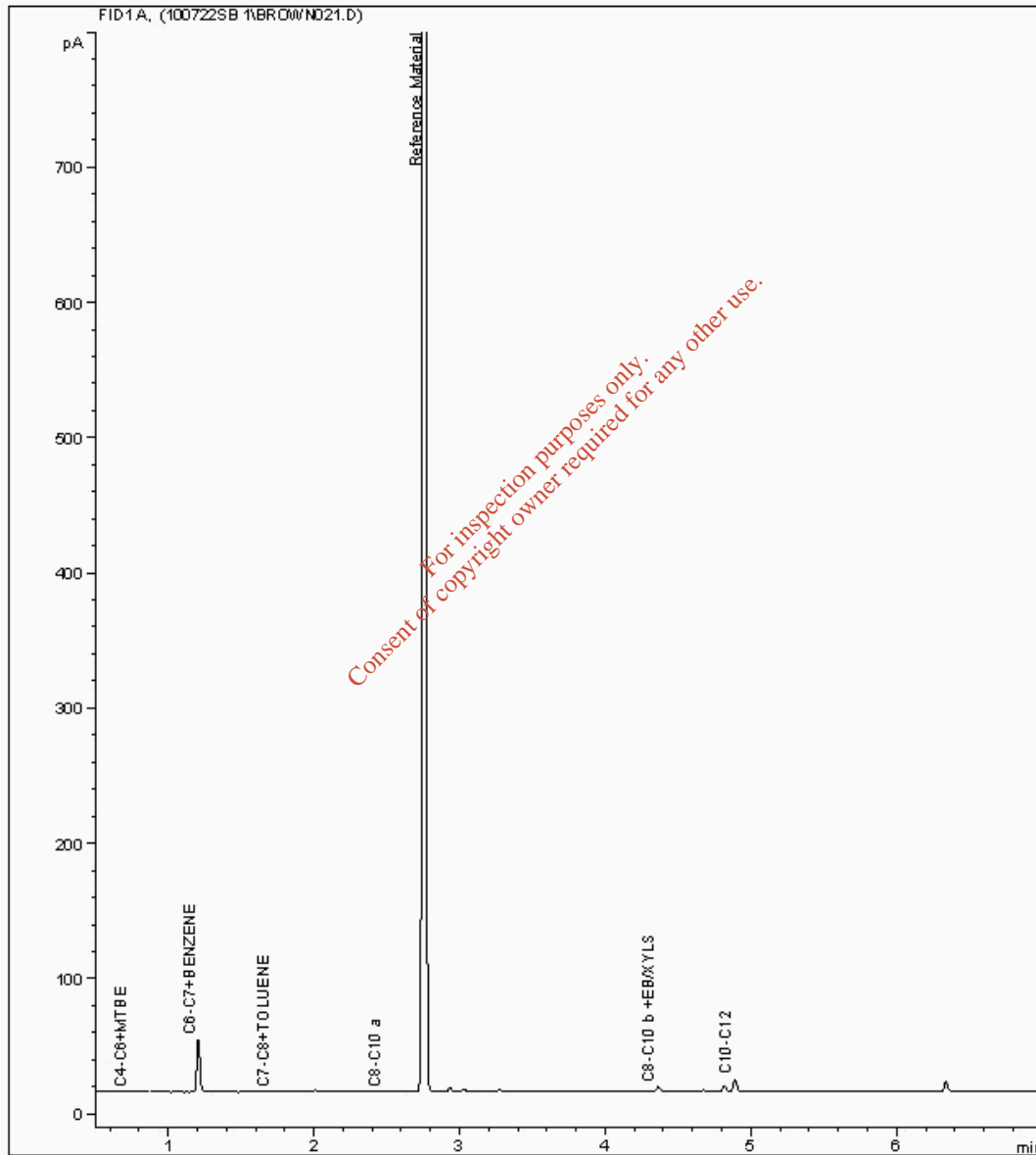
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

Analysis: GRO by GC-FID (W)

Sample No 1824811
Sample ID G3
Depth 3.00 - 4.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940111-1824811
Date Acquired : 22/07/10 16:24:09
Units : ppb
Dilution : 1



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

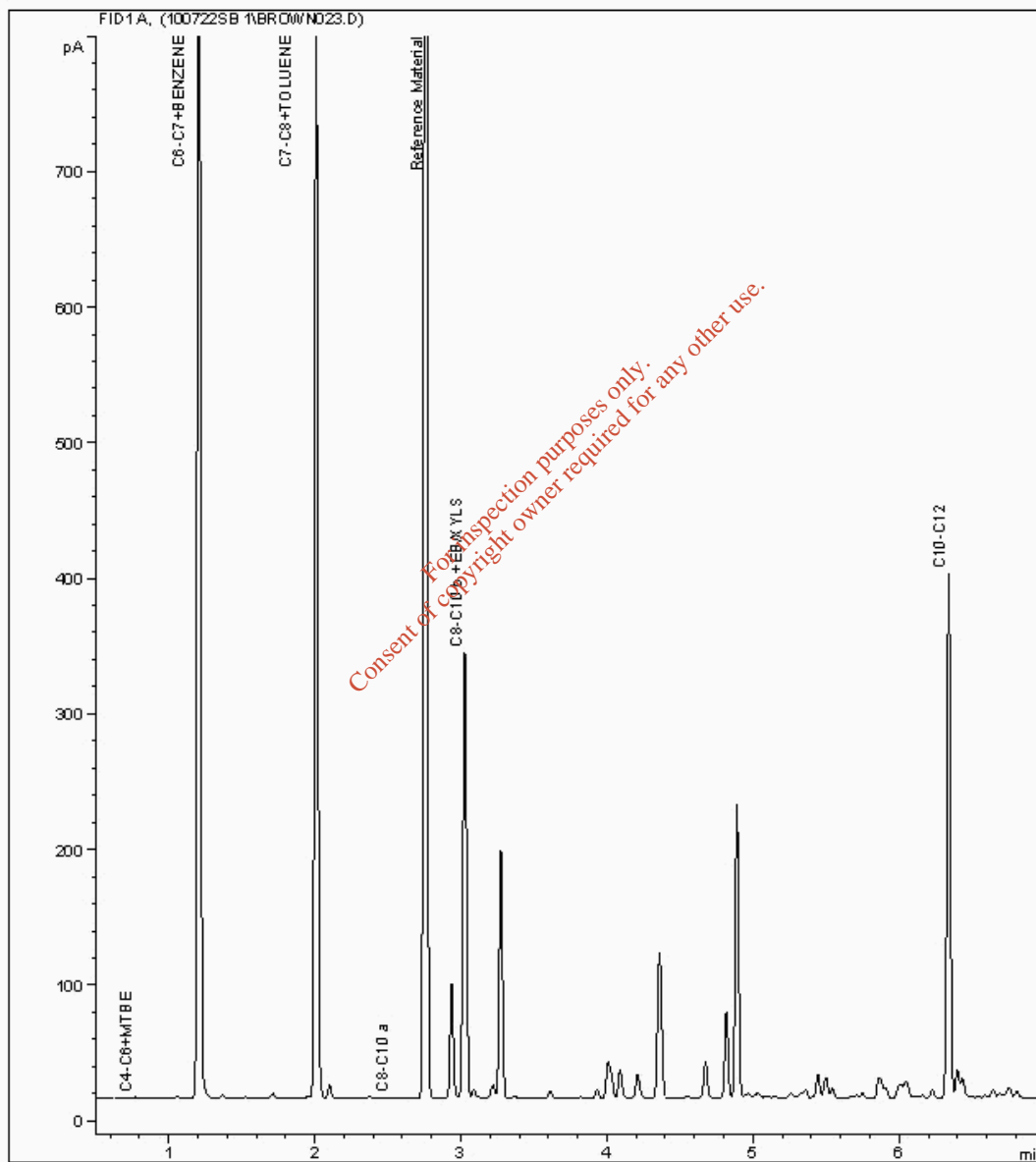
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

Analysis: GRO by GC-FID (W)

Sample No 1824849
Sample ID G2
Depth 3.50 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940126-1824849
Date Acquired : 22/07/10 16:52:20
Units : ppb
Dilution : 2



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

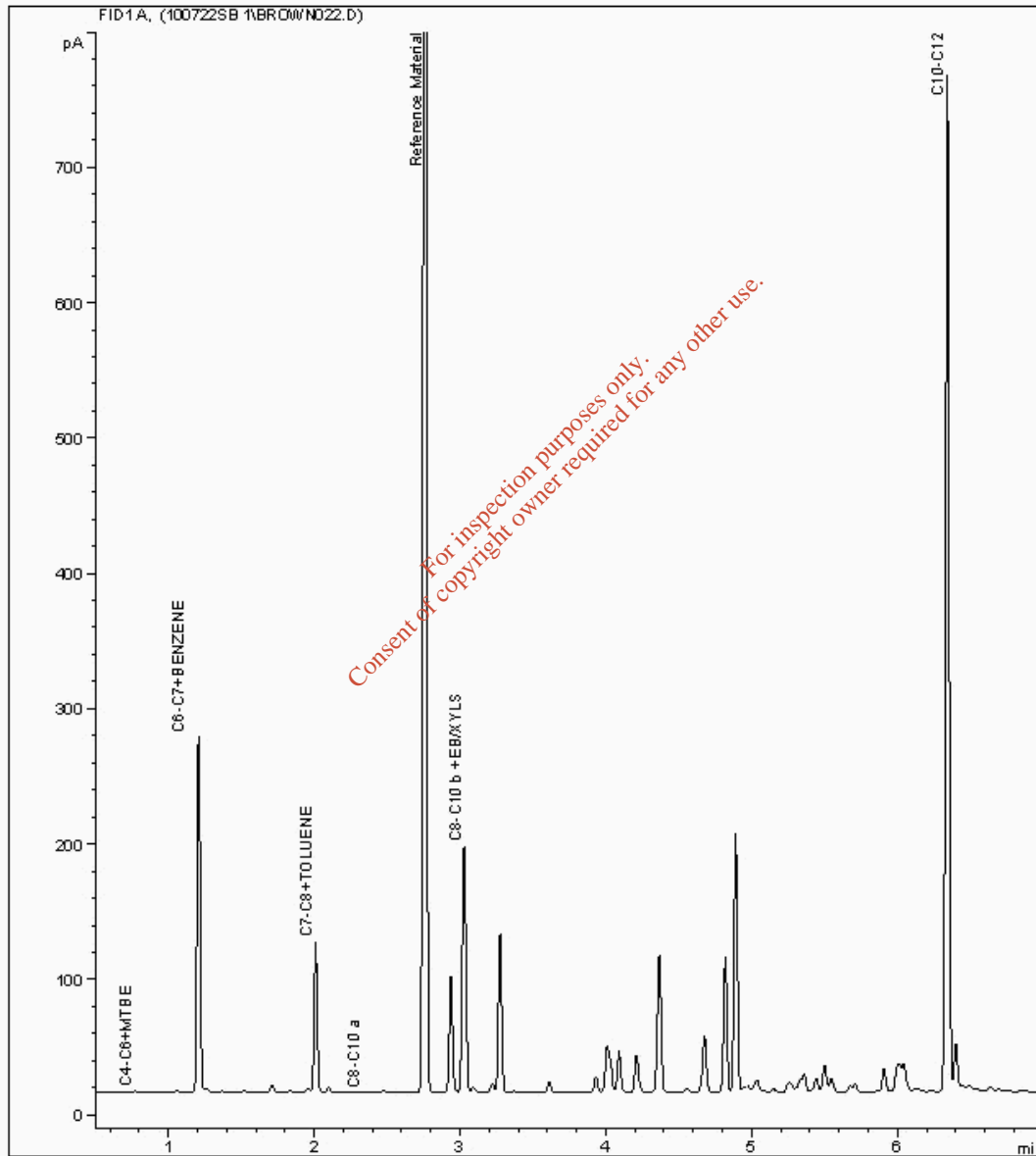
Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No: 91383

Analysis: GRO by GC-FID (W)

Sample No 1824885
Sample ID D1
Depth 3.50 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940142-1824885
Date Acquired : 22/07/10 16:38:13
Units : ppb
Dilution : 1



SDG: 100715-75
Job: D_MOUCHEL_ELE-106
Client Ref.: E8 - G5
Location: Limerick Gasworks

Customer: Mouchel
Attention: Dave Watts
Order No.:
Report No.: 91383

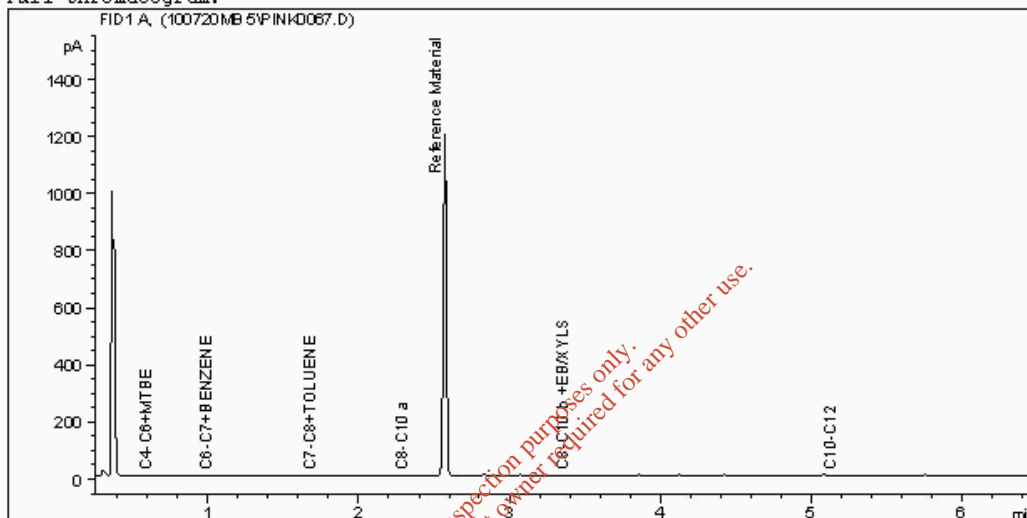
Analysis: GRO by GC-FID (W)

Sample No 1824917
Sample ID G5
Depth 2.50 - 4.00

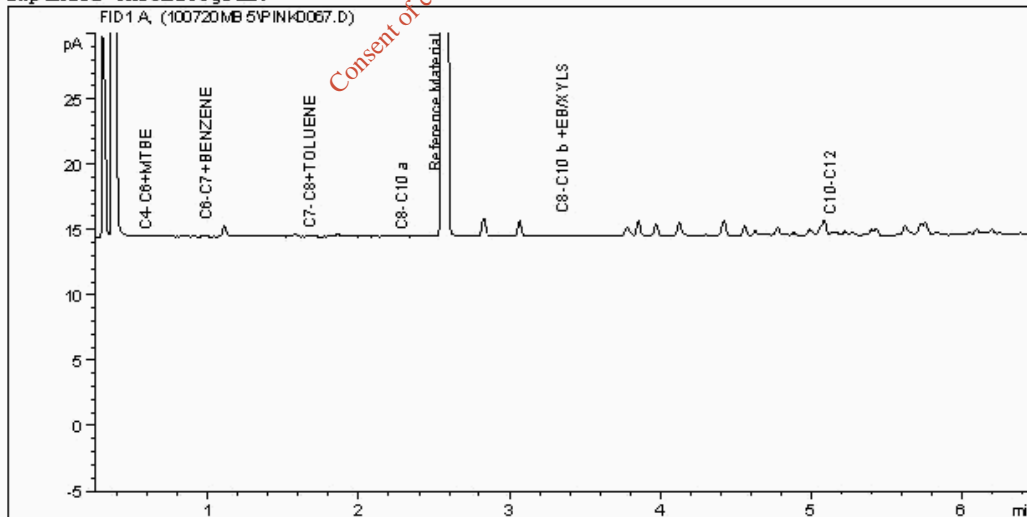
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940158-1824917
Date Acquired : 21/07/10 08:45:57
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:
NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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Attention: David Megson

CERTIFICATE OF ANALYSIS

Date: 29 October 2010
Customer: D_MOUCHEL_ELE-101
Sample Delivery Group (SDG): 101021-66 **Report No.:** 101686
Your Reference: 21.10.10
Location: Limerick Gasworks

We received 19 samples on Thursday October 21, 2010 and 19 of these samples were scheduled for analysis which was completed on Friday October 29, 2010. 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.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Iain Swinton

Business Director - Land, UK & Ireland



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: David Megson
Order No.: 4500056413
Report No.: 101686

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
2271645	A11	WW5	1.50 - 2.50	20/10/2010
2271027	A3	WW5	2.00 - 4.00	20/10/2010
2271053	A4	WW5	2.00 - 4.00	20/10/2010
2271508	C11	WW5	1.50 - 2.50	20/10/2010
2271134	C7	WW5	3.00 - 6.00	20/10/2010
2271832	D1	WW5	3.00 - 4.00	20/10/2010
2271008	D5	WW5	2.00 - 3.00	20/10/2010
2271471	E8	WW5	2.00 - 5.00	20/10/2010
2271579	F11	WW5	2.00 - 4.00	20/10/2010
2271824	G2	WW5	4.00 - 7.00	20/10/2010
2271754	G3	WW5	4.00 - 5.00	20/10/2010
2271690	G4	WW5	3.00 - 3.50	20/10/2010
2271850	G5	WW5	3.00 - 6.00	20/10/2010
2271547	G8	WW5	1.00 - 2.00	20/10/2010
2271381	H12	WW5	1.50 - 4.00	20/10/2010
2271231	J10	WW5	1.00 - 1.30	20/10/2010
2271310	K1	WW5	3.00 - 4.00	20/10/2010
2271174	K5	WW5	1.00 - 2.00	20/10/2010
2271451	M3	WW5	3.50 - 5.50	20/10/2010

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

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: David Megson
Order No.: 4500056413
Report No.: 101686

LIQUID

Results Legend



Test



No Determination Possible

	Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Container	2271645	2271579	2271547	2271508	2271471	2271451	2271381	2271310	2271231	2271174	2271134	2271053	2271027	2271008	
						A11	F11	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5
Ammonium	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anions by ion Chromatography	All	NDPs: 0 Tests: 1													X					
Anions by Kone (w)	All	NDPs: 0 Tests: 18				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH Value	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sulphide	All	NDPs: 1 Tests: 18				X	X	X	X	X	X	X	X	X	X	X	X	X	X	N
TPH CWG (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
VOC MS (W)	All	NDPs: 0 Tests: 10								X										

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention: David Megson
Order No.: 4500056413
Report No.: 101686

LIQUID

Results Legend



Test



No Determination Possible

	Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Container						
						2271645	2271690	2271754	2271824	2271832	2271850
Ammonium	All	NDPs: 0 Tests: 19				X	X	X	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 18				X	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19					X	X	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19				X	X	X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19					X	X	X	X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19				X	X	X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 19					X	X	X	X	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19					X	X	X	X	
pH Value	All	NDPs: 0 Tests: 19				X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19					X	X	X	X	
Sulphide	All	NDPs: 1 Tests: 18				X	X	X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 19					X	X	X	X	
VOC MS (W)	All	NDPs: 0 Tests: 10				X	X		X	X	X

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SDG:	101021-66	Customer:	Mouchel
Job:	D_MOUCHEL_ELE-101	Attention:	David Megson
Client Reference:	21.10.10	Order No.:	4500056413
Location:	Limerick Gasworks	Report No.:	101686

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

Test Completion Dates

Lab Sample No(s)	2271008	2271027	2271053	2271134	2271174	2271231	2271310	2271381	2271451	2271471
Customer Sample Ref.	D5	A3	A4	C7	K5	J10	K1	H12	M3	E8
AGS Ref.	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5
Depth	2.00 - 3.00	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	1.00 - 2.00	1.00 - 1.30	3.00 - 4.00	1.50 - 4.00	3.50 - 5.50	2.00 - 5.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	22/10/2010	25/10/2010	25/10/2010	22/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	26/10/2010
Anions by ion Chromatography					25/10/2010					
Anions by Kone (w)	22/10/2010	22/10/2010	22/10/2010	22/10/2010		22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010
Cyanide Comp/Free/Total/Thiocyanate	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Dissolved Metals by ICP-MS	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
EPH CWG (Aliphatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
EPH CWG (Aromatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
GRO by GC-FID (W)	28/10/2010	28/10/2010	28/10/2010	29/10/2010	29/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	29/10/2010
Hexavalent Chromium (w)	25/10/2010	26/10/2010	25/10/2010	26/10/2010	26/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Mercury Dissolved	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
PAH Spec MS - Aqueous (W)	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	27/10/2010
pH Value	25/10/2010	22/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Phenols by HPLC (W)	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010
Sulphide	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
TPH CWG (W)	28/10/2010	28/10/2010	28/10/2010	29/10/2010	29/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	29/10/2010
VOC MS (W)		28/10/2010	28/10/2010	29/10/2010	29/10/2010				28/10/2010	

Lab Sample No(s)	2271508	2271547	2271579	2271645	2271690	2271754	2271824	2271832	2271850
Customer Sample Ref.	C11	G8	F11	A11	G4	G3	G2	D1	G5
AGS Ref.	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5
Depth	1.50 - 2.50	1.00 - 2.00	2.00 - 4.00	1.50 - 2.50	3.00 - 3.50	4.00 - 5.00	4.00 - 7.00	3.00 - 4.00	3.00 - 6.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	26/10/2010	25/10/2010	25/10/2010	26/10/2010	26/10/2010	26/10/2010	25/10/2010	25/10/2010	25/10/2010
Anions by Kone (w)	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010
Cyanide Comp/Free/Total/Thiocyanate	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Dissolved Metals by ICP-MS	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
EPH CWG (Aliphatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
EPH CWG (Aromatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
GRO by GC-FID (W)	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010
Hexavalent Chromium (w)	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Mercury Dissolved	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
PAH Spec MS - Aqueous (W)	26/10/2010	26/10/2010	27/10/2010	28/10/2010	26/10/2010	26/10/2010	28/10/2010	26/10/2010	26/10/2010
pH Value	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Phenols by HPLC (W)	26/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	27/10/2010	27/10/2010
Sulphide	25/10/2010	25/10/2010		25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
TPH CWG (W)	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010
VOC MS (W)				28/10/2010	29/10/2010		29/10/2010	29/10/2010	27/10/2010

SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

Results Legend		Customer Sample Ref.	A11	A3	A4	C11	C7	D1
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	3.00 - 4.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271645	2271027	2271053	2271508	2271134	2271832
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	5.03 #	10 #	2.99 #	7.15 #	98.4 #	11.4 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	6.47 #	12.9 #	3.84 #	9.19 #	127 #	14.7 #
Sulphide	<0.01 mg/l	TM101	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	53.2 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	12.3 #	33.3 #	10.7 #	17 #	32.9 #	11.4 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	0.107 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	3.11 #	6.1 #	5.09 #	5.48 #	7.87 #	6.42 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	1.88 #	<0.85 #	<0.85 #	1.18 #	1.19 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.07 #	0.125 #	0.072 #	0.027 #	0.248 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152	5.64 #	6.19 #	4.24 #	4.07 #	1.59 #	4.13 #
Selenium (diss.filt)	<0.39 µg/l	TM152	3.49 #	1.54 #	1.65 #	3.1 #	48.6 #	16.5 #
Zinc (diss.filt)	<0.41 µg/l	TM152	0.664 #	1.29 #	0.526 #	0.599 #	0.877 #	<0.41 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0185 #	<0.01 #
Sulphate	<3 mg/l	TM184	272 #	315 #	245 #	79.9 #	54.8 #	420 #
Cyanide, Total	<0.05 mg/l	TM227	0.073 #	0.254 #	0.142 #	0.088 #	0.4 #	0.967 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	7.5 #	8.08 #	8.3 #	8.28 #	8.45 #	7.54 #
Resorcinol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.05 #	<0.01 #
Catechol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.05 #	<0.01 #
Phenol	<0.002 mg/l	TM259	0.01 #	0.02 #	<0.002 #	<0.002 #	23.2 #	0.07 #
Cresols	<0.006 mg/l	TM259	0.1 #	0.02 #	<0.006 #	0.07 #	56.3 #	0.11 #
Xylenols	<0.008 mg/l	TM259	0.03 #	<0.008 #	<0.008 #	0.33 #	63.9 #	0.93 #
1-Naphthol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.05 #	0.04 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	0.06 #	<0.003 #	<0.003 #	<0.015 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	0.32 #	<0.006 #	<0.006 #	23.5 #	1.41 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259	0.14 #	0.42 #	<0.025 #	0.4 #	167 #	2.52 #

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C11	C7	D1	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	3.00 - 4.00	
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66	
*	subcontracted test.		2271645	2271027	2271053	2271508	2271134	2271832	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5	
Component	LOD/Units		Method						
Aliphatics >C12-C16 (aq)	<10 µg/l		TM174	<10	<10	427	306	11	<10
Aliphatics >C16-C21 (aq)	<10 µg/l		TM174	<10	<10	520	140	17	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	<10	314	32	12	<10	
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	<10	1260	478	40	<10	
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	129	455	2050	2190	23000	272	

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C11	C7	D1
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	3.00 - 4.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
		Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
		SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
		Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
		AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method	A11	A3	A4	C11	C7	D1
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	41	209	89	802	20900	144
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	27	183	231	472	1520	101
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	61	63	473	442	514	27
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	129	455	793	1720	22900	272

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

GRO by GC-FID (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C11	C7	D1
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	3.00 - 4.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271645	2271027	2271053	2271508	2271134	2271832
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method						
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<15 #	<3 #
Benzene	<7 µg/l	TM245	<7 #	<7 #	<7 #	62 #	13500 #	616 #
Toluene	<4 µg/l	TM245	12 #	<4 #	<4 #	43 #	4470 #	460 #
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	<5 #	87 #	152 #	166 #
m,p-Xylene	<8 µg/l	TM245	22 #	46 #	<8 #	156 #	1040 #	508 #
o-Xylene	<3 µg/l	TM245	20 #	51 #	<3 #	151 #	480 #	266 #
Aliphatics >C5-C6	<10 µg/l	TM245	<10 #	<10 #	<10 #	<10 #	69 #	<10 #
Aliphatics >C6-C8	<10 µg/l	TM245	<10 #	38 #	10 #	32 #	506 #	67 #
Aliphatics >C8-C10	<10 µg/l	TM245	35 #	144 #	19 #	395 #	1470 #	492 #
Aliphatics >C10-C12	<10 µg/l	TM245	76 #	519 #	31 #	1450 #	5720 #	2330 #
Total Aliphatics >C5-C12	<10 µg/l	TM245	121 #	705 #	61 #	1880 #	7770 #	2900 #
Aromatics >EC5-EC7	<10 µg/l	TM245	<10 #	<10 #	<10 #	62 #	13500 #	616 #
Aromatics >EC7-EC8	<10 µg/l	TM245	12 #	<10 #	<10 #	43 #	4470 #	460 #
Aromatics >EC8-EC10	<10 µg/l	TM245	68 #	194 #	14 #	657 #	2660 #	1270 #
Aromatics >EC10-EC12	<10 µg/l	TM245	51 #	346 #	21 #	964 #	3810 #	1550 #
Total Aromatics >EC5-EC12	<10 µg/l	TM245	135 #	539 #	35 #	1730 #	24500 #	3900 #
m,p,o-Xylene	<10 µg/l	TM245	42 #	97 #	<10 #	307 #	1520 #	774 #
BTEX, Total	<10 µg/l	TM245	54 #	97 #	<10 #	499 #	19600 #	2020 #

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C11	C7	D1
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	3.00 - 4.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271645	2271027	2271053	2271508	2271134	2271832
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	95.2 #	0.315 #	0.441 #	4.45 #	5170 #	23 #
Acenaphthene (aq)	<0.015 µg/l	TM178	67 #	0.855 #	0.142 #	47.8 #	21.8 #	31.9 #
Acenaphthylene (aq)	<0.011 µg/l	TM178	331 #	1.01 #	1.28 #	6.93 #	211 #	34.4 #
Fluoranthene (aq)	<0.014 µg/l	TM178	805 #	4.31 #	7.24 #	22.7 #	32.9 #	33.4 #
Anthracene (aq)	<0.015 µg/l	TM178	212 #	0.478 #	0.514 #	4.04 #	28 #	9.89 #
Phenanthrene (aq)	<0.022 µg/l	TM178	383 #	0.65 #	0.746 #	7.84 #	95.4 #	71.2 #
Fluorene (aq)	<0.014 µg/l	TM178	222 #	0.398 #	0.281 #	18 #	73.6 #	57.1 #
Chrysene (aq)	<0.013 µg/l	TM178	216 #	0.92 #	2.89 #	5.68 #	8.51 #	4.97 #
Pyrene (aq)	<0.015 µg/l	TM178	600 #	9.25 #	7.64 #	13.9 #	20.7 #	20.6 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	354 #	1.12 #	3.24 #	7.04 #	5.3 #	6.22 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	386 #	0.564 #	6.76 #	9.15 #	3.14 #	3.03 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	400 #	1.07 #	5.84 #	7.91 #	3.46 #	2.77 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	443 #	1.55 #	7.2 #	10.1 #	3.12 #	3.41 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	87.4 #	0.107 #	1.44 #	1.51 #	0.814 #	0.464 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	313 #	0.733 #	4.72 #	6.08 #	2.08 #	1.64 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	292 #	0.519 #	4.8 #	6.04 #	2.29 #	1.75 #
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	5210 #	20.8 #	55.2 #	179 #	5680 #	306 #

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

TPH CWG (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C11	C7	D1		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	3.00 - 4.00		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010		
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010		
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66		
*	subcontracted test.		2271645	2271027	2271053	2271508	2271134	2271832		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5		
Component			LOD/Units	Method						
Total Aliphatics >C5-C35 (aq)			<10 µg/l	TM174	121	705	1320	2350	7810	2900
Total Aromatics >C6-C35 (aq)			<10 µg/l	TM174	264	994	828	3440	47400	4170
Total Aliphatics & Aromatics >C5-35 (aq)		<10 µg/l	TM174	385	1700	2150	5800	55200	7070	

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C7	D1
#	ISO17025 accredited.						
M	mCERTS accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	3.00 - 4.00
aq	Aqueous / settled sample.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
diss.filt	Dissolved / filtered sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
tot.unfilt	Total / unfiltered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
*	subcontracted test.		101021-66	101021-66	101021-66	101021-66	101021-66
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		2271645	2271027	2271053	2271134	2271832
			WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	107	104	105	95.6	108
Toluene-d8**	%	TM208	97.8	78.2	98.8	95.2	97.7
4-Bromofluorobenzene**	%	TM208	100	105	100	87.3	92.8
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	<7	<7	<7
Chloromethane	<9 µg/l	TM208	<9	<9	<9	<9	<9
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	<1.2
Bromomethane	<2 µg/l	TM208	<2	<2	<2	<2	<2
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	<2.5
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	<1.3
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	<1.2
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	1.43
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	<3.7	<3.7	<3.7
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	<1.6	<1.6	<1.6
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	<1.9
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	<1.2	<1.2	<1.2
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	<2.3
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	<3.8	<3.8	<3.8
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	<1.9
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	<1.8	<1.8	<1.8
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	<1.3
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	<1.3
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	<1.4	<1.4	<1.4
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	<3.3	<3.3	<3.3
Benzene	<1.3 µg/l	TM208	15.1	44.8	<1.3	11500	906
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	<2.5	<2.5	<2.5
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	<3	<3	<3
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	<2.7	<2.7	<2.7
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	<0.9	<0.9	<0.9
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	<1.9	<1.9	<1.9
Toluene	<1.4 µg/l	TM208	32.2	2.49	<1.4	4070	620
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	<3.5
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	<2.2
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	<2.2	<2.2	<2.2
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	<1.5	<1.5	<1.5
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	<1.7	<1.7	<1.7
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	<2.3	<2.3	<2.3
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	<3.5	<3.5	<3.5
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	<1.3	<1.3	<1.3
Ethylbenzene	<2.5 µg/l	TM208	12.9	61.7	<2.5	132	234

SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	A11	A3	A4	C7	D1	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	3.00 - 4.00	
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	
*	subcontracted test.		2271645	2271027	2271053	2271134	2271832	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	
Component	LOD/Units		Method					
m,p-Xylene	<2.5 µg/l		TM208	29.9 #	53.8 #	<2.5 #	905 #	716 #
o-Xylene	<1.7 µg/l		TM208	25.2 #	62.4 #	<1.7 #	419 #	379 #
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	219 #	<1.2 #	
Bromoform	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #	<3 #	
Isopropylbenzene	<1.4 µg/l	TM208	1.4 #	9.59 #	<1.4 #	5.38 #	20.6 #	
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2 #	<5.2 #	<5.2 #	<5.2 #	<5.2 #	
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #	<7.8 #	<7.8 #	<7.8 #	
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #	<2 #	
Propylbenzene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	<2.6 #	6.16 #	24.9 #	
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	2.67 #	8.04 #	<1.8 #	42.9 #	74.9 #	
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #	<2 #	
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	14.9 #	26.6 #	<1.7 #	106 #	239 #	
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #	1.72 #	
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #	<2.6 #	<2.6 #	11.5 #	
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #	
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #	
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #	6.84 #	
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #	<3.7 #	
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8 #	<9.8 #	<9.8 #	<9.8 #	<9.8 #	
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #	<1 #	
Naphthalene	<3.5 µg/l	TM208	228 #	48.6 #	<3.5 #	3490 #	5200 #	
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #	<3.1 #	<3.1 #	<3.1 #	
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10 #	<10 #	<10 #	<10 #	<10 #	

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

Results Legend		Customer Sample Ref.	D5	E8	F11	G2	G3	G4
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271008	2271471	2271579	2271824	2271754	2271690
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	1.9 #	45.7 #	17.7 #	38.7 #	27 #	13 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	2.44 #	58.8 #	22.8 #	49.8 #	34.7 #	16.7 #
Sulphide	<0.01 mg/l	TM101	<0.01 #	<0.01 #		<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	6.86 #	113 #	4.55 #	17.7 #	7.54 #	16.1 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	0.452 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	4.88 #	1.83 #	5.14 #	9.16 #	7.17 #	4.26 #
Copper (diss.filt)	<0.85 µg/l	TM152	1.3 #	0.864 #	<0.85 #	3.44 #	1.05 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.118 #	0.183 #	0.065 #	<0.02 #	0.065 #	0.166 #
Nickel (diss.filt)	<0.15 µg/l	TM152	8.01 #	56.3 #	8.41 #	6.14 #	9.24 #	4.99 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.95 #	35.7 #	2.36 #	40.1 #	5.97 #	9.38 #
Zinc (diss.filt)	<0.41 µg/l	TM152	0.98 #	44.8 #	1.5 #	1.67 #	1.7 #	3.26 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	112 #	462 #	627 #	605 #	506 #	158 #
Cyanide, Total	<0.05 mg/l	TM227	0.159 #	7.86 #	<0.05 #	0.98 #	0.379 #	0.127 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	8.28 #	8.41 #	7.68 #	8.04 #	8.2 #	8.38 #
Resorcinol	<0.01 mg/l	TM259	<0.01 #	<0.01 #	0.04 #	<0.01 #	<0.01 #	<0.01 #
Catechol	<0.01 mg/l	TM259	<0.01 #	<0.1 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Phenol	<0.002 mg/l	TM259	0.01 #	47 #	0.74 #	<0.002 #	0.02 #	<0.002 #
Cresols	<0.006 mg/l	TM259	0.01 #	71.4 #	1.65 #	<0.006 #	0.04 #	0.38 #
Xylenols	<0.008 mg/l	TM259	0.07 #	52 #	0.24 #	4.18 #	0.46 #	2.55 #
1-Naphthol	<0.01 mg/l	TM259	<0.01 #	<0.1 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.03 #	<0.003 #	<0.003 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	0.26 #	9.2 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259	0.35 #	180 #	2.63 #	4.18 #	0.52 #	2.93 #

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	D5	E8	F11	G2	G3	G4	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50	
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66	
*	subcontracted test.		2271008	2271471	2271579	2271824	2271754	2271690	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5	
Component	LOD/Units		Method						
Aliphatics >C12-C16 (aq)	<10 µg/l		TM174	108	18	<10	<10	<10	43
Aliphatics >C16-C21 (aq)	<10 µg/l		TM174	125	29	<10	<10	77	27
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	431	22	136	<10	151	17	
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	664	69	136	<10	228	87	
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	1830	14500	325	5990	576	3600	

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	D5	E8	F11	G2	G3	G4
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
		Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
		SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
		Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
		AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method	D5	E8	F11	G2	G3	G4
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	107	12400	121	5310	152	1910
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	148	1170	<10	550	20	820
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	908	871	68	127	176	781
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	1160	14400	189	5990	348	3510

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

GRO by GC-FID (W)

Results Legend		Customer Sample Ref.	D5	E8	F11	G2	G3	G4	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50	
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66	
*	subcontracted test.		2271008	2271471	2271579	2271824	2271754	2271690	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5	
Component	LOD/Units		Method						
Methyl tertiary butyl ether (MTBE)	<3 µg/l		TM245	<3 #	<6 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l		TM245	25 #	7750 #	206 #	4310 #	266 #	1180 #
Toluene	<4 µg/l	TM245	5 #	2040 #	47 #	3100 #	11 #	1290 #	
Ethylbenzene	<5 µg/l	TM245	11 #	86 #	<5 #	352 #	17 #	151 #	
m,p-Xylene	<8 µg/l	TM245	15 #	654 #	8 #	1530 #	14 #	1010 #	
o-Xylene	<3 µg/l	TM245	21 #	286 #	7 #	815 #	35 #	434 #	
Aliphatics >C5-C6	<10 µg/l	TM245	<10 #	73 #	<10 #	18 #	<10 #	<10 #	
Aliphatics >C6-C8	<10 µg/l	TM245	11 #	525 #	11 #	217 #	17 #	70 #	
Aliphatics >C8-C10	<10 µg/l	TM245	36 #	949 #	22 #	1040 #	49 #	644 #	
Aliphatics >C10-C12	<10 µg/l	TM245	62 #	3450 #	58 #	3690 #	149 #	1770 #	
Total Aliphatics >C5-C12	<10 µg/l	TM245	111 #	5000 #	93 #	4970 #	217 #	2490 #	
Aromatics >EC5-EC7	<10 µg/l	TM245	25 #	7750 #	206 #	4310 #	266 #	1180 #	
Aromatics >EC7-EC8	<10 µg/l	TM245	<10 #	2040 #	<5 #	3100 #	11 #	1290 #	
Aromatics >EC8-EC10	<10 µg/l	TM245	71 #	1660 #	32 #	3390 #	98 #	2030 #	
Aromatics >EC10-EC12	<10 µg/l	TM245	41 #	2300 #	38 #	2460 #	99 #	1180 #	
Total Aromatics >EC5-EC12	<10 µg/l	TM245	142 #	13700 #	324 #	13300 #	475 #	5680 #	
m,p,o-Xylene	<10 µg/l	TM245	36 #	940 #	15 #	2350 #	49 #	1440 #	
BTEX, Total	<10 µg/l	TM245	77 #	10800 #	268 #	10100 #	343 #	4060 #	

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	D5	E8	F11	G2	G3	G4
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271008	2271471	2271579	2271824	2271754	2271690
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	2.41	2030	17.7	4640	1.71	99.7
			#	#	#	#	#	#
Acenaphthene (aq)	<0.015 µg/l	TM178	1.22	11.6	1.37	58.9	4.1	36
			#	#	#	#	#	#
Acenaphthylene (aq)	<0.011 µg/l	TM178	5.57	100	4.97	72.2	1.9	141
			#	#	#	#	#	#
Fluoranthene (aq)	<0.014 µg/l	TM178	24.6	16.9	34.2	10.7	10.2	61.3
			#	#	#	#	#	#
Anthracene (aq)	<0.015 µg/l	TM178	2.3	11.5	2.69	10.9	1.42	35
			#	#	#	#	#	#
Phenanthrene (aq)	<0.022 µg/l	TM178	5.42	42.3	6.89	50.7	3	90.6
			#	#	#	#	#	#
Fluorene (aq)	<0.014 µg/l	TM178	1.42	35.2	1.45	42.2	1.43	74.4
			#	#	#	#	#	#
Chrysene (aq)	<0.013 µg/l	TM178	12.8	2.65	39.4	2.1	7.32	16
			#	#	#	#	#	#
Pyrene (aq)	<0.015 µg/l	TM178	14.1	11.2	30.8	7.26	8.14	38.2
			#	#	#	#	#	#
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	14.6	5.99	64.5	1.92	7.59	19.5
			#	#	#	#	#	#
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	28.8	<2.3	128	1.36	10.4	12.3
			#	#	#	#	#	#
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	27.4	<2.7	110	1.39	11.1	13.2
			#	#	#	#	#	#
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	33.8	2.05	132	1.19	11.3	15.5
			#	#	#	#	#	#
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	6.46	<1.6	20.9	0.74	1.76	2.36
			#	#	#	#	#	#
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	21.1	<1.6	72.1	1.14	7.28	8.19
			#	#	#	#	#	#
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	20.9	<1.4	70.4	1.2	6.98	8.25
			#	#	#	#	#	#
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	223	2280	737	4910	95.7	672
			#	#	#	#	#	#

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

TPH CWG (W)

Results Legend		Customer Sample Ref.	D5	E8	F11	G2	G3	G4
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271008	2271471	2271579	2271824	2271754	2271690
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method	D5	E8	F11	G2	G3	G4
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	775	5070	229	4970	445	2580
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	1310	28200	513	19200	823	9190
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2080	33200	742	24200	1270	11800

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	G2	G4				
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	4.00 - 7.00	3.00 - 3.50				
		Sample Type	Water(GW/SW)	Water(GW/SW)				
		Date Sampled	20/10/2010	20/10/2010				
		Date Received	21/10/2010	21/10/2010				
		SDG Ref	101021-66	101021-66				
		Lab Sample No.(s)	2271824	2271690				
		AGS Reference	WW5	WW5				
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208	103	105				
Toluene-d8**	%	TM208	96.7	97.9				
4-Bromofluorobenzene**	%	TM208	96.2	97.8				
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	#	#		
Chloromethane	<9 µg/l	TM208	<9	<9	#	#		
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
Bromomethane	<2 µg/l	TM208	<2	<2	#	#		
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	#	#		
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	#	#		
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	#	#		
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	#	#		
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
Chloroform	<1.8 µg/l	TM208	<1.8	<1.8	#	#		
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	#	#		
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	#	#		
Benzene	<1.3 µg/l	TM208	5100	1570	#	#		
Trichloroethene	<2.5 µg/l	TM208	<2.5	<2.5	#	#		
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	#	#		
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	#	#		
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	#	#		
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
Toluene	<1.4 µg/l	TM208	3720	1650	#	#		
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	#	#		
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	<1.5	#	#		
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	#	#		
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	#	#		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
Ethylbenzene	<2.5 µg/l	TM208	441	204	#	#		

SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	G2	G4					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	4.00 - 7.00	3.00 - 3.50					
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)					
aq	Aqueous / settled sample.		20/10/2010	20/10/2010					
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010					
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66					
*	subcontracted test.		2271824	2271690					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5					
Component	LOD/Units		Method						
m,p-Xylene	<2.5 µg/l		TM208	1740	1210	#	#		
o-Xylene	<1.7 µg/l		TM208	934	505	#	#		
Styrene	<1.2 µg/l	TM208	<1.2	77.4	#	#			
Bromoform	<3 µg/l	TM208	<3	<3	#	#			
Isopropylbenzene	<1.4 µg/l	TM208	30.1	15.9	#	#			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2					
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	<7.8	#	#			
Bromobenzene	<2 µg/l	TM208	<2	<2	#	#			
Propylbenzene	<2.6 µg/l	TM208	31.3	17	#	#			
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	109	117	#	#			
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#			
tert-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	395	300	#	#			
sec-Butylbenzene	<1.7 µg/l	TM208	1.88	<1.7	#	#			
4-iso-Propyltoluene	<2.6 µg/l	TM208	36.7	20.2	#	#			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	<2.2	#	#			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	<2.7	#	#			
n-Butylbenzene	<2 µg/l	TM208	5.58	<2	#	#			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7					
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8					
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	<2.3	#	#			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	<2.5	#	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	#	#			
Naphthalene	<3.5 µg/l	TM208	4870	4870	#	#			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	<3.1	#	#			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10					

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

Results Legend		Customer Sample Ref.	G5	G8	H12	J10	K1	K5	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	3.00 - 4.00	1.00 - 2.00	
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66	
*	subcontracted test.		2271850	2271547	2271381	2271231	2271310	2271174	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5	
Component	LOD/Units		Method						
Ammoniacal Nitrogen as N	<0.2 mg/l		TM099	11.4	33.8	14.9	0.824	5.81	56.7
				#	#	#	#	#	#
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	14.7	43.5	19.2	1.06	7.47	72.9	
			#	#	#	#	#	#	
Sulphide	<0.01 mg/l	TM101	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			#	#	#	#	#	#	
Arsenic (diss.filt)	<0.12 µg/l	TM152	6.49	16.7	5.39	2.84	4.28	42.7	
			#	#	#	#	#	#	
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
			#	#	#	#	#	#	
Chromium (diss.filt)	<0.22 µg/l	TM152	8.96	3.69	4.3	4.5	3.31	7.76	
			#	#	#	#	#	#	
Copper (diss.filt)	<0.85 µg/l	TM152	1.31	<0.85	<0.85	1.85	1.61	2.14	
			#	#	#	#	#	#	
Lead (diss.filt)	<0.02 µg/l	TM152	0.064	0.059	0.024	0.052	0.393	0.534	
			#	#	#	#	#	#	
Nickel (diss.filt)	<0.15 µg/l	TM152	7.83	7.1	4.24	4.96	7.57	15.7	
			#	#	#	#	#	#	
Selenium (diss.filt)	<0.39 µg/l	TM152	2.05	19	1.2	3.45	1.36	23	
			#	#	#	#	#	#	
Zinc (diss.filt)	<0.41 µg/l	TM152	1.37	<0.41	0.452	0.809	0.83	3.11	
			#	#	#	#	#	#	
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01	<0.01	<0.01	<0.01	0.0244	
			#	#	#	#	#	#	
Sulphate	<3 mg/l	TM184	676	385	203	165	734		
			#	#	#	#	#	#	
Sulphate	<0.1 mg/l	TM226						573	
			#	#	#	#	#	#	
Cyanide, Total	<0.05 mg/l	TM227	0.933	0.292	<0.05	<0.05	0.62	1.84	
			#	#	#	#	#	#	
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	<0.03	<0.03	<0.03	<0.03	<0.15	
			#	#	#	#	#	#	
pH	<1 pH Units	TM256	8.03	8.29	8.09	8.12	7.9	7.9	
			#	#	#	#	#	#	
Resorcinol	<0.01 mg/l	TM259	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	
			#	#	#	#	#	#	
Catechol	<0.01 mg/l	TM259	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	
			#	#	#	#	#	#	
Phenol	<0.002 mg/l	TM259	0.08	2.47	<0.002	<0.002	<0.002	204	
			#	#	#	#	#	#	
Cresols	<0.006 mg/l	TM259	0.12	4.71	0.05	<0.006	<0.006	442	
			#	#	#	#	#	#	
Xylenols	<0.008 mg/l	TM259	1.01	3.2	<0.008	<0.008	<0.008	272	
			#	#	#	#	#	#	
1-Naphthol	<0.01 mg/l	TM259	0.05	<0.01	<0.01	<0.01	<0.01	<0.5	
			#	#	#	#	#	#	
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003	<0.003	<0.003	<0.003	<0.003	<0.15	
			#	#	#	#	#	#	
2-Isopropylphenol	<0.006 mg/l	TM259	1.5	<0.006	<0.006	<0.006	<0.006	94.5	
			#	#	#	#	#	#	
Phenols, Total 5 speciated	<0.025 mg/l	TM259	2.71	10.4	0.05	<0.025	<0.025	1010	
			#	#	#	#	#	#	

SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	G5	G8	H12	J10	K1	K5
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	3.00 - 4.00	1.00 - 2.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
		Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
		SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
		Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
		AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method	G5	G8	H12	J10	K1	K5
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	13	58	<10	<10	552
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	11	31	39	<10	<10	683
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	13	246	<10	<10	861
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	11	57	343	<10	<10	2100
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	2410	2870	1170	44	41	85500

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend		Customer Sample Ref.	G5	G8	H12	J10	K1	K5
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	3.00 - 4.00	1.00 - 2.00
		Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
		Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
		SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
		Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
		AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method	G5	G8	H12	J10	K1	K5
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	1540	1910	55	<10	<10	69400
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	593	454	120	<10	<10	7220
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	268	443	649	44	41	6780
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	2400	2810	824	44	41	83400

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

GRO by GC-FID (W)

Results Legend		Customer Sample Ref.	G5	G8	H12	J10	K1	K5	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	3.00 - 4.00	1.00 - 2.00	
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66	
*	subcontracted test.		2271850	2271547	2271381	2271231	2271310	2271174	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5	
Component	LOD/Units		Method						
Methyl tertiary butyl ether (MTBE)	<3 µg/l		TM245	<3 #	<3 #	<3 #	<3 #	<3 #	<30 #
Benzene	<7 µg/l		TM245	43 #	1030 #	11 #	<7 #	<7 #	18200 #
Toluene	<4 µg/l	TM245	29 #	609 #	<4 #	<4 #	<4 #	5680 #	
Ethylbenzene	<5 µg/l	TM245	7 #	54 #	<5 #	<5 #	<5 #	268 #	
m,p-Xylene	<8 µg/l	TM245	41 #	384 #	<8 #	<8 #	<8 #	1720 #	
o-Xylene	<3 µg/l	TM245	19 #	153 #	<3 #	<3 #	<3 #	713 #	
Aliphatics >C5-C6	<10 µg/l	TM245	<10	11	<10	<10	<10	269	
Aliphatics >C6-C8	<10 µg/l	TM245	15	73	<10	<10	<10	1980	
Aliphatics >C8-C10	<10 µg/l	TM245	64	312	14	<10	<10	2650	
Aliphatics >C10-C12	<10 µg/l	TM245	130	1450	28	11	<10	11100	
Total Aliphatics >C5-C12	<10 µg/l	TM245	211	1850	49	19	18	16000	
Aromatics >EC5-EC7	<10 µg/l	TM245	43	1030	11	<10	<10	18200	
Aromatics >EC7-EC8	<10 µg/l	TM245	29	609	11	<10	<10	5680	
Aromatics >EC8-EC10	<10 µg/l	TM245	110	799	11	<10	<10	4470	
Aromatics >EC10-EC12	<10 µg/l	TM245	87	967	19	<10	<10	7380	
Total Aromatics >EC5-EC12	<10 µg/l	TM245	269	3400	41	12	10	35800	
m,p,o-Xylene	<10 µg/l	TM245	60	537	<10	<10	<10	2430	
BTEX, Total	<10 µg/l	TM245	139	2230	11	<10	<10	26600	

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101686

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	G5	G8	H12	J10	K1	K5
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	3.00 - 4.00	1.00 - 2.00
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
*	subcontracted test.		2271850	2271547	2271381	2271231	2271310	2271174
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	2.14 #	19.5 #	3.44 #	0.202 #	0.196 #	6130 #
Acenaphthene (aq)	<0.015 µg/l	TM178	3.91 #	8.72 #	2.3 #	0.0512 #	0.139 #	50.1 #
Acenaphthylene (aq)	<0.011 µg/l	TM178	2.83 #	58.1 #	4.66 #	0.465 #	0.134 #	380 #
Fluoranthene (aq)	<0.014 µg/l	TM178	10.3 #	28.5 #	27 #	0.864 #	1.59 #	53.5 #
Anthracene (aq)	<0.015 µg/l	TM178	1.09 #	15.7 #	2.35 #	0.178 #	0.157 #	50.3 #
Phenanthrene (aq)	<0.022 µg/l	TM178	1.12 #	51.4 #	7.89 #	0.548 #	0.395 #	154 #
Fluorene (aq)	<0.014 µg/l	TM178	1.54 #	36.5 #	2.49 #	0.173 #	0.0853 #	126 #
Chrysene (aq)	<0.013 µg/l	TM178	2.16 #	10.6 #	14.7 #	0.719 #	1.19 #	6.72 #
Pyrene (aq)	<0.015 µg/l	TM178	4.23 #	18.7 #	17 #	0.605 #	1.62 #	34.3 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	2.32 #	14.1 #	17.8 #	0.8 #	1.2 #	6.87 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	1.99 #	9.84 #	29.3 #	2.95 #	2.37 #	3.1 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	2.23 #	14.6 #	27.7 #	2.49 #	2.2 #	2.99 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	2.5 #	14.1 #	32.5 #	3.95 #	2.35 #	2.94 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	0.391 #	1.89 #	6.49 #	0.668 #	0.542 #	0.848 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	1.44 #	5.21 #	20.2 #	2.21 #	2.32 #	1.66 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	1.51 #	6.38 #	18.8 #	1.99 #	2.03 #	1.93 #
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	41.7 #	374 #	235 #	18.9 #	18.5 #	7010 #

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

TPH CWG (W)

Results Legend		Customer Sample Ref.	G5	G8	H12	J10	K1	K5		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	3.00 - 4.00	1.00 - 2.00		
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
aq	Aqueous / settled sample.		20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010		
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010		
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66	101021-66	101021-66	101021-66	101021-66		
*	subcontracted test.		2271850	2271547	2271381	2271231	2271310	2271174		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5	WW5	WW5	WW5	WW5		
Component			LOD/Units	Method						
Total Aliphatics >C5-C35 (aq)			<10 µg/l	TM174	222	1900	392	19	18	18100
Total Aromatics >C6-C35 (aq)			<10 µg/l	TM174	2670	6220	865	56	51	119000
Total Aliphatics & Aromatics >C5-35 (aq)		<10 µg/l	TM174	2890	8120	1260	75	69	137000	

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	G5	K5				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.00 - 6.00	1.00 - 2.00				
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)				
aq	Aqueous / settled sample.		20/10/2010	20/10/2010				
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010				
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66				
*	subcontracted test.		2271850	2271174				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5				
Component	LOD/Units		Method					
Dibromofluoromethane**	%		TM208	106	102			
Toluene-d8**	%		TM208	99.6	94.7			
4-Bromofluorobenzene**	%	TM208	102	65.6				
Dichlorodifluoromethane	<7 µg/l	TM208	<7	<7	#	#		
Chloromethane	<9 µg/l	TM208	<9	<9	#	#		
Vinyl chloride	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
Bromomethane	<2 µg/l	TM208	<2	<2	#	#		
Chloroethane	<2.5 µg/l	TM208	<2.5	<2.5	#	#		
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	2.3	#	#		
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
Carbon disulphide	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
Dichloromethane	<3.7 µg/l	TM208	<3.7	<3.7	#	#		
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	<1.6	#	#		
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	<1.2	#	#		
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	<3.8	#	#		
Bromochloromethane	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
Chloroform	<1.8 µg/l	TM208	<1.8	2.26	#	#		
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	8.31	#	#		
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	<1.4	#	#		
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	#	#		
Benzene	<1.3 µg/l	TM208	68.8	15200	#	#		
Trichloroethene	<2.5 µg/l	TM208	<2.5	11.2	#	#		
1,2-Dichloropropane	<3 µg/l	TM208	<3	<3	#	#		
Dibromomethane	<2.7 µg/l	TM208	<2.7	<2.7	#	#		
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	<0.9	#	#		
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	<1.9	#	#		
Toluene	<1.4 µg/l	TM208	44.1	4380	#	#		
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	<3.5	#	#		
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	<2.2	#	#		
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	2.49	#	#		
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	<1.7	#	#		
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	<2.3	#	#		
Chlorobenzene	<3.5 µg/l	TM208	<3.5	<3.5	#	#		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	<1.3	#	#		
Ethylbenzene	<2.5 µg/l	TM208	13.8	230	#	#		

SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	G5	K5					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.00 - 6.00	1.00 - 2.00					
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)					
aq	Aqueous / settled sample.		20/10/2010	20/10/2010					
diss.filt	Dissolved / filtered sample.		21/10/2010	21/10/2010					
tot.unfilt	Total / unfiltered sample.		101021-66	101021-66					
*	subcontracted test.		2271850	2271174					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.		WW5	WW5					
Component	LOD/Units		Method						
m,p-Xylene	<2.5 µg/l		TM208	62.5	1400	#	#		
o-Xylene	<1.7 µg/l		TM208	26.7	650	#	#		
Styrene	<1.2 µg/l	TM208	<1.2	352	#	#			
Bromoform	<3 µg/l	TM208	<3	<3	#	#			
Isopropylbenzene	<1.4 µg/l	TM208	2.28	9.19	#	#			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2	#	#			
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	<7.8	#	#			
Bromobenzene	<2 µg/l	TM208	<2	<2	#	#			
Propylbenzene	<2.6 µg/l	TM208	<2.6	11.3	#	#			
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	11.5	56.2	#	#			
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	<1.9	#	#			
tert-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	27.1	131	#	#			
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	<1.7	#	#			
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6	<2.6	#	#			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	<2.2	#	#			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	<2.7	#	#			
n-Butylbenzene	<2 µg/l	TM208	<2	<2	#	#			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7	#	#			
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8	#	#			
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	<2.3	#	#			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	<2.5	#	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	#	#			
Naphthalene	<3.5 µg/l	TM208	293	5220	#	#			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	<3.1	#	#			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10	#	#			

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

Results Legend		Customer Sample Ref.	M3						
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.50 - 5.50 Water(GW/SW) 20/10/2010 21/10/2010 101021-66 2271451 WW5						
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.								
Component	LOD/Units			Method					
Ammoniacal Nitrogen as N	<0.2 mg/l			TM099	1.35	#			
Ammoniacal Nitrogen as NH4	<0.3 mg/l			TM099	1.74	#			
Sulphide	<0.01 mg/l	TM101	<0.01	#					
Arsenic (diss.filt)	<0.12 µg/l	TM152	3.25	#					
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1	#					
Chromium (diss.filt)	<0.22 µg/l	TM152	1.1	#					
Copper (diss.filt)	<0.85 µg/l	TM152	2.08	#					
Lead (diss.filt)	<0.02 µg/l	TM152	0.039	#					
Nickel (diss.filt)	<0.15 µg/l	TM152	3.86	#					
Selenium (diss.filt)	<0.39 µg/l	TM152	1.34	#					
Zinc (diss.filt)	<0.41 µg/l	TM152	0.553	#					
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	#					
Sulphate	<3 mg/l	TM184	576	#					
Cyanide, Total	<0.05 mg/l	TM227	0.941	#					
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	#					
pH	<1 pH Units	TM256	8	#					
Resorcinol	<0.01 mg/l	TM259	<0.01	#					
Catechol	<0.01 mg/l	TM259	<0.01	#					
Phenol	<0.002 mg/l	TM259	<0.002	#					
Cresols	<0.006 mg/l	TM259	<0.006	#					
Xylenols	<0.008 mg/l	TM259	<0.008	#					
1-Naphthol	<0.01 mg/l	TM259	<0.01	#					
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003	#					
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006	#					
Phenols, Total 5 speciated	<0.025 mg/l	TM259	<0.025	#					

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

EPH CWG (Aliphatic) Aqueous GC (W)

Table with columns: Component, LOD/Units, Method, and results data. Includes a Results Legend and a large diagonal watermark reading 'For inspection purposes only. Consent of copyright owner required for any other use.'

SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

GRO by GC-FID (W)

Results Legend		Customer Sample Ref.	M3				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	3.50 - 5.50				
		Sample Type	Water(GW/SW)				
		Date Sampled	20/10/2010				
		Date Received	21/10/2010				
		SDG Ref	101021-66				
		Lab Sample No.(s)	2271451				
		AGS Reference	WW5				
Component	LOD/Units	Method					
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3	#			
Benzene	<7 µg/l	TM245	<7	#			
Toluene	<4 µg/l	TM245	<4	#			
Ethylbenzene	<5 µg/l	TM245	<5	#			
m,p-Xylene	<8 µg/l	TM245	<8	#			
o-Xylene	<3 µg/l	TM245	<3	#			
Aliphatics >C5-C6	<10 µg/l	TM245	<10				
Aliphatics >C6-C8	<10 µg/l	TM245	<10				
Aliphatics >C8-C10	<10 µg/l	TM245	<10				
Aliphatics >C10-C12	<10 µg/l	TM245	<10				
Total Aliphatics >C5-C12	<10 µg/l	TM245	10				
Aromatics >EC5-EC7	<10 µg/l	TM245	<10				
Aromatics >EC7-EC8	<10 µg/l	TM245	<10				
Aromatics >EC8-EC10	<10 µg/l	TM245	<10				
Aromatics >EC10-EC12	<10 µg/l	TM245	<10				
Total Aromatics >EC5-EC12	<10 µg/l	TM245	<10				
m,p,o-Xylene	<10 µg/l	TM245	<10				
BTEX, Total	<10 µg/l	TM245	<10				

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Reference: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101686

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	M3				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	3.50 - 5.50				
		Sample Type	Water(GW/SW)				
		Date Sampled	20/10/2010				
		Date Received	21/10/2010				
		SDG Ref	101021-66				
		Lab Sample No.(s)	2271451				
		AGS Reference	WW5				
Component	LOD/Units	Method					
Naphthalene (aq)	<0.1 µg/l	TM178	0.266	#			
Acenaphthene (aq)	<0.015 µg/l	TM178	0.0197	#			
Acenaphthylene (aq)	<0.011 µg/l	TM178	0.148	#			
Fluoranthene (aq)	<0.014 µg/l	TM178	3.43	#			
Anthracene (aq)	<0.015 µg/l	TM178	0.243	#			
Phenanthrene (aq)	<0.022 µg/l	TM178	0.342	#			
Fluorene (aq)	<0.014 µg/l	TM178	0.061	#			
Chrysene (aq)	<0.013 µg/l	TM178	2.91	#			
Pyrene (aq)	<0.015 µg/l	TM178	3.07	#			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	3.07	#			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	5.7	#			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	5.08	#			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	5.6	#			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	1.26	#			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	5.61	#			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	5.01	#			
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	41.8	#			

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	M3				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	3.50 - 5.50				
		Sample Type	Water(GW/SW)				
		Date Sampled	20/10/2010				
		Date Received	21/10/2010				
		SDG Ref	101021-66				
		Lab Sample No.(s)	2271451				
		AGS Reference	WW5				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	107				
Toluene-d8**	%	TM208	98.8				
4-Bromofluorobenzene**	%	TM208	101				
Dichlorodifluoromethane	<7 µg/l	TM208	<7	#			
Chloromethane	<9 µg/l	TM208	<9	#			
Vinyl chloride	<1.2 µg/l	TM208	<1.2	#			
Bromomethane	<2 µg/l	TM208	<2	#			
Chloroethane	<2.5 µg/l	TM208	<2.5	#			
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2	#			
Carbon disulphide	<1.3 µg/l	TM208	<1.3	#			
Dichloromethane	<3.7 µg/l	TM208	<3.7	#			
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6	#			
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9	#			
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2	#			
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3	#			
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8	#			
Bromochloromethane	<1.9 µg/l	TM208	<1.9	#			
Chloroform	<1.8 µg/l	TM208	<1.8	#			
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3	#			
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3	#			
Carbontetrachloride	<1.4 µg/l	TM208	<1.4	#			
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	#			
Benzene	<1.3 µg/l	TM208	<1.3	#			
Trichloroethene	<2.5 µg/l	TM208	<2.5	#			
1,2-Dichloropropane	<3 µg/l	TM208	<3	#			
Dibromomethane	<2.7 µg/l	TM208	<2.7	#			
Bromodichloromethane	<0.9 µg/l	TM208	<0.9	#			
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9	#			
Toluene	<1.4 µg/l	TM208	<1.4	#			
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5	#			
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2	#			
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2	#			
Tetrachloroethene	<1.5 µg/l	TM208	<1.5	#			
Dibromochloromethane	<1.7 µg/l	TM208	<1.7	#			
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3	#			
Chlorobenzene	<3.5 µg/l	TM208	<3.5	#			
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3	#			
Ethylbenzene	<2.5 µg/l	TM208	<2.5	#			

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SDG: 101021-66
 Job: D_MOUCHEL_ELE-101
 Client Reference: 21.10.10
 Location: Limerick Gasworks

Customer: Mouchel
 Attention:
 Order No.: 4500056413
 Report No: 101686

VOC MS (W)

Results Legend		Customer Sample Ref.	M3				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		Depth (m)	3.50 - 5.50				
		Sample Type	Water(GW/SW)				
		Date Sampled	20/10/2010				
		Date Received	21/10/2010				
		SDG Ref	101021-66				
		Lab Sample No.(s)	2271451				
		AGS Reference	WW5				
Component	LOD/Units	Method					
m,p-Xylene	<2.5 µg/l	TM208	<2.5	#			
o-Xylene	<1.7 µg/l	TM208	<1.7	#			
Styrene	<1.2 µg/l	TM208	<1.2	#			
Bromoform	<3 µg/l	TM208	<3	#			
Isopropylbenzene	<1.4 µg/l	TM208	<1.4	#			
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	#			
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8	#			
Bromobenzene	<2 µg/l	TM208	<2	#			
Propylbenzene	<2.6 µg/l	TM208	<2.6	#			
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9	#			
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	<1.8	#			
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9	#			
tert-Butylbenzene	<2 µg/l	TM208	<2	#			
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	<1.7	#			
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7	#			
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6	#			
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2	#			
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7	#			
n-Butylbenzene	<2 µg/l	TM208	<2	#			
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	#			
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	#			
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3	#			
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	#			
Naphthalene	<3.5 µg/l	TM208	<3.5	#			
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1	#			
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	#			

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Table of Results - Appendix

SDG Number : 101021-66

Client : D_MOUCHEL_ELE

Client Ref : 21.10.10

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)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
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		
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		
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259		Determination of Phenols in Waters and Leachates by HPLC		

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

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SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

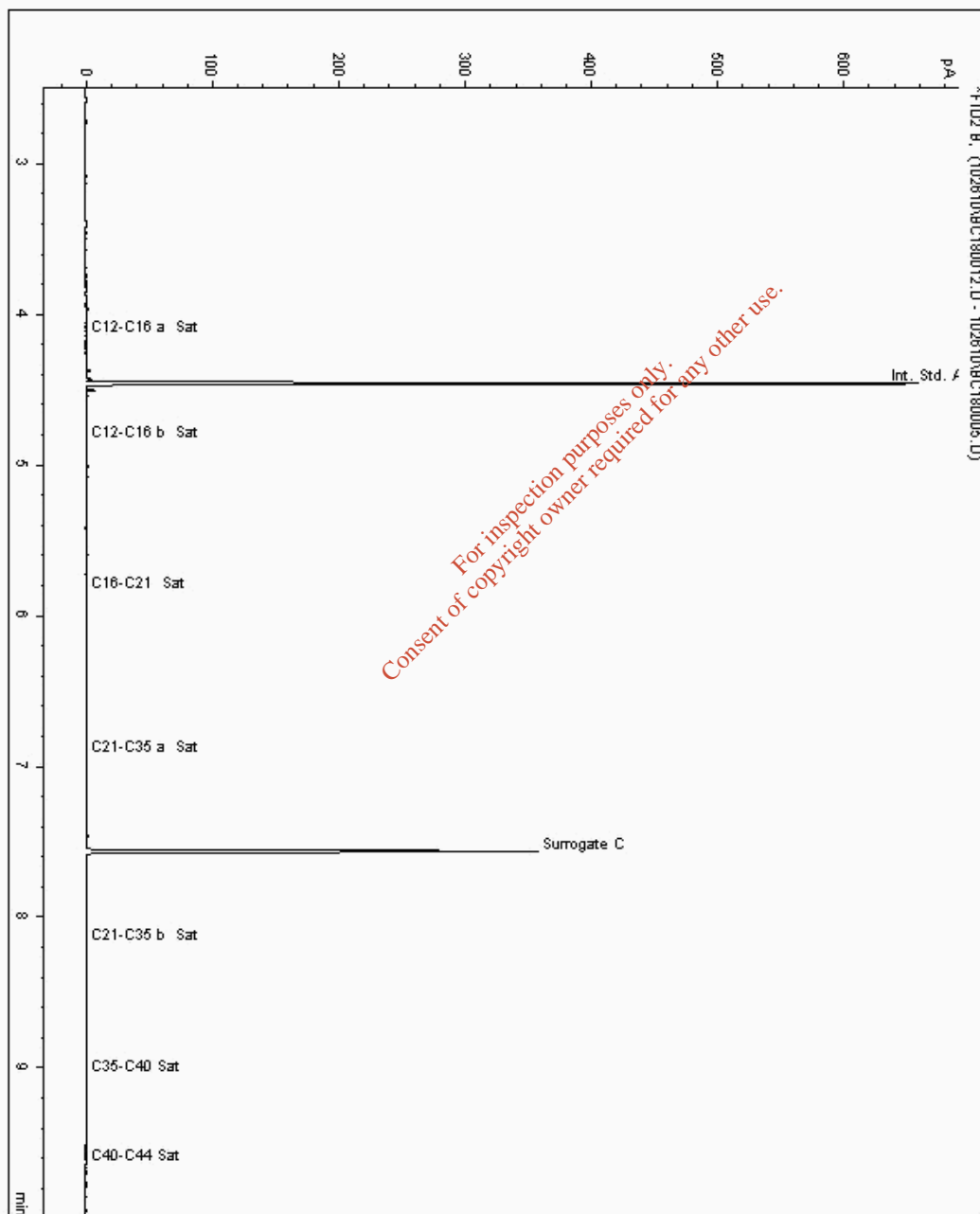
Chromatogram

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

Sample No 2275998
Sample ID A11
Depth 1.50 - 2.50

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

Sample Identity: 2371976-2275998
Date Acquired : 26/10/10 21:38:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

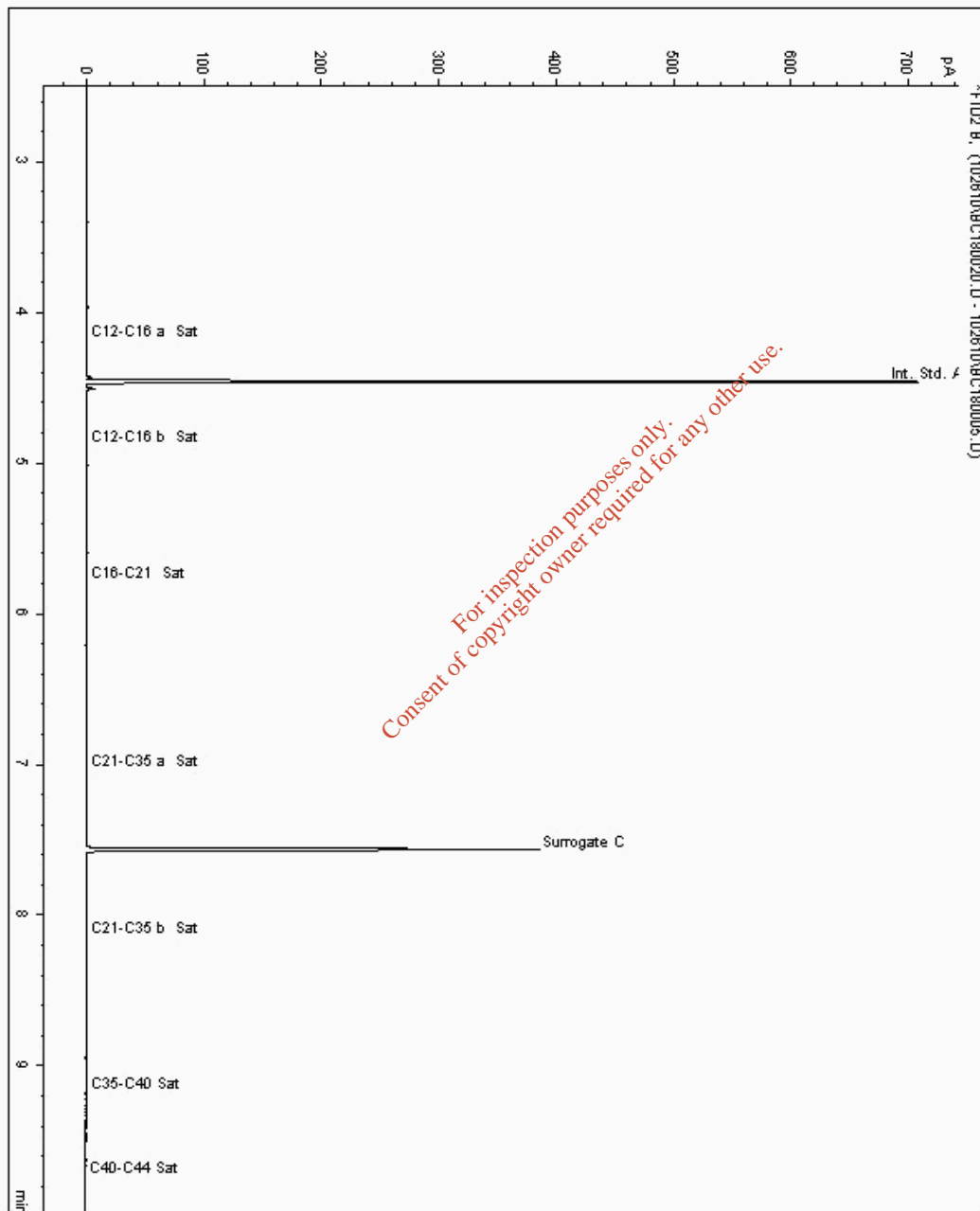
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276097
Sample ID A3
Depth 2.00 - 4.00

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

Sample Identity: 2371792-2276097
Date Acquired : 26/10/10 23:52:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

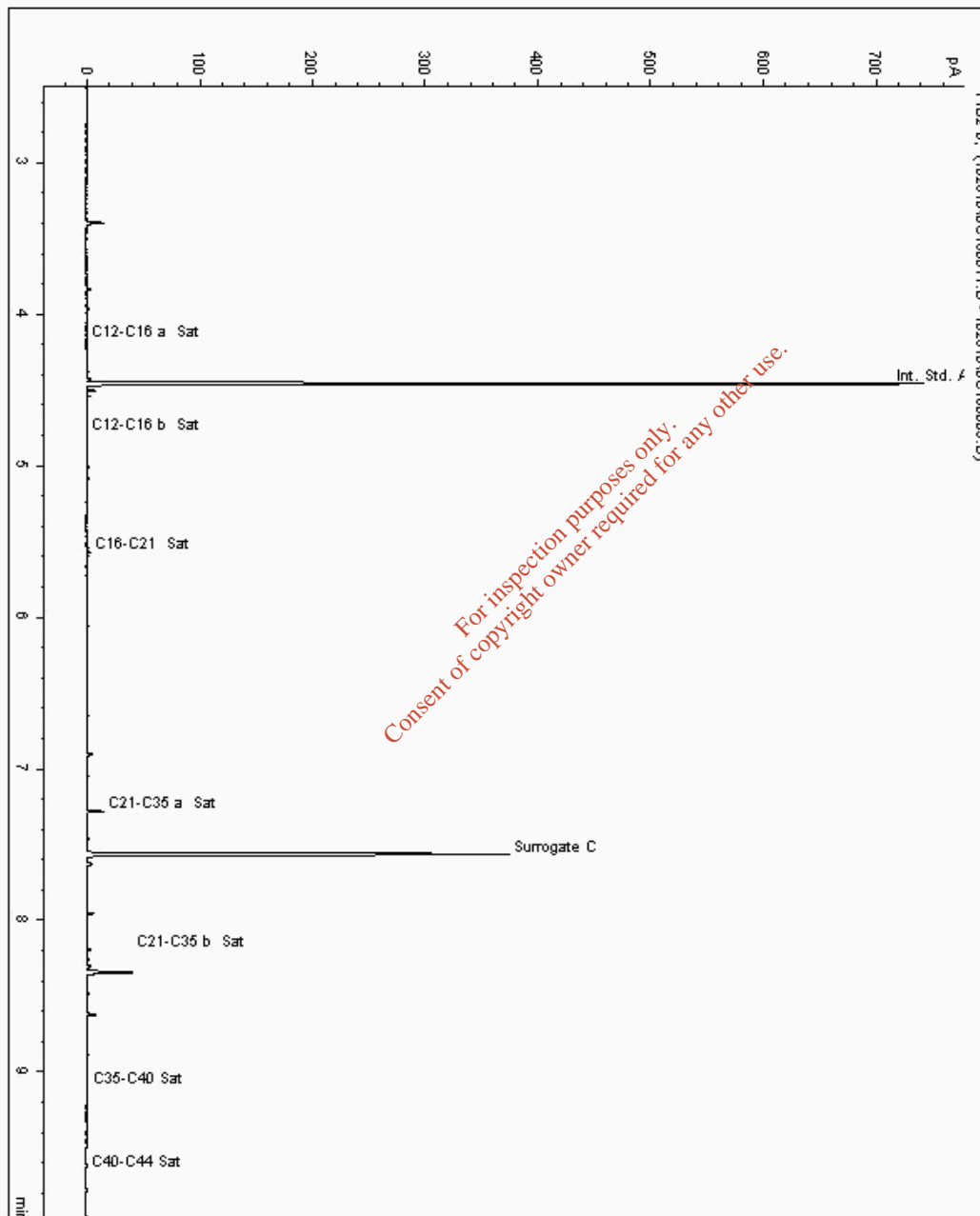
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276183
Sample ID F11
Depth 2.00 - 4.00

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

Sample Identity: 2371961-2276183
Date Acquired : 26/10/10 21:20:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

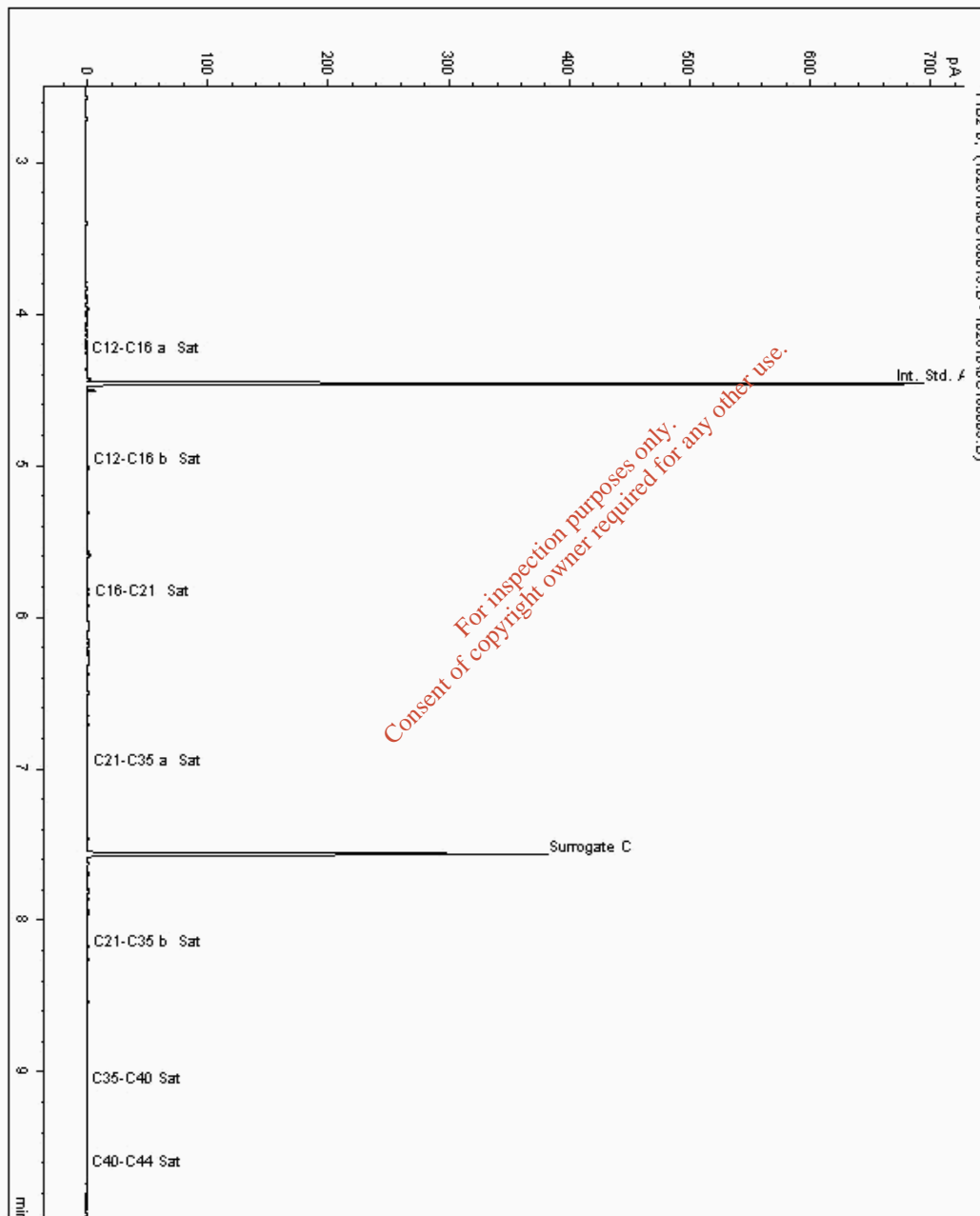
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276270
Sample ID G3
Depth 4.00 - 5.00

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

Sample Identity: 2372006-2276270
Date Acquired : 26/10/10 21:57:52 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

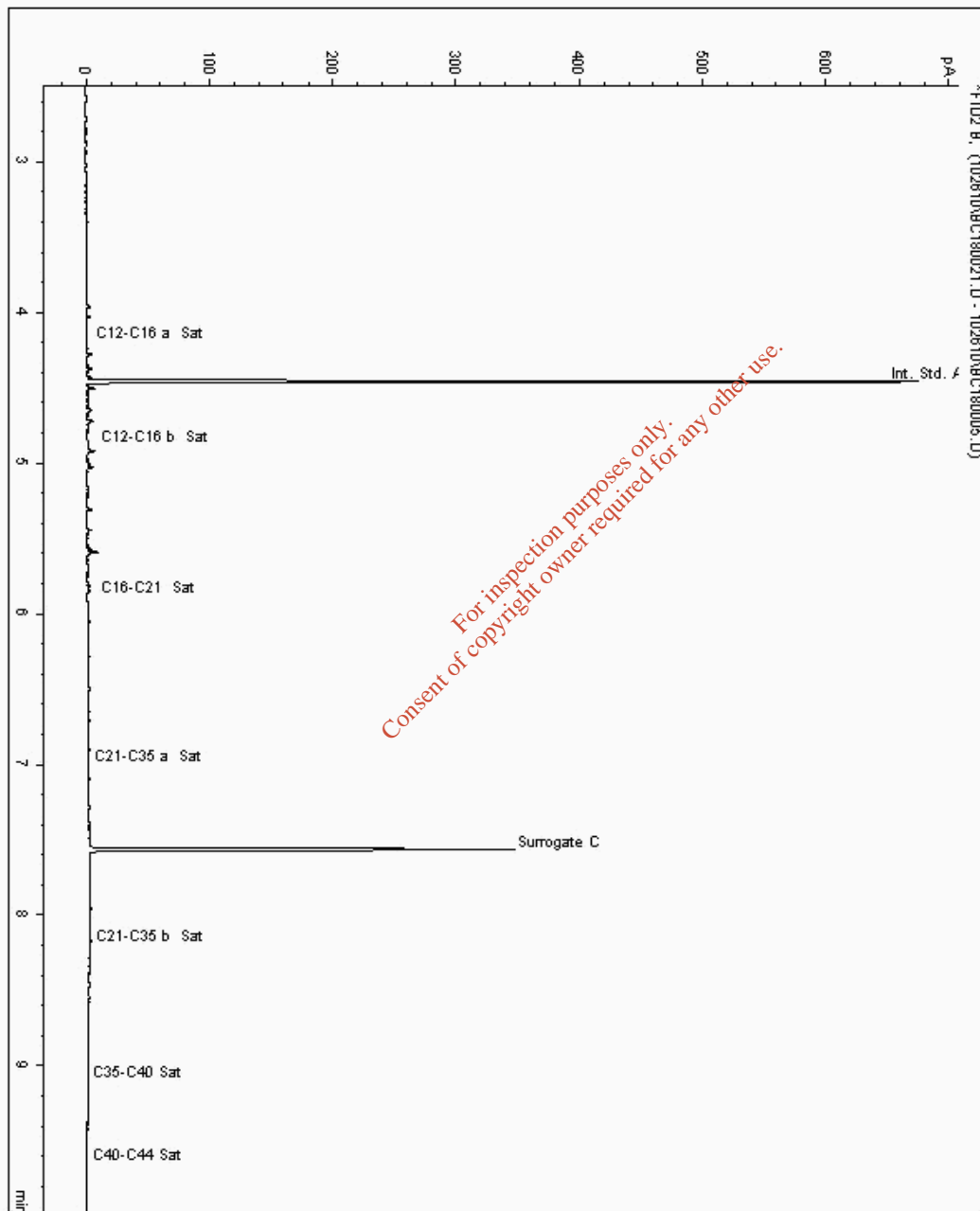
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276326
Sample ID D5
Depth 2.00 - 3.00

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

Sample Identity: 2371774-2276326
Date Acquired : 27/10/10 00:11:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

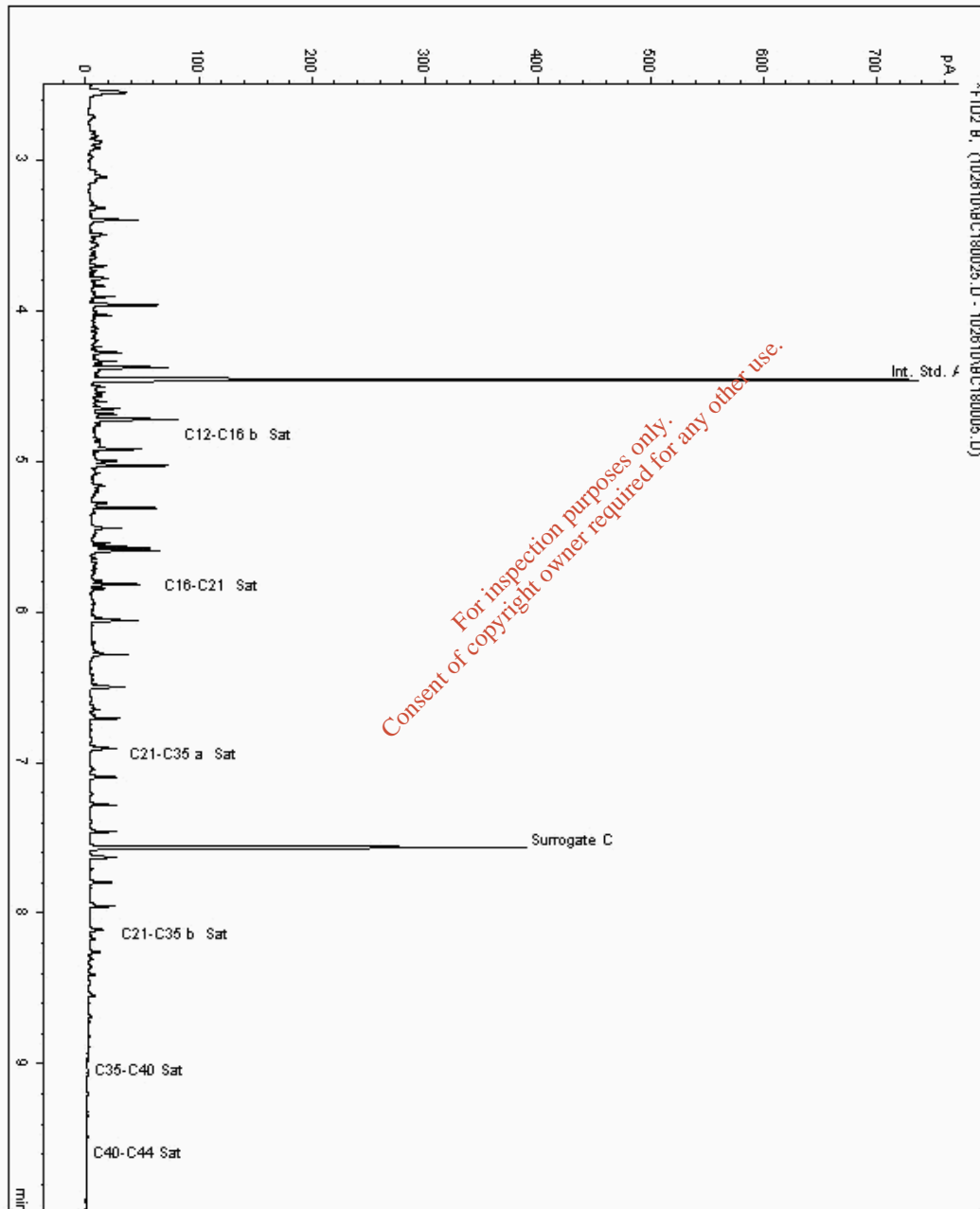
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276388
Sample ID K5
Depth 1.00 - 2.00

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

Sample Identiv: 2371837-2276388
Date Acquired : 27/10/10 01:15:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

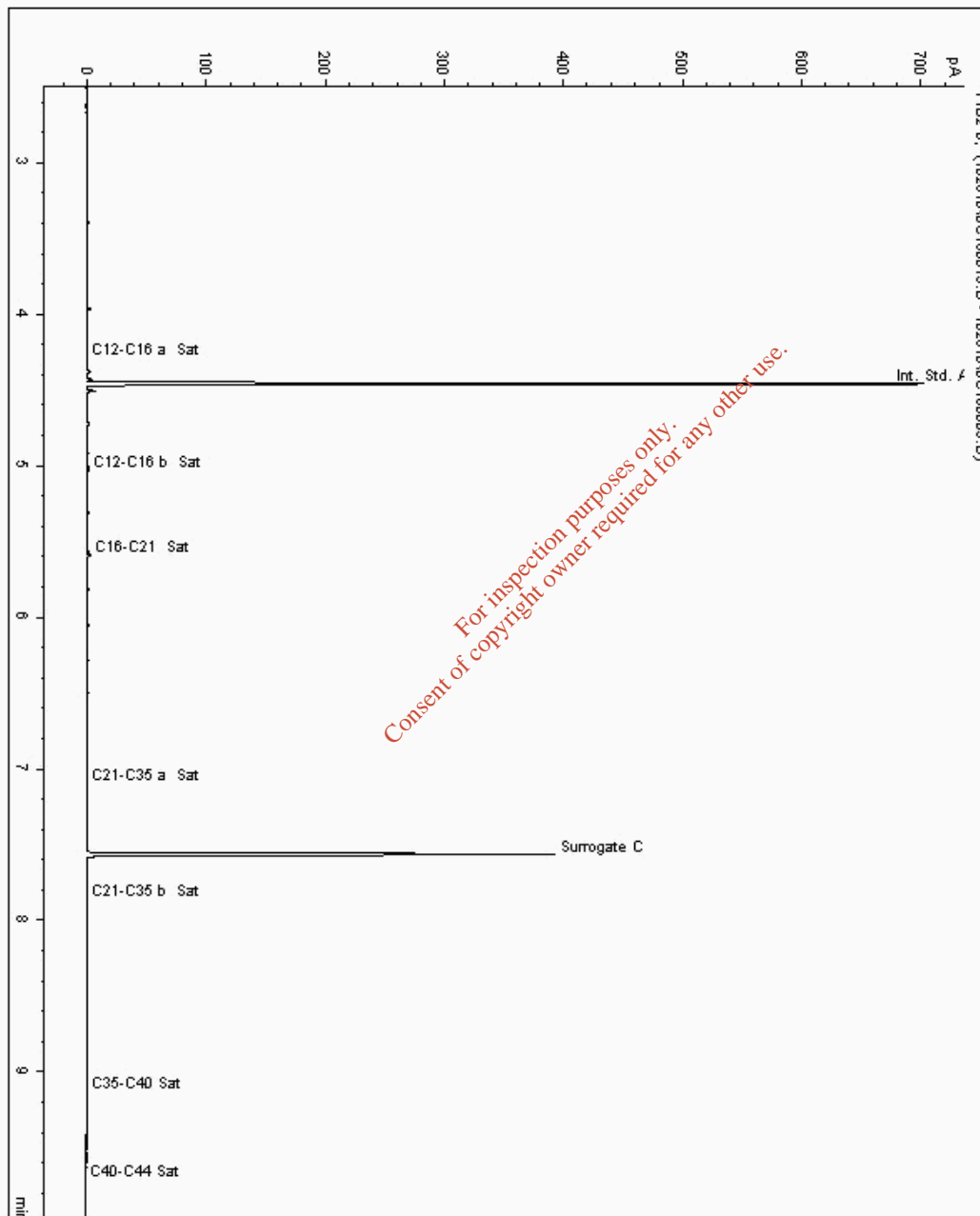
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276390
Sample ID G8
Depth 1.00 - 2.00

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

Sample Identity: 2371944-2276390
Date Acquired : 26/10/10 22:29:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

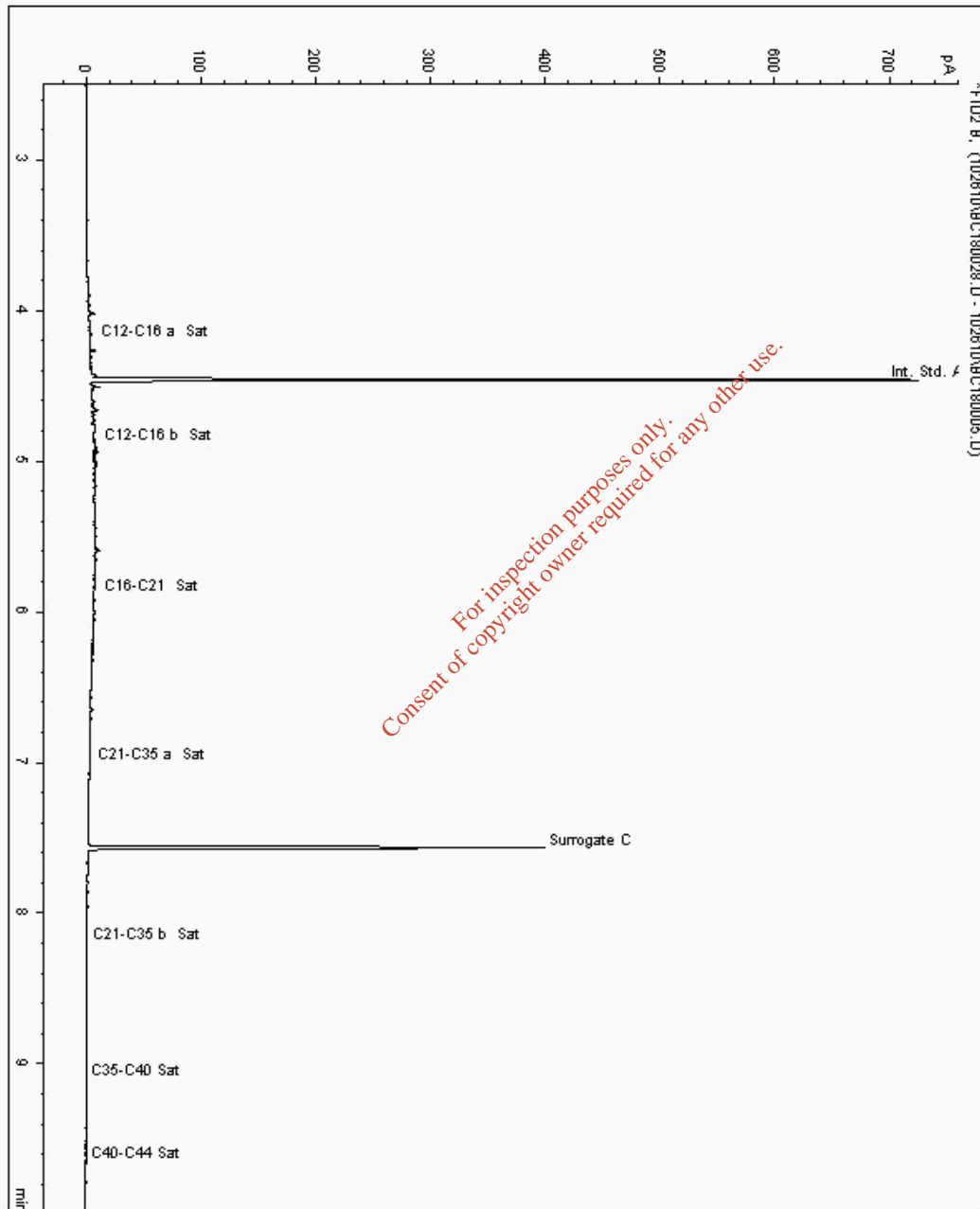
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276440
Sample ID A4
Depth 2.00 - 4.00

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

Sample Identity: 2371807-2276440
Date Acquired : 27/10/10 02:00:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

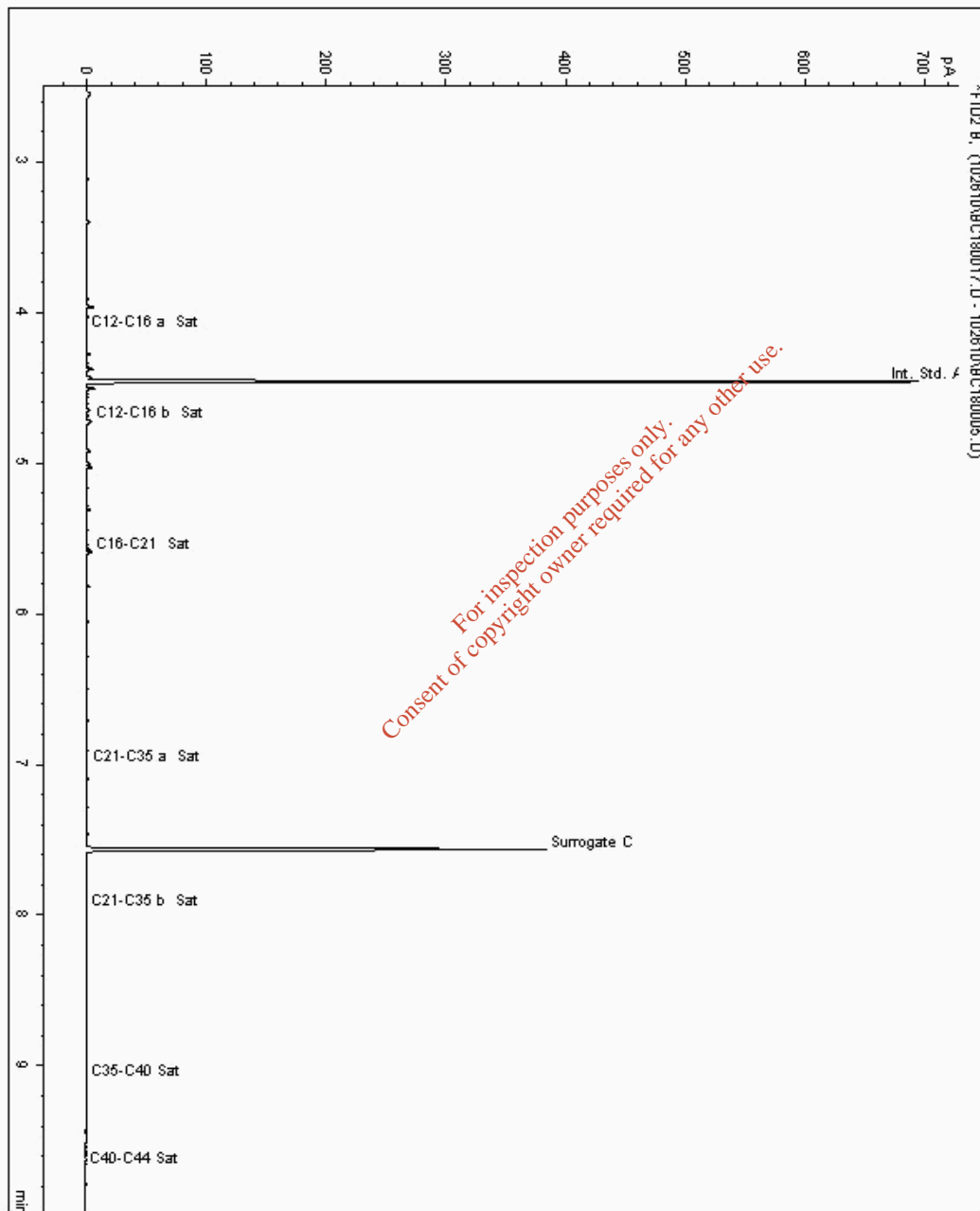
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276451
Sample ID G4
Depth 3.00 - 3.50

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

Sample Identity: 2371991-2276451
Date Acquired : 26/10/10 23:01:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

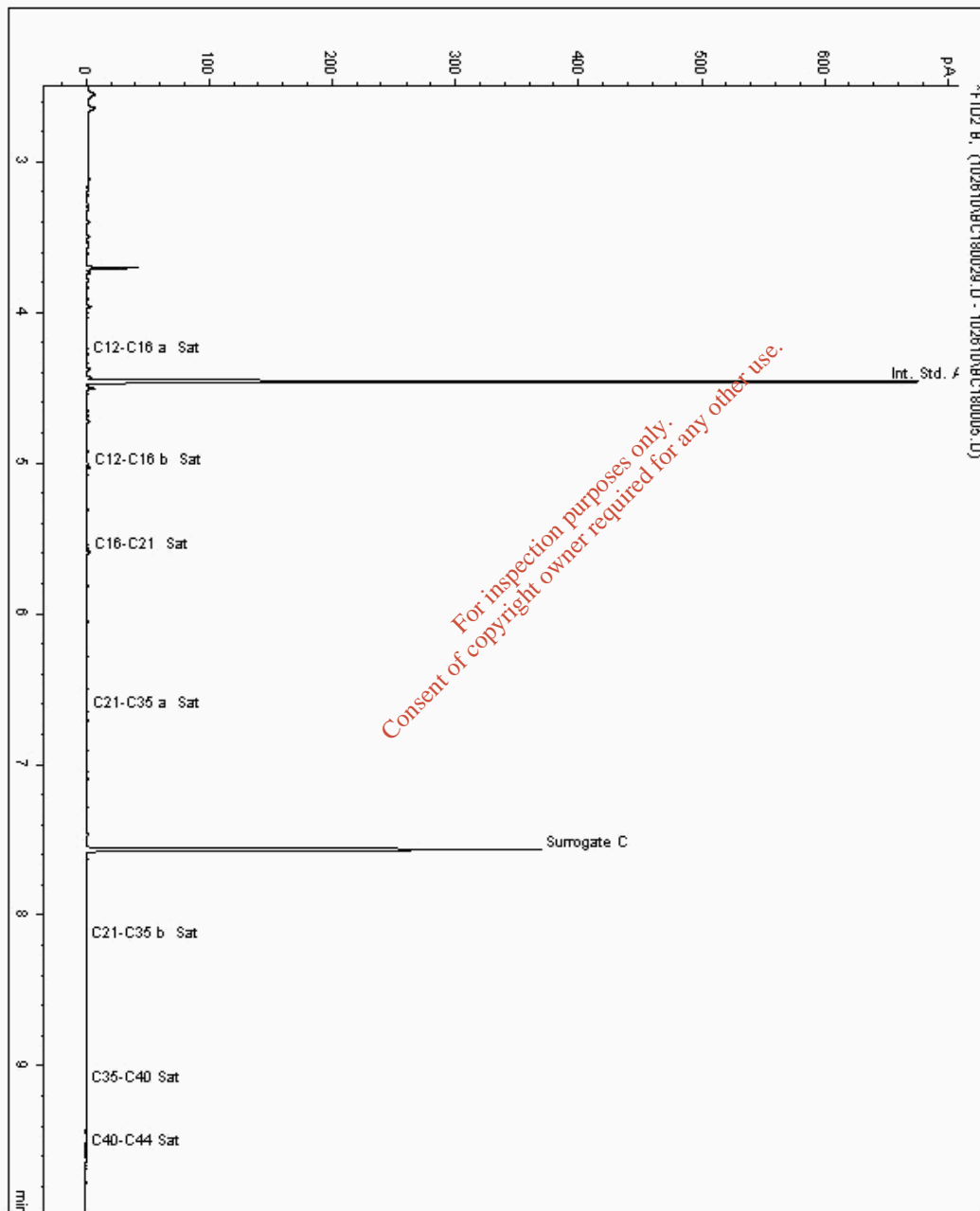
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276479
Sample ID C7
Depth 3.00 - 6.00

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

Sample Identity: 2371822-2276479
Date Acquired : 27/10/10 02:19:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

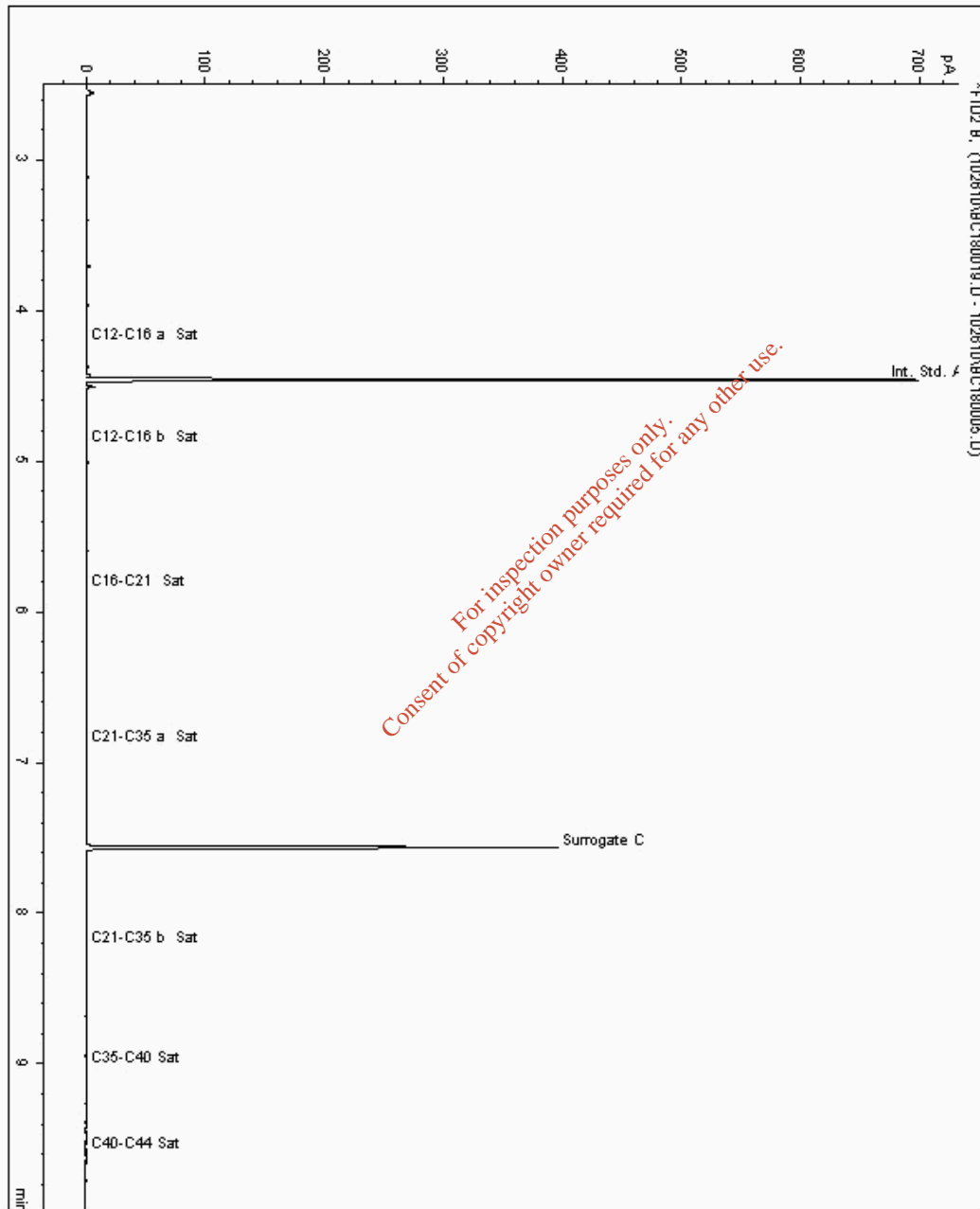
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276518
Sample ID G2
Depth 4.00 - 7.00

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

Sample Identity: 2372021-2276518
Date Acquired : 26/10/10 23:33:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

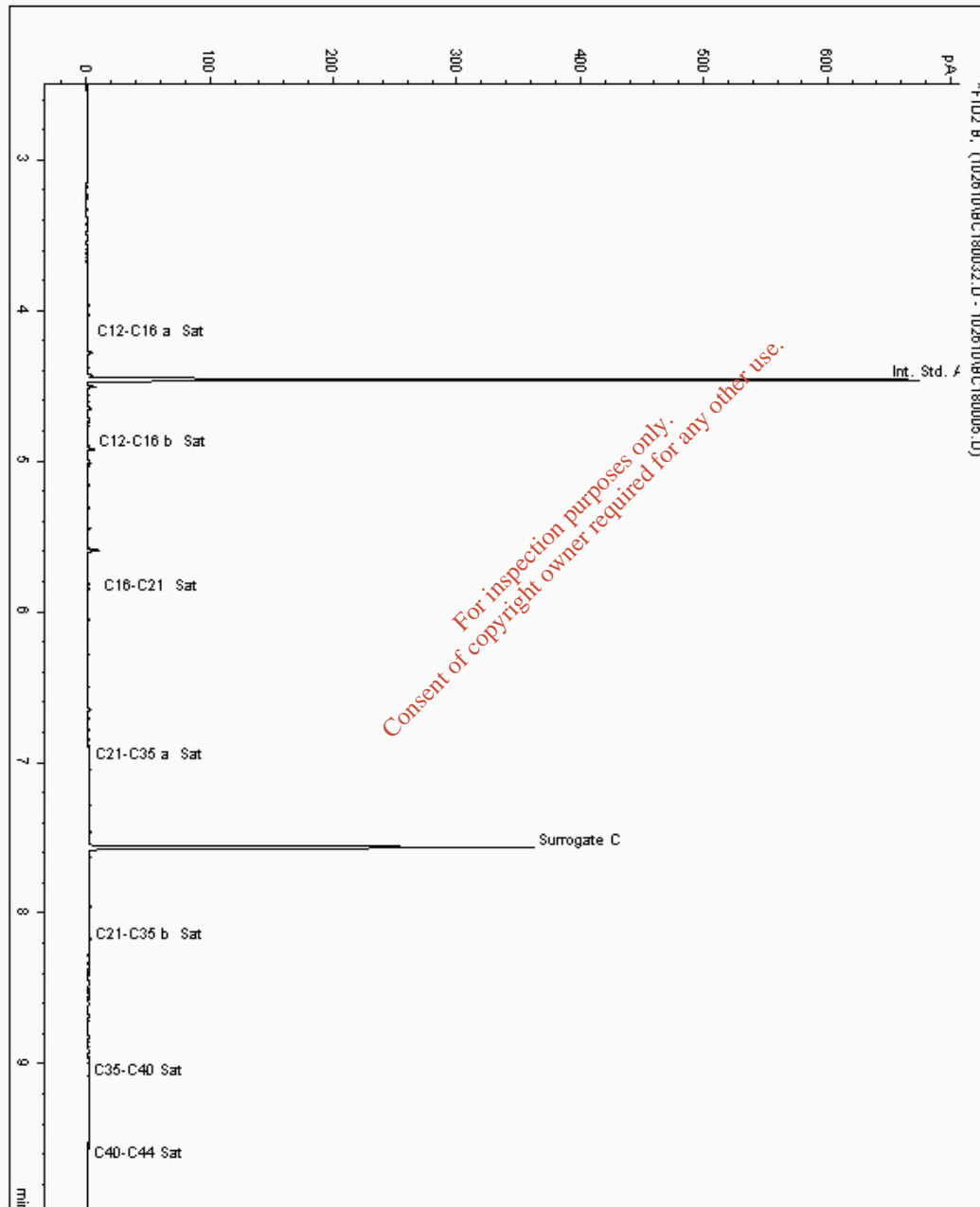
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

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

Sample No 2276670
Sample ID H12
Depth 1.50 - 4.00

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

Sample Identity: 2371882-2276670
Date Acquired : 27/10/10 03:04:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

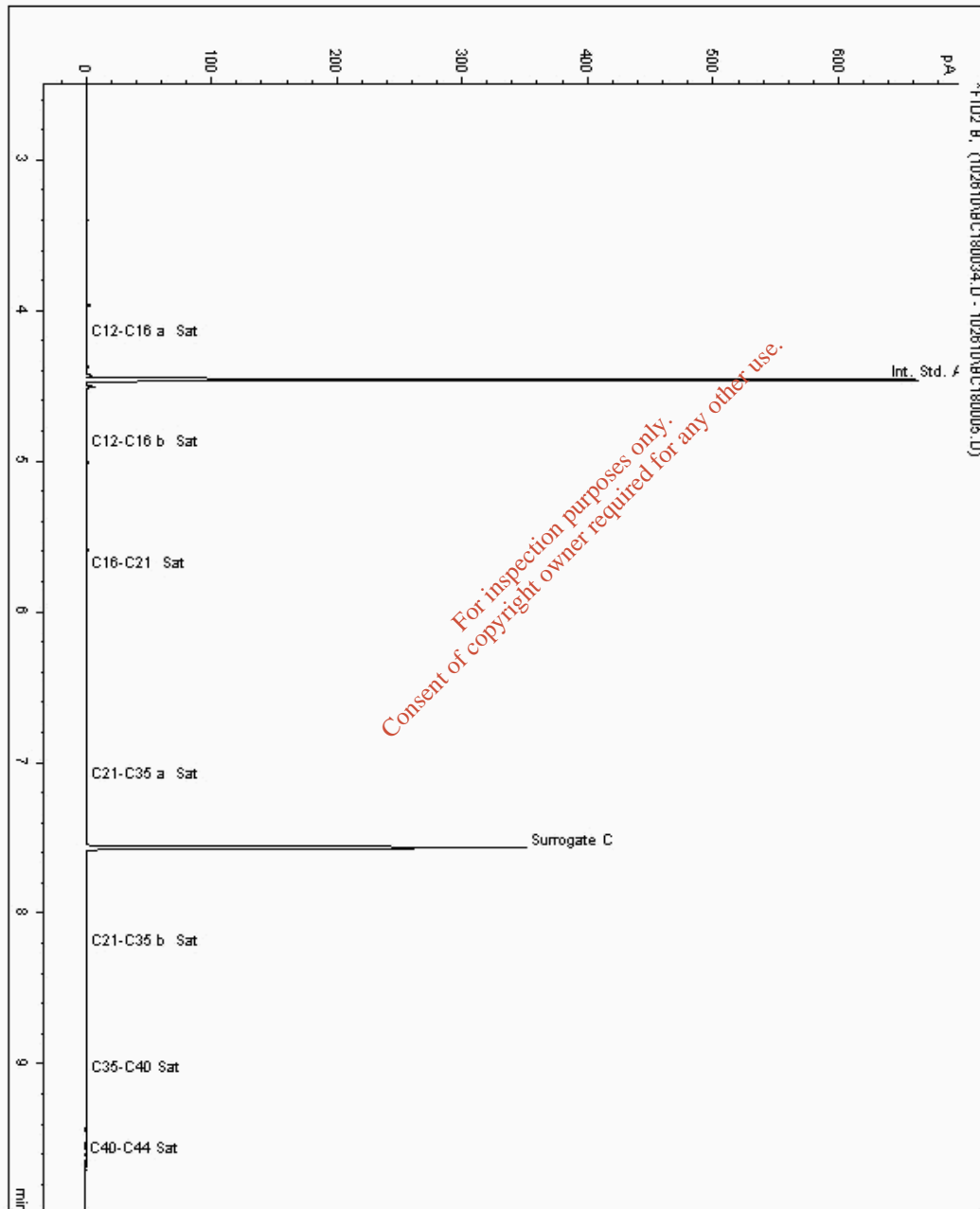
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

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

Sample No 2276894
Sample ID J10
Depth 1.00 - 1.30

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

Sample Identity: 2371852-2276894
Date Acquired : 27/10/10 03:36:54 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

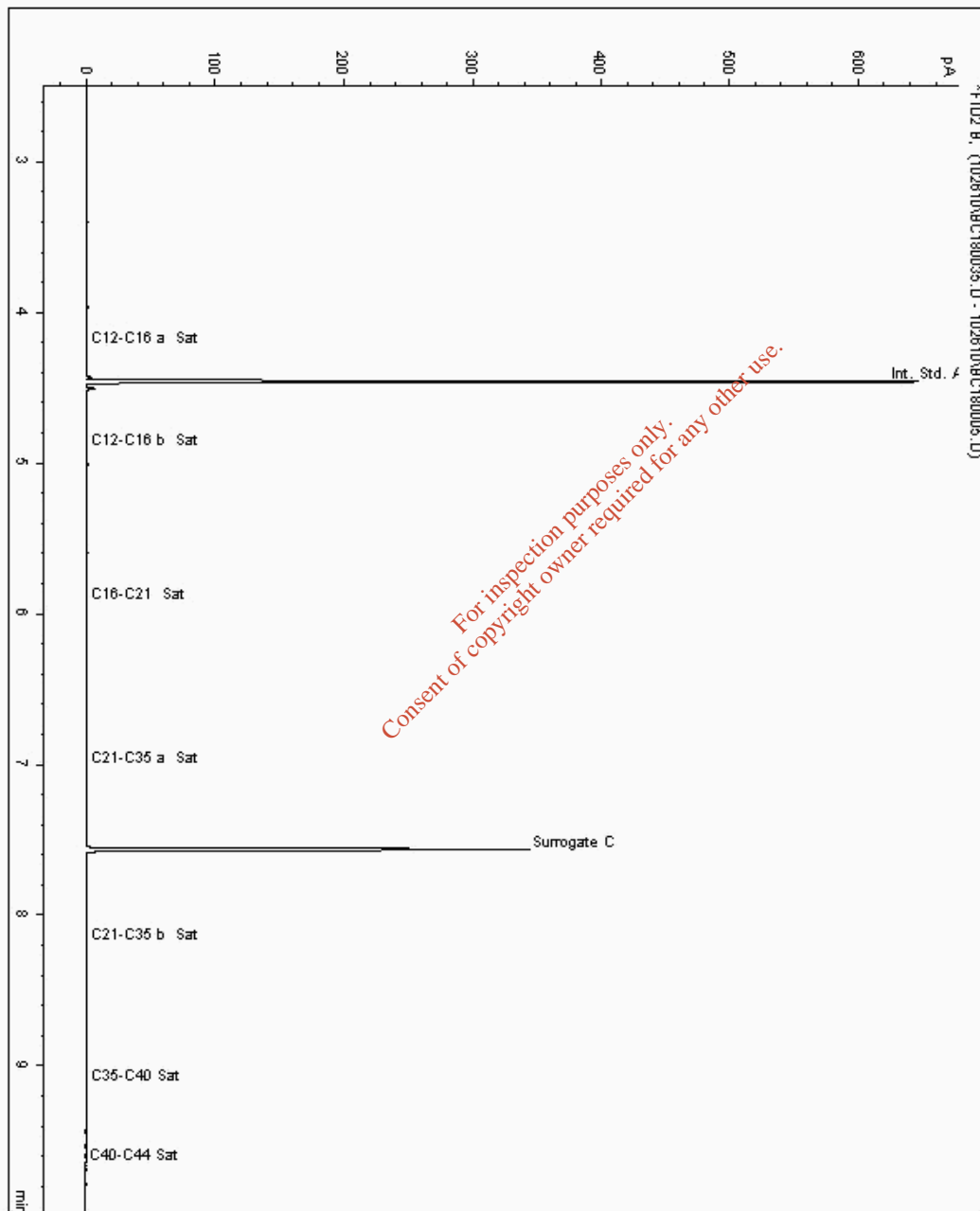
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

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

Sample No 2276951
Sample ID M3
Depth 3.50 - 5.50

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

Sample Identity: 2371897-2276951
Date Acquired : 27/10/10 03:55:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

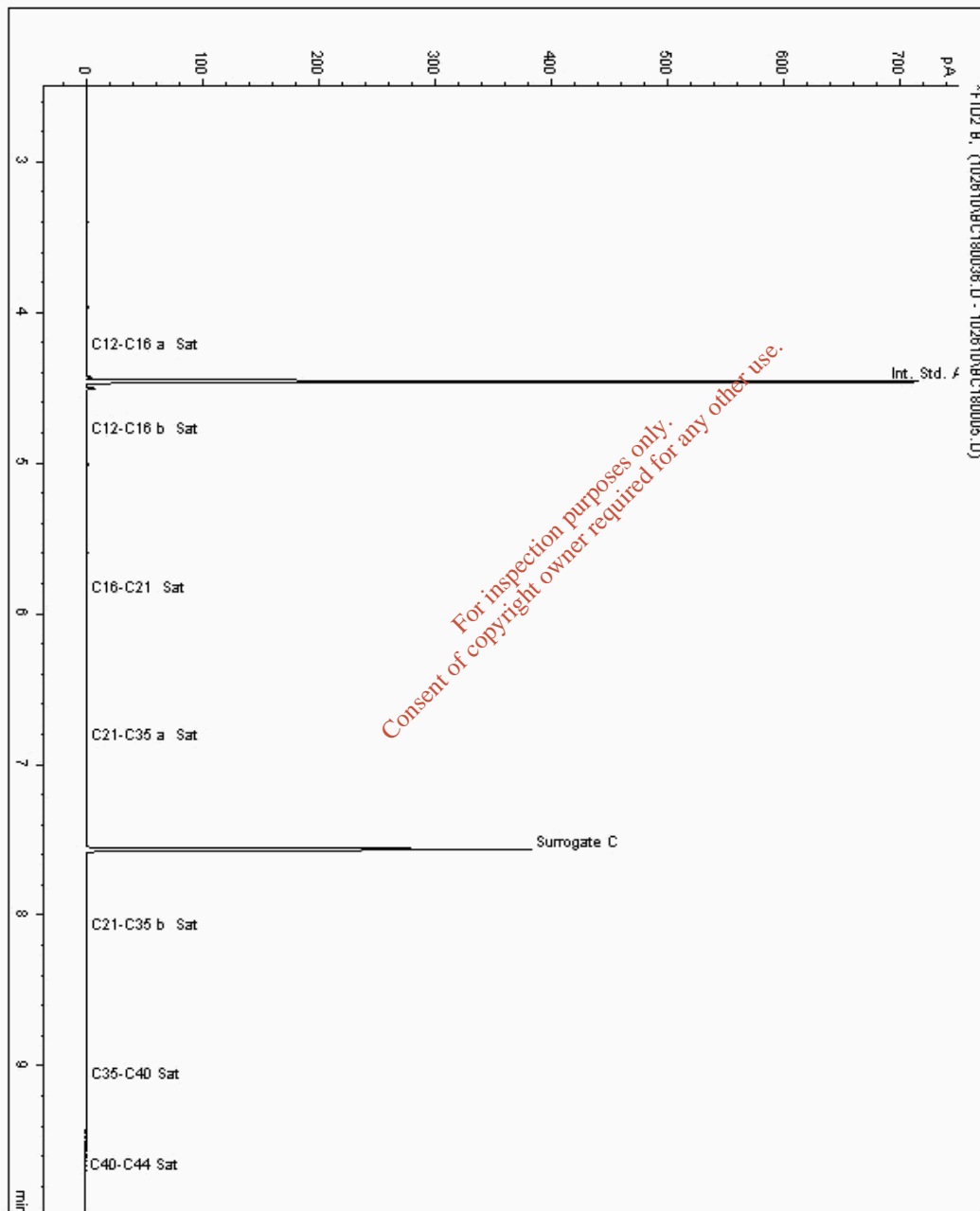
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2277026
Sample ID K1
Depth 3.00 - 4.00

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

Sample Identity: 2371867-2277026
Date Acquired : 27/10/10 04:14:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

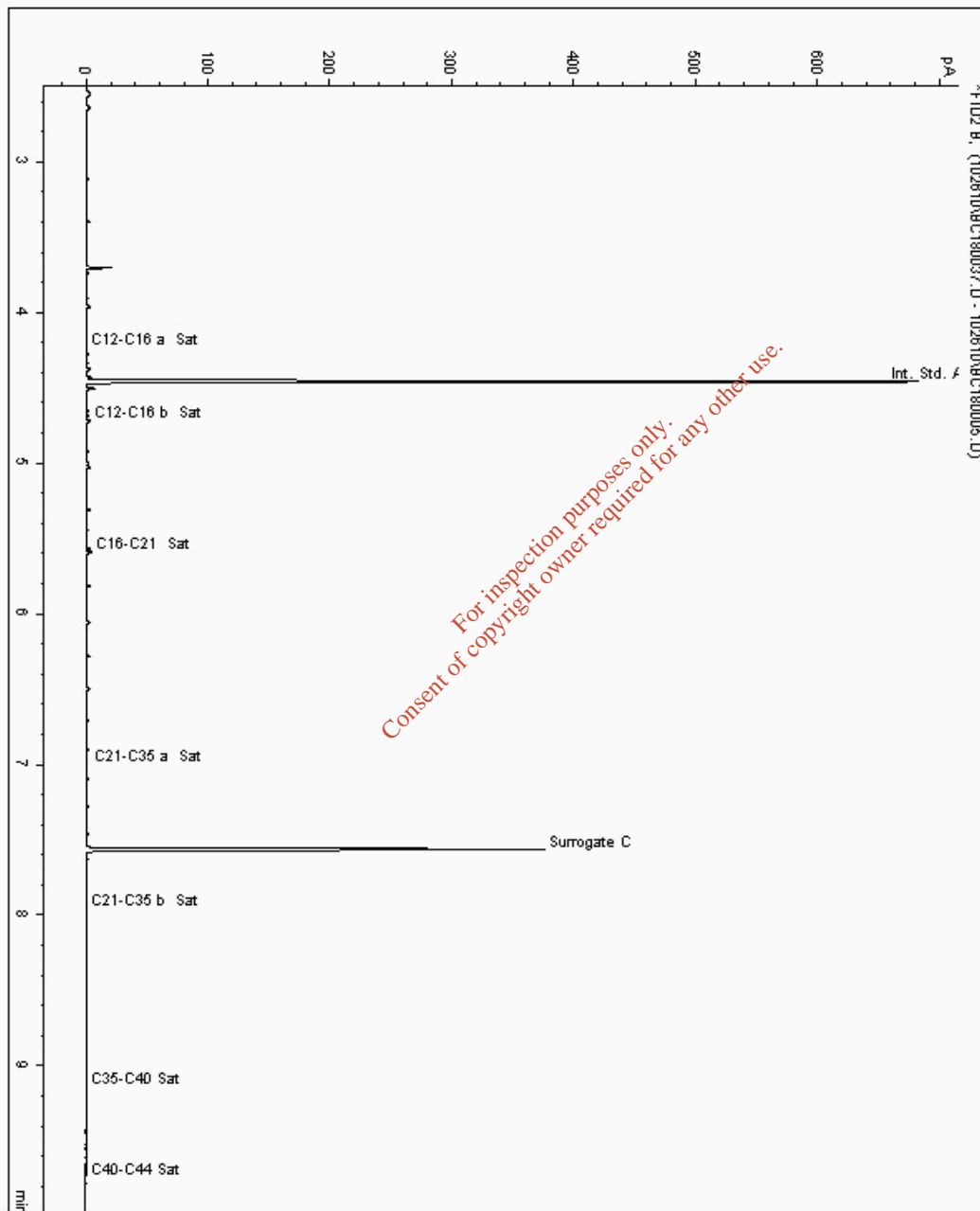
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2277134
Sample ID E8
Depth 2.00 - 5.00

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

Sample Identity: 2371912-2277134
Date Acquired : 27/10/10 04:33:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

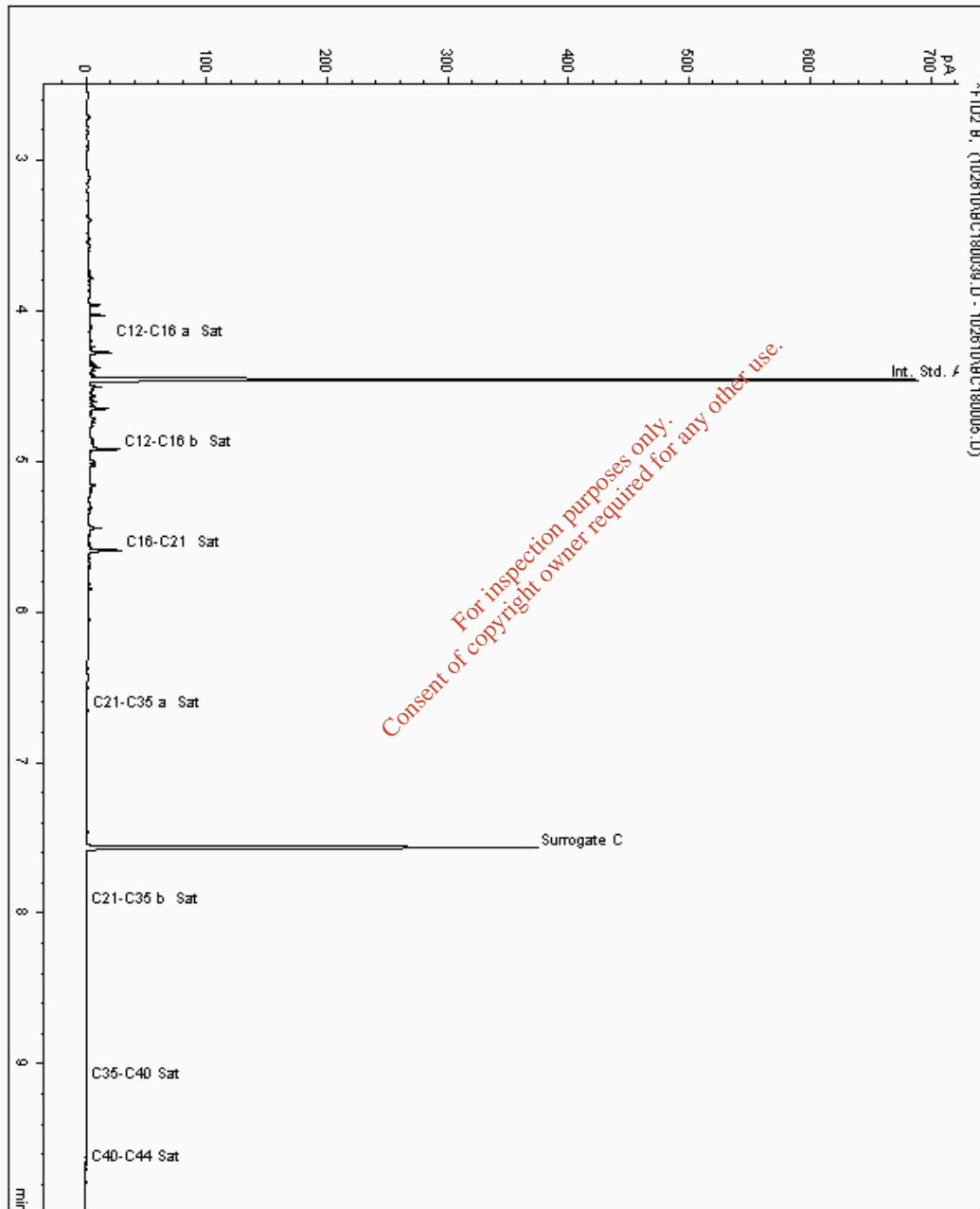
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2277639
Sample ID C11
Depth 1.50 - 2.50

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

Sample Identity: 2371927-2277639
Date Acquired : 27/10/10 05:05:35 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

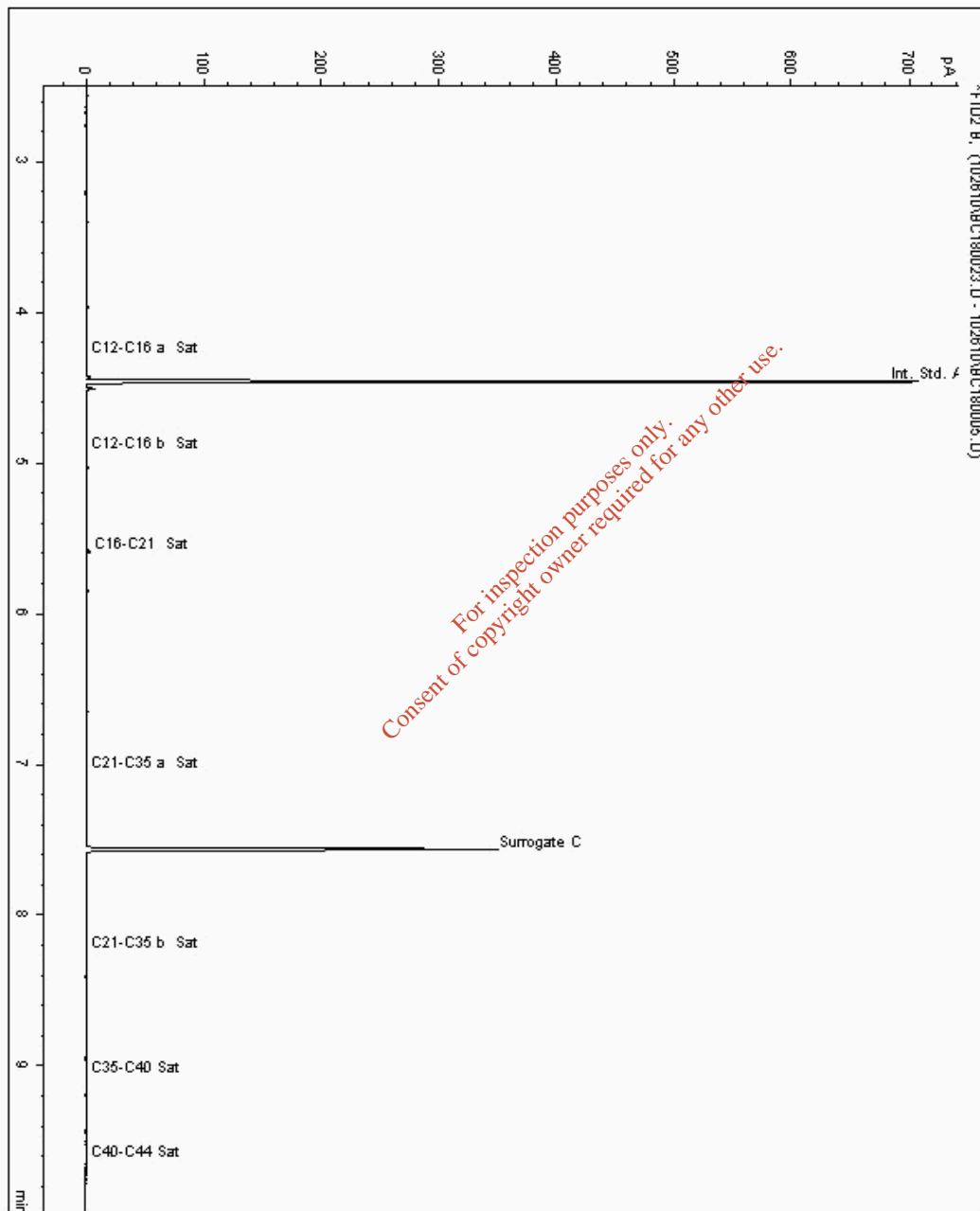
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2278045
Sample ID G5
Depth 3.00 - 6.00

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

Sample Identity: 2372051-2278045
Date Acquired : 27/10/10 00:43:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

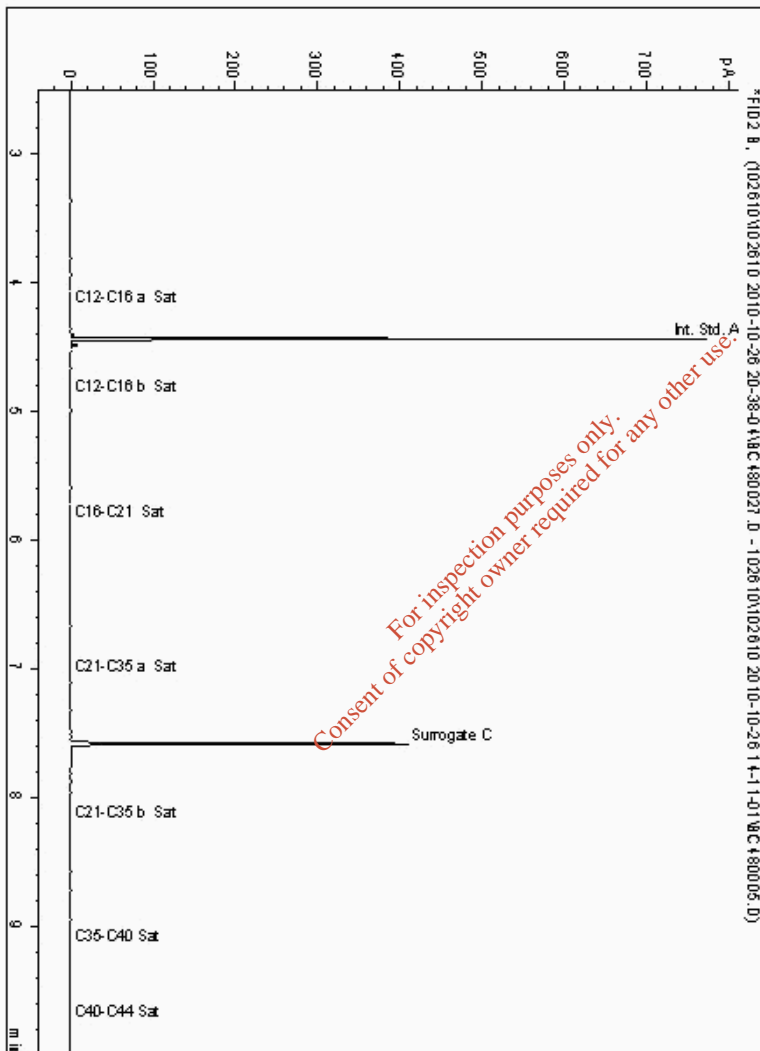
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2278087
Sample ID D1
Depth 3.00 - 4.00

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

Sample Identity: 2372036-2278087
Date Acquired : 27/10/10 02:20:13
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

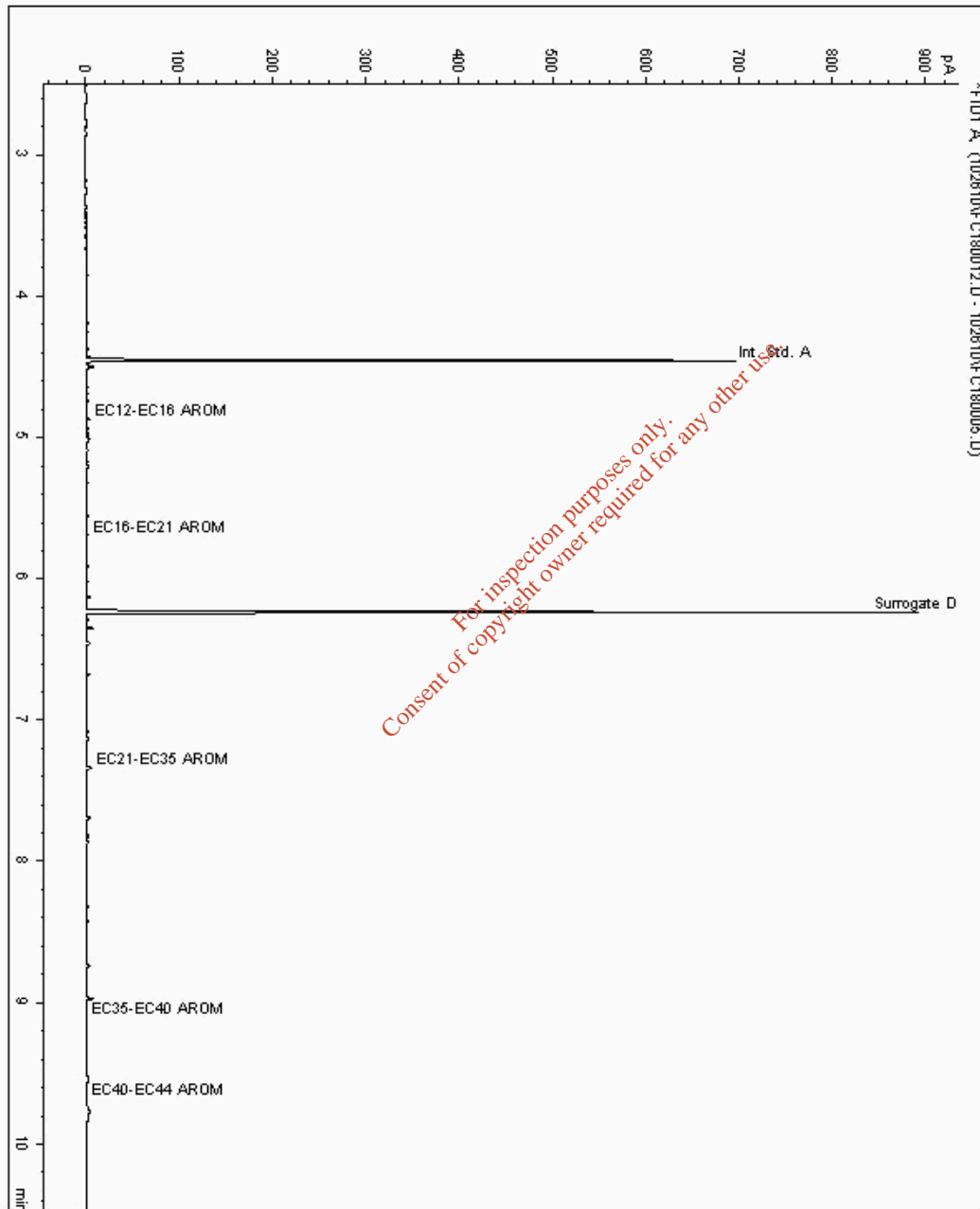
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2275998
Sample ID A11
Depth 1.50 - 2.50

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

Sample Identity: 2371977-2275998
Date Acquired : 26/10/10 21:38:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

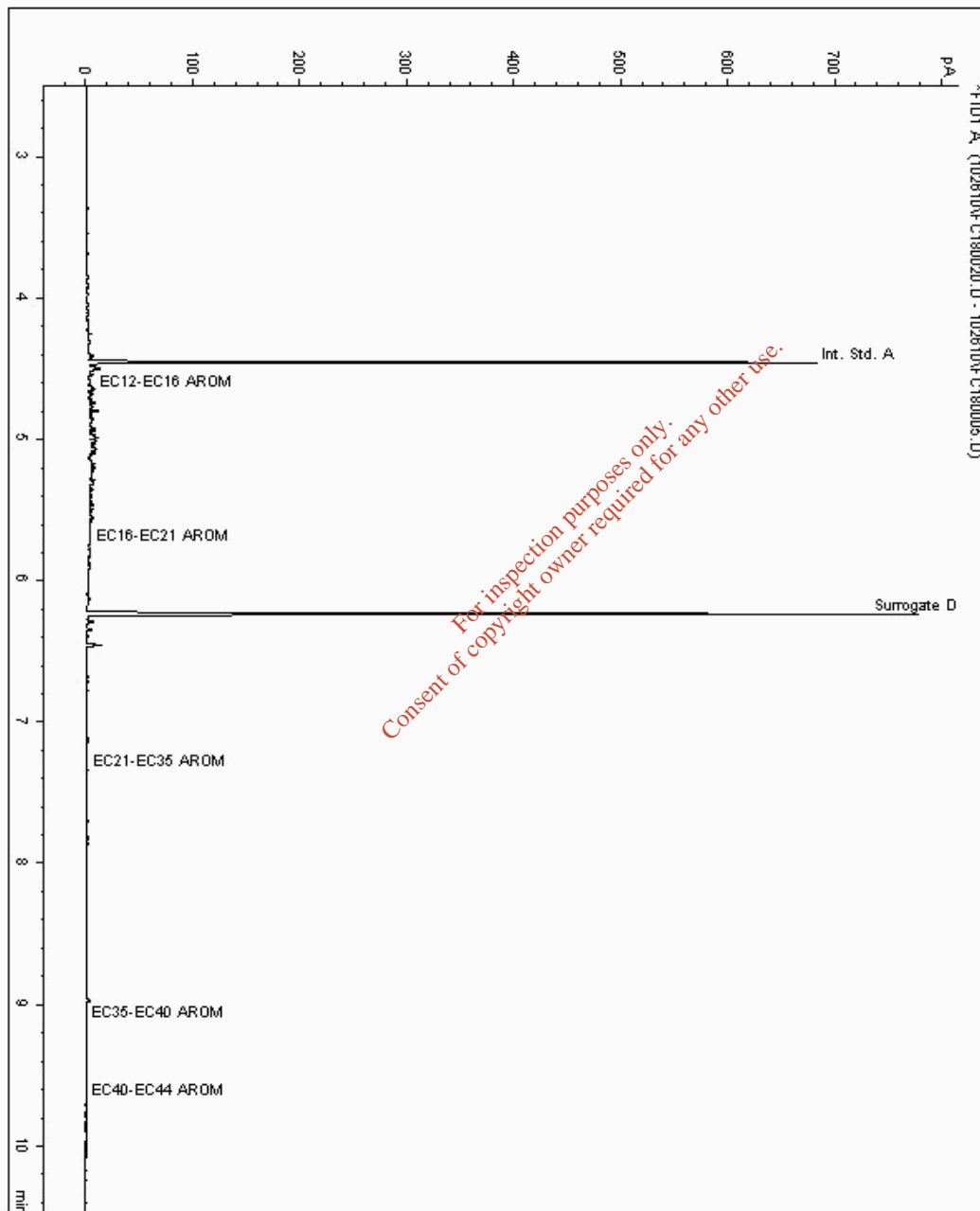
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276097
Sample ID A3
Depth 2.00 - 4.00

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

Sample Identity: 2371793-2276097
Date Acquired : 26/10/10 23:52:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

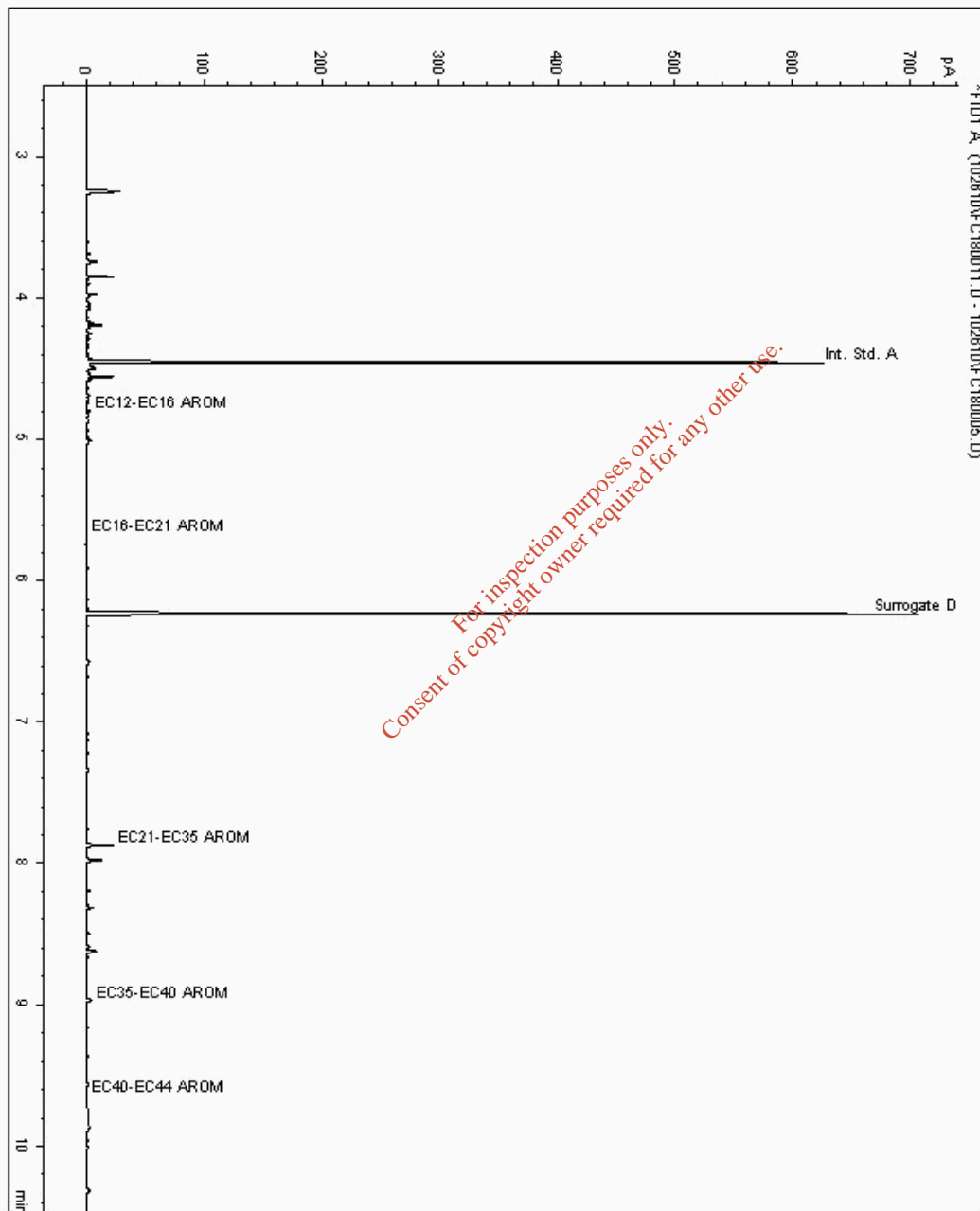
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276183
Sample ID F11
Depth 2.00 - 4.00

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

Sample Identity: 2371962-2276183
Date Acquired : 26/10/10 21:20:19 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

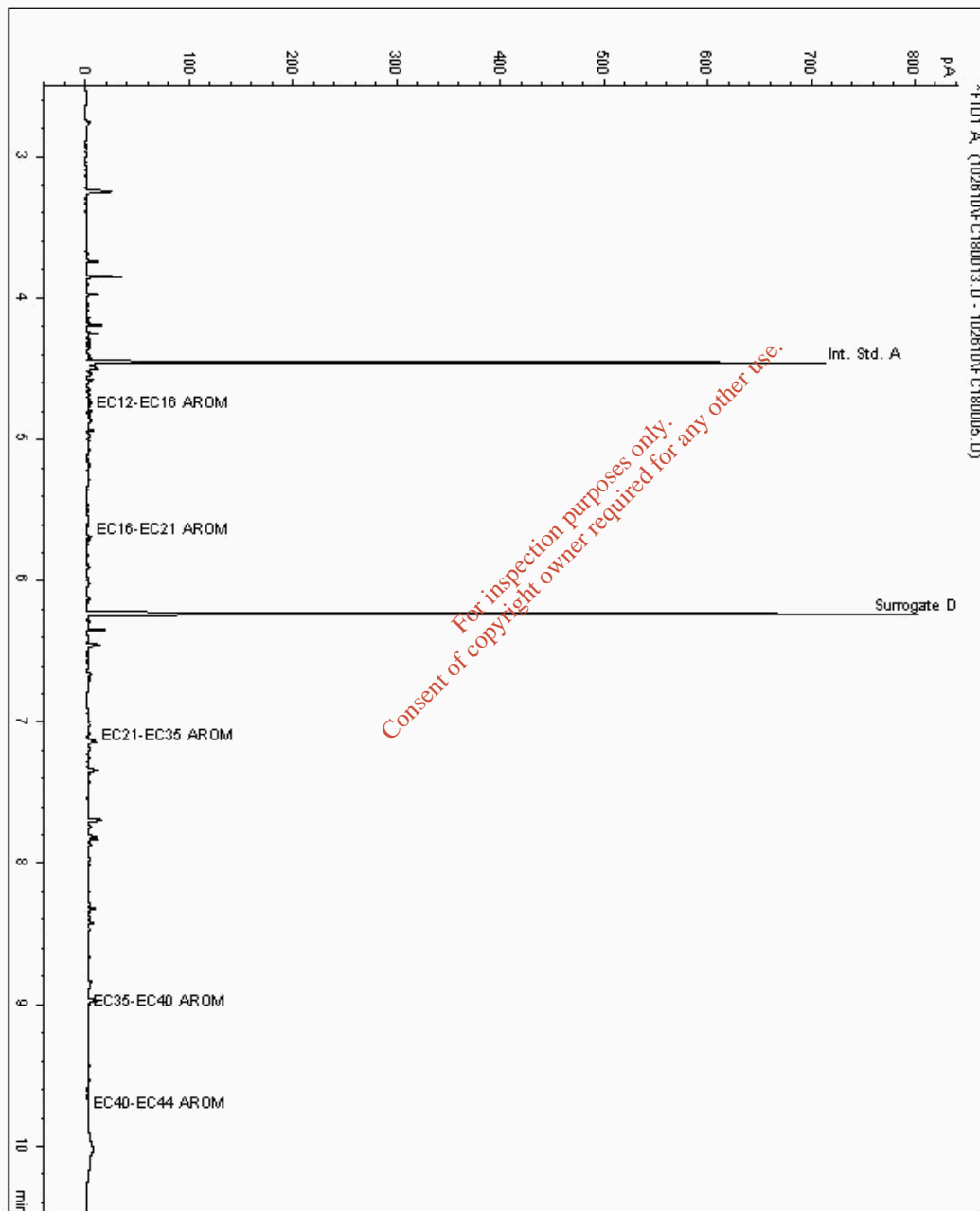
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276270
Sample ID G3
Depth 4.00 - 5.00

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

Sample Identity: 2372007-2276270
Date Acquired : 26/10/10 21:57:51 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

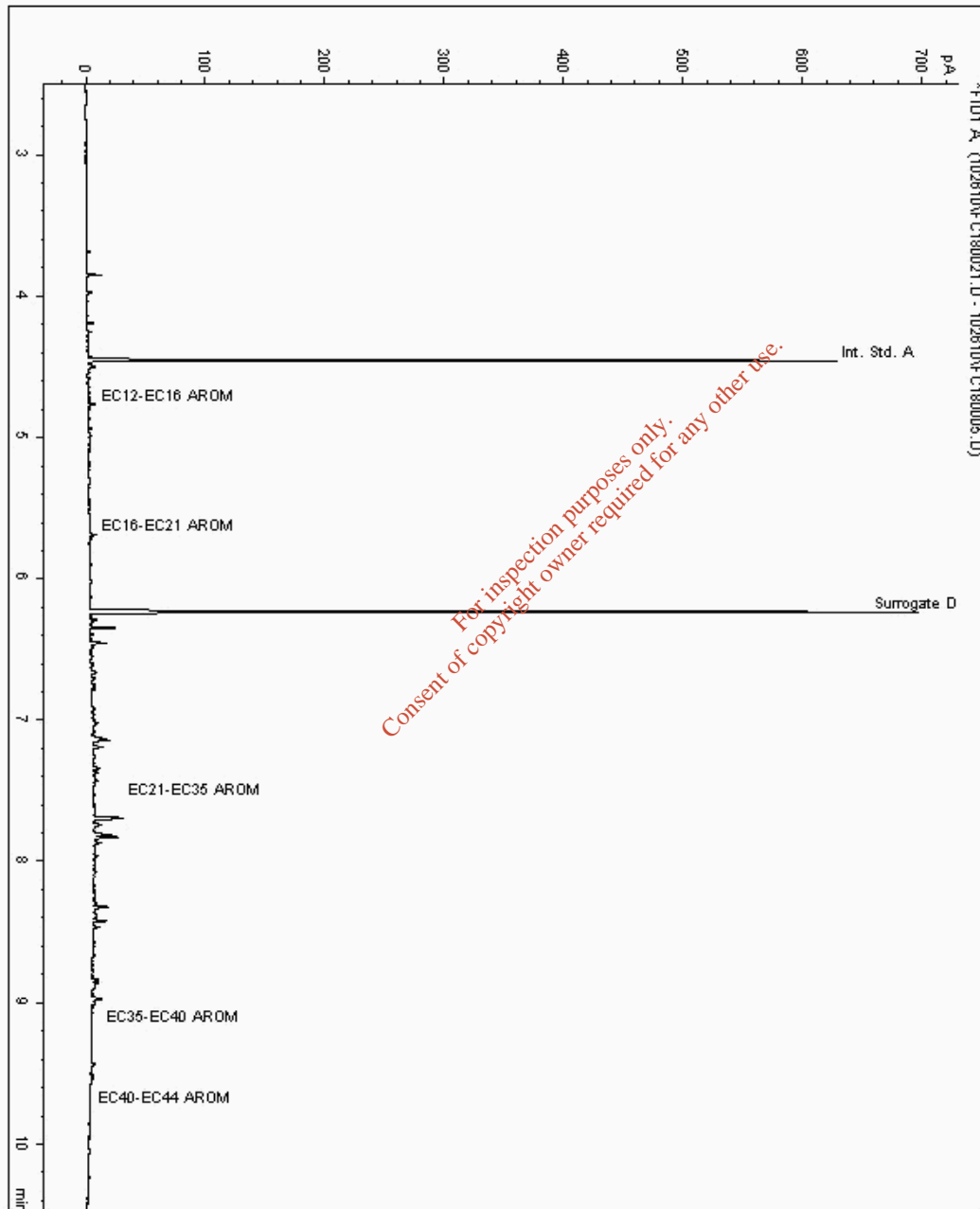
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276326
Sample ID D5
Depth 2.00 - 3.00

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

Sample Identity: 2371775-2276326
Date Acquired : 27/10/10 00:11:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

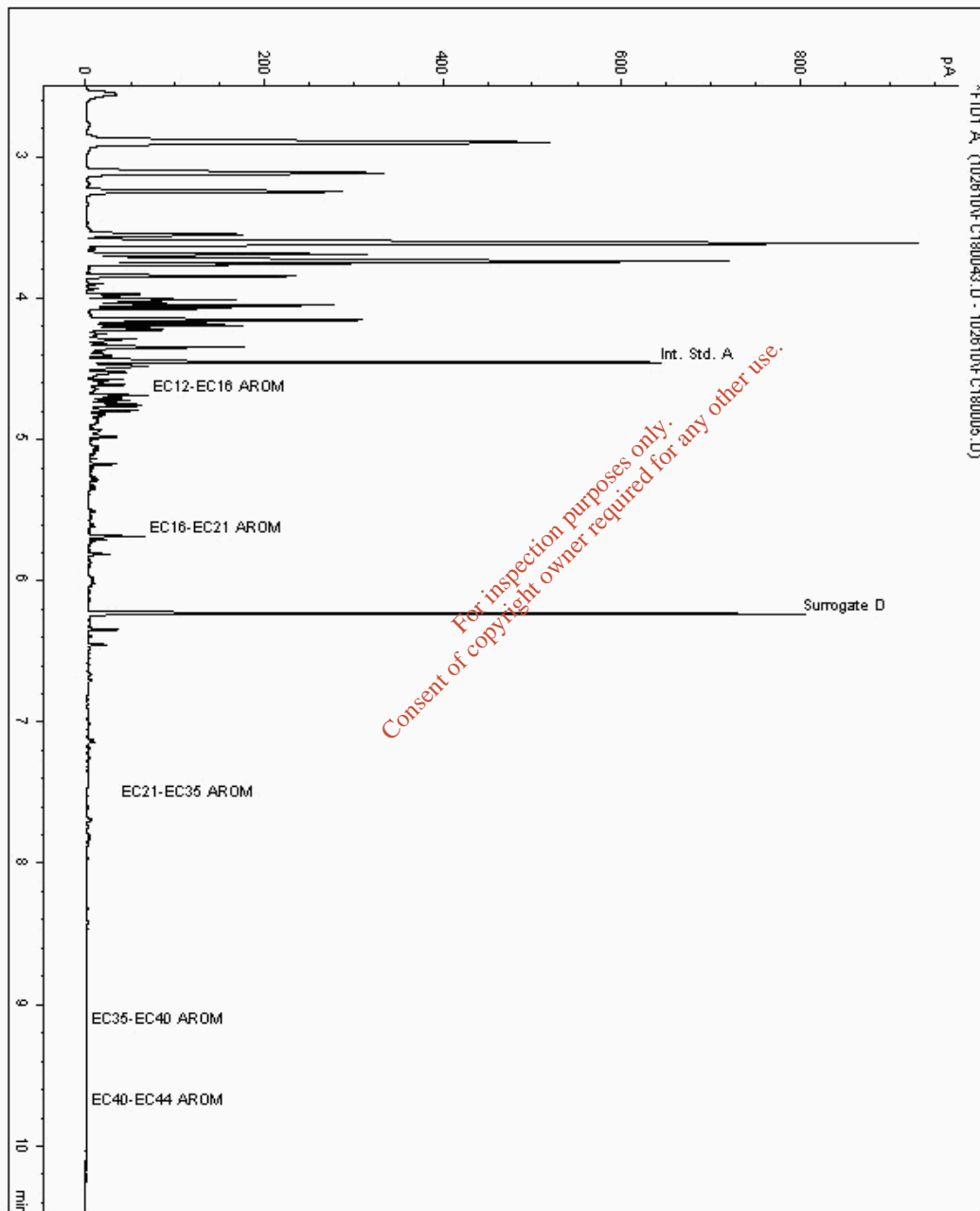
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276388
Sample ID K5
Depth 1.00 - 2.00

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

Sample Identity: 2371838-2276388
Date Acquired : 27/10/10 10:10:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.208



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

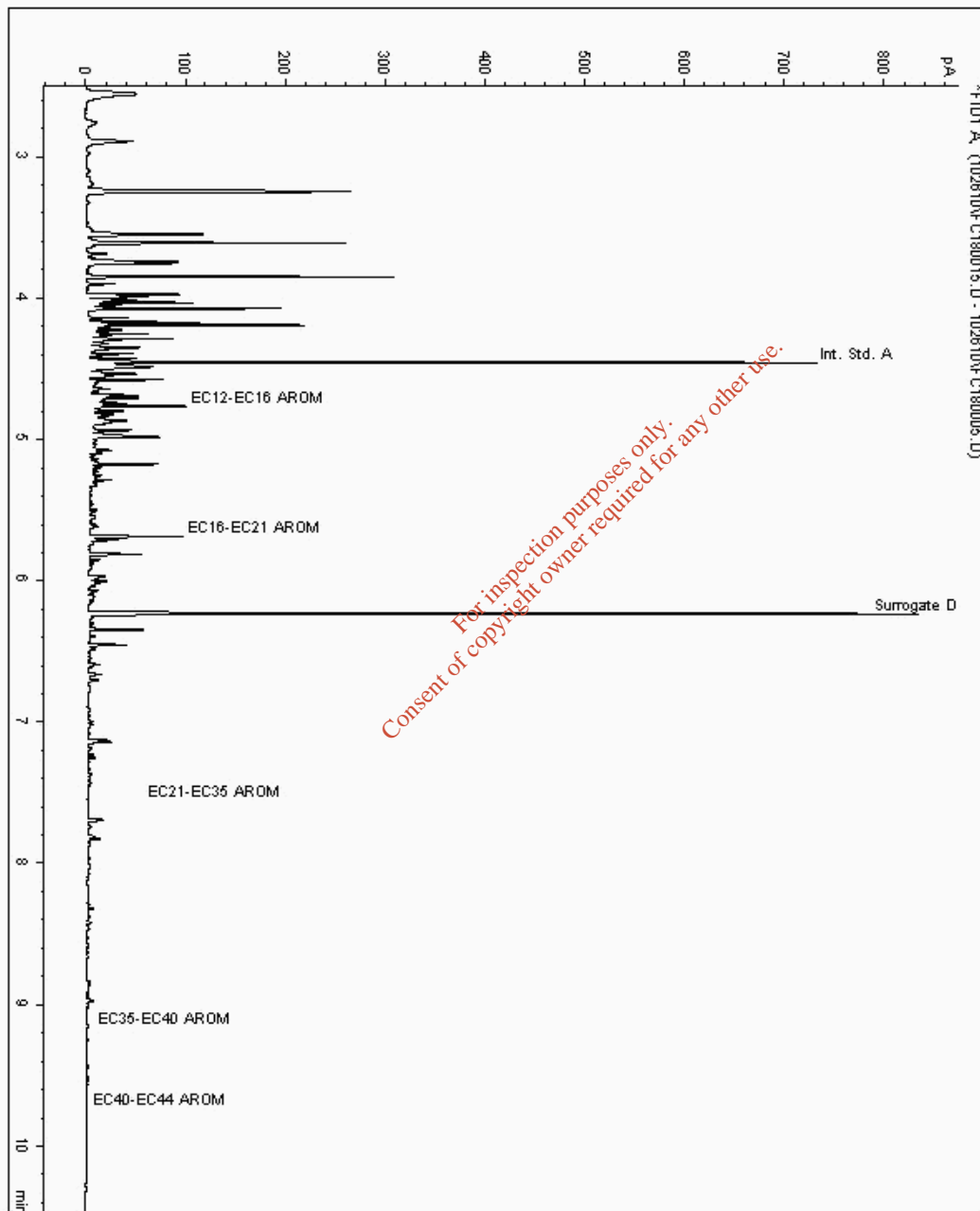
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276390
Sample ID G8
Depth 1.00 - 2.00

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

Sample Identity: 2371945-2276390
Date Acquired : 26/10/10 22:29:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

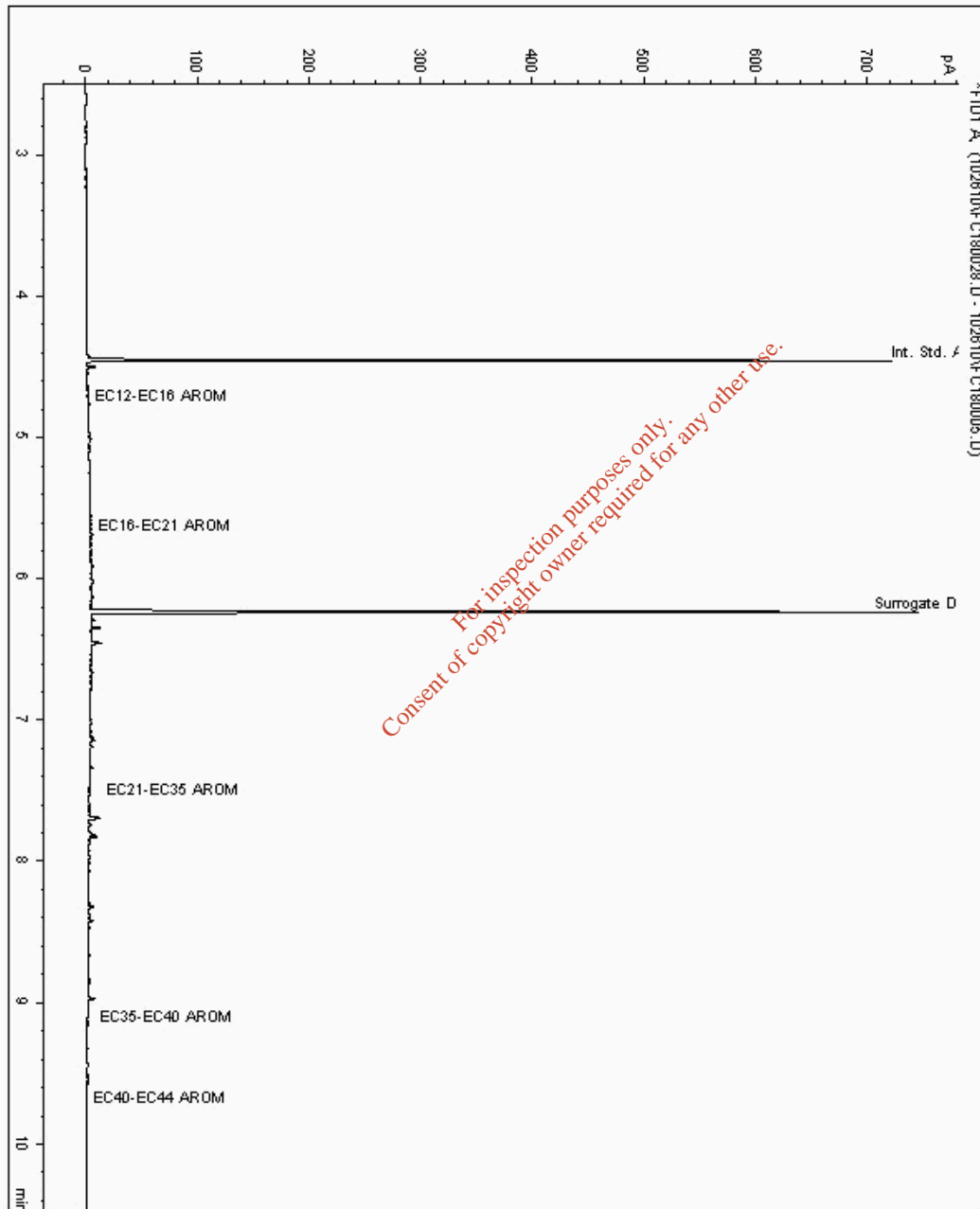
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276440
Sample ID A4
Depth 2.00 - 4.00

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

Sample Identity: 2371808-2276440
Date Acquired : 27/10/10 02:00:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

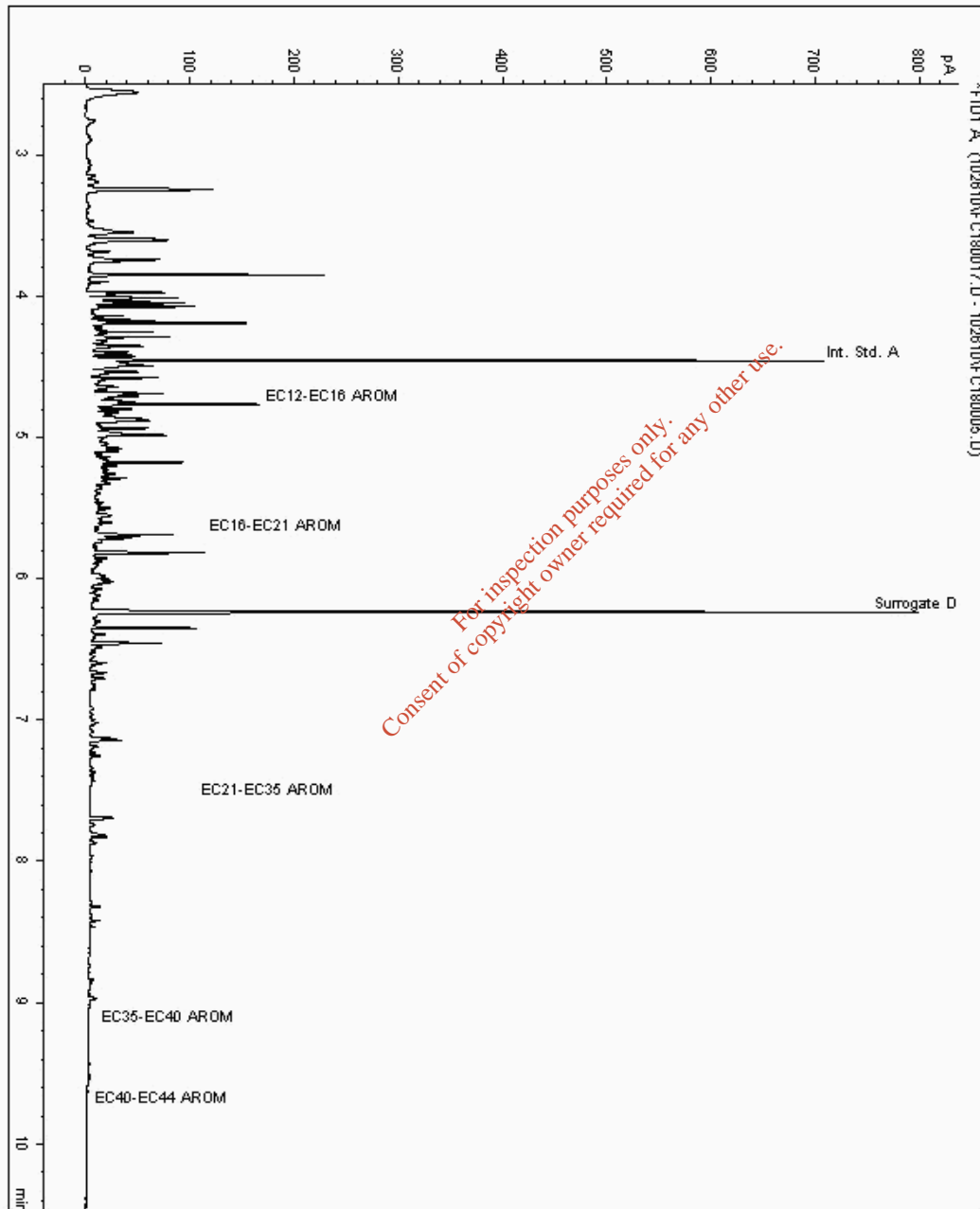
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276451
Sample ID G4
Depth 3.00 - 3.50

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

Sample Identitv: 2371992-2276451
Date Acquired : 26/10/10 23:01:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

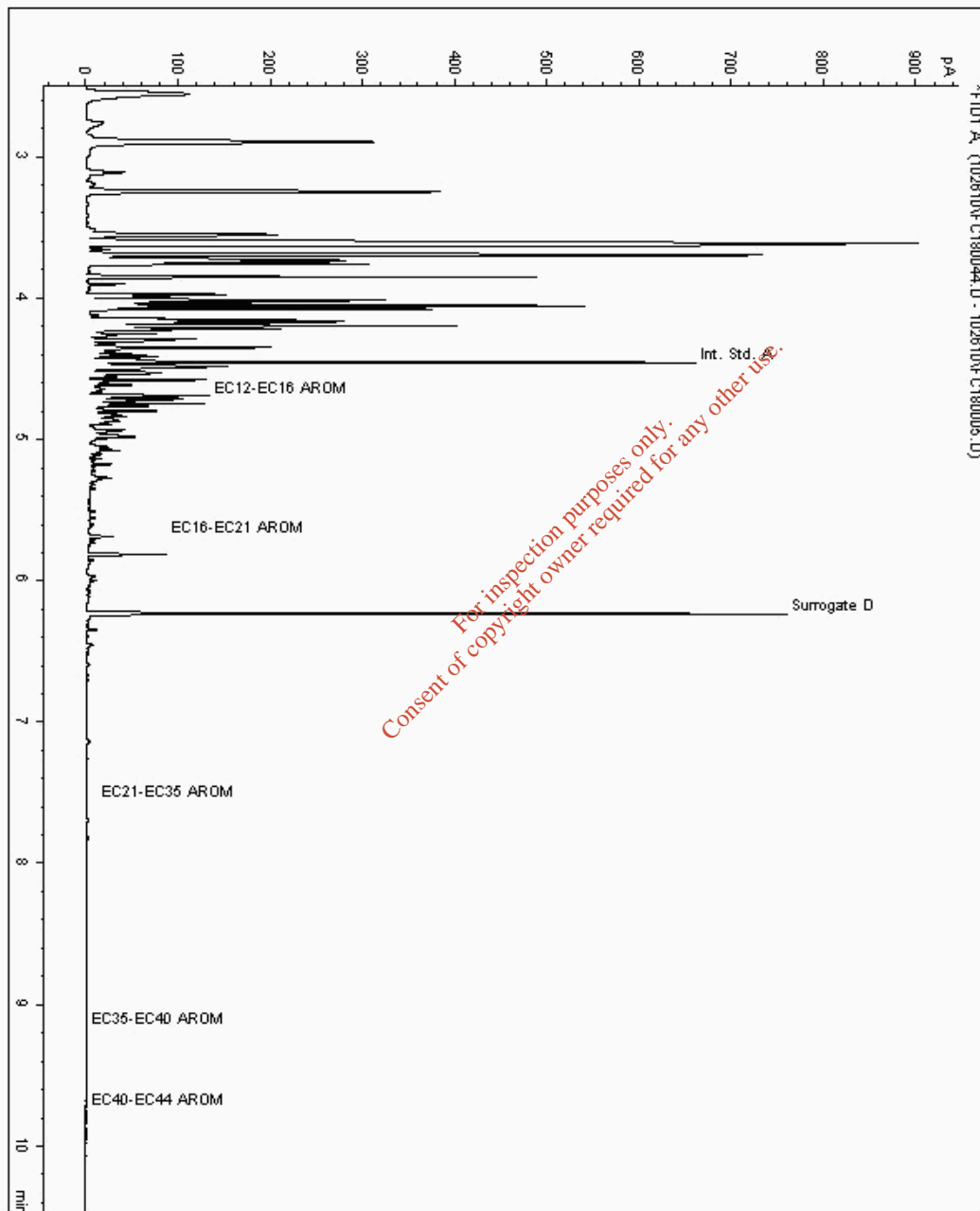
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276479
Sample ID C7
Depth 3.00 - 6.00

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

Sample Identity: 2371823-2276479
Date Acquired : 27/10/10 10:29:11 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.042



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

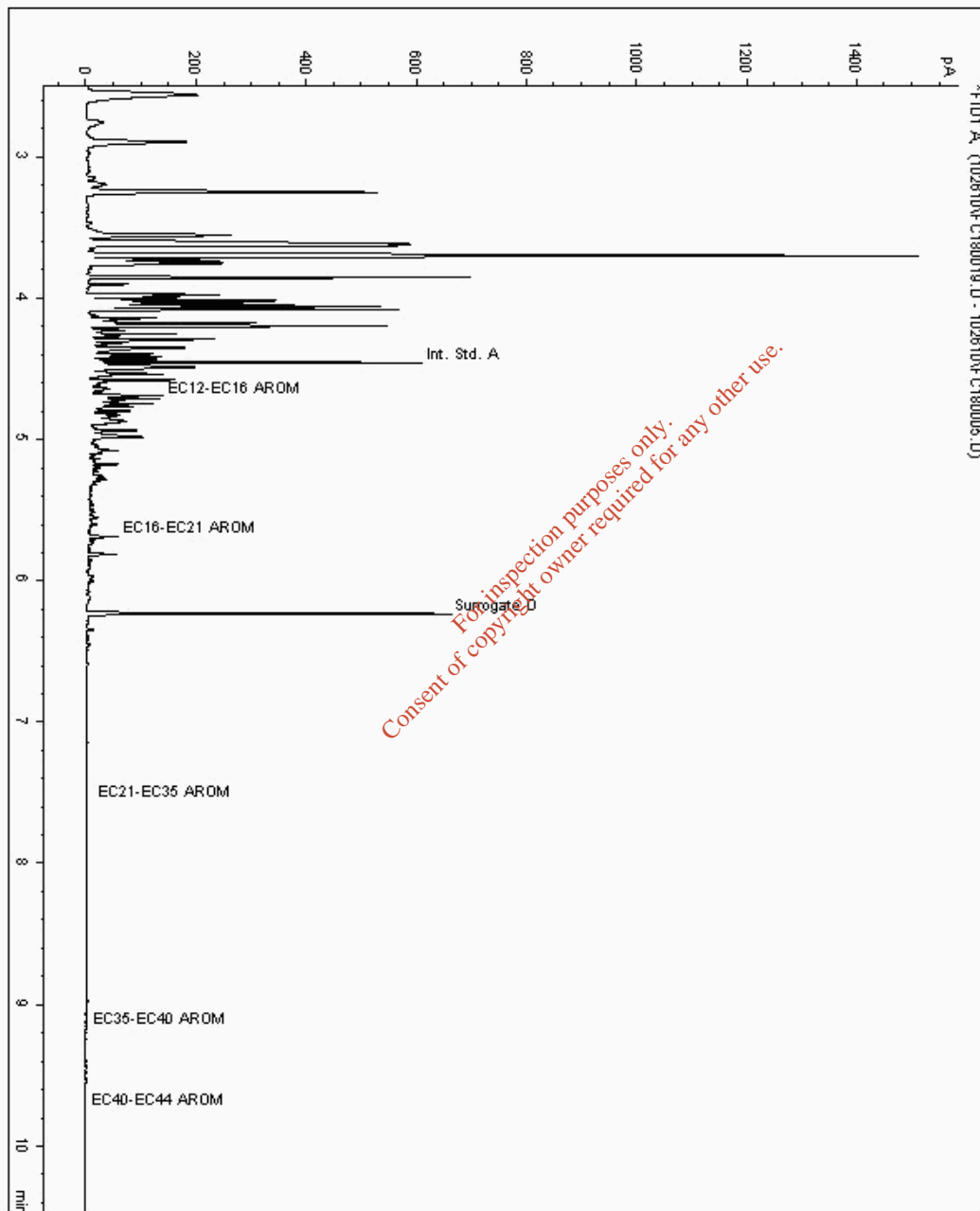
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276518
Sample ID G2
Depth 4.00 - 7.00

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

Sample Identity: 2372022-2276518
Date Acquired : 26/10/10 23:33:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

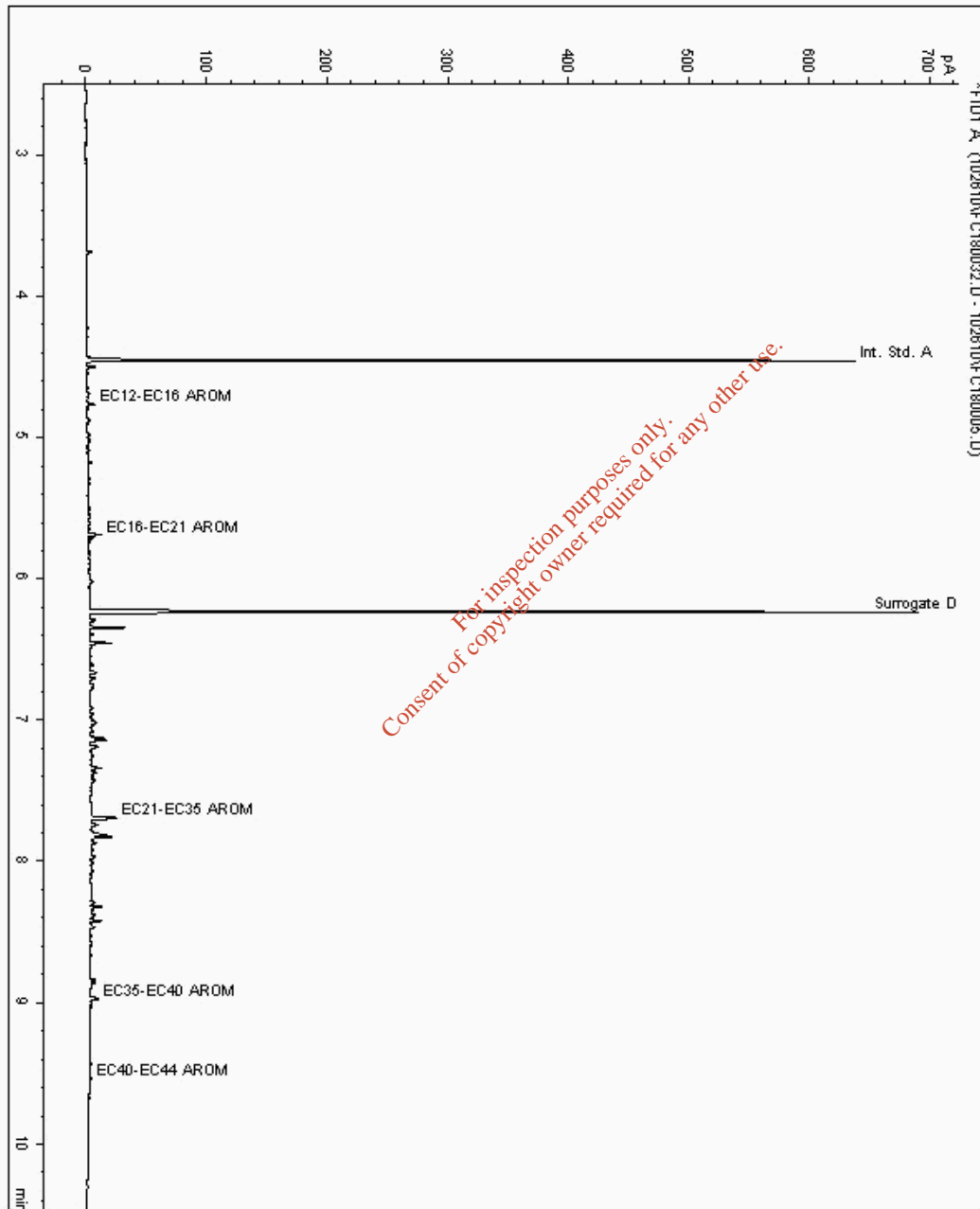
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276670
Sample ID H12
Depth 1.50 - 4.00

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

Sample Identity: 2371883-2276670
Date Acquired : 27/10/10 03:04:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

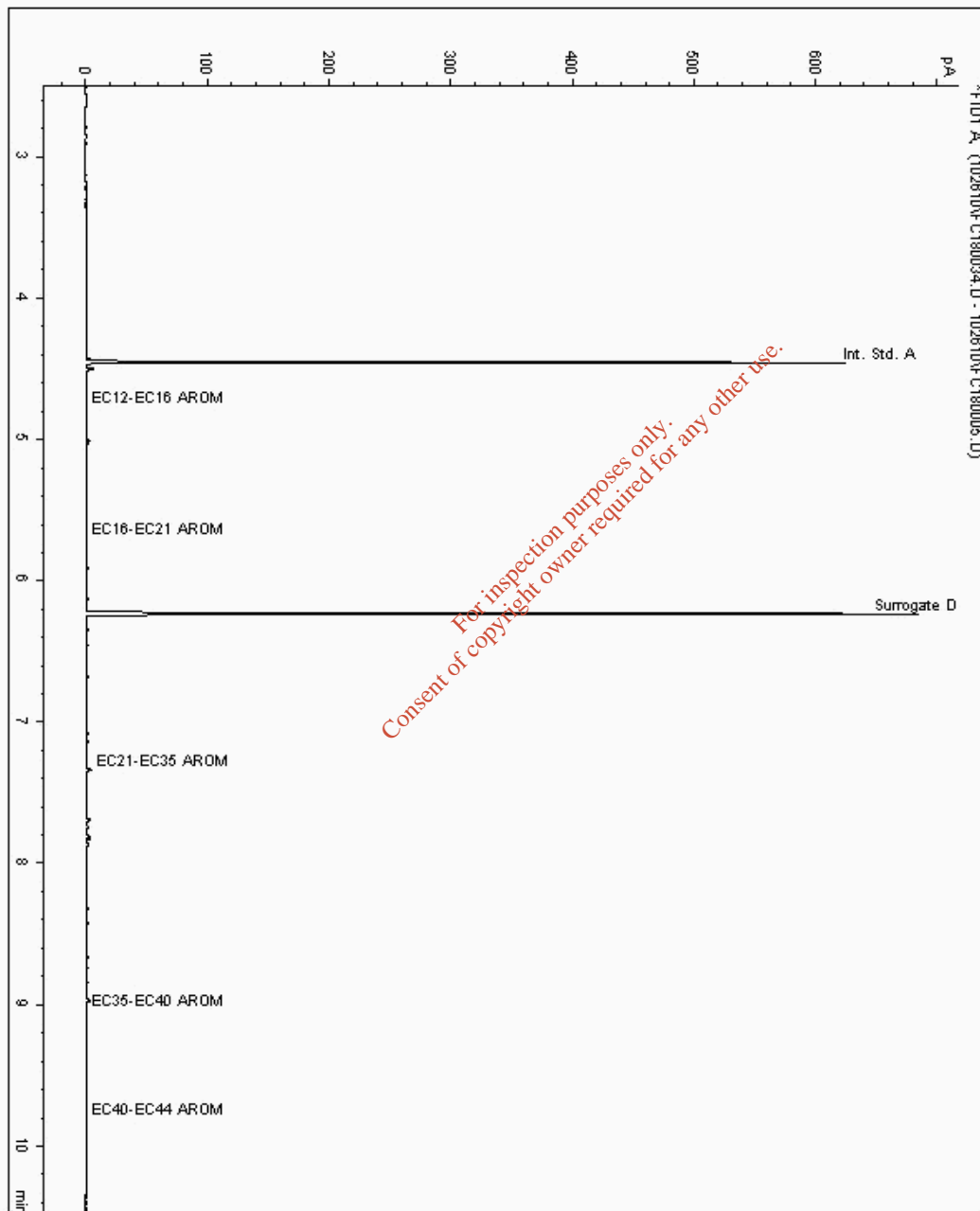
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276894
Sample ID J10
Depth 1.00 - 1.30

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

Sample Identity: 2371853-2276894
Date Acquired : 27/10/10 03:36:54 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

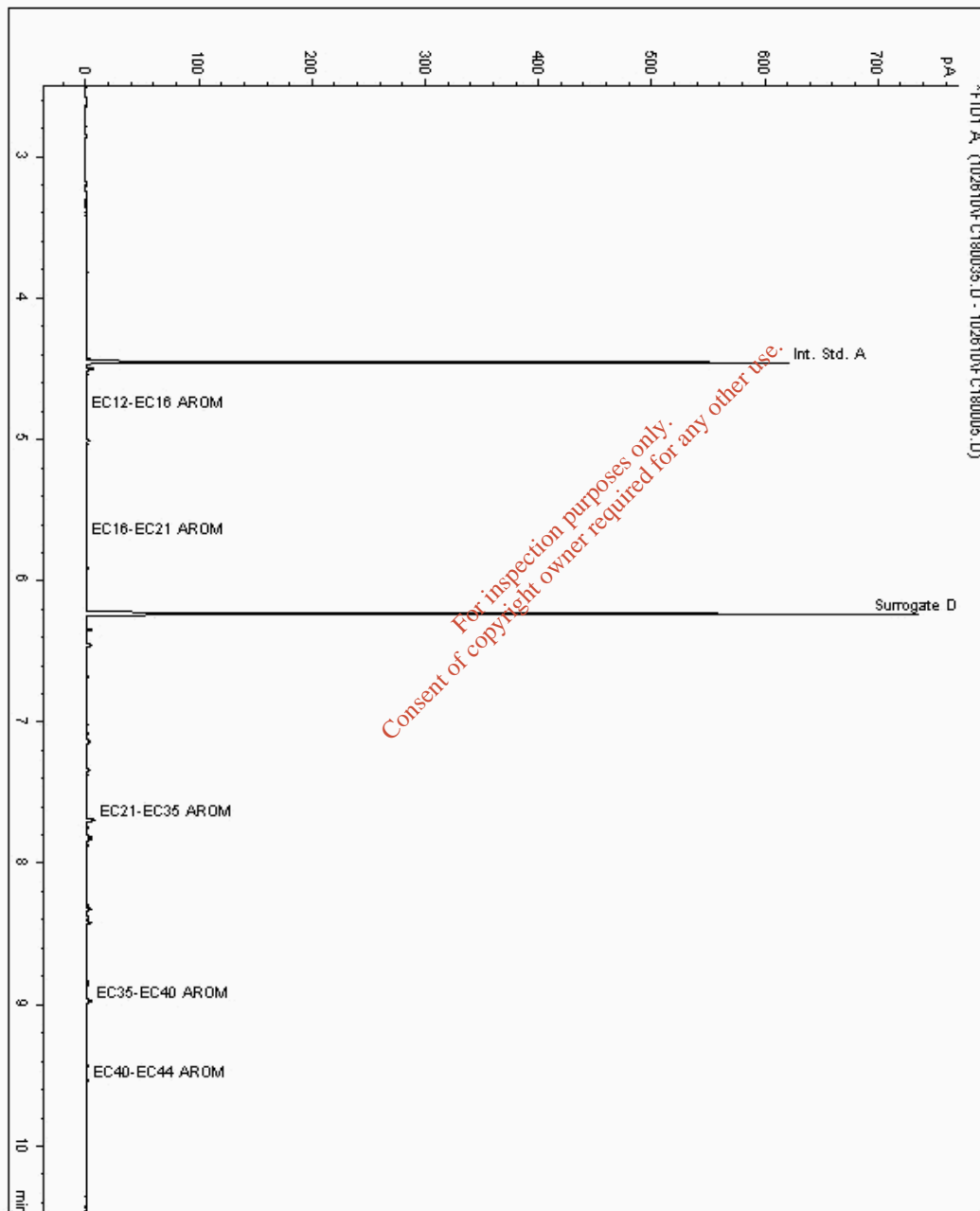
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2276951
Sample ID M3
Depth 3.50 - 5.50

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

Sample Identity: 2371898-2276951
Date Acquired : 27/10/10 03:55:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

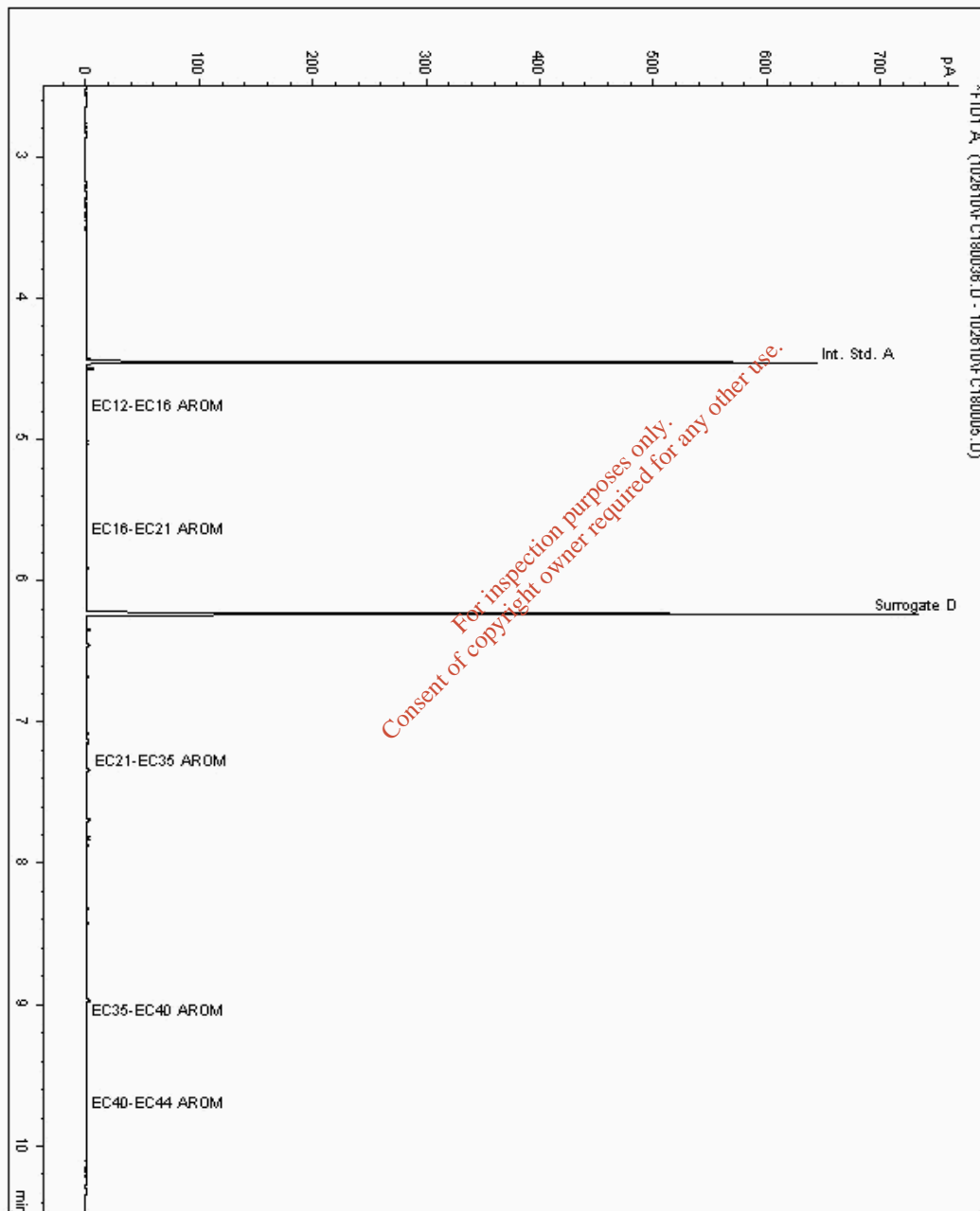
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2277026
Sample ID K1
Depth 3.00 - 4.00

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

Sample Identity: 2371868-2277026
Date Acquired : 27/10/10 04:14:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

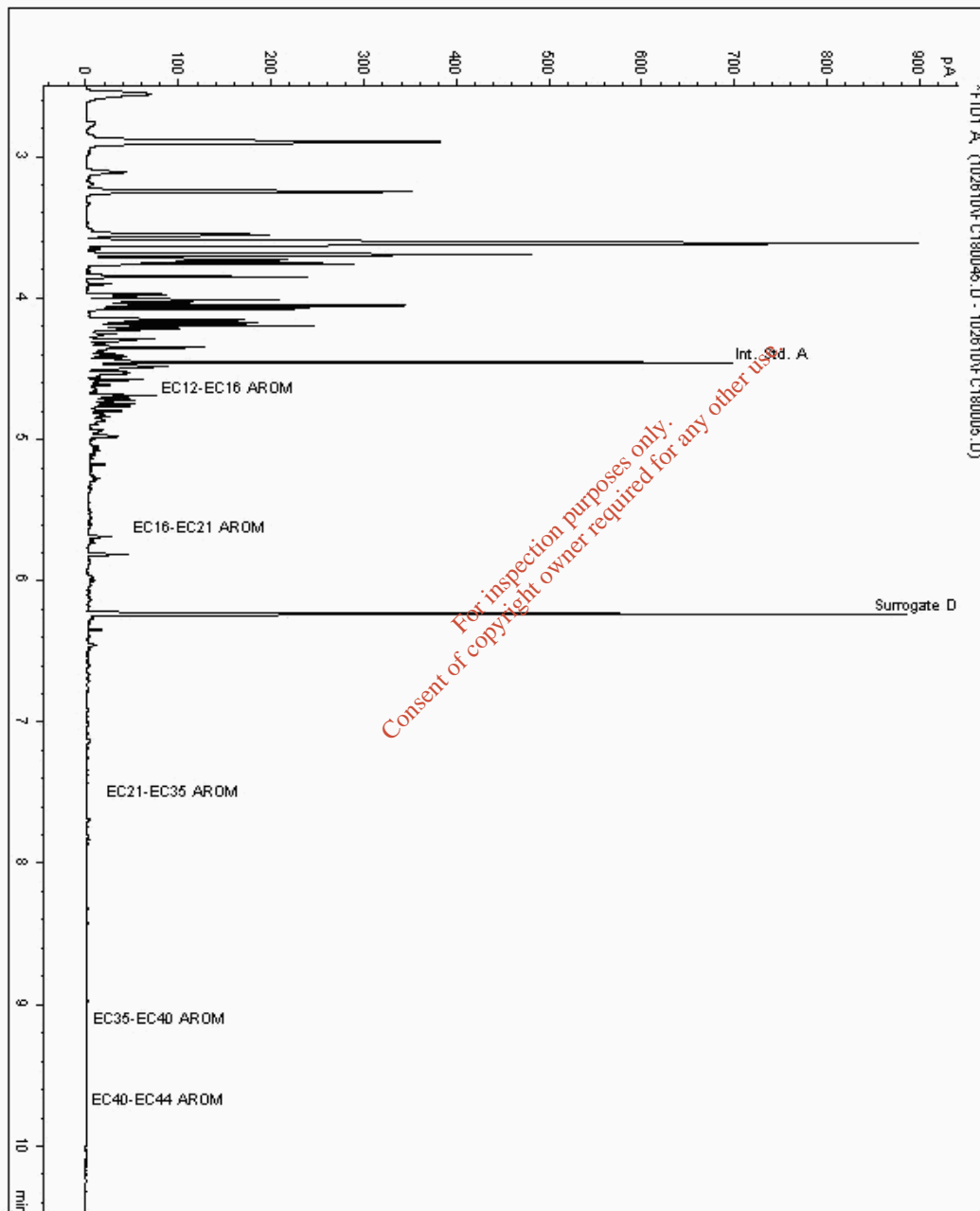
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

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

Sample No 2277134
Sample ID E8
Depth 2.00 - 5.00

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

Sample Identiv: 2371913-2277134
Date Acquired : 27/10/10 10:47:51 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.042



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

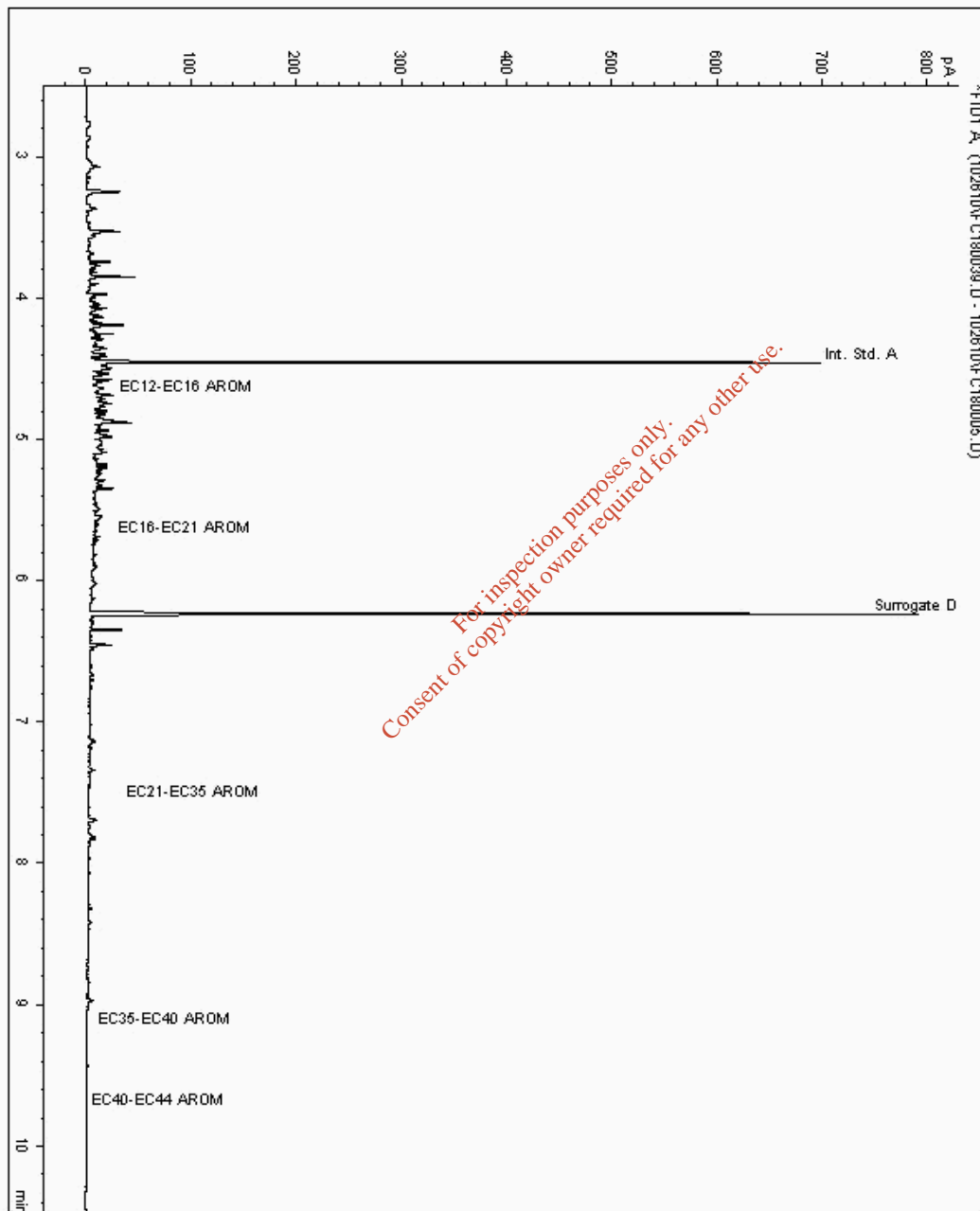
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2277639
Sample ID C11
Depth 1.50 - 2.50

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

Sample Identity: 2371928-2277639
Date Acquired : 27/10/10 05:05:35 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

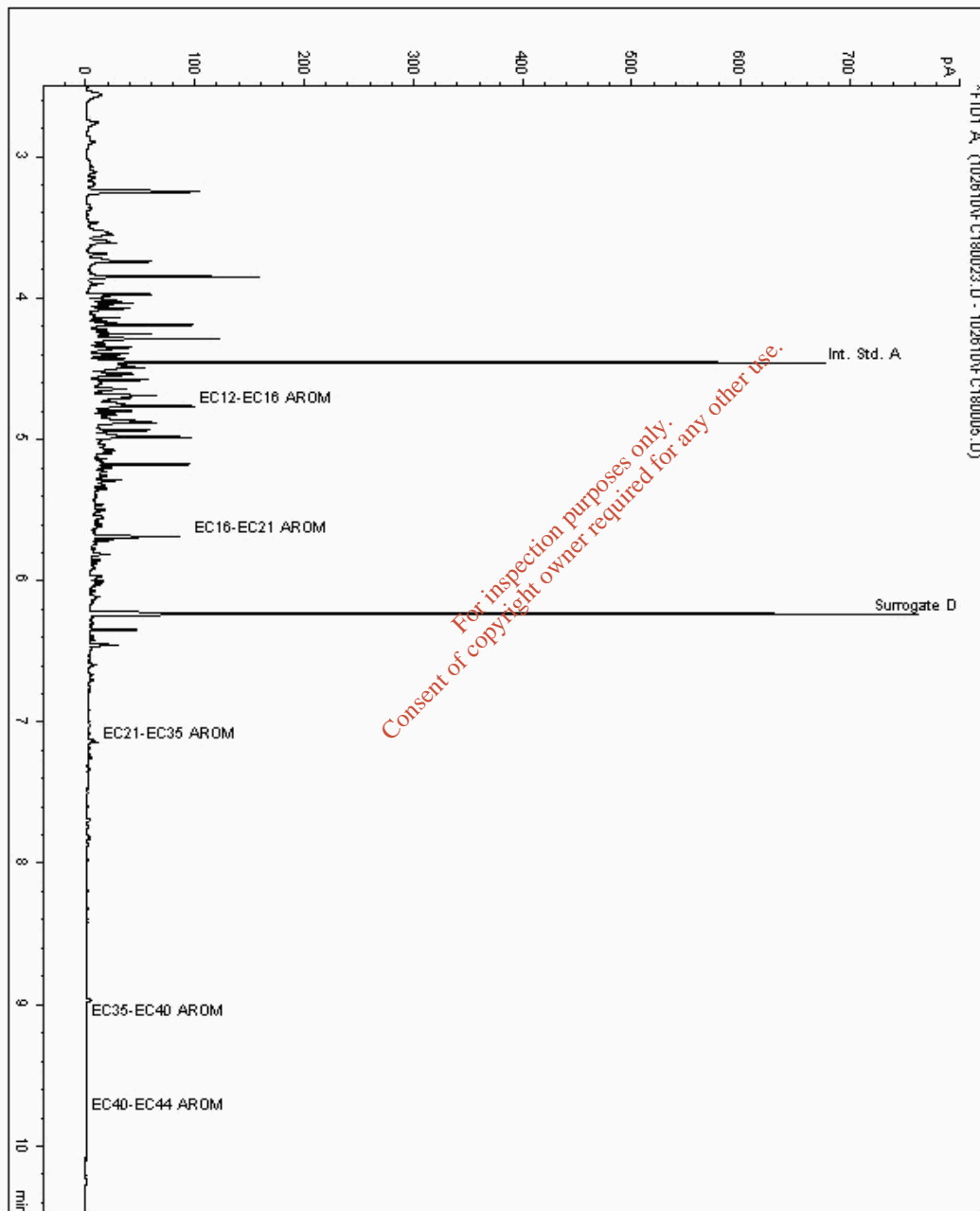
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2278045
Sample ID G5
Depth 3.00 - 6.00

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

Sample Identity: 2372052-2278045
Date Acquired : 27/10/10 00:43:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

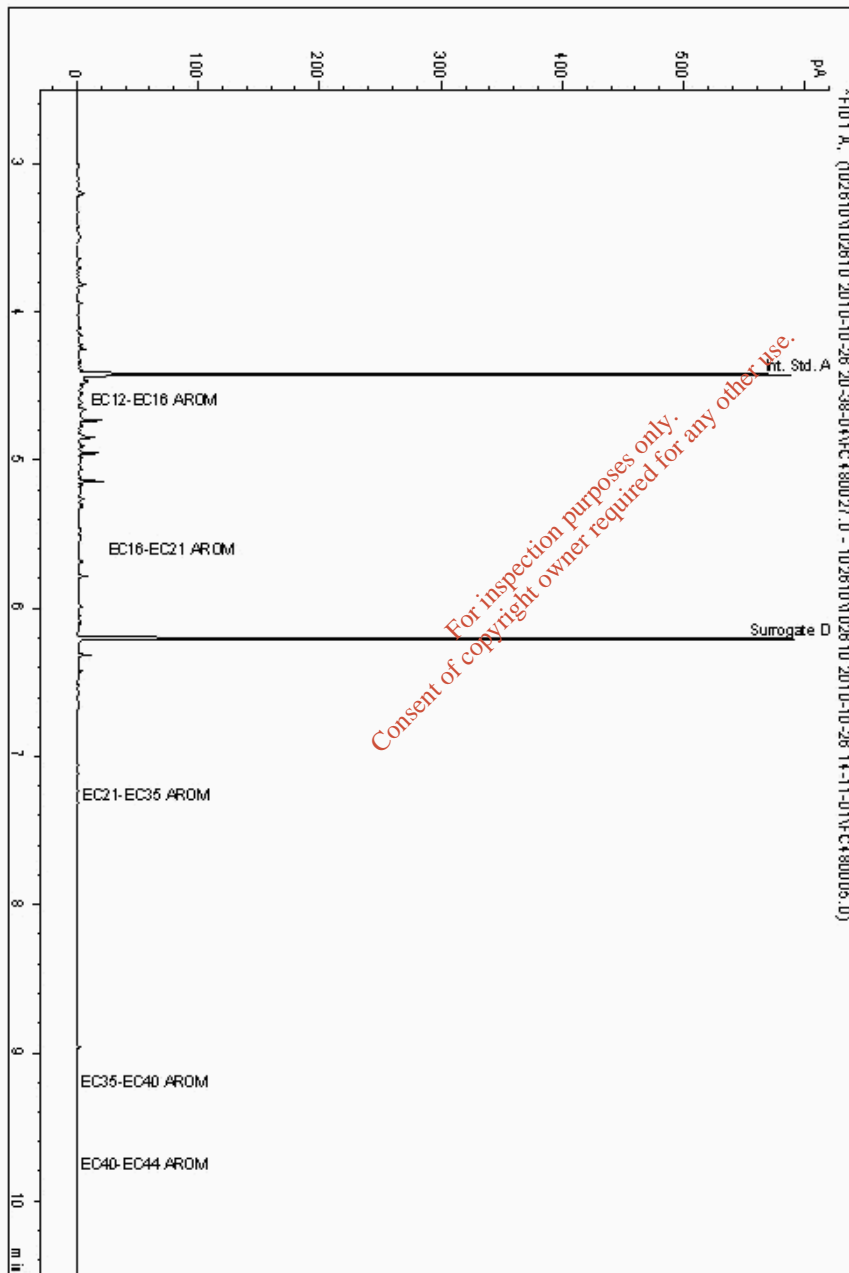
Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

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

Sample No 2278087
Sample ID D1
Depth 3.00 - 4.00

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

Sample Identity: 2372037-2278087
Date Acquired : 27/10/10 02:20:13
Units :
Dilution :
CF : 1
Multiplier : 0.008



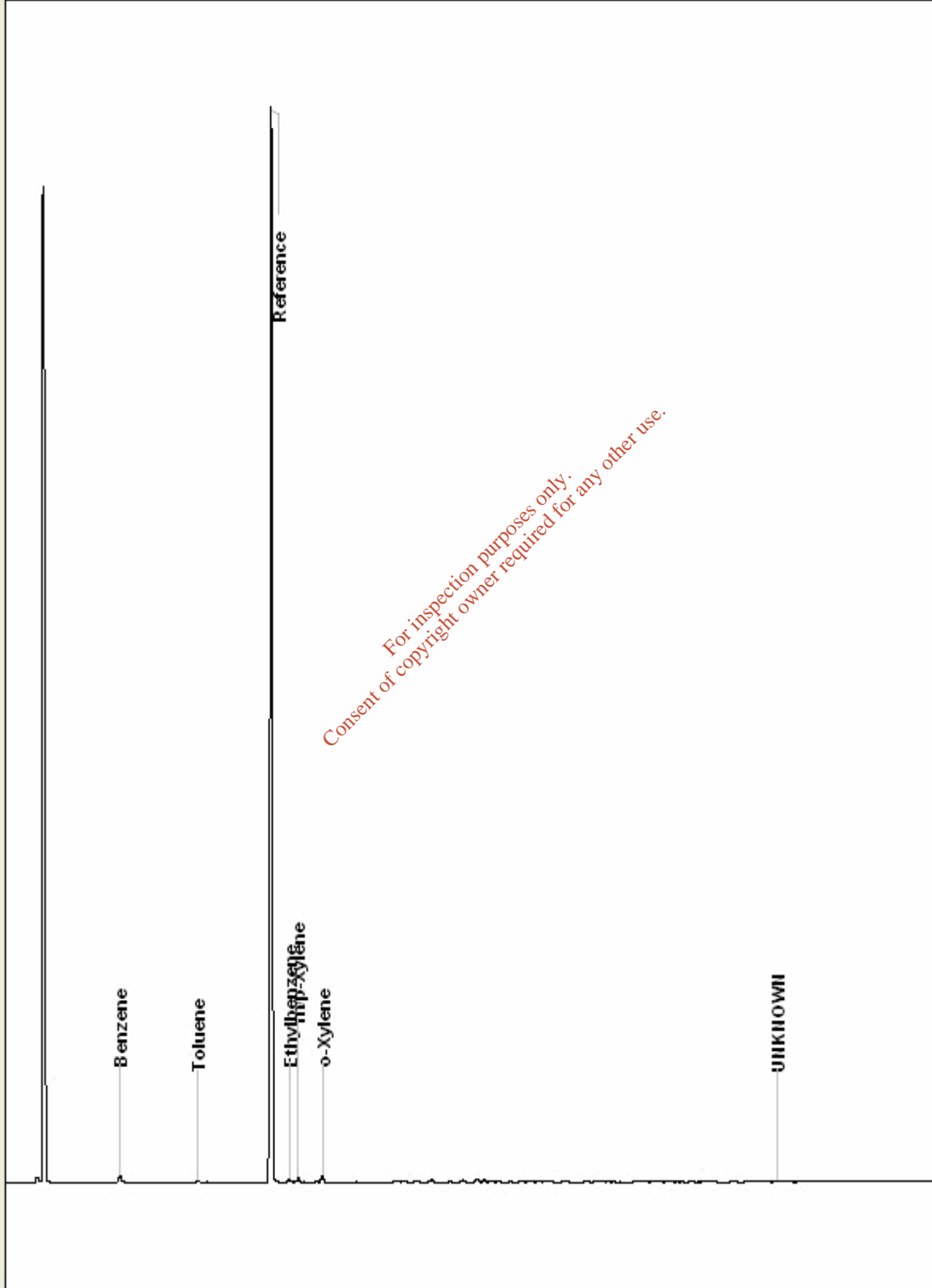
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271006
Sample ID D5
Depth 2.00 - 3.00

2271006_GRO_W.DATA - Chem 63 FID



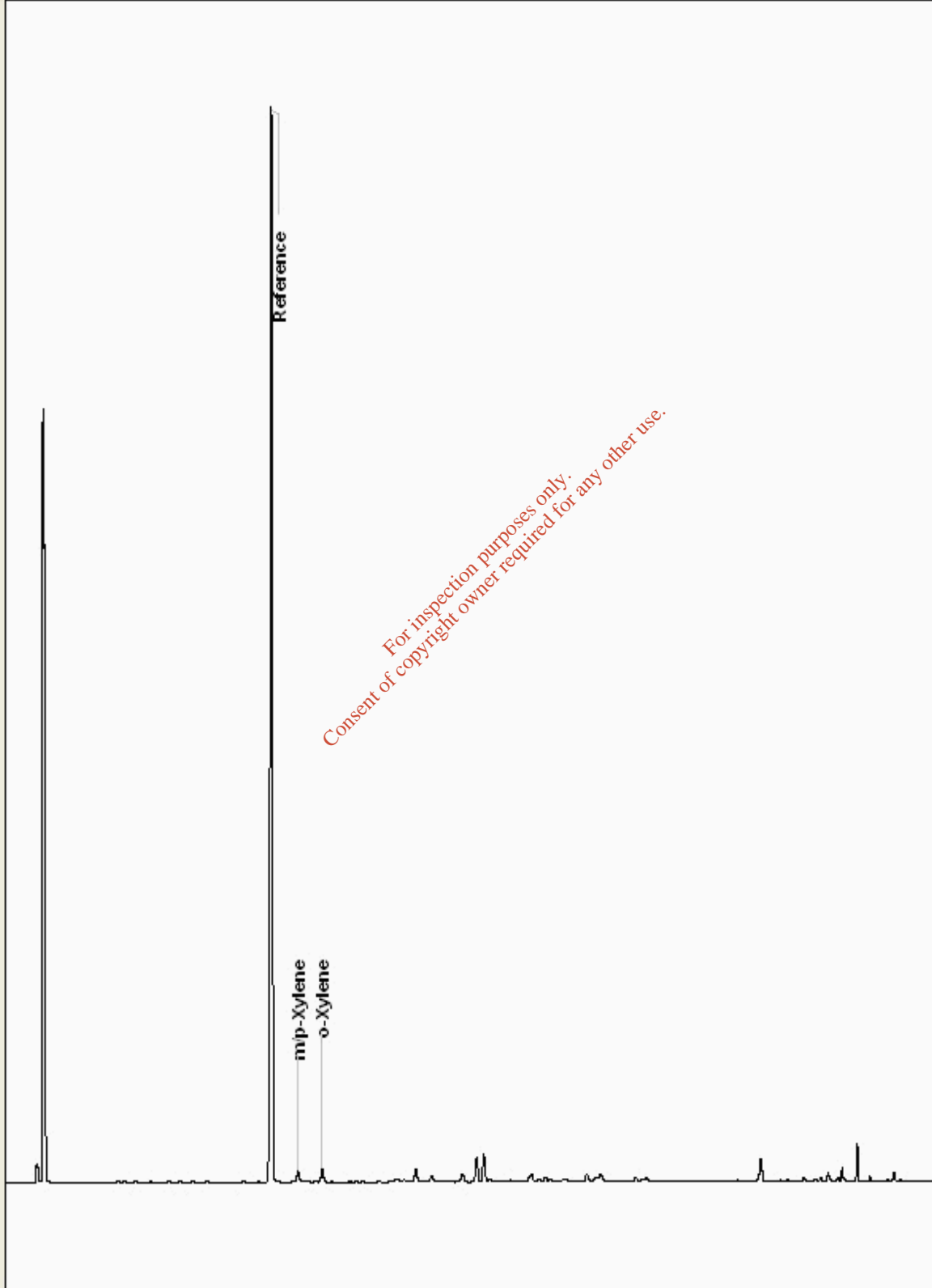
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271026
Sample ID A3
Depth 2.00 - 4.00

2271026_GRO_W.DATA - Chem 63 FID



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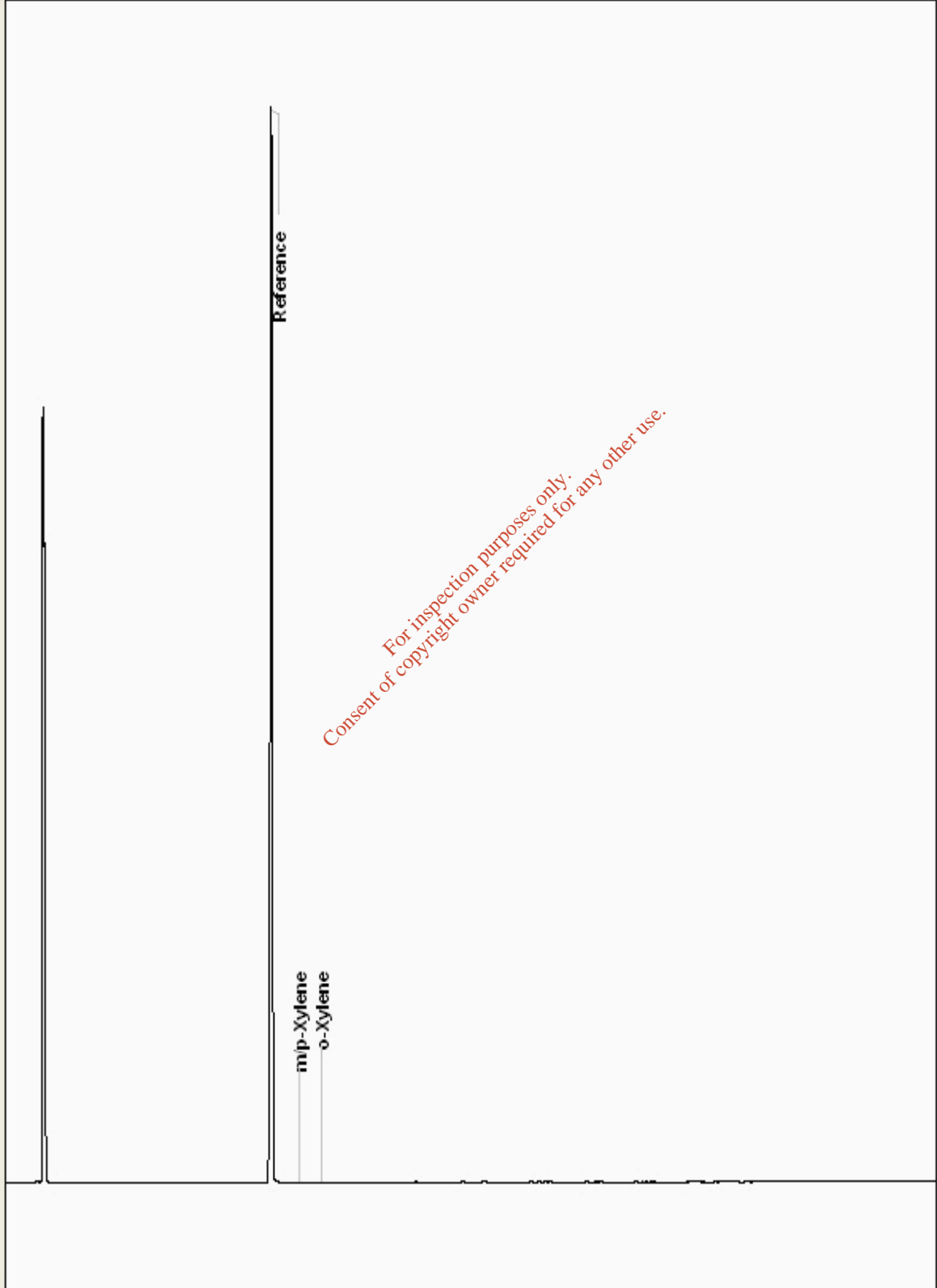
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271052
Sample ID A4
Depth 2.00 - 4.00

2271052_GRO_W.DATA - Chem 63 FID

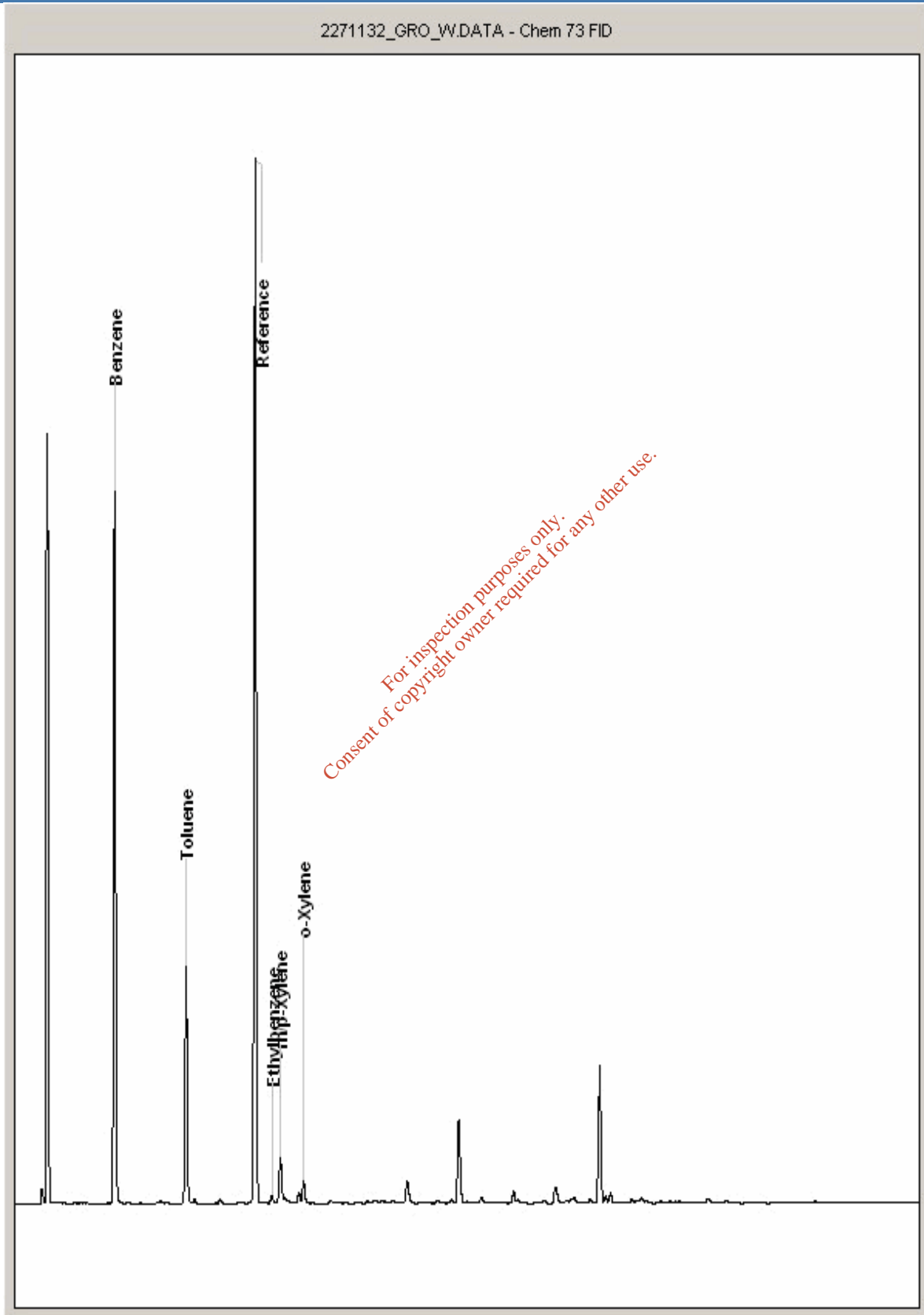


SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271132
Sample ID C7
Depth 3.00 - 6.00

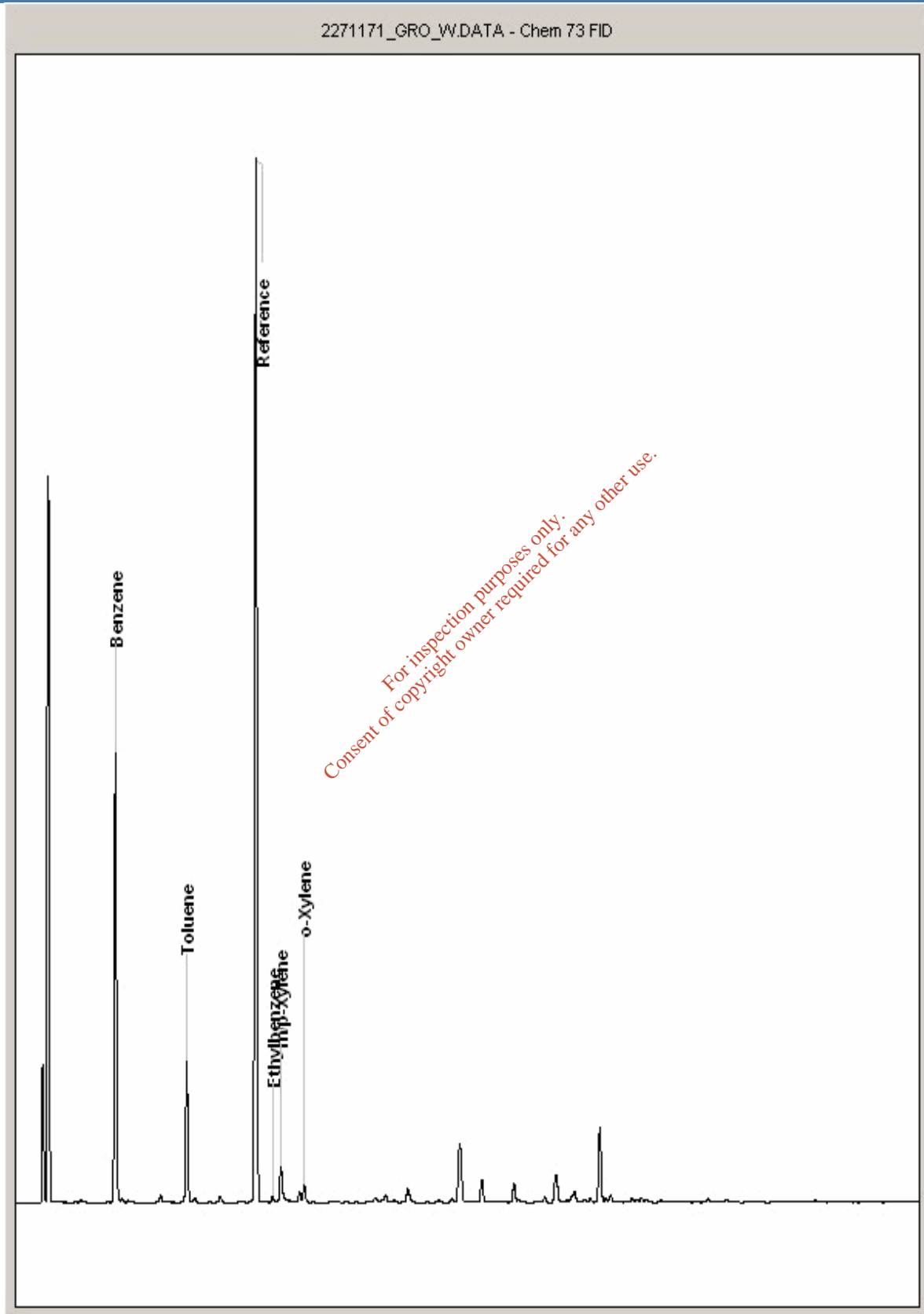


SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271171
Sample ID K5
Depth 1.00 - 2.00



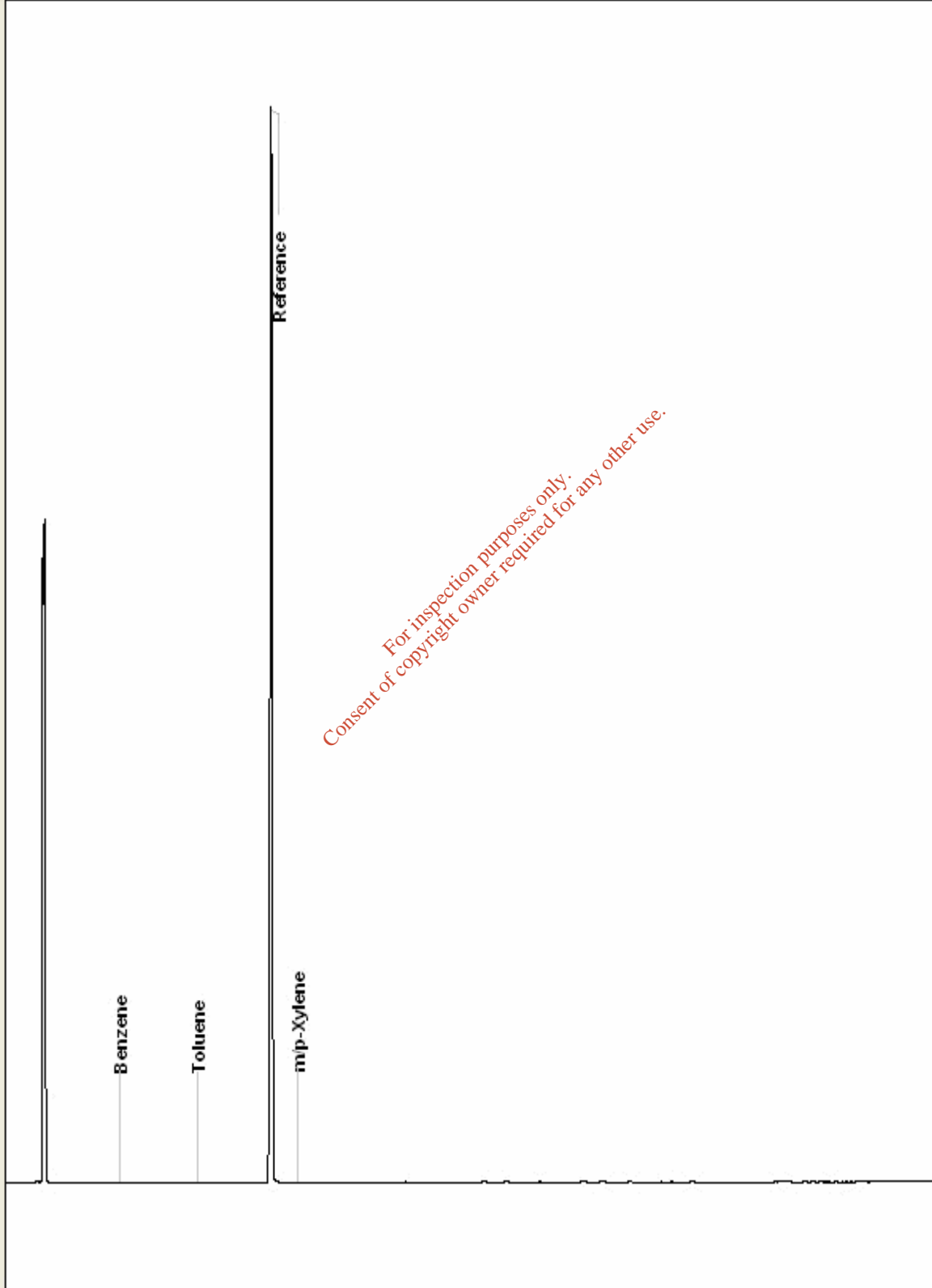
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271229
Sample ID J10
Depth 1.00 - 1.30

2271229_GRO_W.DATA - Chem 63 FID



SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271307
Sample ID K1
Depth 3.00 - 4.00

2271307_GRO_W.DATA - Chem 63 FID



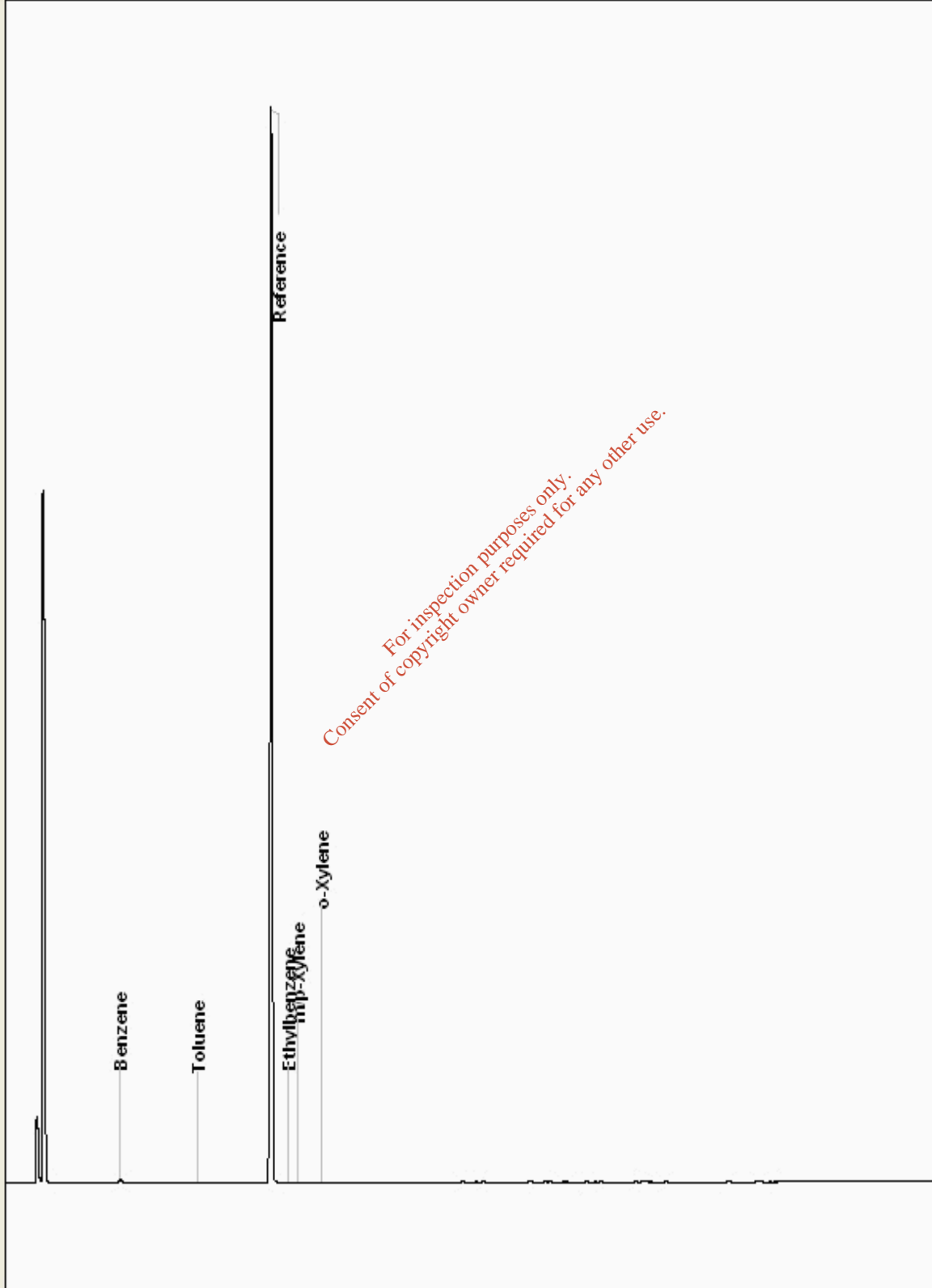
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271380
Sample ID H12
Depth 1.50 - 4.00

2271380_GRO_W.DATA - Chem 63 FID



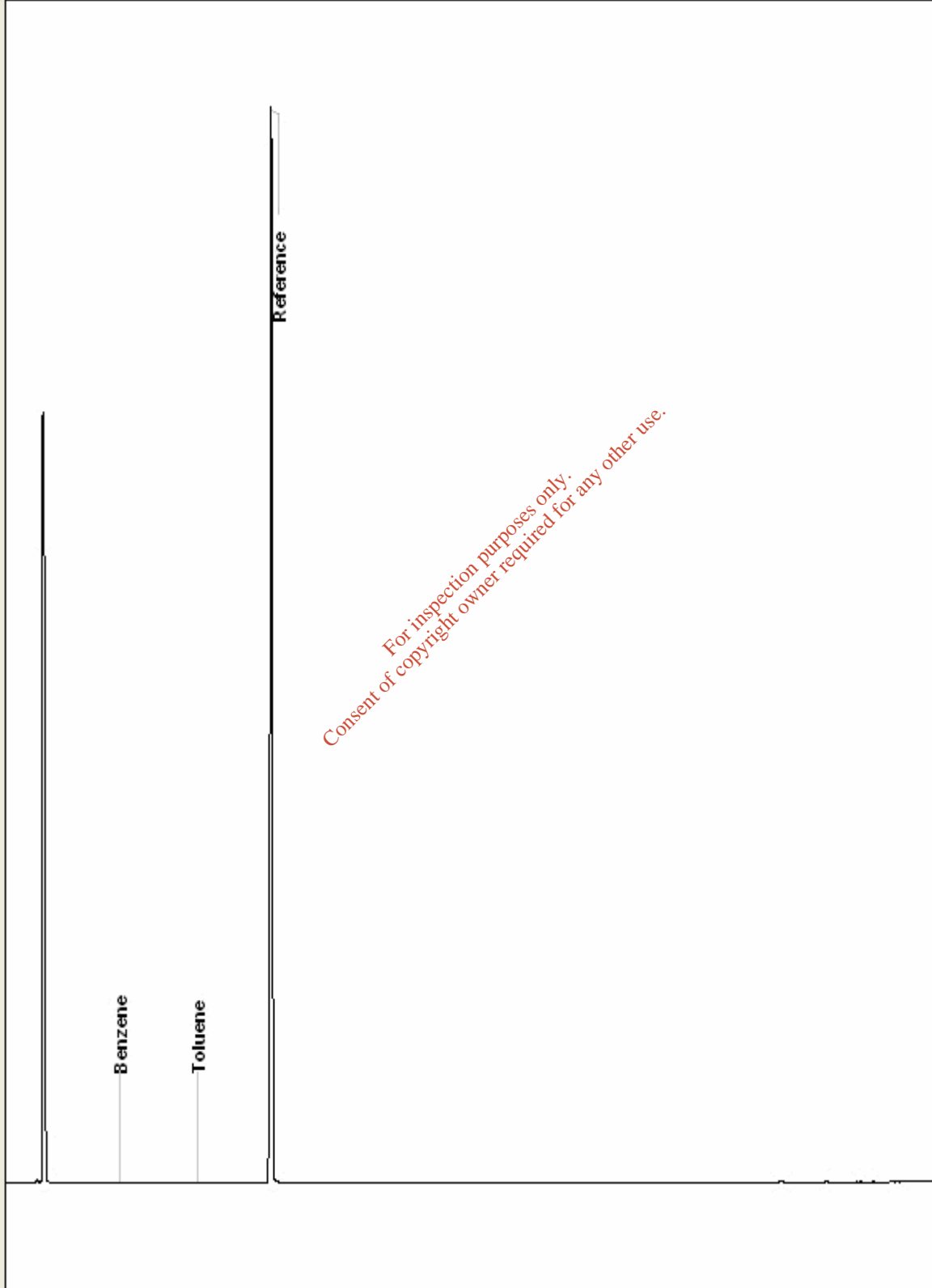
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271450
Sample ID M3
Depth 3.50 - 5.50

2271450_GRO_W.DATA - Chem 63 FID

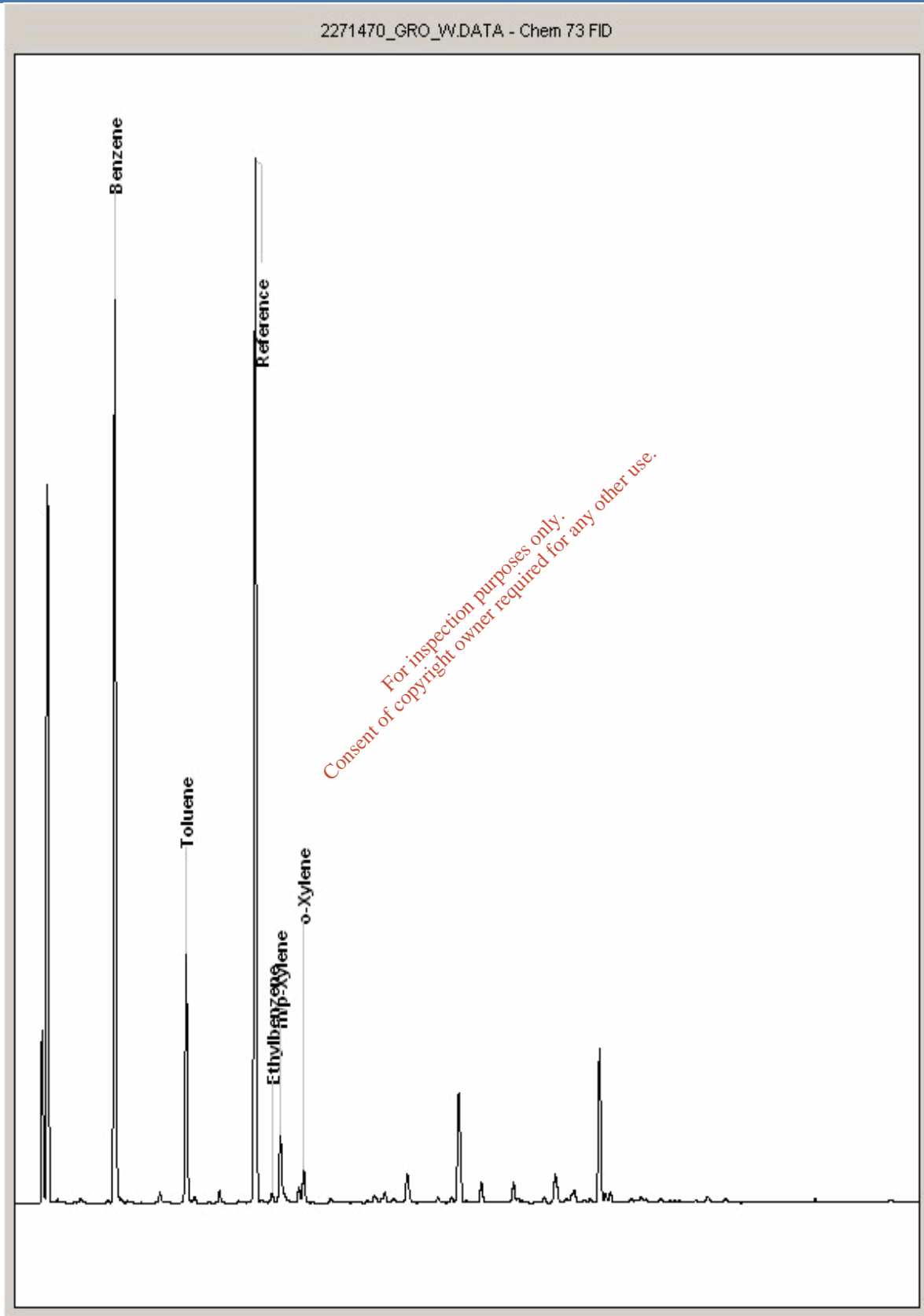


SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271470
Sample ID E8
Depth 2.00 - 5.00



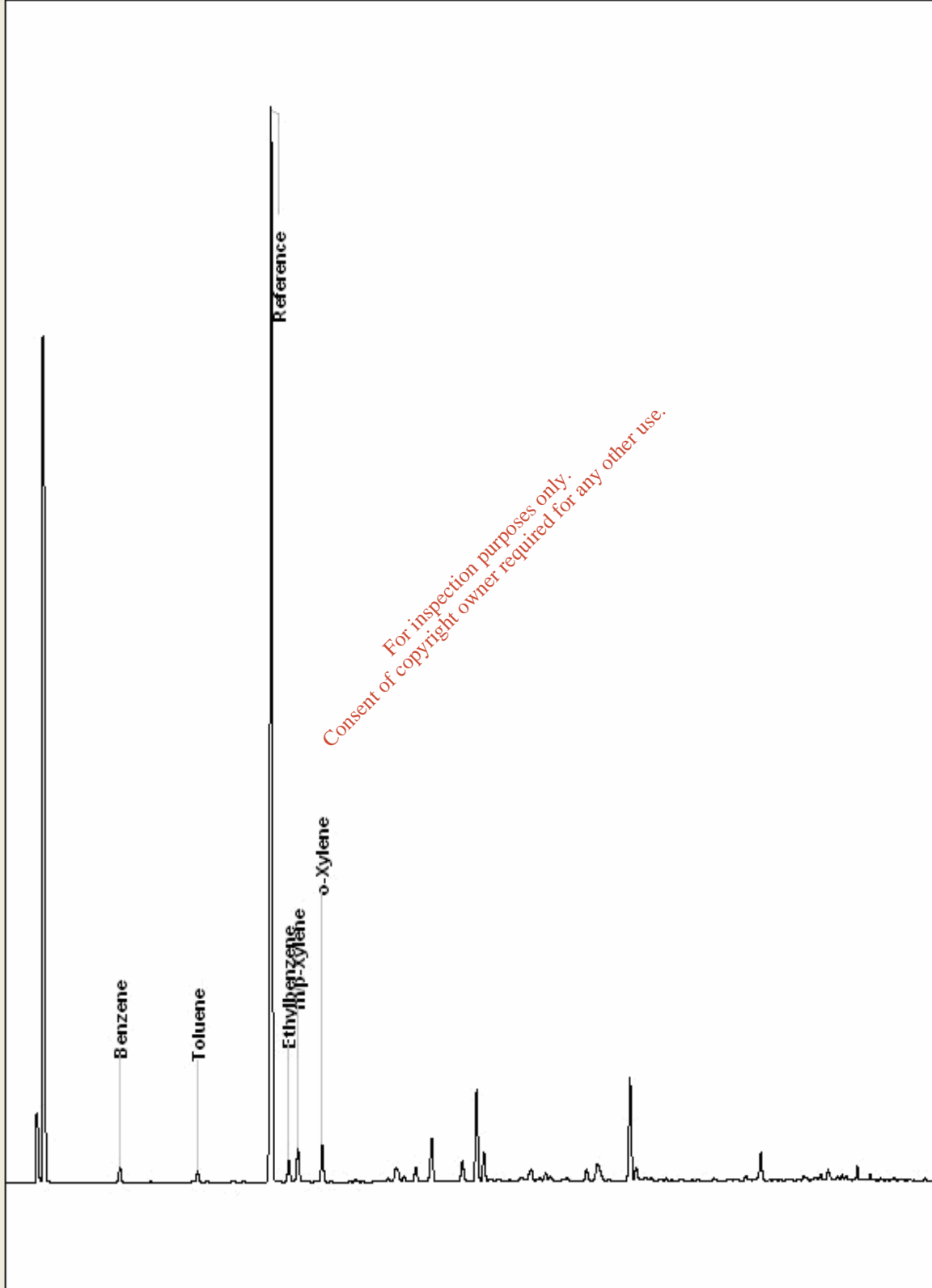
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271497
Sample ID C11
Depth 1.50 - 2.50

2271497_GRO_W.DATA - Chem 63 FID



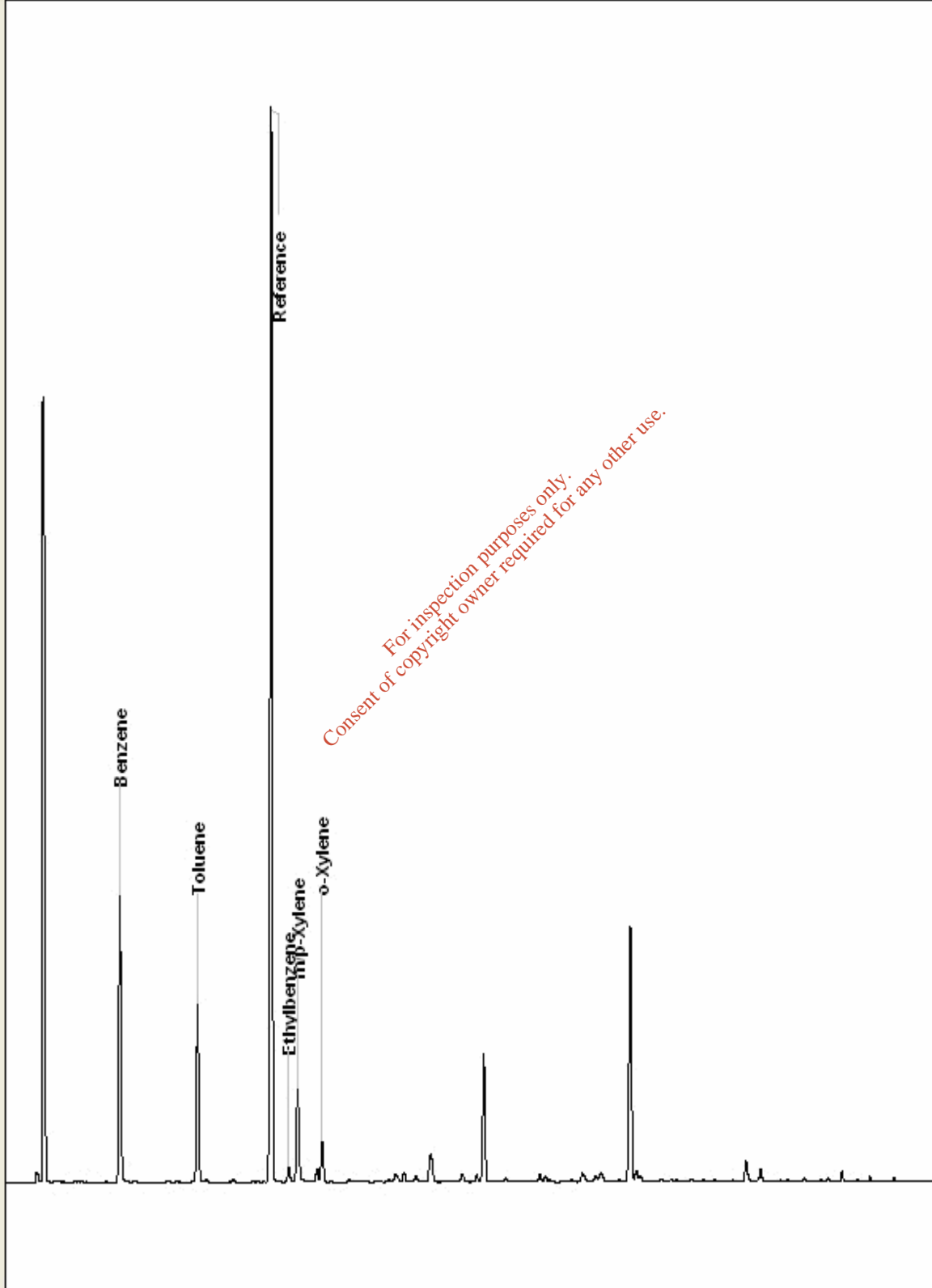
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271546
Sample ID G8
Depth 1.00 - 2.00

2271546_GRO_W.DATA - Chem 63 FID



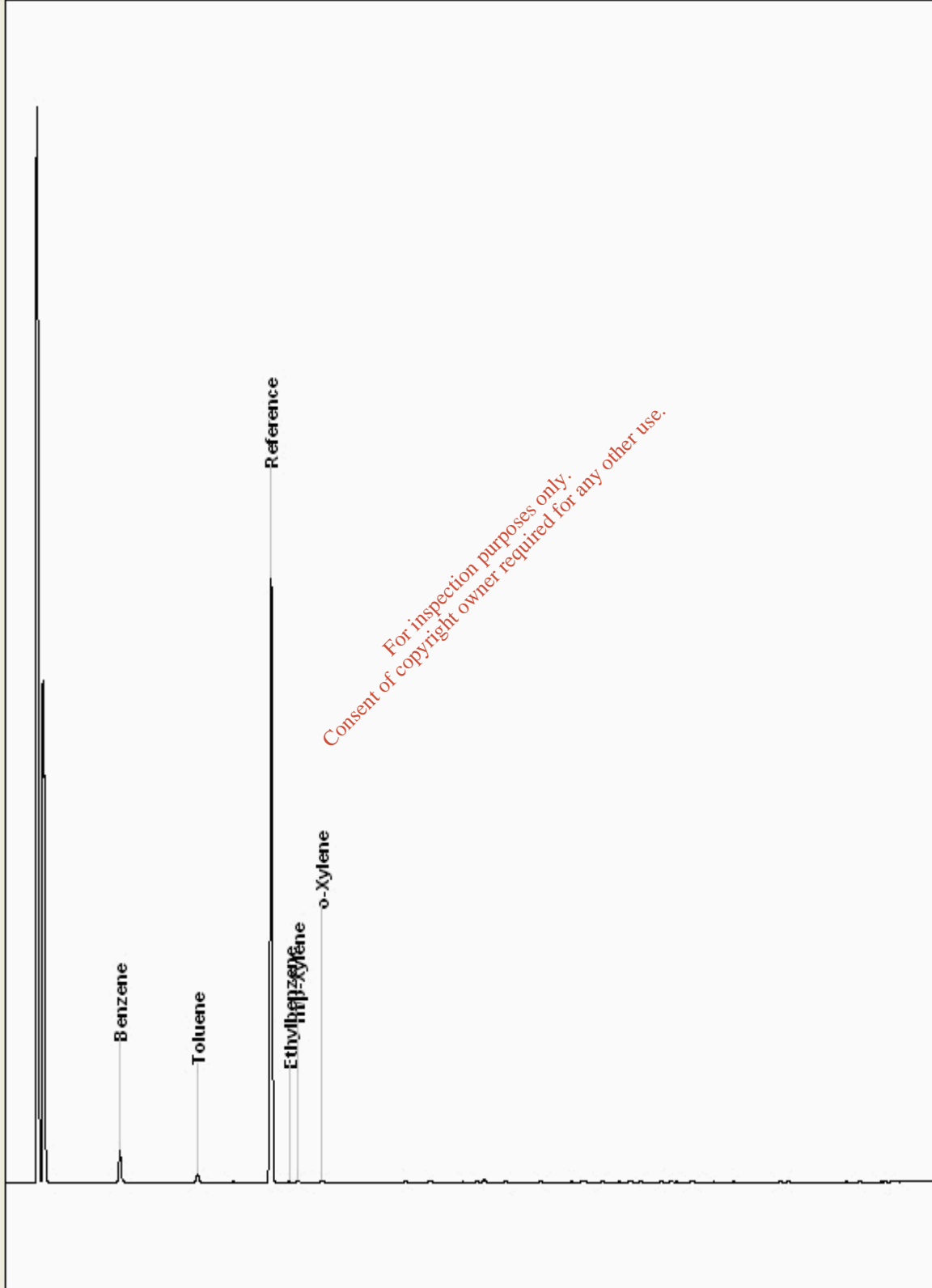
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271577
Sample ID F11
Depth 2.00 - 4.00

2271577_GRO_W.DATA - Chem 63 FID



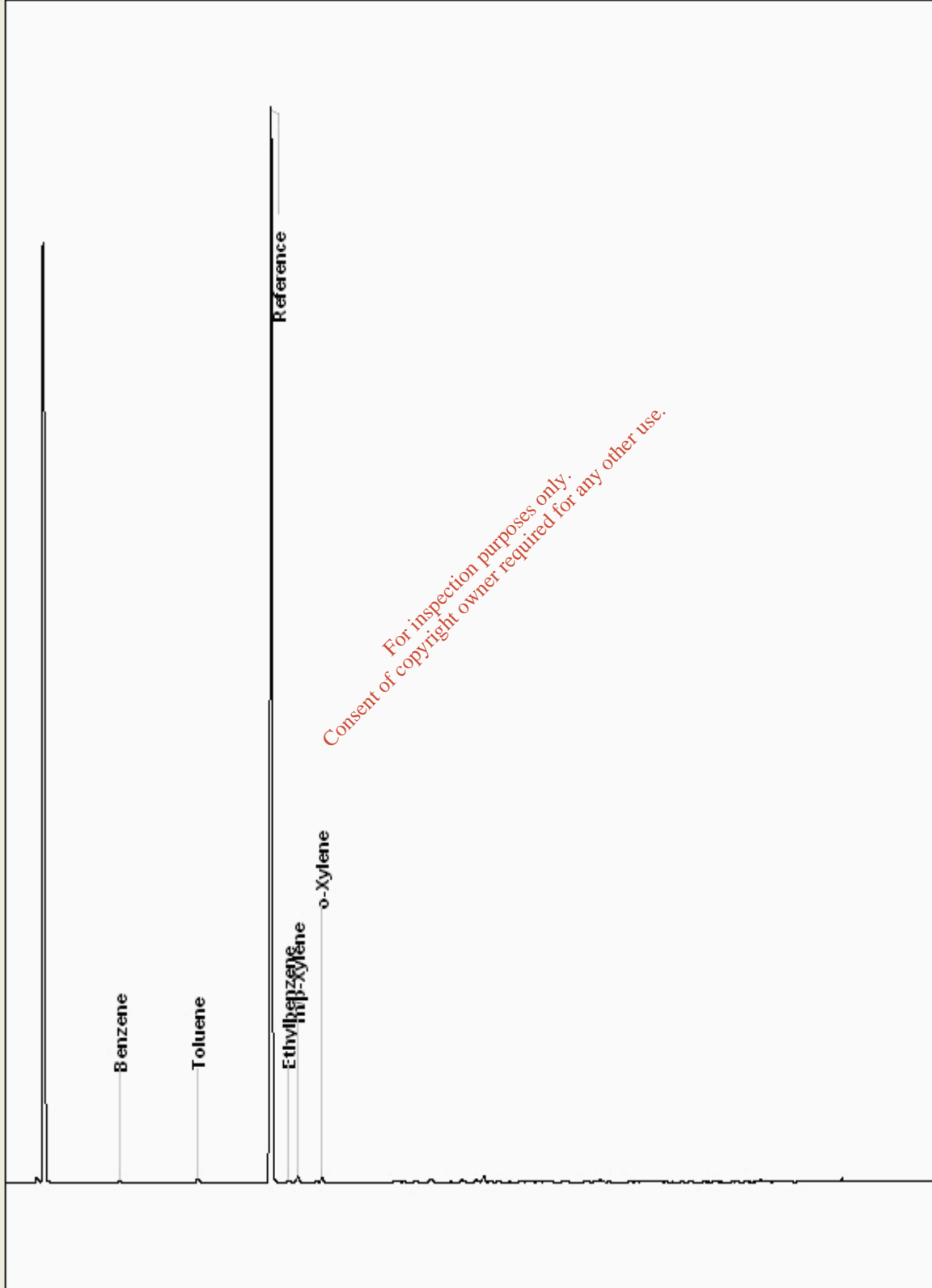
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271643
Sample ID A11
Depth 1.50 - 2.50

2271643_GRO_W.DATA - Chem 63 FID



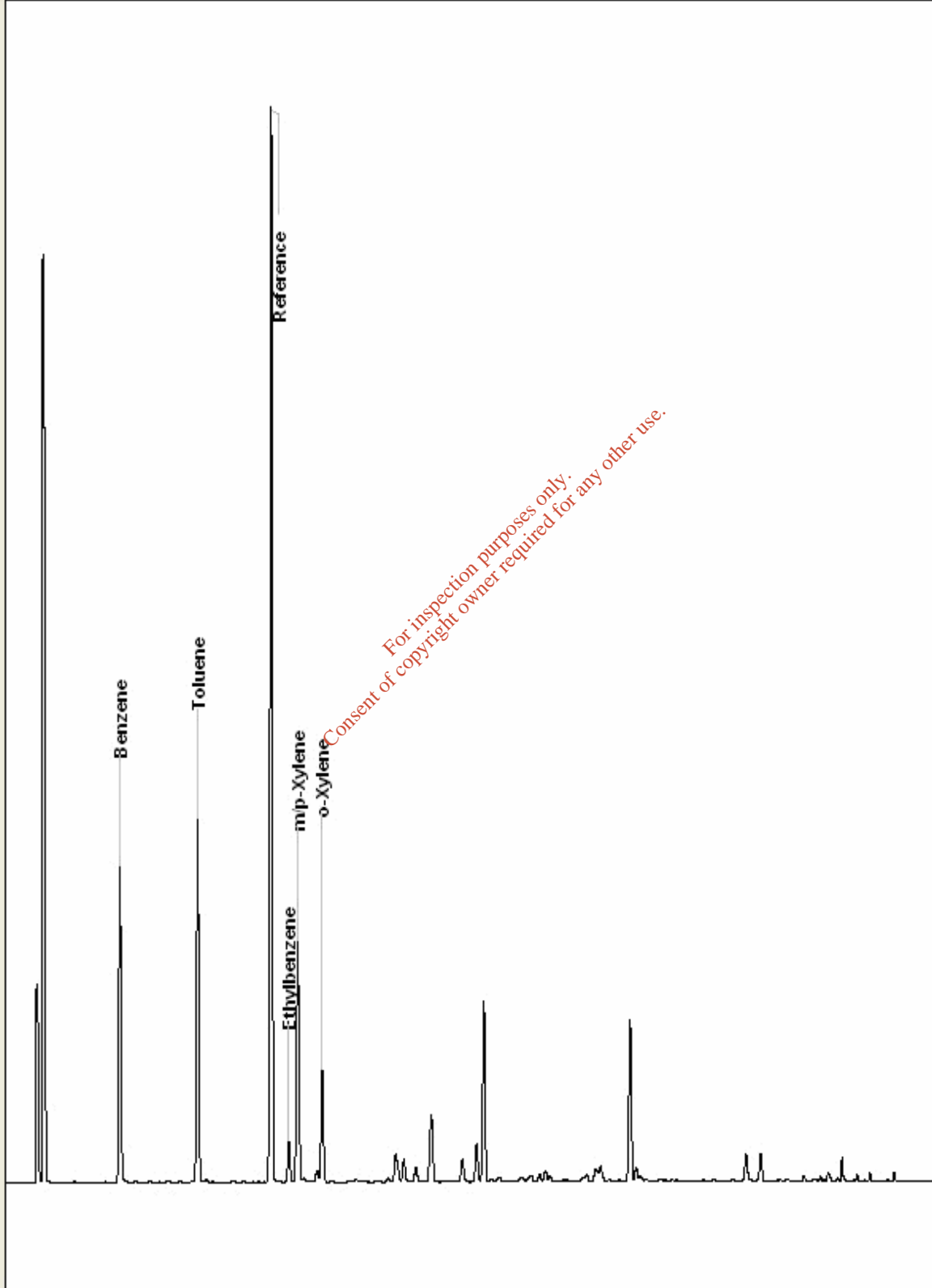
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271688
Sample ID G4
Depth 3.00 - 3.50

2271688_GRO_W.DATA - Chem 63 FID



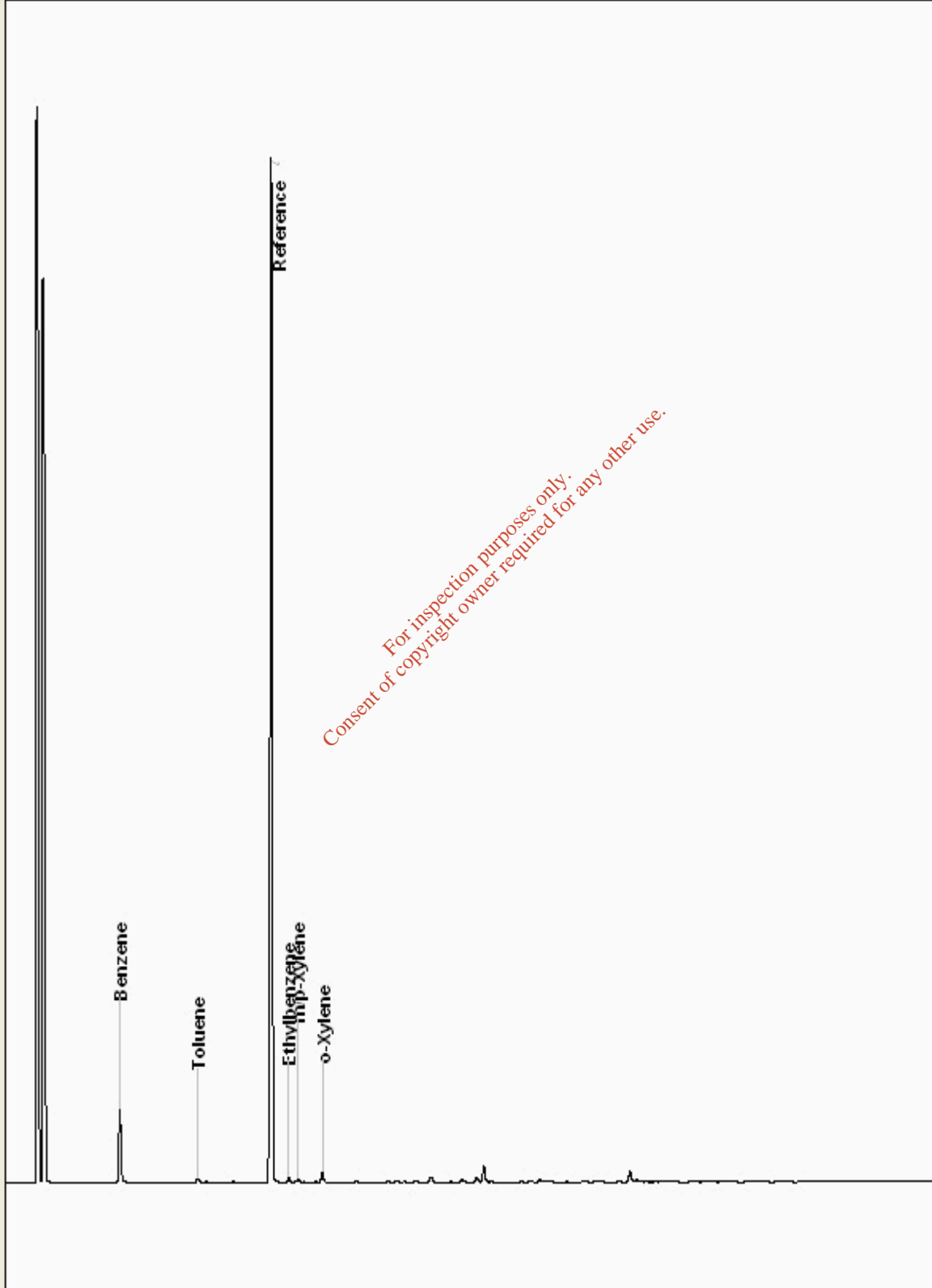
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No.: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271753
Sample ID G3
Depth 4.00 - 5.00

2271753_GRO_W.DATA - Chem 63 FID



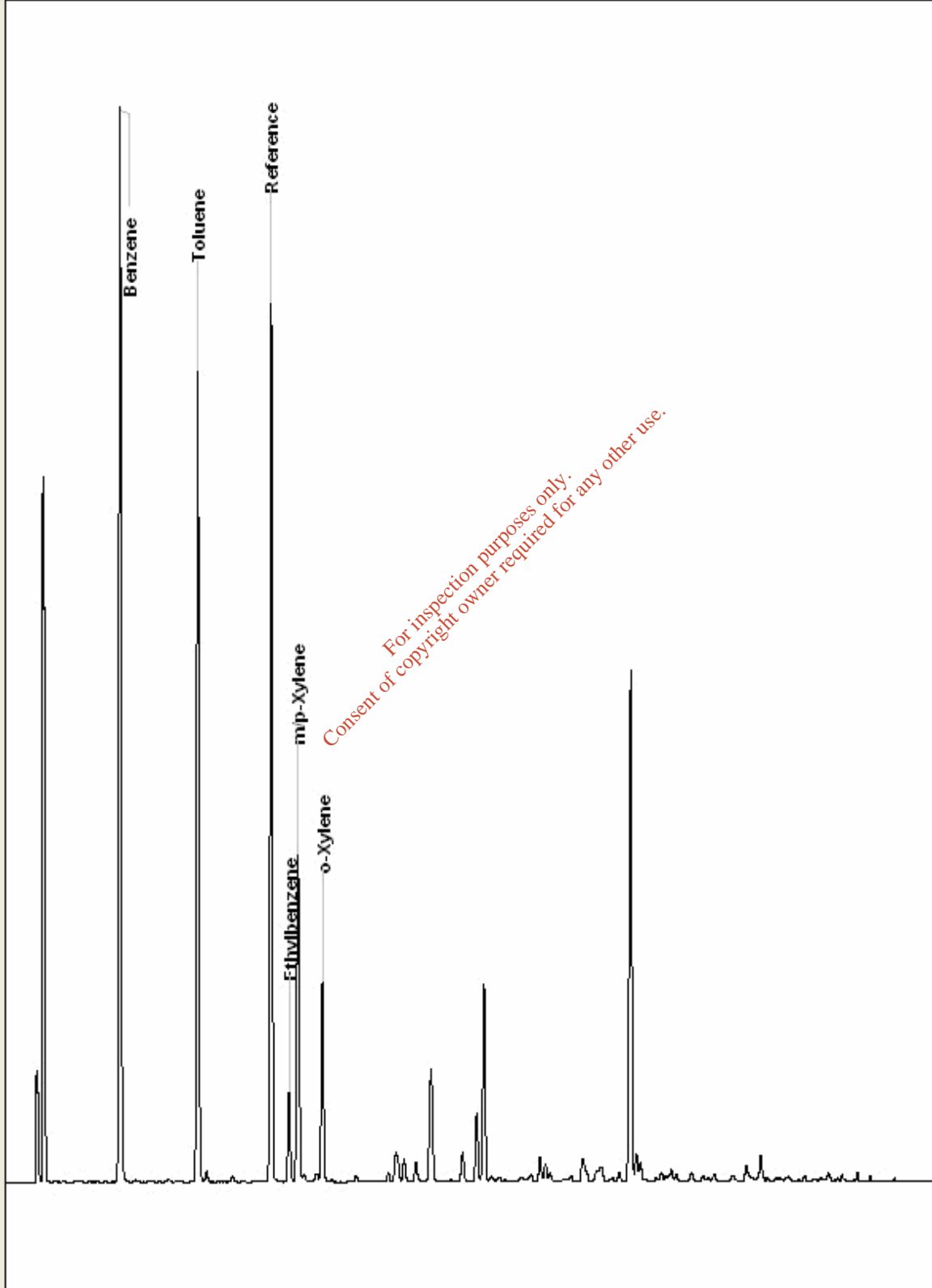
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271779
Sample ID G2
Depth 4.00 - 7.00

2271779_GRO_W.DATA - Chem 63 FID



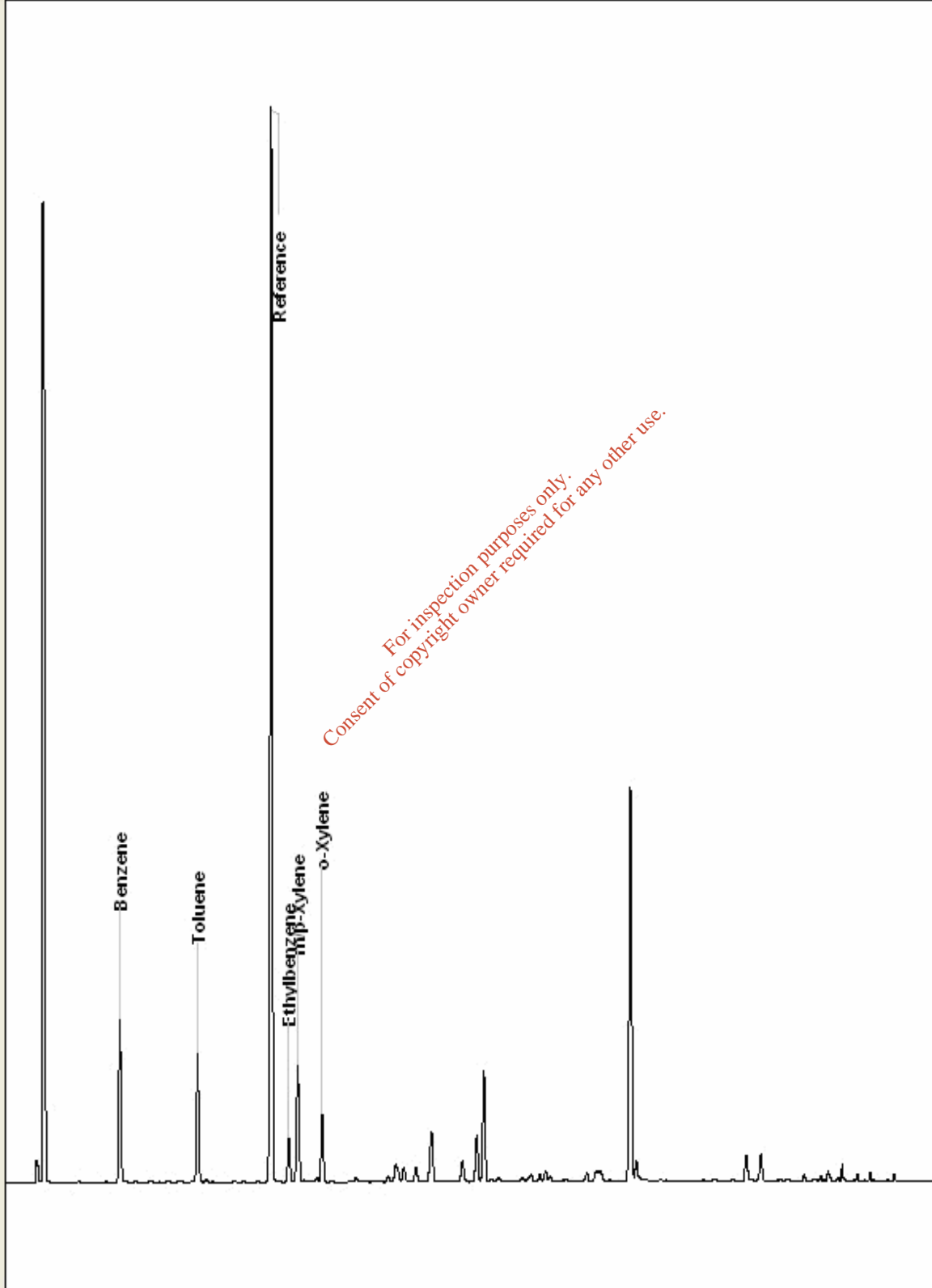
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Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271831
Sample ID D1
Depth 3.00 - 4.00

2271831_GRO_W.DATA - Chem 63 FID



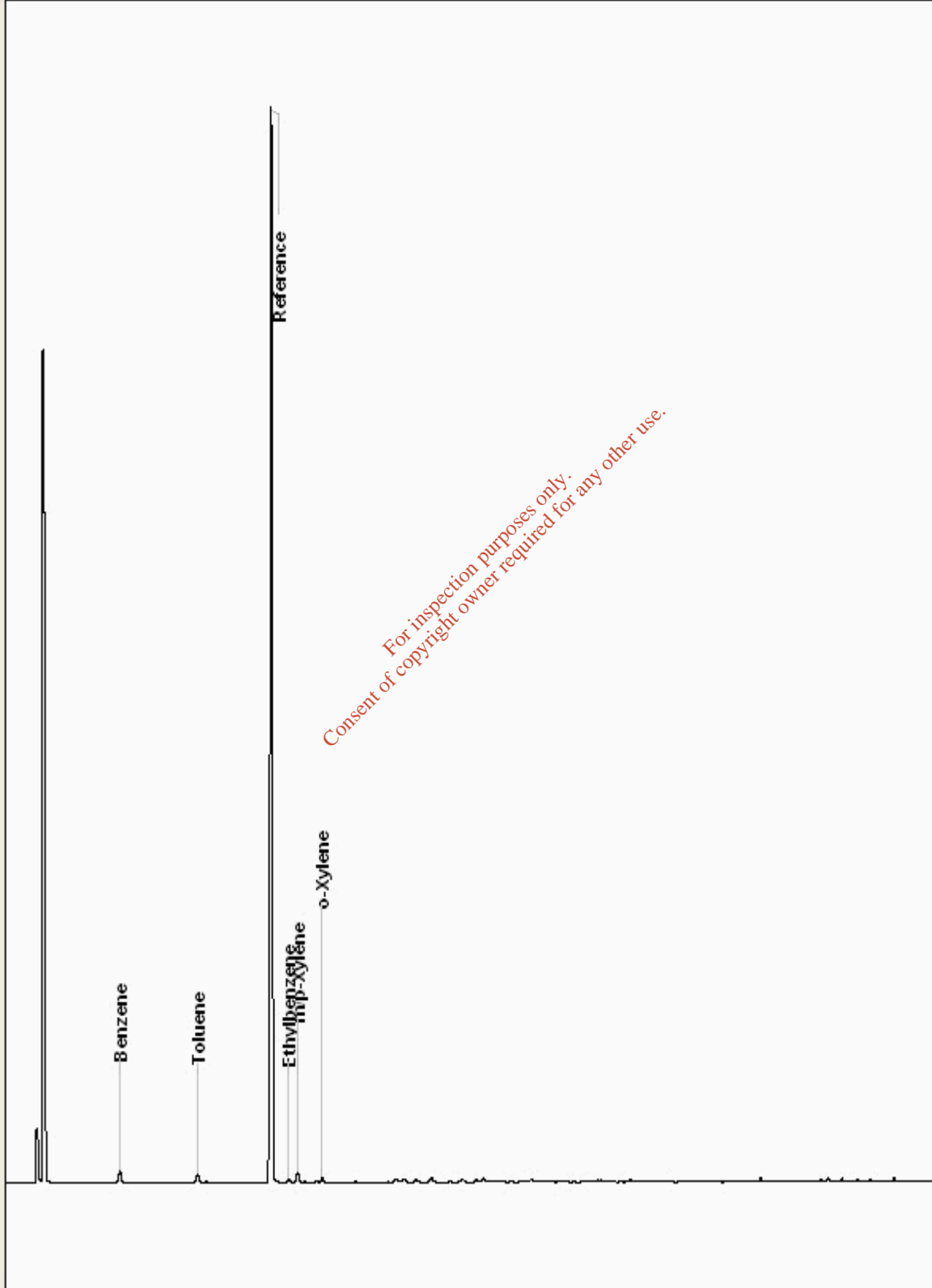
SDG: 101021-66
Job: D_MOUCHEL_ELE-101
Client Ref.: 21.10.10
Location: Limerick Gasworks

Customer: Mouchel
Attention:
Order No.: 4500056413
Report No: 101046

Analysis: GRO by GC-FID (W)

Sample No 2271848
Sample ID G5
Depth 3.00 - 6.00

2271848_GRO_W.DATA - Chem 63 FID



Notification of NDPs (No determination possible)

SDG Number	101021-66	Location	Limerick Gasworks
Client	D_MOUCHEL_ELE	Order No.	4500056413
Client Reference	21.10.10	Report No.	61738-1
Attention	David Megson	Date Received	21/10/2010 14:11:26

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
2271579	F11 WW5	2.00 - 4.00	Sulphide	Sample too coloured

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA 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 large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. 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. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
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 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. 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.

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOX THERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOX THERM	IATROSCAN
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 CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / 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	DCM:ACETONE	SONICATE	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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 MDHS 100.

The identification of asbestos containing materials 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	-

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, 2003 data.

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value

Determinand	Units	Screening Value (ug/l)	Source of screening value	Ground type															
				Borehole															
				BH41C	BH41C	BH42	BH42	BH43	BH43	BH7	BH7	BH7	TT101	TT54	TT55	TT58	TT59		
Depth (mbgl)	2.797	2.89	0.779	0.95	3.436	3.522	1.15	1.121	1.121	1	1	1	1	1					
				01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	16/09/2003	30/07/2003	30/07/2003	15/08/2003	31/07/2003	30/07/2003
Inorganics																			
Arsenic	ug/l	10	SI 278/2007	18	13	67	127	2	4	20			30	6	13	11	11		7
Cadmium	ug/l	5	SI 278/2007	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Chromium	ug/l	50	SI 278/2007	1	5	16	25	1	2	9			7	10	2	3	3		7
Copper	ug/l	2000	SI 278/2007	1	1	8	6	3	3	3			8	2	1	2	2		1
Lead	ug/l	25	SI 278/2007	1	1	1	1	1	1	1			1	9	1	1	47		59
Nickel	ug/l	20	SI 278/2007	3	3	81	68	7	4	19			19	12	5	7	6		14
Selenium	ug/l	10	SI 278/2007	3	1	46	55	1	1	5			6	-888000	2	4	1		1
Zinc (dissolved)	ug/l	5000	WHO Drinking Water Quality Guideline Value	13	15	12	67	14	40	83			121	50	3	3	5		20
Mercury	ug/l	1	SI 278/2007	0.07	0.05	0.05	0.05	0.05	0.05	0.05			0.05	0.05	0.05	0.05	0.05		0.05
Total Ammonium	ug/l	300	SI 278/2007	16200	14100	256000	282000	2100	2900	18000			20500	20400	6300	7500	700		2000
Nitrate	ug/l	50000	SI 278/2007	320	400	5190	400	300	600	900			300	700	900	670	3700		3800
Sulphate (soluble)	ug/l	250000	SI 278/2007	468000	718000	1190	1294000	825000	770000	1444000			1563000	728000	789000	962000	1142000		559000
Phenols	ug/l	0.5	SI 81/1988	440	460	2710	382180	10	1500	680			320	10	10	4790	10		10
Creosole	ug/l	10	SI 278/2007	1090	1650	3070	522840	10	2010	2660			1200	10	20	17890	10		10
Cyanide	ug/l	50	SI 278/2007	3300	2500	17500	11200	1200	700	21700			15500	500	1300	500	1400		2100
pH Value	ug/l	6.5	SI 278/2007	8.14	7.46	8.98	9.71	8.03	7.36	8.59			9.24	7.82	7.75	7.68	7.98		7.93
pH Value	ug/l	9.5	SI 278/2007	8.14	7.46	8.98	9.71	8.03	7.36	8.59			9.24	7.82	7.75	7.68	7.98		7.93
BTEX																			
Benzene	ug/l	1	SI 278/2007	1434	2102	19407	16221	1	10	10647	2848849	4558	313	1	5628	11	99		
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value	1560	1651	4015	4750	1	10	2875	155584	1262	25	1	8824	3	12		
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value	731	1994	6051	5618	1	10	4292	1482170	1753	90	1	8984	4	21		
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value	5654	6551	2488	2809	375	10	2939	1173072	1606	283	9	7469	12	95		
Petroleum Hydrocarbons																			
GRO (C4-C12)	ug/l	-																	
MTBE	ug/l	-			23	45	10		10	10	61701	10			10				10
Aliphatics C5-C6	ug/l	-			12		49		10	10		10			10				10
Aliphatics C6-C8	ug/l	-			354		226		10	10		13			15				15
Aliphatics C8-C10	ug/l	-		50	568	50	511		10	50		60	50	50	726	60			50
Aliphatics C10-C12	ug/l	-		50	3568	50	2676		10	50		740	50	50	4508	50			50
Aliphatics C12-C16	ug/l	-			10		561		10	10		10			15001				10
Aliphatics C16-C21	ug/l	-		50	10	50	77		10	50		10	50	50	4629	107			69
Aliphatics C21-C35	ug/l	-		50	10	50	10		10	50		10	50	50	1066	89			321
Aromatics C6-C7	ug/l	-			2102		16221		10			4558			6628				
Aromatics C7-C8	ug/l	-			1994		5618		10			1753			8984				
Aromatics 8-10	ug/l	-		50	6441	50	3907		10	50		1924	50	50	8617	50			50
Aromatics 10-12	ug/l	-		157	5353	20910	4013		10	50		1110	50	50	6754	50			50
Aromatics 12-16	ug/l	-			50		2548		27			205			11566				
Aromatics 16-21	ug/l	-		192	10	704	480		10	115		55	50	50	3587	180			383
Aromatics 21-35	ug/l	-		50	10	119	61		10	115		18	50	50	1317	92			1070
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988	14142		307320				14703			14444	2397		17488			11899
PAHs																			
Acenaphthene	ug/l	-		18.558	15.425	2.636	17.996	7.651	18.542	18.09			19.163	3.96	25.057	474.681	480.11		23.335
Acenaphthylene	ug/l	-																	
Anthracene	ug/l	-		5.808	2.89	1.625	7.088	0.22	0.275	41.071			17.855	4.571	1.89	304.11	46.985		15.022
Benzo(a)anthracene	ug/l	-		2.545	0.201	0.491	0.01	0.061	0.04	24.671			6.658	3.204	2.266	140.66	23.485		9.065
Benzo(a)pyrene	ug/l	0.01	SI 278/2007	1.686	0.036	0.248	0.01	0.037	0.01	13.966			3.921	2.149	2.661	91.992	11.469		4.717
Benzo(b)fluoranthene	ug/l	-		3.886	0.027	0.17	0.01	0.014	0.01	18.301			3.958	1.931	6.67	83.258	12.207		14.527
Benzo(ghi)perylene	ug/l	-		1.1	0.017	0.122	0.01	0.03	0.01	7.26			1.989	0.972	2.854	54.98	5.534		3.189
Benzo(k)fluoranthene	ug/l	-		1.732	0.033	0.272	0.01	0.043	0.01	16.737			3.934	1.839	1.726	75.323	6.053		4.294
Chrysene	ug/l	-		1.878	0.1	0.316	0.01	0.051	0.018	16.983			4.645	2.574	2.829	112.885	19.869		8.061
Dibenzo(ah)anthracene	ug/l	-		0.385	0.012	0.051	0.01	0.01	0.01	3.148			0.629	0.353	0.853	17.58	1.9		1.396
Fluoranthene	ug/l	4	WHO Drinking Water Quality Guideline Value	7.392	1.796	1.408	2.52	0.51	0.827	67.632			21.84	10.069	4.604	450.161	135.588		28.098
Fluorene	ug/l	-		23.588	20.234	6.034	33.248	0.248	1.029	69.522			57.296	7.293	4.782	529.709	357.307		28.184
Indeno(123cd)pyrene	ug/l	-		0.962	0.014	0.133	0.01	0.025	0.01	6.841			1.757	0.931	2.143	46.595	4.509		2.932
Naphthalene	ug/l	-		486.479	3306.788	55.04	140.798	0.232	0.614	646.531			493.635	19.001	29.572	6440.862	249.089		222.348
Phenanthrene	ug/l	-		22.167	13.994	4.65	22.117	0.077	0.076	122.56			62.102	13.896	7.191	972.581	548.016		48.069
Pyrene	ug/l	-		4.604	1.058	0.883	1.958	0.12	0.374	42.363			15.948	6.625	4.097	306.281	97.39		17.591
Sum of Benzo (b + k) fluoranthene, benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.1	SI 278/2007	7.68	0.091	0.697	0.04	0.112	0.04	49.139			11.638	5.673	13.393	260.156	28.303		24.942

metals * - total - freshwater, dissolved - marine

Information contained herein is for regulatory purposes only. It is not to be used for any other use.

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 1.

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (ug/l)	Source of screening value	Ground type																			
				Borehole Depth (mbgl)																			
				A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
				1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-8.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00
Inorganics																							
Arsenic (dissolved)	ug/l	10	SI 278/2007	4.83	18.2	4.8	30.9	5.85	18.4	17.1	8.26	52.3	2.26	44.2	7.65	41.6	1.46	4.28	1.92	1.49	3.9	41.7	5.3
Cadmium (dissolved)	ug/l	5	SI 278/2007	<0.22	<0.22	<0.22	0.955	<0.22	<0.22	<0.22	<0.22	0.275	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Chromium (dissolved)	ug/l	50	SI 278/2007	18.4	54.4	78.6	6.54	<3	40.1	108	137	102	57.1	92.8	85.1	9.3	197	15.6	67.4	19.7	28.5	45.3	21.2
Copper (dissolved)	ug/l	2000	SI 278/2007	<1.6	<1.6	14.3	7.56	3.08	5.29	2.14	2.99	10.6	1.94	2.34	2.03	2.01	5.02	3.27	12.9	4.83	11.5	5.44	8.55
Lead (dissolved)	ug/l	25	SI 278/2007	<0.4	<0.4	0.736	6.58	0.52	6.61	<0.4	<0.4	0.764	1.11	<0.4	<0.4	<0.4	<0.4	<0.4	0.815	3.88	5.04	1.53	2.9
Nickel (dissolved)	ug/l	20	SI 278/2007	3.75	5.21	3.21	10.2	5.07	5.32	4.88	3.49	75.4	1.82	5.62	11.1	5.87	9.13	3.41	2.33	6.26	15.9	28.7	7.43
Selenium (dissolved)	ug/l	10	SI 278/2007	6.28	1.45	4.68	3.58	1.69	8.43	2.09	<1	29.3	4.3	7.41	9.83	26	2.69	7.22	3.63	<1	1.48	22.4	3.64
Zinc (dissolved)	ug/l	5000	WHO Drinking water Quality Guideline Value	<5	<5	7.74	55.4	<5	36.1	<5	<5	8.6	5.94	<5	<5	<5	<5	<5	7.07	25.8	41.4	9.78	30
Mercury (dissolved)	ug/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0117	<0.01	0.0124	<0.01	<0.01	0.0238	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0262	<0.01
Ammonium	ug/l	300	SI 278/2007	2720	8990	2360	184000	6490	94800	11600	4240	57100	4530	53300	26600	23000	2080	15100	3880	<200	9270	135000	1370
Sulphate (soluble)	ug/l	250000	SI 278/2007	273000	412000	292000	115000	264000	159000	484000	52600	525000	35800	595000	486000	385000	635000	83000	150000	27300	472000	678000	541000
Phenols	ug/l	0.5	SI 81/1988	280	<25	<25	131000	<25	625000	<25	1540	353000	180	11700	3050	41600	<25	9100	890	<25	<25	1840000	<25
Total Cyanide	ug/l	50	SI 278/2007	75	505	595	269	1410	454	1670	253	8180	<50	1440	511	912	5590	449	<50	577	5200	705	
pH Value	ug/l	6.5	SI 278/2007	8.32	8.06	7.89	8.63	8.06	8.75	7.7	9.11	9.52	8.1	7.61	7.55	7.59	7.32	8.37	7.91	8.06	8.1	9.56	7.86
pH Value	ug/l	9.5	SI 278/2007	8.32	8.06	7.89	8.63	8.06	8.75	7.7	9.11	9.52	8.1	7.61	7.55	7.59	7.32	8.37	7.91	8.06	8.1	9.56	7.86
BTEX																							
Benzene	ug/l	1	SI 278/2007	57	430	<7	15300	86	16400	718	469	5360	7	3810	744	5080	34	309	24	<7	<7	18900	9
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value	107	62	<4	7810	106	5070	591	226	1430	8	2360	306	4220	73	160	20	<4	<4	6560	<4
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value	26	293	<5	399	210	232	280	21	95	<5	271	34	367	32	11	<5	<5	<5	393	<5
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value	139	201	43	3980	918	2250	1270	183	982	<10	1550	181	3280	349	112	76	<10	<10	3270	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	ug/l	10	SI 81/1988	1080	3900	490	57200	11300	52400	11000	1770	22400	78	14200	2030	30800	3730	1590	1030	<42	<42	69500	<42
MTBE	ug/l	-	-	<3	9	<3	<3	<3	18	<3	6	<3	21	11	10	7	<3	6	<3	<3	<3	<3	<3
Aliphatics C5-C6	ug/l	-	-	<10	19.2	<10	133	<10	176	<10	132	<10	<10	132	<10	16.3	<10	<10	<10	<10	<10	487	<10
Aliphatics C6-C8	ug/l	-	-	34.4	116	<10	7120	83.8	6980	343	142	2910	<10	1100	187	2860	60.3	76.7	17.1	<10	<10	9560	11
Aliphatics C8-C10	ug/l	-	-	79.8	208	41.5	2090	829	1950	630	86.7	999	13.2	572	67.4	1500	235	63.7	77.7	<10	<10	2960	<10
Aliphatics C10-C12	ug/l	-	-	206	904	137	6900	3120	6570	2470	205	3600	11.8	1460	157	4480	1040	306	278	10.1	<10	9170	<10
Aliphatics C12-C16	ug/l	-	-	<10	<10	1060	99	5450	203	228	13	27	<10	<10	1660	915	<10	185	<10	<10	<10	<10	
Aliphatics C16-C21	ug/l	-	-	<10	<10	1460	111	2410	<10	203	21	<10	222	<10	55	919	435	<10	126	<10	<10	20	<10
Aliphatics C21-C35	ug/l	-	-	<10	<10	646	145	896	<10	180	73	13	216	<10	18	829	386	<10	682	<10	<10	<10	<10
Aromatics C6-C7	ug/l	-	-	57	430	<10	15300	86	16400	718	469	5360	<10	3810	744	5080	34	309	24	<10	<10	18900	<10
Aromatics C7-C8	ug/l	-	-	107	62	<10	7810	106	5070	591	226	1430	<10	2360	306	4220	73	160	20	<10	<10	6560	<10
Aromatics 9-10	ug/l	-	-	285	806	105	7520	2370	5400	2500	334	2570	19.8	2880	316	5890	734	219	193	<10	<10	9110	<10
Aromatics 10-12	ug/l	-	-	309	1360	206	10400	4680	9850	3710	308	5400	17.7	2200	235	6730	1550	459	417	15.2	<10	13800	<10
Aromatics 12-16	ug/l	-	-	494	516	227	7400	8460	20600	1530	178	6980	75	1930	85	865	5810	283	527	8560	<10	<10	<10
Aromatics 16-21	ug/l	-	-	310	304	811	1920	2980	3200	1180	91	1450	148	345	11	1190	4230	82	718	520	<10	<10	<10
Aromatics 21-35	ug/l	-	-	316	255	1710	2470	2600	3010	1670	252	502	376	344	30	2110	7370	22	1700	71	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988	2200	4980	6400	69400	34100	79400	16000	2400	1130	16800	2210	38300	22900	1980	4960	9180	<10	69500	11	
PAHs																							
Acenaphthene	ug/l	-	-	12.4	119	<0.15	47.7	724	3.72	61.6	6.99	49.2	0.398	20	3.55	180	145	5.82	25.3	1.58	0.712	3.58	2.19
Acenaphthylene	ug/l	-	-	63.5	39.4	0.488	278	247	23.8	164	13.8	292	3.08	30.8	1.69	582	546	45.4	38.4	0.475	0.473	19.3	0.944
Anthracene	ug/l	-	-	9.93	12.2	0.245	92.8	162	10.6	64.4	11.1	82.4	1.06	5.98	1.69	517	303	7.53	27.6	0.194	0.0939	2.52	0.239
Benzo(a)anthracene	ug/l	-	-	8.65	10.1	1.12	42.7	102	4.3	52.5	9.24	20.9	5.48	4.86	1.88	321	155	2.44	27.2	0.284	0.0864	<1.7	0.573
Benzo(a)pyrene	ug/l	0.01	SI 278/2007	5.59	8.02	1.04	35.2	74.1	3.34	40.6	7.39	9.04	10.3	4.22	1.5	228	119	1.07	24.9	0.0756	0.0872	<0.9	0.576
Benzo(b)fluoranthene	ug/l	-	-	6.47	2.94	1.46	42.5	97.3	3.75	49.7	9.36	13.1	11.5	5.3	2.03	303	155	1.36	28.9	0.0737	0.125	<2.3	0.881
Benzo(g)herylene	ug/l	-	-	2.54	3.3	0.615	18.5	40.1	<1.6	22.3	4.23	5.78	6.86	2.06	0.966	129	70.4	0.815	13.4	0.0294	0.0805	<1.6	0.54
Benzo(k)fluoranthene	ug/l	-	-	2.77	1.88	0.514	17.7	35	<2.7	17.2	3.26	5.63	5.44	2.15	0.855	127	65.2	0.711	11.6	0.076	0.0473	<2.7	0.338
Chrysene	ug/l	-	-	5.27	6.54	0.798	31.5	58.2	2.75	32.6	6.04	14.3	5.26	4.14	1.28	240	124	1.73	16.8	0.124	0.0734	<1.3	0.48
Dibenz(a,h)anthracene	ug/l	-	-	0.665	0.664	<0.16	5.38	9.74	<1.6	5.74	1.05	1.63	1.41	0.859	0.257	30.9	18.2	0.398	3.73	<0.016	0.0182	<1.6	0.104
Fluoranthene	ug/l	4	WHO Drinking Water Quality Guideline Value	29.3	32.5	2.88	154	421	17.1	147	27.1	117	7.32	24.5	5.52	1120	587	11.3	90.3	3.67	0.667	2.11	1.91
Fluorene	ug/l	-	-	18.7	35.8																		

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 2.

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

 Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (ug/l)	Source of screening value	Ground type Borehole																				
				A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	KS	M3	
				Depth (mbgl)																				
				1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-9.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00	
Inorganics																								
Arsenic (dissolved)	ug/l	10	SI 278/2007	1.22	29.8	3.3	18	4.13	37.1	15.4	6.04	2.35	13.9	24.4	6.11	4.29	3.76	5.16	2.36	2.01	3.9	290	3.53	
Cadmium (dissolved)	ug/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.439	<0.1
Chromium (dissolved)	ug/l	50	SI 278/2007	15.9	11.5	9.21	<3	46.2	5.9	37.3	17.2	6.41	22.9	47.9	6.83	124	52	17.6	<3	95.7	56.8	14.7		
Copper (dissolved)	ug/l	2000	SI 278/2007	1.52	1.14	1.03	1.71	1.27	<0.85	1.34	0.914	1.12	3.2	1.83	1.6	3.31	2.71	1.4	<0.85	3.9	1.57	3.19	2.2	
Lead (dissolved)	ug/l	25	SI 278/2007	2.33	0.034	0.112	0.087	0.02	0.371	0.03	<0.02	0.308	0.58	<0.02	0.077	<0.02	0.139	0.07	0.094	0.063	0.582	5.31	0.066	
Nickel (dissolved)	ug/l	20	SI 278/2007	3.47	5.52	4.36	7.18	5.14	6.15	7.91	7.49	5.84	3.89	10.4	14.2	3.95	15.2	4.83	4.88	4.75	13.9	69.8	7.08	
Selenium (dissolved)	ug/l	10	SI 278/2007	5.48	1.23	1.26	14.7	4.12	44.6	3.05	1.56	8.47	8.08	9.82	8.98	5.32	4.58	4.78	1.6	1.35	1.62	68	2.62	
Zinc (dissolved)	ug/l	5000	WHO Drinking Water Quality Guideline Value	11.6	2.33	1.56	1.32	0.801	1.18	<0.41	0.955	0.957	1.41	<0.41	<0.41	<0.41	<0.41	1.09	<0.41	<0.41	<0.41	107	<0.41	
Mercury (dissolved)	ug/l	1	SI 278/2007	<0.01	<0.01	<0.01	<0.01	<0.01	0.029	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.187	<0.01	
Ammonium	ug/l	300	SI 278/2007	1330	9270	2930	60300	4730	118000	10400	1480	59300	1930	48300	22500	9460	4190	21300	6270	439	11800	202000	890	
Sulphate (soluble)	ug/l	250000	SI 278/2007	328000	423000	310000	67500	222000	64600	456000	43000	547000	33900	583000	571000	127000	671000	112000	169000	35900	708000	715000	556000	
Phenols	ug/l	0.5	SI 81/1988	<2	20	<2	12900	<2	63900	10	<2	86000	40	2770	10	180	<2	3170	<2	20	<2	464000	<2	
Total Cyanide	ug/l	50	SI 278/2007	<50	242	177	118	74	814	883	179	13700	<50	899	495	243	381	817	<50	<50	152	12000	784	
pH Value	ug/l	6.5	SI 278/2007	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97	
pH Value	ug/l	9.5	SI 278/2007	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97	
BTEX																								
Benzene	ug/l	1	SI 278/2007	<7	458	<7	7150	61	22800	644	38	8540	<7	4140	158	2150	30	2170	12	<7	<7	13800	<7	
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value	<4	36	<4	4120	61	9130	512	24	2040	<4	2890	13	2840	34	1190	14	<4	<4	4670	<4	
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value	<5	82	<5	310	65	391	227	<5	85	<5	281	14	293	14	83	<5	<5	<5	236	<5	
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value	73	140	12	3000	505	3660	1020	71	940	<10	1950	78	2620	218	824	58	<10	<10	2180	<10	
Petroleum Hydrocarbons																								
GRO (C4-C12)	ug/l	10	SI 81/1988	679	2970	216	<42	5970	88200	8960	479	21200	48	16300	571	19500	1830	7040	949	66	<42	49500	<42	
MTBE	ug/l	-	-	7	<3	<3	<3	21	<30	12	<3	<3	6	<3	12	24	4	<3	<3	<3	<3	<3	<3	
Aliphatics C5-C6	ug/l	-	-	14.3	<10	<10	<10	31.3	402	<10	<10	136	12	<3	<20	15.2	30.6	13.2	18.3	<10	<10	760	<10	
Aliphatics C6-C8	ug/l	-	-	48.3	319	<10	<10	124	<100	405	23.2	1620	35.7	629	83.4	1510	83.7	<10	17.2	<10	<10	4600	<10	
Aliphatics C8-C10	ug/l	-	-	55.2	205	31.2	<10	498	6680	609	37.3	774	<10	647	32.1	1130	209	208	82.8	26.4	<10	1990	<10	
Aliphatics C10-C12	ug/l	-	-	162	567	50.4	<10	1540	16500	1840	91.8	2360	<10	1910	44.7	2860	360	990	256	<10	<10	7310	<10	
Aliphatics C12-C16	ug/l	-	-	<10	<10	126	11	156	<10	267	<10	<10	<10	<10	<10	342	906	<10	223	<10	<10	<10		
Aliphatics C16-C21	ug/l	-	-	<10	<10	247	50	325	<10	207	<10	<10	<10	<10	135	364	725	<10	195	<10	<10	<10		
Aliphatics C21-C35	ug/l	-	-	<10	<10	85	44	71	<10	115	<10	<10	<10	<10	95	265	524	<10	595	<10	<10	<10		
Aromatics C6-C7	ug/l	-	-	<10	458	<10	7150	61	22800	644	38	8540	<10	4140	158	2150	30	2170	12	<10	<10	13800	<10	
Aromatics C7-C8	ug/l	-	-	<10	36	<10	4120	61	9130	512	24	2040	<10	2890	13	2840	34	1190	14	<10	<10	4670	<10	
Aromatics 8-10	ug/l	-	-	156	529	58.8	1320	1320	14100	2160	127	2190	<10	3200	140	4610	545	1220	182	39.6	<10	5400	<10	
Aromatics 10-12	ug/l	-	-	243	850	75.6	<10	2320	24800	2760	138	3550	<10	2860	67.1	4300	540	1490	384	<10	<10	11000	<10	
Aromatics 12-16	ug/l	-	-	201	634	61	5200	1550	16400	1840	83	5740	<10	1980	48	3570	2580	1050	235	<10	<10	8490	<10	
Aromatics 16-21	ug/l	-	-	197	185	116	1340	779	1050	1840	51	904	<10	250	75	3070	4460	322	353	<10	<10	789	<10	
Aromatics 21-35	ug/l	-	-	111	22	156	1060	433	306	2660	93	543	<10	172	189	4180	8260	188	1260	<10	184	149	<10	
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988	1190	3800	1010	20300	9270	112000	15900	706	28400	48	18700	1100	31200	19300	8840	3810	66	184	58900	<10	
PAHs																								
Acenaphthene	ug/l	-	-	8.45	114	1.26	32.5	117	19	137	0.083	29.7	0.044	29.4	1.63	97.5	98.1	11.5	4.76	0.185	0.43	35.4	0.0522	
Acenaphthylene	ug/l	-	-	19.6	65.5	1.56	206	40.9	183	286	0.422	172	0.198	45.7	1.75	372	283	71.8	11.9	0.203	0.882	181	0.156	
Anthracene	ug/l	-	-	4.07	3.25	0.525	55.3	20.5	19.8	95.5	0.425	37.7	0.15	6.74	2.12	177	307	11.3	6.08	0.0562	0.765	31.9	0.152	
Benzo(a)anthracene	ug/l	-	-	3.7	0.282	2.23	16.3	13.1	<4.25	44.8	0.856	12.3	0.607	5.63	4.29	87.2	193	3.1	17.9	0.193	4.76	5.99	1.67	
Benzo(a)pyrene	ug/l	0.01	SI 278/2007	2.5	0.115	2.19	9.92	9.61	2.49	29.9	0.932	6.5	0.887	4.8	3.5	48.7	122	0.863	18.3	0.296	6.18	3	2.15	
Benzo(b)fluoranthene	ug/l	-	-	3.39	0.119	2.97	15.4	12.8	<5.75	42	1.32	10.2	1.08	6.76	4.81	72.4	169	1.41	23.3	0.381	8.12	4.08	3.16	
Benzo(g)herylene	ug/l	-	-	1.04	<0.08	1.35	7.18	4.72	<4	17.7	0.489	3.99	0.522	2.61	2.1	21.6	54.6	<0.32	11.1	0.2	5.43	2	1.94	
Benzo(k)fluoranthene	ug/l	-	-	1.24	<0.135	1.13	6.81	4.71	<6.75	17.2	0.503	4.15	0.451	2.39	1.8	28.2	60.2	<0.54	8.45	0.126	3.15	<2.7	1.16	
Chrysene	ug/l	-	-	2.98	0.261	1.26	18	8.74	4.35	38.4	0.622	10.2	0.408	5.83	3.67	70	154	2.32	12	0.107	3.22	4.42	1.23	
Dibenz(a,h)anthracene	ug/l	-	-	0.296	<0.08	0.338	<3.2	1.35	<4	4.96	0.124	1.53	0.128	0.914	0.565	6.13	15.8	<0.32	2.93	0.0522	1.32	<1.6	0.409	
Fluorene	ug/l	4	WHO Drinking Water Quality Guideline Value	12.7	4.81	6.43	81.4	52.4	21.4	215	3.89	60.9	0.966	23.2	8.92	339	640	17.4	52.3	0.597	6.85	41.1	2.82	
Fluorene	ug/l	-	-	18	34.1	0.6																		

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 3 (21st - 22nd April 2010)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Ground type Borehole Depth (m bgl)																				
				A3	A4	A11	B8	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3	
Inorganics																								
Arsenic (dissolved)	µg/l	10	SI 278/2007	39.2	7.31	2.98	52.8	27.9	7.81	12	3.7	137	7.15	18.6	6.1	30.6	4.35	5.93	3.38	5.25	2.2	121	3.8	
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	0.102	<0.1	<0.1	<0.1	<0.1	<0.1	0.721	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.118	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	21.3	14.5	3.59	22.7	15.5	8.31	20.6	9.27	3.35	4.28	28.1	20.9	23.4	26.1	4.48	12.8	14.8	10	26.1	4.63	
Copper (dissolved)	µg/l	3000	SI 278/2007	<0.85	<0.85	1.34	<0.85	<0.85	<0.85	<0.85	<0.85	0.47	<0.85	1.11	<0.85	<0.85	1.99	1.62	0.85	<0.85	<0.85	2.37	5.2	5.4
Lead (dissolved)	µg/l	25	SI 278/2007	0.034	0.054	0.153	0.143	0.046	0.029	0.033	0.034	0.415	0.05	0.022	0.034	0.107	0.092	0.023	0.091	0.042	0.321	0.836	0.146	
Nickel (dissolved)	µg/l	30	SI 278/2007	7.05	4.85	4.97	9.62	2.92	3.37	5.13	7.47	50.9	2.06	6.96	8.31	6.61	11.1	5.16	4.78	6.21	8.64	33.9	5.4	
Selenium (dissolved)	µg/l	10	SI 278/2007	2.14	2.8	2.16	26.7	27	4.82	14.5	1.34	30.2	1.86	22	6.28	24.9	5.91	9.84	2.26	1.99	1.92	35.7	2.54	
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	1.18	1.76	1.13	1.21	0.755	0.991	2.7	0.655	38.3	0.709	2.23	1.95	3.49	3.86	0.817	1.31	1.18	2.49	20.3	1.37	
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0188	0.0321	<0.01	<0.01	<0.01	0.0559	<0.01	0.0117	<0.01	0.0153	<0.01	<0.01	<0.01	<0.01	<0.01	0.144	<0.01	
Ammonium	µg/l	300	SI 278/2007	9650	3270	1280	138000	100000	6010	12000	483	62300	4640	46600	24900	27600	6480	30400	8140	1130	6790	119000	830	
Sulphate (soluble)	µg/l	250000	SI 278/2007	375000	277000	353000	102000	36800	128000	401000	32100	496000	37300	565000	304000	254000	729000	162000	188000	58400	733000	-	530000	
Phenols	µg/l	0.5	SI 81/1988	<25	<25	<25	118000	215000	<25	660	2130	248000	250	21400	<25	56600	<25	12200	<25	<25	<25	1280000	<25	
Total Cyanide	µg/l	50	SI 278/2007	267	154	66	259	522	69	930	295	12800	<50	1110	279	380	581	<50	<50	411	9530	946		
pH Value	µg/l	6.5	SI 278/2007	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	7.44	8.31	7.57	7.45	7.68	9.76	7.76		
pH Value	µg/l	9.5	SI 278/2007	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	7.44	8.31	7.57	7.45	7.68	9.76	7.76		
BTEX																								
Benzene	µg/l	1	SI 278/2007	574	<7	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<7	13	<7	16700	<7	
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	30	<4	76	5450	12500	40	360	91	2480	<4	3680	<4	6920	<4	996	<4	<4	<4	5930	<4	
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	189	<5	7	312	527	85	219	39	119	<5	392	<5	606	<5	75	<5	<5	<5	359	<5	
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	158	<10	147	3040	5030	542	861	186	1310	<10	2570	23	5250	10	757	<10	11	<10	3140	<10	
Petroleum Hydrocarbons																								
GRO (C4-C12)	µg/l	10	SI 81/1988	2689	93	968	38520	81100	4000	5540	1659	21820	<91.3	19040	280.6	39850	422	6150	175.2	463	<20	50900	221.4	
MTBE	µg/l			<3	<3	<3	<15	<30	<3	<3	<3	<15	<3	<6	<3	<15	<3	<3	<3	<3	<3	<15	<3	
Aliphatics C5-C6	µg/l			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C6-C8	µg/l			121	<10	36.4	3400	8370	31.3	<10	91.4	2060	<10	1200	27	1860	13.5	155	<10	<10	<10	<10	<10	
Aliphatics C8-C10	µg/l			150	13.4	95.8	1390	2550	368	249	105	665	<10	773	18.6	1670	44.1	236	24.5	51.1	<10	1860	27.6	
Aliphatics C10-C12	µg/l			498	23.8	176	4710	7840	937	1120	233	1980	<10	1750	29	4680	107	818	45.7	124	<10	5990	60.8	
Aliphatics C12-C16	µg/l			<10	89	797	174	<10	357	56	225	46	65	<10	<10	1270	40	<10	186	328	<10	2360	<10	
Aliphatics C16-C21	µg/l			<10	230	560	156	<10	131	84	255	41	398	<10	57	1310	38	<10	142	186	<10	1770	<10	
Aliphatics C21-C35	µg/l			<10	106	1280	188	<10	21	27	876	55	820	<10	46	1280	23	<10	685	276	<10	2000	<10	
Aromatics C6-C7	µg/l			574	<10	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<10	13	<10	16700	<10	
Aromatics C7-C8	µg/l			30	<10	76	5450	12500	40	360	91	2480	<10	3680	<10	6920	<10	996	<10	<10	<10	5930	<10	
Aromatics 8-10	µg/l			972	20.1	291	5430	9380	1180	1450	383	2450	11.4	4120	50.9	8360	76.1	1190	36.7	87.7	<10	8300	41.4	
Aromatics 10-12	µg/l			747	35.7	264	7060	11800	1400	1680	349	2980	161	2620	43.5	7010	161	1230	68.6	187	<10	8980	91.2	
Aromatics 12-16	µg/l			196	13	2280	10700	19100	349	1310	161	4110	27	6280	21	19900	<10	917	117	118	<10	40600	<10	
Aromatics 16-21	µg/l			177	61	4480	2200	1250	297	826	411	1010	142	534	11	8400	39	304	353	413	<10	12300	<10	
Aromatics 21-35	µg/l			421	30	10400	2590	142	318	497	2170	1010	1020	70	128	13400	318	320	1740	2000	<10	13900	<10	
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	3490	622	20800	54500	102000	5470	8340	5750	28100	2550	25900	544	85300	880	7690	3400	3780	<10	124000	221	
PAHs																								
Acenaphthene	µg/l			0.979	<0.015	62.3	45.7	125	13.6	49.5	1.28	22.3	1.56	26.9	1.58	167	0.295	6.97	2.32	2.53	0.0366	129	<0.015	
Acenaphthylene	µg/l			6.24	0.124	267	258	1050	4.77	79.5	9.82	127	5.77	32.1	1.1	749	4.67	40.8	9.78	13.3	0.145	543	0.105	
Anthracene	µg/l			1.66	0.0872	282	84.9	64.9	2.79	30.7	7.57	48.7	2.79	2.51	1.08	321	2.74	14	7.78	15.7	0.123	245	0.0982	
Benzo(a)anthracene	µg/l			16.6	0.334	205	39.5	8.72	5.49	9.81	33.4	18.6	13.2	<0.85	4.7	89	12.5	10.6	24.5	54.2	1.11	113	1.51	
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	18.8	0.227	140	28.8	6.07	4.53	5.01	34	8.61	21	<0.45	4.79	54.6	14.4	6.28	28.2	46.2	1.54	79.2	2.23	
Benzo(b)fluoranthene	µg/l			13.1	0.354	175	44.1	7.74	5.6	6.27	37.7	11	25.7	<1.15	5.99	72.1	17.2	8.33	32.4	51.9	2.06	105	2.98	
Benzo(g)herylene	µg/l			8.44	0.0812	69.9	20.8	6.43	2.45	2.17	18.4	4.28	15.8	<0.8	2.76	26.2	7.97	2.67	17.3	17.9	1.31	46.4	1.95	
Benzo(k)fluoranthene	µg/l			4.84	0.113	64.5	14.2	4.29	1.68	1.8	13.4	4.62	8.59	<1.35	1.99	32.3	5.61	3.07	11.6	18.5	0.681	48.2	0.949	
Chrysene	µg/l			8.35	0.131	138	37.9	8.47	3.36	5.86	18.7	16.8	10.2	<0.65	2.84	86.5	7.34	6.46	13.1	23.7	0.59	107	0.892	
Dibenz(a,h)anthracene	µg/l			1.97	0.0245	19.1	4.25	2.34	0.685	0.559	5.25	0.975	4.23	<0.8	0.908	6.24	2.43	0.957	5.12	7.94	0.312	9.6	0.455	
Fluorene	µg/l	4	WHO Drinking Water Quality Guideline Value	21	0.963	678	153	41.4	18.5	59.5	58.7	93.9	19.6	3.48	5.8	482	19.9	23.8	53.7	88.9	1.17	471	9.6	
Fluorene	µg/l			0.613	0.0442	266	144	314	4.76	65.4	2.95	77.3	1.67	12.6	0.944	482	0.785	25.2	5.7	11.1	0.0477	374	0.0315	
Indeno(1,2,3-cd)pyrene	µg/l			6.61	0.0718	61.6	15	4.67	2.27	1.95	16.9	3.28	13.8	<0.7	2.54	21.8	7.38	2.46	15.3	17.9	1.06	34.9	1.56	
Naphthalene	µg/l			0.295	<0.1	87.9	4500	23600	2.59	14.2	2.3	1460	20.4	750	0.918	4870	0.981	12.1	10.3	6.43	0.108	5960	0.228	
Phenanthrene	µg/l			0.759	0.0257	782	290	252	5.8	93.5	16	175	5.96	21.3	1.79	994	3.74	39.1	18.5	53.8	0.318	794	0.18	
Pyrene	µg/l			40.5	0.99	442	105	26.6	11.5	36.1	39.3	61.9	18.6	2.13	4.72	320	12.4	16.3	41.1	61.2	1.21	309	1.25	
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g)herylene & Indeno(1,2,3-cd)pyrene)	µg/l	0.1	SI 278/2007	32.99	0.62	371	94.1	23.13	12	12.19	86.4	23.18	63.89	<4	13.28	152.4	38.16	16.53	76.6	106.2	5.111	234.5	7.439	
Volatile Organic Compounds																								
1,1,1,2-Tetrachloroethane	µg/l			<1.3	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3	
1,1,1-Trichloroethane	µg/l	2000	WHO Drinking Water Quality Guideline Value	<1.3	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<								

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 4 (15th - 16th July 2010)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Ground type Borehole Depth (mbgl)																			
				A3	A4	A11	B8	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
Inorganics																							
Arsenic (dissolved)	µg/l	10	SI 278/2007	31.8	7.35	11.2	38.3	23.9	7.8	9.07	1.68	104	<0.12	17.6	9.3	11.8	1.27	7.57	3.44	1.73	2.5	167	2.91
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.567	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.172	<0.1	0.32	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	7.49	5.34	2.63	6.43	5.21	2.57	4.39	1.45	1.7	0.577	15.9	6.72	6.41	4.59	2.44	6.83	3.74	5.5	22.9	2.51
Copper (dissolved)	µg/l	3000	SI 278/2007	<0.85	0.915	<0.85	<0.85	<0.85	<0.85	<0.85	1.52	3.95	2.03	1.29	<0.85	2.2	2.51	1.64	<0.85	7.73	1.47	3.84	4.84
Lead (dissolved)	µg/l	25	SI 278/2007	0.02	0.05	<0.02	0.054	0.422	<0.02	<0.02	0.341	0.06	<0.02	<0.02	<0.02	0.19	<0.02	<0.02	0.055	0.144	0.212	4.15	1.82
Nickel (dissolved)	µg/l	20	SI 278/2007	4.93	3.84	7.73	9.24	2.28	6.18	5.8	2.17	53.4	1.94	4.39	12.3	6.01	14.3	9	3.53	5.61	6.69	35.4	3.6
Selenium (dissolved)	µg/l	10	SI 278/2007	1.08	1.02	2.86	5.73	16.9	1.19	1.48	0.928	22.7	<0.39	13.6	8.99	8.46	1.51	3.93	1.07	1.56	1.08	26.1	1.69
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	10.8	4.29	3.63	3.48	3.16	4.23	1.57	3.79	24.7	3.07	2.04	3.48	5.29	6	2.27	2.1	4.82	2.9	173	2.49
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	<0.01	0.0179	<0.01	<0.01	0.0283	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0101	<0.01	0.0677	<0.01
Ammonium	µg/l	300	SI 278/2007	12200	3640	21200	132000	107000	6660	14100	778	59900	315	67000	40200	14000	6610	67200	17400	571	10900	215000	1650
Sulphate (soluble)	µg/l	250000	SI 278/2007	324000	233000	319000	130000	49400	344000	384000	13700	416000	123000	545000	254000	426000	942000	426000	189000	266000	800000	728000	564000
Phenols	µg/l	0.5	SI 81/1988	<0.2	<0.2	969	127000	304000	<0.2	520	<0.2	125000	<0.2	32600	<0.2	14100	<0.2	10300	<0.2	<0.2	<0.2	1620000	<0.2
Total Cyanide	µg/l	50	SI 278/2007	241	168	<0.05	206	363	199	826	97	5990	<0.05	783	361	358	422	961	<0.05	<0.05	367	14600	771
pH Value	µg/l	6.5	SI 278/2007	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
pH Value	µg/l	9.5	SI 278/2007	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
BTEX																							
Benzene	µg/l	1	SI 278/2007	117	<7	40	8020	16300	13	618	<7	3690	<7	4940	91	3140	<7	1040	<7	<7	<7	14300	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	<4	<4	64	4550	5220	<4	237	<4	954	<4	3580	<4	2860	<4	554	<4	<4	<4	4870	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	<5	<5	17	275	203	<5	194	<5	45	<5	377	<5	269	<5	36	<5	<5	<5	271	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	49	<10	113	2590	1990	74	745	<10	512	<10	2460	<10	2450	<10	365	<10	<10	<10	2650	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l	10	SI 81/1988	834	153.3	922	26810	39420	1625	5470	<36.3	12030	<20	21000	288.8	21910	<20	5000	102.1	<20	<20	52100	<20
MTBE	µg/l			<3	<3	<3	<6	<15	<3	<3	<6	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l			<10	<10	<10	83.9	124	<10	<10	107	<10	<10	20.2	<10	<10	<10	<10	<10	<10	<10	888	<10
Aliphatics C6-C8	µg/l			58.9	<10	24.7	651	2900	<10	11.3	<10	1220	<10	1890	14.4	2030	<10	513	<10	<10	<10	3910	<10
Aliphatics C8-C10	µg/l			53.2	15	75.1	777	1110	190	241	<10	484	<10	940	25.1	1100	<10	201	10.2	<10	<10	1850	<10
Aliphatics C10-C12	µg/l			190	46.4	190	3500	3990	425	1230	<10	1710	<10	2140	48.3	3380	<10	798	30.6	<10	<10	8230	<10
Aliphatics C12-C16	µg/l			<10	334	<10	35	<10	367	99	65	<10	<10	<10	90	625	<10	26	<10	<10	<10	<10	<10
Aliphatics C16-C21	µg/l			<10	580	<10	14	<10	235	162	72	<10	<10	<10	79	389	<10	43	<10	<10	<10	<10	<10
Aliphatics C21-C35	µg/l			<10	328	<10	<10	<10	110	108	203	<10	<10	<10	65	448	<10	281	<10	<10	<10	<10	<10
Aromatics C6-C7	µg/l			117	<10	40	8020	16300	13	618	<10	3690	<10	4940	91	3140	<10	1040	<10	<10	<10	14300	<10
Aromatics C7-C8	µg/l			<10	<10	64	4550	5220	<10	237	<10	954	<10	3580	<10	2860	<10	554	<10	<10	<10	4870	<10
Aromatics C8-C10	µg/l			129	22.4	243	4030	3850	359	1300	12.1	1290	<10	4250	37.7	4360	<10	702	15.4	<10	<10	5700	<10
Aromatics C10-C12	µg/l			286	69.5	285	5250	5990	637	1840	14.1	2570	<10	3220	72.5	5070	<10	1200	45.9	<10	<10	12300	<10
Aromatics C12-C16	µg/l			615	43	608	12700	28300	702	2000	52	9600	<10	6940	14	5800	1120	3640	<10	<10	<10	62200	<10
Aromatics C16-C21	µg/l			377	139	391	1510	1980	537	1350	174	809	<10	734	10	1940	1920	617	54	<10	<10	3500	<10
Aromatics C21-C35	µg/l			272	288	267	385	348	464	1120	1100	313	<10	223	49	1570	4720	198	347	<10	20	756	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	2100	1870	2190	41500	70100	4040	10300	1690	22700	<10	28900	362	31500	9220	9450	853	<10	20	119000	<10
PAHs																							
Acenaphthene	µg/l			26.7	0.17	10.9	23.2	36.3	34.3	63.5	2.94	12.5	0.04	49.1	4.95	47.1	46	12.5	1.93	<0.015	0.1	31.6	<0.015
Acenaphthylene	µg/l			7.54	1.49	54.5	174	277	5	137	9.41	89	0.32	75.9	2.5	198	131	76.2	4.1	0.16	0.22	190	0.07
Anthracene	µg/l			1.48	0.65	8.87	28.6	42.6	4.57	52.3	6.19	15.9	0.08	4.91	1.69	47.7	130	12.9	1.83	0.05	0.2	21.6	0.09
Benzo(a)anthracene	µg/l			6.06	3.43	3.19	6.75	6.06	5.29	14.9	15.4	4.75	0.68	<1.7	4.28	19	90.7	2.63	7.24	0.16	1.26	<1.7	0.97
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	6.92	4.73	2.34	4.09	2.18	4.19	7.32	16.1	2.15	1.04	1.28	4.22	11.4	75.3	0.81	9.57	0.3	1.7	<0.9	1.39
Benzo(b)fluoranthene	µg/l			4.86	5.6	3.01	5.65	3.52	5.2	10.5	17.4	3.29	1.41	<2.3	5.15	17	94.3	1.32	12.3	0.32	2.34	<2.3	1.97
Benzo(g)herylene	µg/l			3.45	2.93	0.96	2.01	<1.6	2.04	3.14	10.1	0.88	1.71	<1.6	2.45	8.92	43.9	<0.32	5.26	0.22	1.43	<1.6	1.3
Benzo(k)fluoranthene	µg/l			1.83	2.17	1.13	2.18	<2.7	1.8	3.73	7.37	1.25	0.44	<2.7	2.23	7.69	37.8	0.54	4.33	0.11	0.85	<2.7	0.67
Chrysene	µg/l			4.25	2.08	2.09	5.46	5.31	3.23	10.3	11.9	3.51	0.57	1.69	3.31	15.4	67.7	1.82	5.04	0.1	1.02	<1.3	0.77
Dibenz(a,h)anthracene	µg/l			0.73	0.78	0.28	<0.64	<1.6	0.62	0.8	2.88	<0.32	0.18	<1.6	0.739	2.6	12.6	<0.32	1.47	0.06	0.34	<1.6	0.27
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	13.8	8.31	13.4	33.4	47	20.5	104	37.7	23.6	1.1	12.8	7.64	81.4	289	15.8	19	0.21	2.01	14.9	1.38
Fluorene	µg/l			3.63	0.3	24.6	66.6	114	16.1	108	3.78	36.8	0.06	25.4	1.94	96	142	39.8	1.81	0.04	0.1	67.2	0.03
Indeno(1,2,3-cd)pyrene	µg/l			2.57	2.85	0.99																	

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 5 (20th - 21st Oct 2010)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
 Typical productivity: Moderately Productive (40-100 m3/d)

 Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Ground type Borehole Depth (mbgl)																			
				A3	A4	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3	
Inorganics																							
Arsenic (dissolved)	µg/l	10	SI 278/2007	33.3	10.7	12.3	32.9	17	11.4	6.86	113	4.55	17.7	7.54	16.1	6.49	16.7	5.39	2.84	4.28	42.7	3.25	
Cadmium (dissolved)	µg/l	5	SI 278/2007	0.107	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.452	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium (dissolved)	µg/l	50	SI 278/2007	6.1	5.09	3.11	7.87	5.48	6.42	4.88	1.83	5.14	9.16	7.17	4.26	8.96	3.69	4.3	4.5	3.31	7.76	1.1	
Copper (dissolved)	µg/l	3000	SI 278/2007	1.88	<0.85	<0.85	1.18	<0.85	1.19	1.3	0.864	<0.85	3.44	1.05	<0.85	1.31	<0.85	0.064	0.059	0.024	0.052	0.393	0.039
Lead (dissolved)	µg/l	25	SI 278/2007	0.125	0.072	0.07	0.248	0.027	<0.02	0.118	183	0.065	<0.02	0.065	0.166	0.064	0.059	0.024	0.052	0.393	0.393	0.534	0.039
Nickel (dissolved)	µg/l	30	SI 278/2007	6.19	4.24	5.64	1.59	4.07	4.13	8.01	56.3	8.41	6.14	9.24	4.99	7.83	7.1	4.24	4.96	7.57	15.7	3.86	
Selenium (dissolved)	µg/l	10	SI 278/2007	1.54	1.65	3.49	48.6	3.1	16.5	1.95	35.7	2.36	40.1	5.97	9.38	2.05	19	1.2	3.45	1.36	23	1.34	
Zinc (dissolved)	µg/l	5000	WHO Drinking Water Quality Guideline Value	1.29	0.526	0.664	0.877	0.599	<0.41	0.98	44.8	1.5	1.67	1.7	3.26	1.37	<0.41	0.452	0.809	0.83	3.11	0.553	
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0185	<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	0.0244	<0.01	
Ammonium	µg/l	300	SI 278/2007	10000	2990	5030	98400	7150	11400	1900	45700	17700	38700	27000	13000	11400	33800	14900	824	5810	56700	1350	
Sulphate (soluble)	µg/l	250000	SI 278/2007	315000	245000	272000	54800	79900	420000	112000	462000	62700	605000	506000	158000	676000	385000	203000	165000	734000	573000	576000	
Phenols	µg/l	0.5	SI 81/1988	420	<25	140	167000	400	2520	350	180000	2630	4180	520	2930	2710	10400	50	<25	<25	1010000	<25	
Titral Cyanide	µg/l	50	SI 278/2007	254	142	73	400	88	967	159	7800	<50	890	379	127	833	292	<50	<50	820	1840	941	
pH Value	µg/l	6.5	SI 278/2007	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8	
pH Value	µg/l	9.5	SI 278/2007	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8	
BTEX																							
Benzene	µg/l	1	SI 278/2007	<7	<7	<7	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<7	<7	18200	<7	
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	<4	<4	12	4470	43	460	5	2040	47	3100	11	1290	29	609	<4	<4	<4	5680	<4	
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	<5	<5	<5	152	87	166	11	86	<5	352	17	151	7	54	<5	<5	<5	268	<5	
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	97	<10	42	1520	307	774	36	940	15	2350	49	1440	60	537	<10	<10	<10	2430	<10	
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l	10	SI 81/1988	1244	96	256	32270	3610	6800	253	18700	417	18270	692	8170	480	5250	90	31	28	51800	<20	
MTBE	µg/l			<3	<3	<3	<15	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<30	<3	
Aliphatics C5-C6	µg/l			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Aliphatics C6-C8	µg/l			38	10	<10	506	32	67	11	525	11	217	17	70	15	73	<10	<10	<10	1980	<10	
Aliphatics C8-C10	µg/l			144	19	35	1470	395	492	36	949	22	1040	49	644	64	312	14	<10	<10	2650	<10	
Aliphatics C10-C12	µg/l			519	31	76	5720	1450	2330	62	3450	58	3890	149	1770	130	1450	28	11	<10	11100	<10	
Aliphatics C12-C16	µg/l			<10	427	<10	11	306	<10	108	18	<10	<10	<10	43	<10	13	58	<10	<10	552	<10	
Aliphatics C16-C21	µg/l			<10	520	<10	17	140	<10	125	29	<10	<10	77	27	11	31	39	<10	<10	683	<10	
Aliphatics C21-C35	µg/l			<10	314	<10	12	32	<10	431	22	136	<10	151	17	<10	13	246	<10	<10	861	<10	
Aromatics C6-C7	µg/l			<10	<10	<10	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<10	<10	18200	<10	
Aromatics C7-C8	µg/l			<10	<10	12	4470	43	460	<10	2040	47	3100	11	1290	29	609	<10	<10	<10	5680	<10	
Aromatics C8-C10	µg/l			194	14	88	2660	657	1270	71	1660	32	3390	98	2030	110	799	11	<10	<10	4470	<10	
Aromatics C10-C12	µg/l			346	21	41	3810	964	1550	41	2300	38	2460	99	1180	87	967	19	<10	<10	7380	<10	
Aromatics C12-C16	µg/l			209	89	41	20900	802	144	107	12400	121	5310	152	1910	1540	1910	55	<10	<10	69400	<10	
Aromatics C16-C21	µg/l			183	231	27	1520	472	101	148	1170	<10	550	20	820	593	454	120	<10	<10	7220	<10	
Aromatics C21-C35	µg/l			63	473	61	514	442	27	908	871	68	127	176	781	268	443	649	44	41	6780	79	
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	1700	2150	385	55200	5800	7070	2080	33200	742	24200	1270	11800	2890	8120	1260	75	69	137000	95	
PAHs																							
Acenaphthene	µg/l			0.855	0.142	67	21.8	47.8	31.9	1.22	11.6	1.37	58.9	4.1	36	3.91	8.72	2.3	0.0512	0.139	50.1	0.0197	
Acenaphthylene	µg/l			1.01	1.29	331	211	6.93	34.4	5.57	100	8.47	72.2	1.9	141	2.83	58.1	4.66	0.465	0.134	380	0.148	
Anthracene	µg/l			0.478	0.514	212	28	4.04	9.89	23	11.5	2.69	10.9	1.42	35	1.09	15.7	2.35	0.178	0.157	50.3	0.243	
Benzo(a)anthracene	µg/l			1.12	3.24	354	5.3	7.04	6.22	14.6	5.99	64.5	1.92	7.59	19.5	2.32	14.1	17.8	0.8	1.2	6.87	3.07	
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	1.55	7.2	443	3.12	10.1	3.41	33.8	2.05	132	1.19	11.3	15.5	2.5	14.1	32.5	3.95	2.35	2.94	5.6	
Benzo(b)fluoranthene	µg/l			0.564	6.76	386	3.14	9.15	3.03	28.8	<2.3	128	1.36	10.4	12.3	1.99	9.84	29.3	2.95	2.37	3.1	5.7	
Benzo(g)herylene	µg/l			0.733	4.72	313	2.08	6.08	1.64	21.1	<1.6	72.1	1.14	7.28	8.19	1.44	5.21	20.2	2.21	2.32	1.66	5.61	
Benzo(k)fluoranthene	µg/l			1.07	5.84	400	3.46	7.91	2.77	27.4	<2.7	110	1.39	11.1	13.2	2.23	14.6	27.7	2.49	2.2	2.99	5.08	
Chrysene	µg/l			0.92	2.89	216	8.51	5.68	4.97	12.8	2.65	39.4	2.1	7.32	16	2.16	10.6	14.7	0.719	1.19	6.72	2.91	
Dibenz(a,h)anthracene	µg/l			0.107	1.44	87.4	0.814	1.51	0.464	6.46	<1.6	20.9	0.74	1.76	2.36	0.391	1.89	6.49	0.668	0.542	0.848	1.26	
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	4.31	7.24	805	32.9	22.7	33.4	24.6	16.9	34.2	10.7	10.2	61.3	10.3	28.5	27	0.864	1.59	53.5	3.43	
Fluorene	µg/l			0.398	0.281	222	73.6	18	57.1	1.42	35.2	1.45	42.2	1.43	74.4	1.54	36.5	2.49	0.173	0.0853	126	0.061	
Indeno(1,2,3-cd)pyrene	µg/l			0.519	4.8	292	2.29	6.04	1.75	20.9	<1.4	70.4	1.2	6.98	8.25	1.51	6.18	18.8	1.99	2.03	1.93	5.01	
Naphthalene	µg/l			0.315	0.441	95.2	5170	4.45	23	2.41	2030	17.7	4640	1.71	99.7	2.14	19.5	3.44	0.202	0.196	6130	0.266	
Phenanthrene	µg/l			0.65	0.746	383	95.4	7.84	71.2	5.42	42.3	6.89	50.7	3	90.6	1.12	51.4	7.89	0.548	0.395	154	0.342	
Pyrene																							

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 2.

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

- * Hardness related Freshwater EQS - based on cyprinid/coarse fish
- Concentration exceeds screening value
- Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (ug/l)		Source of screening value	Ground type																			
		Freshwater	Coastal/Estuary /Marine		Borehole																			
					A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
					Depth (m)																			
					1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-9.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00
Inorganics																								
Arsenic (dissolved)	ug/l	25	20	SI 27/2009 Annual Ave	1.22	29.8	3.3	18	4.13	37.1	15.4	6.04	2.35	13.9	24.4	6.11	4.29	3.76	5.16	2.36	2.01	3.9	290	3.53
Cadmium (dissolved)	ug/l	1.5	1.5	SI 27/2009 MAC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.439	<0.1
Chromium (dissolved)	ug/l	32	32	SI 27/2009 MAC	15.9	11.5	9.21	<3	46.2	5.9	37.3	<3	17.2	6.41	22.9	47.9	6.83	124	52	17.6	<3	95.7	56.8	14.7
Copper (dissolved)	ug/l	30*	-	SI 27/2009 Annual Ave	1.52	1.14	1.03	1.71	1.27	<0.85	1.34	0.914	11.2	3.2	1.83	1.6	3.31	2.71	1.4	<0.85	3.9	1.57	3.19	2.2
Lead (dissolved)	ug/l	7.2	7.2	SI 27/2009 Annual Ave	2.33	0.034	0.112	0.087	0.02	0.371	0.03	<0.02	0.308	0.58	<0.02	0.077	<0.02	0.139	0.07	0.094	0.063	0.582	5.31	0.066
Nickel (dissolved)	ug/l	20	20	SI 27/2009 Annual Ave	3.47	5.52	4.36	7.18	5.14	6.15	7.91	7.49	5.84	3.89	10.4	14.2	3.95	15.2	4.83	4.88	4.75	13.9	69.6	7.08
				Canadian Water Quality Guidelines for Aquatic Life (2007)																				
Selenium (dissolved)	ug/l	1	-	SI 27/2009 Annual Ave	5.48	1.23	1.26	14.7	4.12	44.6	3.05	1.56	8.47	8.08	9.82	8.98	5.32	4.58	4.78	1.6	1.35	1.62	66	2.62
Zinc (dissolved)	ug/l	100*	40	SI 27/2009 Annual Ave	11.6	2.33	1.56	1.32	0.801	1.18	<0.41	0.955	0.957	1.41	<0.41	<0.41	<0.41	<0.41	1.09	<0.41	<0.41	<0.41	107	<0.41
Mercury (dissolved)	ug/l	0.07	0.07	SI 27/2009 MAC	<0.01	<0.01	<0.01	<0.01	<0.01	0.029	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.187	<0.01
Ammoniacal Nitrogen	ug/l	1000	-	Freshwater Fish Directive	1330	9270	2930	60300	4730	118000	10400	1480	59300	1930	48300	22500	9460	4190	21300	6270	439	11800	202000	890
Sulphate (soluble)	ug/l	200000	-	EQS & IGW	328000	423000	310000	67500	222000	64600	456000	43000	547000	33900	583000	571000	127000	671000	112000	169000	35900	709000	715000	556000
Phenols	ug/l	46	46	SI 27/2009 MAC	<2	20	<2	12900	<2	63800	10	<2	86000	40	2770	10	180	<2	3170	<2	20	<2	464000	<2
Free Cyanide - (total CN in lab results)	ug/l	10	10	SI 27/2009 Annual Ave	<50	242	177	118	74	814	663	179	13700	<50	809	495	321	817	<50	<50	152	12000	794	
pH Value	ug/l	6.5	6.5	Interim Guideline Values	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97
pH Value	ug/l	9.5	9.5	Interim Guideline Values	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97
BTEX																								
Benzene	ug/l	50	50	SI 27/2009 MAC	<7	458	<7	7150	61	22800	644	38	8540	<7	4140	158	2150	30	2170	12	<7	<7	13800	<7
Toluene	ug/l	10	10	SI 27/2009 Annual Ave	<4	36	<4	4120	61	9130	512	24	2040	<4	2890	13	2840	34	1190	14	<4	<4	4670	<4
Ethyl benzene	ug/l	10	10	EQS & IGW	<5	82	<5	310	65	391	227	<5	85	<5	281	14	293	14	83	<5	<5	236	<5	
Xylene	ug/l	10	10	SI 27/2009 Annual Ave	73	140	12	3000	505	3660	1020	71	940	<10	1950	78	2620	218	824	58	<10	<10	2180	<10
Petroleum Hydrocarbons																								
GRO (C4-C12)	ug/l	-	-	IGW	679	2970	216	<42	5970	88200	8960	479	21200	48	16300	571	19500	1830	7040	949	66	<42	49500	<42
MTBE	ug/l	30	30	IGW	7	<3	<3	<3	21	<30	12	<3	<3	6	<3	12	24	10	4	<3	<3	<3	<3	<3
Aliphatics C5-C6	ug/l	-	-	-	14.3	<10	<10	<10	31.3	402	<10	<10	136	12.3	<20	15.2	30.6	13.2	18.3	<10	<10	<10	760	<10
Aliphatics C6-C8	ug/l	-	-	-	48.3	319	<10	<10	124	<100	405	23.2	1620	35.7	629	83.4	1510	83.7	<10	17.2	<10	<10	4600	<10
Aliphatics C8-C10	ug/l	-	-	-	55.2	205	31.2	<10	498	6680	609	37.3	774	<10	647	32.1	1130	209	208	82.8	26.4	<10	1990	<10
Aliphatics C10-C12	ug/l	-	-	-	162	567	50.4	<10	1540	16500	1840	91.8	2360	<10	1910	44.7	2860	360	990	256	<10	<10	7310	<10
Aliphatics C12-C16	ug/l	-	-	-	<10	<10	126	11	156	<10	267	<10	<10	<10	<10	342	906	<10	223	<10	<10	<10	<10	<10
Aliphatics C16-C21	ug/l	-	-	-	<10	<10	247	50	325	<10	207	<10	<10	<10	<10	135	364	725	<10	195	<10	<10	<10	<10
Aliphatics C21-C35	ug/l	-	-	-	<10	<10	85	44	71	<10	115	<10	<10	<10	<10	95	265	524	<10	595	<10	<10	<10	<10
Aromatics C6-C7	ug/l	-	-	-	<10	458	<10	7150	61	22800	644	38	8540	<10	4140	158	2150	30	2170	12	<10	<10	13800	<10
Aromatics C7-C8	ug/l	-	-	-	<10	36	<10	4120	61	9130	512	24	2040	<10	2890	13	2840	34	1190	14	<10	<10	4670	<10
Aromatics 8-10	ug/l	-	-	-	156	529	58.8	1320	1320	14100	2160	127	2190	<10	3200	140	4610	545	1220	182	39.6	<10	5400	<10
Aromatics 10-12	ug/l	-	-	-	243	850	75.6	<10	2320	24800	2760	138	3550	<10	2860	67.1	4300	540	1490	384	<10	<10	11000	<10
Aromatics 12-16	ug/l	-	-	-	201	634	61	5200	1550	16400	1840	83	5740	<10	1980	48	3570	2580	1050	235	<10	<10	8490	<10
Aromatics 16-21	ug/l	-	-	-	197	185	116	1340	779	1050	1840	51	904	<10	250	75	3070	4460	322	353	<10	<10	789	<10
Aromatics 21-35	ug/l	-	-	-	111	22	156	1060	433	306	2660	93	543	<10	172	189	4180	8260	188	1260	<10	184	149	<10
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	10	EQS & IGW	1190	3900	1010	29300	9270	112000	15900	706	28400	48	18700	1100	31200	19300	8840	3610	66	184	58900	<10
PAHs																								
Acenaphthene	ug/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	8.45	114	1.26	32.5	117	19	137	0.083	29.7	0.044	29.4	1.63	97.5	98.1	11.5	4.76	0.185	0.43	35.4	0.0522
Acenaphthylene	ug/l	-	-	-	19.6	65.5	1.56	206	40.9	183	286	0.422	172	0.198	45.7	1.75	372	283	71.8	11.9	0.203	0.882	191	0.156
Anthracene	ug/l	0.4	0.4	SI 27/2009 MAC	4.07	3.25	0.525	55.3	20.5	19.8	95.5	0.425	37.7	0.15	67.4	2.12	177	307	11.3	6.08	0.0562	0.765	31.9	0.152
Benzo(a)anthracene	ug/l	0.018	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	3.7	0.282	2.23	16.3	13.1	<4.25	44.8	0.856	12.3	0.607	5.63	4.29	87.2	193	3.1	17.9	0.193	4.76	5.99	1.67
Benzo(a)pyrene	ug/l	0.1	0.1	SI 27/2009 MAC	2.5	0.115	2.19	9.92	9.61	2.49	29.9	0.932	6.5	0.887	4.8	3.5	48.7	122	0.863	18.3	0.296	6.18	3	2.15
Benzo(b)fluoranthene	ug/l	0.5	-	Interim Guideline Value	3.39	0.119	2.97	15.4	12.8	<5.75	42	1.32	10.2	1.08	6.76	4.81	72.4	169	1.41	23.3	0.381	8.12	4.08	3.16
Benzo(g,h,i)perylene	ug/l	0.05	-	Interim Guideline Value	1.04	<0.08	1.35	7.18	4.72	<4	17.7	0.489	3.99	0.522	2.61	2.1	21.6	54.6	<0.32	11.1	0.2	5.43	2	1.94
Benzo(k)fluoranthene	ug/l	0.05	-	Interim Guideline Value	1.24	<0.135	1.13	6.81	4.71	<6.75	17.2	0.593	4.15	0.451	2.39	1.8	28.2	60.2	<0.54	8.45	0.128	3.15	<2.7	1.16
Chrysene	ug/l	-	-	-	2.98	0.261	1.26	18	8.74	4.35	38.4	0.522	10.2	0.408	5.83	3.67	70	154	2.32	12	0.107	3.22	4.42	1.23
Dibenz(a,h)anthracene	ug/l	-	-	-	0.296	<0.08	0.338	<3.2	1.35	<4	4.96	0.124	1.53	0.128	0.914	0.565	6.13	15.8	<0.32	2.93	0.0522	1.32	<1.6	0.409
Fluoranthene	ug/l	1	1	SI 27/2009 MAC	12.7	4.81	6.43	81.4	52.4	21.4	215	3.89	60.9	0.966	23.2	8.92	339	640	17.4	52.3	0.597	6.85	41.1	2.18
Fluorene	ug/l	3	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	18	34.1	0.649	107	52.1	56.6	180	0.196	86.3	0.0567	19	1.25	274	336	34.6	4.9	0.0317	0.385	72.7	0.0527
Indeno(1,2,3-cd)pyrene	ug/l	0.05	-	Interim Guideline Value	1.08	<0.07	1.26																	

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 3 (21st - 22nd April 2010)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

- * Hardness related Freshwater EQS - based on cyprinid/coarse fish
- Concentration exceeds screening value
- Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)	Source of screening value	Ground type																				
				Borehole																				
				A3	A4	A11	B8	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3	
Depth (mbgl)																								
		Freshwater	Coastal/Estuary /Marine	1.50-4.50	1.50-2.30	1.00-2.50	1.60-2.80	2.00-6.50	1.50-2.50	3.00-4.50	2.00-3.00	1.50-6.00	1.00-4.00	4.00-10.00	3.50-8.50	3.00-9.50	2.50-8.50	1.00-2.00	1.50-4.00	1.00-2.00	2.50-4.00	1.00-5.00	3.50-6.00	
Inorganics																								
Arsenic (dissolved)	µg/l	25	20	39.2	7.31	2.98	52.8	27.9	7.81	12	3.7	137	7.15	18.6	6.1	30.6	4.35	5.93	3.38	5.25	2.2	121	3.8	
Cadmium (dissolved)	µg/l	1.5	1.5	<0.1	<0.1	0.102	<0.1	<0.1	<0.1	<0.1	<0.1	0.721	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.118	<0.1
Chromium (dissolved)	µg/l	32	32	21.3	14.5	3.59	22.7	15.5	8.31	20.6	9.27	3.35	4.28	28.1	20.9	23.4	26.1	4.48	12.8	14.8	10	26.1	4.63	
Copper (dissolved)	µg/l	30	30	<0.85	<0.85	1.34	<0.85	<0.85	<0.85	<0.85	<0.85	2.47	<0.85	1.11	<0.85	1.99	1.62	<0.85	<0.85	2.37	5.2	5.4		
Lead (dissolved)	µg/l	7.2	7.2	0.034	0.054	0.153	0.143	0.046	0.029	0.033	0.034	0.415	0.05	0.022	0.034	0.107	0.092	0.023	0.091	0.042	0.321	0.836	0.146	
Nickel (dissolved)	µg/l	20	20	7.05	4.86	4.97	9.62	2.92	3.37	5.13	7.47	50.9	2.06	6.96	8.31	6.61	11.1	5.16	4.78	6.21	8.64	33.9	5.4	
Selenium (dissolved)	µg/l	1	-	2.14	2.8	2.16	26.7	27	4.82	14.5	1.34	30.2	1.86	22	6.28	24.9	5.91	9.84	2.26	1.99	1.92	35.7	2.54	
Zinc (dissolved)	µg/l	100	40	1.18	1.76	1.13	1.21	0.755	0.991	2.7	0.655	38.3	0.709	2.23	1.95	3.49	3.86	0.817	1.31	1.18	2.49	20.3	1.37	
Mercury (dissolved)	µg/l	0.07	0.07	<0.01	<0.01	0.0188	0.0321	<0.01	<0.01	<0.01	<0.01	0.0559	<0.01	0.0117	<0.01	0.0153	<0.01	<0.01	<0.01	<0.01	<0.01	0.144	<0.01	
Ammoniacal Nitrogen	µg/l	1000	-	12400	4200	1650	177000	129000	7730	15400	621	80100	5970	59900	32000	35500	8330	39100	10500	1450	8730	153000	1070	
Sulphate (soluble)	µg/l	200000	-	375000	277000	353000	102000	35800	128000	401000	32100	496000	37300	565000	304000	254000	729000	162000	188000	58400	733000	530000		
Phenols	µg/l	46	46	<25	<25	<25	118000	215000	<25	660	2130	249000	250	21400	<25	56600	<25	122000	<25	<25	<25	1280000	<25	
Free Cyanide - (total CN in lab results)	µg/l	10	10	267	154	66	259	522	69	930	295	12900	<50	1110	279	202	380	581	<50	<50	411	9530	946	
pH Value	µg/l	6.5	6.5	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	-	7.44	8.31	7.57	7.45	7.68	9.76	7.76	
pH Value	µg/l	9.5	9.5	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	-	7.44	8.31	7.57	7.45	7.68	9.76	7.76	
BTEX																								
Benzene	µg/l	50	50	574	<7	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<7	13	<7	16700	<7	
Toluene	µg/l	10	10	39	<4	76	5450	12500	40	360	91	2480	<4	3680	<4	6920	<4	996	<4	<4	<4	5930	<4	
Ethyl benzene	µg/l	10	10	189	<5	7	312	827	85	219	39	119	<5	392	<5	606	<5	75	<5	<5	<5	359	<5	
Xylene	µg/l	10	10	158	<10	147	3040	5030	542	861	186	1310	<10	2570	23	6250	10	757	<10	11	<10	3140	<10	
Petroleum Hydrocarbons																								
GRO (C4-C12)	µg/l			2689	93	988	38520	81100	4000	5540	1659	21820	<91.3	19040	280.6	39850	422	6150	175.2	463	<20	50900	221.4	
MTBE	µg/l	30	30	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
Aliphatics C5-C6	µg/l			<10	<10	<10	118	240	<10	<10	<10	<10	<10	<10	<10	<50	<10	16.2	<10	<10	<10	489	<10	
Aliphatics C6-C8	µg/l			121	<10	36.4	3400	8370	31.3	<10	91.4	2060	<10	1200	27	1860	13.5	155	<10	<10	<10	4660	<10	
Aliphatics C8-C10	µg/l			150	13.4	95.8	1390	2550	368	249	105	665	<10	773	18.6	1670	44.1	236	24.5	51.1	<10	1860	27.6	
Aliphatics C10-C12	µg/l			498	23.8	176	4710	7840	937	1120	233	1980	<10	1750	29	4680	107	818	45.7	124	<10	5990	60.8	
Aliphatics C12-C16	µg/l			<10	89	797	174	<10	357	56	225	46	65	<10	1270	40	<10	186	328	<10	<10	2360	<10	
Aliphatics C16-C21	µg/l			<10	230	560	156	<10	131	84	255	41	398	<10	57	1310	38	<10	142	186	<10	1770	<10	
Aliphatics C21-C35	µg/l			<10	106	1280	188	<10	21	27	876	55	820	<10	46	1280	23	<10	685	276	<10	2000	<10	
Aromatics C6-C7	µg/l			574	<10	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<10	13	<10	16700	<10	
Aromatics C7-C8	µg/l			30	<10	76	5450	12500	40	360	91	2480	<10	3680	<10	6920	<10	996	<10	<10	<10	5930	<10	
Aromatics 9-10	µg/l			572	20.1	291	5430	9380	1180	1450	383	2430	14.4	4120	50.9	8360	76.1	1190	36.7	87.7	<10	6300	41.4	
Aromatics 10-12	µg/l			747	35.7	264	7060	11800	1400	1680	349	2980	11.9	2620	43.5	7010	161	1230	69.9	187	<10	8980	91.2	
Aromatics 12-16	µg/l			196	13	2280	10700	19100	349	1310	161	4110	27	6280	21	19900	<10	917	117	118	<10	40600	<10	
Aromatics 16-21	µg/l			177	61	4480	2200	1250	297	826	411	1010	142	534	11	8400	39	304	353	413	<10	12300	<10	
Aromatics 21-35	µg/l			421	30	10400	2590	142	318	497	2170	1010	1020	70	128	13400	318	320	1740	2000	<10	13900	<10	
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	3490	622	20800	54500	102000	5470	8340	5750	28100	2550	25900	544	85300	880	7690	3400	3780	<10	124000	221	
PAHs																								
Acenaphthene	µg/l	5.8	-	0.979	<0.015	62.3	45.7	125	13.6	49.5	1.28	22.3	1.56	26.9	1.58	167	0.295	6.97	2.32	2.53	0.0366	129	<0.015	
Acenaphthylene	µg/l	-	-	6.24	0.124	267	258	1050	4.77	79.5	9.82	127	5.77	32.1	1.1	749	4.67	40.8	9.78	13.3	0.145	543	0.015	
Anthracene	µg/l	0.4	0.4	1.66	0.0872	282	84.9	64.9	2.79	30.7	7.57	48.7	2.79	2.51	1.08	321	2.74	14	7.78	15.7	0.123	245	0.0962	
Benzo(a)anthracene	µg/l	0.018	-	16.6	0.334	205	39.5	8.72	5.49	9.81	33.4	18.6	13.2	<0.85	4.7	89	12.5	10.6	24.5	54.2	1.11	113	1.51	
Benzo(a)pyrene	µg/l	0.1	0.1	18.8	0.227	140	28.8	6.07	4.53	5.01	34	8.61	21	<0.45	4.79	54.6	14.4	6.28	28.2	46.2	1.54	79.2	2.23	
Benzo(b)fluoranthene	µg/l	0.5	-	13.1	0.354	175	44.1	7.74	5.6	6.27	37.7	11	25.7	<1.15	5.99	72.1	17.2	8.33	32.4	51.9	2.06	105	2.98	
Benzo(k)fluoranthene	µg/l	0.05	-	8.44	0.0812	69.9	20.8	6.43	2.45	2.17	18.4	4.28	15.8	<0.8	2.76	26.2	7.97	2.67	17.3	17.9	1.31	46.4	1.95	
Benzo(e)fluoranthene	µg/l	0.05	-	8.44	0.112	61.9	14.2	4.28	1.68	1.8	13.4	4.62	8.99	<1.35	1.99	32.3	5.61	3.07	11.6	18.5	0.681	48.2	0.948	
Chrysene	µg/l	-	-	8.35	0.131	138	37.9	8.47	3.36	5.86	18.7	16.8	10.2	<0.65	2.84	86.5	7.34	6.46	13.1	23.7	0.59	107	0.892	
Dibenz(a,h)anthracene	µg/l	-	-	1.97	0.0245	19.1	4.25	2.34	0.685	0.559	5.25	0.975	4.23	<0.8	0.908	6.24	2.43	0.957	5.12	7.94	0.312	9.6	0.455	
Fluoranthene	µg/l	1	1	21	0.963	678	153	41.4	18.5	59.5	58.7	93.9	19.6	3.48	5.8	482	19.3	23.8	53.7	88.9	1.17	471	1.4	
Fluorene	µg/l	3	-	0.613	0.0442	266	144	314	4.76	65.4	2.95	77.3	1.67	12.6	0.944	482	0.785	25.2	5.7	11.1	0.0477	374	0.0315	
Indeno(1,2,3-cd)pyrene	µg/l	0.05	-	6.61	0.0718	61.6	15	4.67	2.27	1.95	16.9	3.28	13.8	<0.7	2.54	21.8	7.38	2.46	15.3	17.9	1.06	34.9	1.56	
Naphthalene	µg/l	2.4	1.2	0.295	<0.1	87.9	4500	23600	2.59	14.2	2.3	1460	20.4	750	0.918	4870	0.981	12.1						

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 4 (15th - 16th July 2010)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

* Hardness related Freshwater EQS - based on cyprinid/coarse fish
 Concentration exceeds screening value
 Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)		Source of screening value	Ground type																			
		Freshwater	Coastal/Estuary /Marine		Depth (mbgl)																			
					A3	A4	A11	B8	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
Inorganics																								
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave	31.8	7.35	11.2	38.3	23.9	7.8	9.07	1.68	104	<0.12	17.6	9.3	11.8	1.27	7.57	3.44	1.73	2.5	167	2.91
Cadmium (dissolved)	µg/l	1.5	1.5	SI272/2009 MAC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.567	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.172	<0.1	0.32	<0.1
Chromium (dissolved)	µg/l	32	32	SI272/2009 MAC	7.49	5.34	2.63	6.43	5.21	2.57	4.39	1.45	1.7	0.577	15.9	6.72	6.41	4.59	2.44	6.83	3.74	5.5	22.9	2.51
Copper (dissolved)	µg/l	30	30	SI 272/2009 Annual Ave	<0.85	0.915	<0.85	<0.85	<0.85	<0.85	1.52	3.95	2.03	1.29	<0.85	2.2	2.51	1.64	<0.85	7.73	1.47	3.84	4.84	3.84
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave	0.02	0.05	<0.02	0.054	0.422	<0.02	<0.02	0.341	0.06	<0.02	<0.02	0.19	<0.02	<0.02	0.055	0.144	0.212	4.15	0.122	3.6
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave	4.93	3.84	7.73	9.24	2.28	6.18	5.02	0.217	53.4	1.94	4.39	12.02	6.01	14.3	9	3.55	5.61	6.69	35.4	3.6
				Guidelines for Aquatic Life (2007)	1.08	1.02	2.86	5.73	16.9	1.19	1.48	0.928	22.7	<0.39	13.6	8.99	8.46	1.51	3.93	1.07	1.56	1.08	26.1	1.69
Selenium (dissolved)	µg/l	1	-	SI 272/2009 Annual Ave	10.8	4.29	3.63	3.48	3.16	4.23	1.57	3.79	24.7	3.07	2.04	3.48	5.29	6	2.27	2.1	4.82	2.9	173	2.49
Zinc (dissolved)	µg/l	100	40	SI 272/2009 Annual Ave	<0.01	<0.01	<0.01	<0.01	0.0179	<0.01	<0.01	0.0283	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0101	<0.01	0.0677	<0.01
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC	12200	3640	21200	136000	107000	6690	14100	778	59500	315	67000	40200	14000	6610	67200	17400	571	10900	215000	1650
Ammoniacal Nitrogen	µg/l	10000	-	Freshwater Fish Directive	324200	233000	319000	130000	49400	344000	384000	13700	416000	123000	545000	294000	426000	942000	426000	189000	266000	606000	720000	864000
Sulphate (soluble)	µg/l	200000	-	EQS & IGW	<0.2	<0.2	960	127000	304000	<0.2	520	<0.2	125000	<0.2	32600	<0.2	14100	<0.2	10300	<0.2	<0.2	<0.2	1820000	<0.2
Phenols	µg/l	46	46	SI 272/2009 Annual Ave	241	166	<0.05	206	363	129	826	97	5990	<0.05	783	301	358	422	961	<0.05	<0.05	267	14600	771
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
pH Value	µg/l	6.5	6.5	Interim Guideline Values	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
pH Value	µg/l	9.5	9.5	Interim Guideline Values	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
BTEX																								
Benzene	µg/l	50	50	SI272/2009 MAC	117	<7	40	8020	16300	13	618	<7	3690	<7	4940	91	3140	<7	1040	<7	<7	<7	14300	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave	<4	<4	84	4560	5220	<4	237	<4	954	<4	3580	<4	2860	<4	554	<4	<4	<4	4870	<4
Ethyl benzene	µg/l	10	10	EQS & IGW	<5	<5	17	275	203	<5	194	<5	45	<5	377	<5	259	<5	36	<5	<5	<5	271	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave	49	<10	113	2590	1990	74	745	<10	512	<10	2460	<10	2450	<10	365	<10	<10	<10	2650	<10
Petroleum Hydrocarbons																								
GRO (C4-C12)	µg/l	30	30	IGV	834	153.3	922	26810	39420	1625	5470	<36.3	12030	<20	21000	288.8	21910	<20	5000	102.1	<20	<20	52100	<20
MTBE	µg/l	30	30	IGV	<3	<3	<3	<6	<15	<3	<3	<6	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l	<10	<10	IGV	<10	<10	<10	83.9	124	<10	<10	107	<10	20.2	<10	<10	<10	<10	<10	<10	<10	868	<10	
Aliphatics C6-C8	µg/l	53.2	15	75.1	777	1110	190	241	<10	484	<10	940	<10	940	25.1	1100	<10	201	10.2	<10	<10	1850	<10	
Aliphatics C8-C10	µg/l	190	46.4	190	3500	3990	425	1230	<10	1710	<10	2140	<10	2140	48.3	3380	<10	798	30.6	<10	<10	8230	<10	
Aliphatics C12-C16	µg/l	<10	334	<10	35	<10	367	99	65	<10	<10	<10	<10	<10	90	625	<10	10	26	<10	<10	<10	<10	
Aliphatics C16-C21	µg/l	<10	580	<10	14	<10	235	162	72	<10	<10	<10	<10	<10	79	389	<10	43	<10	<10	<10	<10	<10	
Aliphatics C21-C35	µg/l	<10	328	<10	10	<10	110	108	203	<10	<10	<10	<10	<10	65	448	<10	281	<10	<10	<10	<10	<10	
Aromatics C6-C7	µg/l	117	<10	40	8020	16300	13	618	<10	3690	<10	4940	91	3140	<10	1040	<10	1040	<10	<10	<10	14300	<10	
Aromatics C7-C8	µg/l	<10	<10	64	4550	5220	<10	237	<10	954	<10	3580	<10	2860	<10	554	<10	554	<10	<10	<10	4870	<10	
Aromatics 8-10	µg/l	129	22.4	243	4030	3850	359	1300	12.1	1290	<10	4250	37.7	4360	<10	702	15.4	<10	702	15.4	<10	5700	<10	
Aromatics 10-12	µg/l	286	69.5	285	5250	5990	637	1840	14.1	2570	<10	3220	72.5	5070	<10	1200	45.9	<10	1200	45.9	<10	12300	<10	
Aromatics 12-16	µg/l	615	43	608	12700	28300	702	2000	52	9600	<10	9600	<10	6490	14	5800	1120	3640	<10	<10	<10	62200	<10	
Aromatics 16-21	µg/l	377	139	391	1510	1980	537	1350	174	809	<10	734	10	1940	1920	617	54	<10	<10	<10	3500	<10		
Aromatics 21-35	µg/l	272	288	267	385	348	464	1120	1100	313	<10	223	49	1570	4720	198	347	<10	<10	<10	756	<10		
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGW	2100	1870	2190	41500	70100	4040	10300	1690	22700	<10	28900	362	31500	9220	9450	853	<10	20	119000	<10
PAHs																								
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	26.7	0.17	10.9	23.2	36.3	34.3	63.5	2.94	12.5	0.04	49.1	4.95	47.1	46	12.5	1.93	<0.015	0.1	31.6	<0.015
Acenaphthylene	µg/l	-	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	7.54	1.49	54.5	17.4	277	5	137	9.41	89	0.32	75.9	2.5	198	131	76.2	4.1	0.16	0.22	190	0.07
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC	1.48	0.65	8.87	28.6	42.8	4.57	52.3	6.19	15.9	0.08	4.91	1.69	47.7	130	12.9	1.83	0.05	0.2	21.6	0.09
				Guidelines for Aquatic Life (2007)	6.06	3.43	3.19	6.75	6.06	5.29	14.9	15.4	4.75	0.68	<1.7	4.28	19	90.7	2.63	7.24	0.16	1.26	<1.7	0.97
Benzo(a)anthracene	µg/l	0.018	-	SI272/2009 MAC	6.92	4.73	2.34	4.09	2.18	4.19	7.32	16.1	2.15	1.04	1.28	4.22	11.4	75.3	0.81	9.57	0.3	1.7	<0.9	1.39
Benzo(a)pyrene	µg/l	0.1	0.1	Interim Guideline Value	4.86	5.6	3.01	5.65	3.52	5.2	10.5	17.4	3.29	1.41	<2.3	5.15	17	94.3	1.32	12.3	0.32	2.34	<2.3	1.97
Benzo(b)fluoranthene	µg/l	0.05	-	Interim Guideline Value	3.45	2.93	0.96	2.01	<1.6	2.04	3.14	10.1	0.88	0.74	<1.6	2.45	8.92	43.9	<0.32	5.26	0.22	1.43	<1.6	1.3
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	4.63	2.12	1.12	2.18	<2.7	1.9	3.73	7.37	1.25	0.44	<1.2	2.23	7.69	31.6	0.64	4.33	0.11	0.85	<1.2	0.67
Benzo(e)fluoranthene	µg/l	0.05	-	Interim Guideline Value	4.25	2.08	2.09	5.46	5.31	3.23	10.3	11.9	3.51	0.57	1.69	3.31	15.4	67.7	1.82	5.04	0.1	1.02	<1.6	0.77
Chrysene	µg/l	-	-	-	0.73	0.78	0.28	<0.64	<1.6	0.62	0.8	2.68	<0.32	0.18	<1.6	0.739	2.6	12.6	<0.32	1.47	0.06	0.34	<1.6	0.27
Dibenz(a,h)anthracene	µg/l	-	-	-	13.8																			

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 5 (20th - 21st July 2010)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
 Relevant EQS Hardness Band: >100-150 mg/l

- * Hardness related Freshwater EQS - based on cyprinid/coarse fish
- Concentration exceeds screening value
- Concentration exceeds screening value because limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l)		Source of screening value	Ground type																		
		Freshwater	Coastal/Estuary /Marine		Borehole																		
					A3	A4	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
Inorganics																							
Arsenic (dissolved)	µg/l	25	20	SI 27/2009 Annual Ave	33.3	10.7	12.3	32.9	17	11.4	6.86	113	4.55	17.7	7.54	16.1	6.49	16.7	5.39	2.84	4.28	42.7	3.25
Cadmium (dissolved)	µg/l	1.5	1.5	SI 27/2009 MAC	0.107	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.452	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (dissolved)	µg/l	32	32	SI 27/2009 MAC	6.1	5.09	3.11	7.87	5.48	6.42	4.88	1.83	5.14	9.16	7.17	4.26	8.96	3.69	4.3	4.5	3.31	7.76	1.1
Copper (dissolved)	µg/l	30*	-	SI 27/2009 Annual Ave	1.88	<0.85	<0.85	1.18	<0.85	1.19	1.3	0.864	<0.85	3.44	1.05	<0.85	1.31	<0.85	<0.85	1.85	1.61	2.14	2.08
Lead (dissolved)	µg/l	7.2	7.2	SI 27/2009 Annual Ave	0.125	0.072	0.07	0.248	0.027	<0.02	0.118	0.183	<0.02	0.065	0.166	0.064	0.059	0.024	0.052	0.393	0.534	0.039	
Nickel (dissolved)	µg/l	20	20	SI 27/2009 Annual Ave	6.19	4.24	5.64	1.59	4.07	4.13	8.01	56.3	8.41	6.14	9.24	4.99	7.83	7.1	4.24	4.96	7.57	15.7	3.86
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)	1.54	1.65	3.49	48.6	3.1	16.5	1.95	35.7	2.36	40.1	5.97	9.38	2.05	19	1.2	3.45	1.36	23	1.34
Zinc (dissolved)	µg/l	100*	40	SI 27/2009 Annual Ave	1.29	0.526	0.664	0.877	0.599	<0.41	0.98	44.8	1.5	167	1.7	3.26	1.37	<0.41	0.452	0.809	0.83	3.11	0.553
Mercury (dissolved)	µg/l	0.07	0.07	SI 27/2009 MAC	<0.01	<0.01	<0.01	0.0185	<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	0.0244	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive	10000	2990	5030	98400	7150	11400	1900	45700	1700	38700	27000	12000	11400	33800	14900	824	5810	56700	1350
Sulphate (soluble)	µg/l	200000	-	EQS & IGW	315000	245000	272000	54800	79900	420000	112000	462000	62700	805000	506000	158000	679000	385000	203000	165000	734000	573000	578000
Phenols	µg/l	46	46	SI 27/2009 MAC	420	<25	140	167000	400	2520	350	180000	2630	4180	520	2830	2710	10400	50	<25	<25	1010000	<25
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 27/2009 Annual Ave	254	142	73	400	88	967	159	7860	<50	980	379	127	933	292	<50	<50	620	1840	941
pH Value	µg/l	6.5	6.5	Interim Guideline Values	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8
pH Value	µg/l	9.5	9.5	Interim Guideline Values	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8
BTEX																							
Benzene	µg/l	50	50	SI 27/2009 MAC	<7	<7	<7	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<7	<7	18200	<7
Toluene	µg/l	10	10	SI 27/2009 Annual Ave	<4	<4	12	4470	43	460	5	2040	47	3100	11	1290	29	609	<4	<4	<4	5680	<4
Ethyl benzene	µg/l	10	10	EQS & IGW	<5	<5	<5	152	87	166	11	86	<5	352	17	151	7	54	<5	<5	268	<5	
Xylene	µg/l	10	10	SI 27/2009 Annual Ave	97	<10	42	1520	307	774	36	940	15	2350	49	1440	60	537	<10	<10	<10	2430	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l	-	-	-	1244	96	256	32270	3610	6800	263	18700	417	18270	692	8170	480	5250	90	31	28	51800	<20
NTBE	µg/l	30	30	IGV	<3	<3	<3	<15	<3	<3	<3	<5	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Aliphatics C5-C6	µg/l	<10	<10	<10	69	<10	69	<10	<10	<10	73	<10	18	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C6-C8	µg/l	38	10	<10	506	32	67	11	525	11	217	17	70	15	73	<10	<10	<10	<10	<10	<10	<10	<10
Aliphatics C8-C10	µg/l	144	19	35	1470	395	492	36	949	22	1040	49	644	64	312	14	<10	<10	<10	<10	<10	<10	<10
Aliphatics C10-C12	µg/l	519	31	76	5720	1450	2330	62	3450	58	3690	149	1770	130	1450	28	11	<10	<10	<10	<10	<10	<10
Aliphatics C12-C16	µg/l	<10	427	<10	11	306	<10	108	18	<10	<10	<10	<10	43	<10	13	58	<10	<10	<10	552	<10	
Aliphatics C16-C21	µg/l	<10	520	<10	17	140	<10	125	29	<10	<10	<10	<10	77	27	11	31	39	<10	<10	683	<10	
Aliphatics C21-C35	µg/l	<10	314	<10	12	32	<10	431	22	136	<10	151	17	<10	13	246	<10	<10	<10	<10	861	<10	
Aromatics C6-C7	µg/l	<10	<10	<10	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<10	<10	<10	<10	18200	<10	
Aromatics C7-C8	µg/l	<10	<10	12	4470	43	460	<10	2040	47	3100	11	1290	29	609	<10	<10	<10	<10	<10	5680	<10	
Aromatics 8-10	µg/l	194	14	68	2660	657	1270	71	1660	32	3390	98	2030	110	799	11	<10	<10	<10	<10	4470	<10	
Aromatics 10-12	µg/l	346	21	51	3810	964	1550	41	2300	38	2460	99	1180	87	967	19	<10	<10	<10	<10	7380	<10	
Aromatics 12-16	µg/l	209	89	41	20900	802	144	107	12400	121	5310	152	1910	1540	1910	55	<10	<10	<10	<10	69400	<10	
Aromatics 16-21	µg/l	183	231	27	1520	472	101	148	1170	<10	550	20	820	593	454	120	<10	<10	<10	<10	7220	<10	
Aromatics 21-35	µg/l	63	473	61	514	442	27	908	871	68	127	176	781	268	443	649	44	41	6780	79			
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGW	1700	2150	385	55200	5800	7070	2080	33200	742	24200	1270	11800	2890	8120	1260	75	69	137000	95
PAHs																							
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	0.855	0.142	67	21.8	47.8	31.9	1.22	11.6	1.37	58.9	4.1	36	3.91	8.72	2.3	0.0512	0.139	50.1	0.0197
Acenaphthylene	µg/l	-	-	-	1.01	1.28	331	211	6.93	34.4	5.57	100	4.97	72.2	1.9	141	2.83	58.1	4.66	0.465	0.134	380	0.148
Anthracene	µg/l	0.4	0.4	SI 27/2009 MAC	0.478	0.514	212	28	4.04	9.89	2.3	11.5	2.69	10.9	1.42	35	1.09	15.7	2.35	0.178	0.157	50.3	0.243
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)	1.12	3.24	354	5.3	7.04	6.22	14.6	5.99	64.5	1.92	7.59	19.5	2.32	14.1	17.8	0.8	1.2	6.87	3.07
Benzo(a)pyrene	µg/l	0.1	0.1	SI 27/2009 MAC	1.55	7.2	443	3.12	10.1	3.41	33.8	2.05	132	1.19	11.3	15.5	2.5	14.1	32.5	3.95	2.35	2.94	5.6
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value	0.564	6.76	386	3.14	9.15	3.03	28.8	<2.3	128	1.36	10.4	12.3	1.99	9.84	29.3	2.95	2.37	3.1	5.7
Benzo(g)herylene	µg/l	0.05	-	Interim Guideline Value	0.733	4.72	313	2.08	6.08	1.64	21.1	<1.6	72.1	1.14	7.28	8.19	1.44	5.21	20.2	2.21	2.32	1.66	5.61
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	1.07	5.84	400	3.46	7.91	2.77	27.4	<2.7	110	1.39	11.1	13.2	2.23	14.6	27.7	2.49	2.2	2.99	5.08
Chrysene	µg/l	-	-	-	0.92	2.89	216	8.51	5.68	4.97	12.8	2.65	39.4	2.1	7.32	16	2.16	10.6	14.7	0.719	1.19	6.72	2.91
Dibenz(a,h)anthracene	µg/l	-	-	-	0.107	1.44	87.4	0.814	1.51	0.464	6.46	<1.6	20.9	0.74	1.76	2.36	0.391	1.89	6.49	0.668	0.542	0.848	1.26
Fluoranthene	µg/l	1	1	SI 27/2009 MAC	4.31	7.24	805	32.7	33.4	24.6	16.9	34.2	10.7	10.2	61.3	10.3	28.5	27	0.864	1.59	53.5	3.43	
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)	0.398	0.281	222	73.6	18	57.1	1.42	35.2	1.45	42.2	1.43	74.4	1.54	36.5	2.49	0.173	0.0853	126	0.061
Indeno(1,2,3-cd)pyrene	µg/l	0.05	-	Interim Guideline Value	0.519	4.8	292	2.29	6.														