



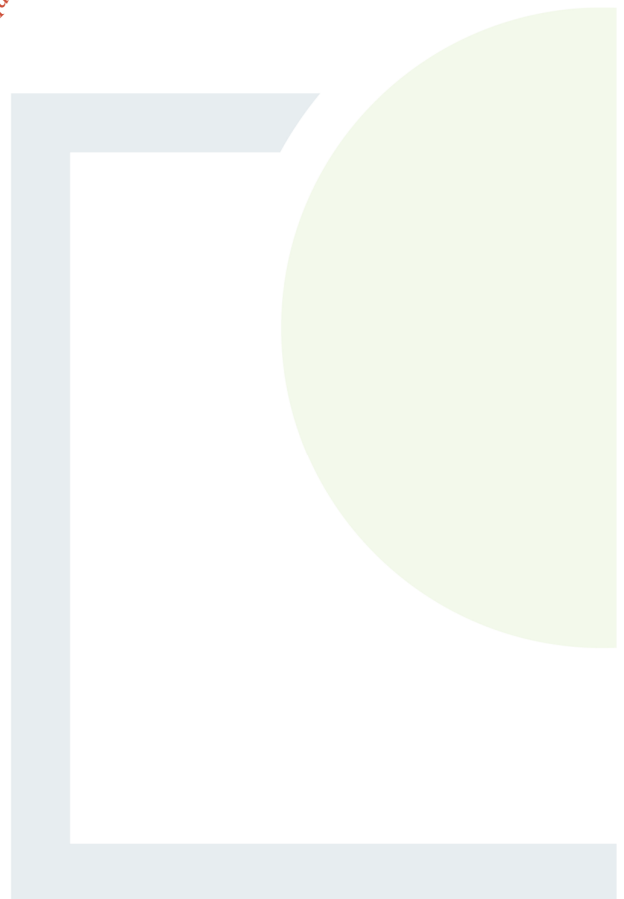
**FEHILY
TIMONEY**

**CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING**

APPENDIX 4

**Groundwater & Surface
Water Sampling Analysis
Results**

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Fehily Timoney
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North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 29 July 2019
Customer: Fehily Timoney
Sample Delivery Group (SDG): 190719-100
Your Reference: P1766 North Kerry
Location: North Kerry Landfills
Report No: 515983

We received 3 samples on Friday July 19, 2019 and 3 of these samples were scheduled for analysis which was completed on Monday July 29, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20365959	BH-01 Ahascra		0.00 - 0.00	16/07/2019
20365981	BH-02 Ahascra		0.00 - 0.00	16/07/2019
20365936	BH-01 Leanamore		0.00 - 0.00	16/07/2019

Maximum Sample/Coolbox Temperature (°C) :

13.8

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

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

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SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container												Sample Type
					Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	
	20365936	BH-01 Leanamore		0.00 - 0.00	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	GW
	20365981	BH-02 Athasca		0.00 - 0.00	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	GW
	20365959	BH-01 Athasca		0.00 - 0.00	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	GW
pH Value	All	NDPs: 0 Tests: 3							X								X
Phosphate by Kone (w)	All	NDPs: 0 Tests: 3							X								X
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 3							X								X
Total Dissolved Solids	All	NDPs: 0 Tests: 3							X								X
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 3						X						X			X
VOC MS (W)	All	NDPs: 0 Tests: 3									X						X

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SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Alkalinity, Total as CaCO3	<2 mg/l	TM043	471 #	350 #	2050 #		
Oxygen, dissolved	<0.3 mg/l	TM046	5.59	8.57	8.69		
Organic Carbon, Total	<3 mg/l	TM090	3.44 #	4.64 @ #	14.9 @ #		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	2.43 #	1.89 #	<0.2 #		
Fluoride	<0.5 mg/l	TM104	<0.5 #	<0.5 #	<0.5 #		
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.516 #	0.652 #	0.778 #		
Dissolved solids, Total (meter)	<5 mg/l	TM123	442 #	500 #	729 #		
Arsenic (diss.filt)	<0.5 µg/l	TM152	39.2 #	14.4 #	3.06 #		
Barium (diss.filt)	<0.2 µg/l	TM152	29 #	53.3 #	39.6 #		
Boron (diss.filt)	<10 µg/l	TM152	23.6 #	11.7 #	20.9 #		
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #	<0.08 #		
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #		
Copper (diss.filt)	<0.3 µg/l	TM152	<0.3 #	<0.3 #	1.47 #		
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 #	0.241 #	0.361 #		
Manganese (diss.filt)	<3 µg/l	TM152	341 #	280 #	2930 #		
Nickel (diss.filt)	<0.4 µg/l	TM152	1.32 #	1.36 #	4.73 #		
Phosphorus (diss.filt)	<10 µg/l	TM152	<10 #	<10 #	<10 #		
Selenium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #		
Thallium (diss.filt)	<2 µg/l	TM152	<2 #	<2 #	<2 #		
Zinc (diss.filt)	<1 µg/l	TM152	2.07 #	3.88 #	4.39 #		
Sodium (Dis.Filt)	<0.076 mg/l	TM152	35.9 #	31.2 #	42.7 #		
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	9.06 #	10.8 #	16.8 #		
Potassium (Dis.Filt)	<0.2 mg/l	TM152	2.52 #	2.12 #	2.65 #		
Calcium (Dis.Filt)	<0.2 mg/l	TM152	87.7 #	109 #	166 #		
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.798 #	2.23 #	0.0719 #		
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	251	<100	<100		
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #		
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05 #	<0.05 #	<0.05 #		
Chloride	<2 mg/l	TM184	44.1 #	35.7 #	48.6 #		
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1 #	<0.1 #	<0.1 #		
Sulphate (soluble) as S	<1 mg/l	TM184	<1 #	<1 #	<1 #		
PCB congener 28	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		
PCB congener 52	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		



CERTIFICATE OF ANALYSIS

Validated

SDG:	190719-100	Client Reference:	P1766 North Kerry
Location:	North Kerry Landfills	Order Number:	
		Report Number:	515983
		Superseded Report:	

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-3*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 16/07/2019	0.00 - 0.00 Ground Water (GW) 16/07/2019	0.00 - 0.00 Ground Water (GW) 16/07/2019		
Component	LOD/Units	Method					
PCB congener 101	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		
PCB congener 118	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		
PCB congener 138	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		
PCB congener 153	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		
PCB congener 180	<0.015 µg/l	TM197	<0.015	<0.015	<0.015		
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105	<0.105	<0.105		
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05	<0.05		
pH	<1 pH Units	TM256	8.17 #	7.57 #	7.83 #		
Trifluralin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Aldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
beta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Isodrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
delta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
o,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
trans-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
cis-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
p,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Endrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
o,p'-DDT	<0.01 µg/l	TM343	<0.05	<0.05	<0.05		
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02	<0.02		
p,p'-DDT	<0.01 µg/l	TM343	<0.05	<0.05	<0.05		
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.05	<0.05	<0.05		
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.05	<0.05	<0.05		
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04	<0.04	<0.04		

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
aq	Aqueous / settled sample.		16/07/2019	16/07/2019	16/07/2019		
diss.filt	Dissolved / filtered sample.		.	.	.		
tot.unfilt	Total / unfiltered sample.		19/07/2019	19/07/2019	19/07/2019		
*	Subcontracted - refer to subcontractor report for accreditation status.		190719-100	190719-100	190719-100		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		20365959	20365981	20365936		
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01	<0.01		
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02		
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02		
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02		
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02		
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Phorate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Triallate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Simazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Disulfoton	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Propetamphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Chlorpyrifos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Malathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		

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SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
aq	Aqueous / settled sample.		16/07/2019	16/07/2019	16/07/2019		
diss.filt	Dissolved / filtered sample.		.	.	.		
tot.unfilt	Total / unfiltered sample.		19/07/2019	19/07/2019	19/07/2019		
*	Subcontracted - refer to subcontractor report for accreditation status.		190719-100	190719-100	190719-100		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		20365959	20365981	20365936		
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Ethion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Triazophos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Phosalone	<0.01 µg/l	TM344	<0.01	<0.01	<0.01		
Azinphos methyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02		
Azinphos ethyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02		
Etridiazole	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Pentachlorobenzene	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Tributylphosphate	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Propachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Omethoate	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Propazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Propyzamide	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Alachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Prometryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Telodrin	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Terbutryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Chlorothalonil	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Etrimphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Metazachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Cyanazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Trietazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Coumaphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Phosphamidon I	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Phosphamidon II	<0.01 µg/l	TM345	<0.01	<0.01	<0.01		
Dinitro-o-cresol	<0.1 µg/l	TM411	0.137	<0.5	<0.1		
Clopyralid	<0.04 µg/l	TM411	<0.04	<0.2	<0.04		
MCPA	<0.05 µg/l	TM411	<0.05	<0.25	<0.05		
Mecoprop	<0.04 µg/l	TM411	<0.04	<0.2	0.0472		
Dicamba	<0.04 µg/l	TM411	<0.04	<0.2	<0.04		

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Validated

SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
dis.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-3*§@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2-Chlorophenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2-Methylphenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2-Nitroaniline (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
2-Nitrophenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
3-Nitroaniline (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Chloroaniline (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Methylphenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Nitroaniline (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
4-Nitrophenol (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
Azobenzene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
Acenaphthylene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
Acenaphthene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
Anthracene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<20 #	<40 #	<2 #		
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<10 #	<20 #	<1 #		



CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
aq	Aqueous / settled sample.		16/07/2019	16/07/2019	16/07/2019		
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Carbazole (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Chrysene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Dibenzofuran (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Diethyl phthalate (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Dimethyl phthalate (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<50	<100	<5	#	#
Fluoranthene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Fluorene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Hexachlorobenzene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Pentachlorophenol (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Phenol (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Hexachloroethane (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Nitrobenzene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Naphthalene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Isophorone (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Phenanthrene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#
Pyrene (aq)	<1 µg/l	TM176	<10	<20	<1	#	#

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Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

VOC MS (W)

Results Legend # ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. dis.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-3*§@ Sample deviation (see appendix)			Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore				
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
Dibromofluoromethane**	%	TM208	0.00 - 0.00	Ground Water (GW)	16/07/2019		16/07/2019		20365959	
Toluene-d8**	%	TM208	0.00 - 0.00	Ground Water (GW)	16/07/2019		16/07/2019		20365981	
4-Bromofluorobenzene**	%	TM208	0.00 - 0.00	Ground Water (GW)	16/07/2019		16/07/2019		20365936	
Dichlorodifluoromethane	<1 µg/l	TM208	<1							
Chloromethane	<1 µg/l	TM208	<1							
Vinyl chloride	<1 µg/l	TM208	<1							
Bromomethane	<1 µg/l	TM208	<1							
Chloroethane	<1 µg/l	TM208	<1							
Trichlorofluoromethane	<1 µg/l	TM208	<1							
1,1-Dichloroethene	<1 µg/l	TM208	<1							
Carbon disulphide	<1 µg/l	TM208	<1							
Dichloromethane	<3 µg/l	TM208	<3							
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1							
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1							
1,1-Dichloroethane	<1 µg/l	TM208	<1							
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1							
2,2-Dichloropropane	<1 µg/l	TM208	<1							
Bromochloromethane	<1 µg/l	TM208	<1							
Chloroform	<1 µg/l	TM208	<1							
1,1,1-Trichloroethane	<1 µg/l	TM208	<1							
1,1-Dichloropropene	<1 µg/l	TM208	<1							
Carbontetrachloride	<1 µg/l	TM208	<1							
1,2-Dichloroethane	<1 µg/l	TM208	<1							
Benzene	<1 µg/l	TM208	<1							
Trichloroethene	<1 µg/l	TM208	<1							
1,2-Dichloropropane	<1 µg/l	TM208	<1							
Dibromomethane	<1 µg/l	TM208	<1							
Bromodichloromethane	<1 µg/l	TM208	<1							
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1							
Toluene	<1 µg/l	TM208	<1							
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1							
1,1,2-Trichloroethane	<1 µg/l	TM208	<1							
1,3-Dichloropropane	<1 µg/l	TM208	<1							



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SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	BH-01 Ahasra	BH-02 Ahasra	BH-01 Leanamore		
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
aq	Aqueous / settled sample.		16/07/2019	16/07/2019	16/07/2019		
diss.filt	Dissolved / filtered sample.		.	.	.		
tot.unfilt	Total / unfiltered sample.		19/07/2019	19/07/2019	19/07/2019		
*	Subcontracted - refer to subcontractor report for accreditation status.		190719-100	190719-100	190719-100		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		20365959	20365981	20365936		
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Tetrachloroethene	<1 µg/l	TM208	<1	<1	<1	#	#
Dibromochloromethane	<1 µg/l	TM208	<1	<1	<1	#	#
1,2-Dibromoethane	<1 µg/l	TM208	<1	<1	<1	#	#
Chlorobenzene	<1 µg/l	TM208	<1	<1	<1	#	#
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	#	#
Ethylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
m,p-Xylene	<1 µg/l	TM208	<1	<1	<1	#	#
o-Xylene	<1 µg/l	TM208	<1	<1	<1	#	#
Styrene	<1 µg/l	TM208	<1	<1	<1	#	#
Bromoform	<1 µg/l	TM208	<1	<1	<1	#	#
Isopropylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	#	#
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1	<1	#	#
Bromobenzene	<1 µg/l	TM208	<1	<1	<1	#	#
Propylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
2-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	#	#
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
4-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	#	#
tert-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
sec-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
4-iso-Propyltoluene	<1 µg/l	TM208	<1	<1	<1	#	#
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	#	#
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	#	#
n-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	#	#
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	#	#
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1	<1	#	#
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	#	#
Hexachlorobutadiene	<1 µg/l	TM208	<1	<1	<1	#	#
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	<1	#	#
Naphthalene	<1 µg/l	TM208	<1	<1	<1	#	#
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	#	#

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Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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Test Completion Dates

Lab Sample No(s)	20365959	20365981	20365936
Customer Sample Ref.	BH-01 Ahascra	BH-02 Ahascra	BH-01 Leanamore
AGS Ref.			
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water

Acid Herbicides by GCMS	24-Jul-2019	24-Jul-2019	25-Jul-2019
Alkalinity as CaCO3	26-Jul-2019	24-Jul-2019	26-Jul-2019
Ammoniacal Nitrogen	23-Jul-2019	23-Jul-2019	23-Jul-2019
Anions by Kone (w)	26-Jul-2019	25-Jul-2019	26-Jul-2019
Conductivity (at 20 deg.C)	26-Jul-2019	26-Jul-2019	24-Jul-2019
Cyanide Comp/Free/Total/Thiocyanate	24-Jul-2019	24-Jul-2019	24-Jul-2019
Dissolved Metals by ICP-MS	26-Jul-2019	26-Jul-2019	26-Jul-2019
Dissolved Oxygen by Probe	20-Jul-2019	21-Jul-2019	21-Jul-2019
Fluoride	23-Jul-2019	22-Jul-2019	23-Jul-2019
Mercury Dissolved	23-Jul-2019	23-Jul-2019	23-Jul-2019
Mineral Oil C10-40 Aqueous (W)	26-Jul-2019	26-Jul-2019	26-Jul-2019
PCB Congeners - Aqueous (W)	25-Jul-2019	25-Jul-2019	25-Jul-2019
Pesticides (Suite I) by GCMS	26-Jul-2019	26-Jul-2019	26-Jul-2019
Pesticides (Suite II) by GCMS	24-Jul-2019	24-Jul-2019	24-Jul-2019
Pesticides (Suite III) by GCMS	23-Jul-2019	29-Jul-2019	23-Jul-2019
pH Value	24-Jul-2019	24-Jul-2019	24-Jul-2019
Phosphate by Kone (w)	22-Jul-2019	20-Jul-2019	22-Jul-2019
SVOC MS (W) - Aqueous	26-Jul-2019	26-Jul-2019	25-Jul-2019
Total Dissolved Solids	23-Jul-2019	23-Jul-2019	23-Jul-2019
Total Organic and Inorganic Carbon	23-Jul-2019	24-Jul-2019	26-Jul-2019
VOC MS (W)	23-Jul-2019	23-Jul-2019	23-Jul-2019

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Appendix

General

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

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

3. 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.

4. 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.

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

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

7. Results relate only to the items tested.

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

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

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

11. 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.

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

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

14. 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.

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

16. 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.

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

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2107)*.

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

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



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North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 20 September 2019
Customer: Fehily Timoney
Sample Delivery Group (SDG): 190906-103
Your Reference: P1766 North Kerry
Location: North Kerry Landfills
Report No: 522224

We received 5 samples on Friday September 06, 2019 and 5 of these samples were scheduled for analysis which was completed on Friday September 20, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103	Client Reference: P1766 North Kerry	Report Number: 522224
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20668536	BH01 Ahascra		0.00 - 0.00	03/09/2019
20668587	BH02 Ahascra		0.00 - 0.00	03/09/2019
20668626	BH01 Ardfert		0.00 - 0.00	03/09/2019
20668654	BH01 Listowel		0.00 - 0.00	03/09/2019
20668689	BH02 Listowel		0.00 - 0.00	03/09/2019

Maximum Sample/Coolbox Temperature (°C) :

16.2

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

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

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103	Client Reference: P1766 North Kerry	Report Number: 522224
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	X Test	N No Determination Possible										
<p>Sample Types -</p> <ul style="list-style-type: none"> S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other 												
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 5	X									
Alkalinity as CaCO3	All	NDPs: 0 Tests: 5		X								
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5			X							
Anions by Kone (w)	All	NDPs: 0 Tests: 5		X								
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 5	X									
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5										
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5										
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 5		X								
Fluoride	All	NDPs: 0 Tests: 5		X								
Mercury Dissolved	All	NDPs: 1 Tests: 4										
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 5	X									
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 5	X									
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 5	X									
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 5	X									
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 5	X									



CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-103	Client Reference:	P1766 North Kerry	Report Number:	522224
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Results Legend		Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	
*	Subcontracted - refer to subcontractor report for accreditation status.		190906-103	190906-103	190906-103	190906-103	190906-103	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		20668536	20668587	20668626	20668654	20668689	
(F)	Trigger breach confirmed							
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
PCB congener 101	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.03	
PCB congener 118	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.03	
PCB congener 138	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.03	
PCB congener 153	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.03	
PCB congener 180	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.03	
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105	<0.105	<0.105	<0.105	<0.21	
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05	<0.05	<0.05	<0.05	
pH	<1 pH Units	TM256	7.99	7.67	7.64	7.67	7.93	
Trifluralin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Aldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
beta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Isodrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
delta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
o,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
trans-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
cis-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
p,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Endrin	<0.01 µg/l	TM343	<0.02	<0.02	<0.01	<0.02	<0.02	
o,p'-DDT	<0.01 µg/l	TM343	<0.01	<0.03	<0.01	<0.02	<0.01	
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02	<0.02	<0.02	<0.02	
p,p'-DDT	<0.01 µg/l	TM343	<0.01	<0.03	<0.01	<0.02	<0.01	
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01	<0.03	<0.01	<0.02	<0.01	
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01	<0.04	<0.01	<0.02	<0.01	
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.06	<0.06	<0.02	<0.04	<0.06	

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103	Client Reference: P1766 North Kerry	Report Number: 522224
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Results Legend		Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel	
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
(F)	Trigger breach confirmed	Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	
1-3*5@	Sample deviation (see appendix)	Sample Time	-	-	-	-	-	
		Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	
		SDG Ref	190906-103	190906-103	190906-103	190906-103	190906-103	
		Lab Sample No.(s)	20668536	20668587	20668626	20668654	20668689	
		AGS Reference						
Component	LOD/Units	Method						
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Phorate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Triallate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Simazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Disulfoton	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Propetamphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Chlorpyrifos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Malathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	

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CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-103	Client Reference:	P1766 North Kerry	Report Number:	522224
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Results Legend		Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		190906-103	190906-103	190906-103	190906-103	190906-103	
(F)	Trigger breach confirmed		20668536	20668587	20668626	20668654	20668689	
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Ethion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Triazophos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Phosalone	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	
Azinphos methyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02	
Azinphos ethyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02	
Etridiazole	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Pentachlorobenzene	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Propachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Omethoate	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Propazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Propyzamide	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Alachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Prometryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Telodrin	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Terbutryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Chlorothalonil	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Etrimphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Metazachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Cyanazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Trietazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Coumaphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Phosphamidon I	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Phosphamidon II	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	
Dinitro-o-cresol	<0.1 µg/l	TM411	<10	0.43	1.07	<0.5	<1	
Clopyralid	<0.04 µg/l	TM411	<4	<0.04	<0.04	<0.2	<0.4	
MCPA	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5	
Mecoprop	<0.04 µg/l	TM411	<4	<0.04	<0.04	<0.2	<0.4	
Dicamba	<0.04 µg/l	TM411	<4	<0.04	<0.04	<0.2	<0.4	
MCPB	<0.05 µg/l	TM411	<5	<0.05	<0.05	<0.25	<0.5	

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522224
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH01 Ahasca	BH02 Ahasca	BH01 Ardfert	BH01 Listowel	BH02 Listowel			
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery.									
(F)	Trigger breach confirmed									
1-3*§@	Sample deviation (see appendix)									
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668536	
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668587	
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668626	
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668654	
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2-Chloronaphthalene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2-Chlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2-Methylnaphthalene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2-Methylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2-Nitroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
2-Nitrophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
3-Nitroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Chloroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Methylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Nitroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
4-Nitrophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
Azobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
Acenaphthylene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
Acenaphthene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
Anthracene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	
Benzo(a)anthracene (aq)	<1 µg/l	TM176	0.00 - 0.00	Ground Water (GW)	03/09/2019		06/09/2019	190906-103	20668689	



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522224
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardfert	BH01 Listowel	BH02 Listowel
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
*	Subcontracted - refer to subcontractor report for accreditation status.		190906-103	190906-103	190906-103	190906-103	190906-103
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		20668536	20668587	20668626	20668654	20668689
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Carbazole (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Chrysene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Dibenzofuran (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Diethyl phthalate (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Dimethyl phthalate (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<200 @ #	<100 @ #	<5 @ #	<10 @ #	<100 @ #
Fluoranthene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Fluorene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachlorobenzene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Pentachlorophenol (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Phenol (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachloroethane (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Nitrobenzene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Naphthalene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Isophorone (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Phenanthrene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #
Pyrene (aq)	<1 µg/l	TM176	<40 @ #	<20 @ #	<1 @ #	<2 @ #	<20 @ #

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CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-103	Client Reference:	P1766 North Kerry	Report Number:	522224
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

VOC MS (W)

Results Legend			Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardferf	BH01 Listowel	BH02 Listowel	
# ISO17025 accredited.									
M mCERTS accredited.									
sq Aqueous / settled sample.									
dis.filt Dissolved / filtered sample.									
tot.unfilt Total / unfiltered sample.									
* Subcontracted - refer to subcontractor report for accreditation status.									
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F) Trigger breach confirmed									
1-3* Sample deviation (see appendix)									
			Depth (m)						
			Sample Type						
			Date Sampled						
			Sample Time						
			Date Received						
			SDG Ref						
			Lab Sample No.(s)						
			AGS Reference						
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM208	106	118	103	106	106		
Toluene-d8**	%	TM208	99.6	99.8	99.8	100	99.8		
4-Bromofluorobenzene**	%	TM208	96.8	99.7	98.8	98.2	96.1		
Dichlorodifluoromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Chloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Vinyl chloride	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Bromomethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Chloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Trichlorofluoromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,1-Dichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Carbon disulphide	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Dichloromethane	<3 µg/l	TM208	<3	<3	<3	<3	<3		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	<1	<1	<1	<1		
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,1-Dichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
2,2-Dichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Bromochloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Chloroform	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,1-Dichloropropene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Carbontetrachloride	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,2-Dichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Benzene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Trichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,2-Dichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Dibromomethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Bromodichloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
Toluene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1		
1,3-Dichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1		

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103	Client Reference: P1766 North Kerry	Report Number: 522224
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardferd	BH01 Listowel	BH02 Listowel
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		190906-103	190906-103	190906-103	190906-103	190906-103
(F)	Trigger breach confirmed		20668536	20668587	20668626	20668654	20668689
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Tetrachloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1
Dibromochloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,2-Dibromoethane	<1 µg/l	TM208	<1	<1	<1	<1	<1
Chlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1
Ethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
m,p-Xylene	<1 µg/l	TM208	<1	<1	<1	<1	<1
o-Xylene	<1 µg/l	TM208	<1	<1	<1	<1	<1
Styrene	<1 µg/l	TM208	<1	<1	<1	<1	<1
Bromoform	<1 µg/l	TM208	<1	<1	<1	<1	<1
Isopropylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1
Bromobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
Propylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
2-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
4-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1
tert-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
sec-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
4-iso-Propyltoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
n-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1
Hexachlorobutadiene	<1 µg/l	TM208	<1	<1	<1	<1	<1
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	<1	<1	<1
Naphthalene	<1 µg/l	TM208	<1	<1	<1	1.29	<1
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103 Client Reference: P1766 North Kerry Report Number: 522224
Location: North Kerry Landfills Order Number: Z1658 Superseded Report:

Notification of NDPs (No determination possible)

Date Received : 06/09/2019 14:28:26

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
20668689	BH02 Listowel	0.00 - 0.00	Mercury Dissolved	Insufficient Sample

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103 Client Reference: P1766 North Kerry Report Number: 522224
 Location: North Kerry Landfills Order Number: Z1658 Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-103
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522224
Superseded Report:

Test Completion Dates

Lab Sample No(s)	20668536	20668587	20668626	20668654	20668689
Customer Sample Ref.	BH01 Ahascra	BH02 Ahascra	BH01 Ardferit	BH01 Listowel	BH02 Listowel
AGS Ref.					
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water

Acid Herbicides by GCMS	13-Sep-2019	11-Sep-2019	12-Sep-2019	13-Sep-2019	17-Sep-2019
Alkalinity as CaCO3	13-Sep-2019	13-Sep-2019	13-Sep-2019	15-Sep-2019	15-Sep-2019
Ammoniacal Nitrogen	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Anions by Kone (w)	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019
Conductivity (at 20 deg.C)	11-Sep-2019	11-Sep-2019	11-Sep-2019	10-Sep-2019	11-Sep-2019
Cyanide Comp/Free/Total/Thiocyanate	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
Dissolved Metals by ICP-MS	18-Sep-2019	18-Sep-2019	18-Sep-2019	16-Sep-2019	16-Sep-2019
Dissolved Oxygen by Probe	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Fluoride	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
Mercury Dissolved	10-Sep-2019	09-Sep-2019	10-Sep-2019	09-Sep-2019	
Mineral Oil C10-40 Aqueous (W)	16-Sep-2019	16-Sep-2019	10-Sep-2019	16-Sep-2019	16-Sep-2019
PCB Congeners - Aqueous (W)	16-Sep-2019	16-Sep-2019	11-Sep-2019	16-Sep-2019	16-Sep-2019
Pesticides (Suite I) by GCMS	11-Sep-2019	11-Sep-2019	13-Sep-2019	11-Sep-2019	11-Sep-2019
Pesticides (Suite II) by GCMS	11-Sep-2019	11-Sep-2019	13-Sep-2019	13-Sep-2019	11-Sep-2019
Pesticides (Suite III) by GCMS	10-Sep-2019	10-Sep-2019	12-Sep-2019	10-Sep-2019	10-Sep-2019
pH Value	12-Sep-2019	12-Sep-2019	12-Sep-2019	13-Sep-2019	13-Sep-2019
Phosphate by Kone (w)	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
SVOC MS (W) - Aqueous	19-Sep-2019	19-Sep-2019	19-Sep-2019	20-Sep-2019	19-Sep-2019
Total Dissolved Solids	11-Sep-2019	10-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019
Total Organic and Inorganic Carbon	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
VOC MS (W)	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019

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CERTIFICATE OF ANALYSIS

SDG: 190906-103 Client Reference: P1766 North Kerry Report Number: 522224
 Location: North Kerry Landfills Order Number: Z1658 Superseded Report:

Appendix

General

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

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

3. 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.

4. 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.

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

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

7. Results relate only to the items tested.

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

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

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

11. 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.

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

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

14. 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.

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

16. 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.

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

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2107)*.

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

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



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Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 31 July 2019
Customer: Fehily Timoney
Sample Delivery Group (SDG): 190719-99
Your Reference: P1766 North Kerry
Location: North Kerry Landfills
Report No: 516269

This report has been revised and directly supersedes 515690 in its entirety.

We received 6 samples on Friday July 19, 2019 and 6 of these samples were scheduled for analysis which was completed on Wednesday July 31, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20365870	SW-01 Ahascra		0.00 - 0.00	16/07/2019
20365883	SW-02 Ahascra		0.00 - 0.00	16/07/2019
20365911	SW-01 Ardfert		0.00 - 0.00	16/07/2019
20365921	SW-02 Ardfert		0.00 - 0.00	16/07/2019
20365892	SW-01 Leanamore		0.00 - 0.00	16/07/2019
20365901	SW-02 Leanamore		0.00 - 0.00	16/07/2019

Maximum Sample/Coolbox Temperature (°C) :

13.8

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

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

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269	Superseded Report: 515690
Location: North Kerry Landfills	Order Number: Z1658		

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></div> Test </div> <div style="display: flex; align-items: center;"> <div style="width: 15px; height: 15px; background-color: red; color: white; border: 1px solid black; margin-right: 5px; display: flex; align-items: center; justify-content: center;">N</div> No Determination Possible </div> </div> <p>Sample Types -</p> <ul style="list-style-type: none"> S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other 	20365870	SW-01 Athascra		0.00 - 0.00	HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227) NaOH (ALE245)
	20365883	SW-02 Athascra		0.00 - 0.00	HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227) NaOH (ALE245)	SW
	20365911	SW-01 Ardtert		0.00 - 0.00	HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227) NaOH (ALE245)	SW
	20365921	SW-02 Ardtert		0.00 - 0.00	HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227) NaOH (ALE245)	SW

pH Value	All	NDPs: 0 Tests: 6	SW	SW	SW	SW	SW	SW	SW
			X		X			X	
Phosphate by Kone (w)	All	NDPs: 0 Tests: 6	X		X			X	
Suspended Solids	All	NDPs: 0 Tests: 6	X		X			X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6	X		X			X	
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6		X		X		X	
VOC MS (W)	All	NDPs: 0 Tests: 6	X		X			X	

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269	
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690	

Results Legend			Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardferd	SW-02 Ardferd	SW-01 Leanamore	SW-02 Leanamore
# ISO17025 accredited. M mCERTS accredited. sq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-3*5@ Sample deviation (see appendix)	Depth (m)	Sample Type							
	Date Sampled	Sample Time							
	Date Received	SDG Ref							
	Lab Sample No.(s)	AGS Reference							
Component	LOD/Units	Method							
Suspended solids, Total	<2 mg/l	TM022	24	41.8	<2	3.6	30.7	17	
Alkalinity, Total as CaCO3	<2 mg/l	TM043	16	11	288	298	283	278	
Oxygen, dissolved	<0.3 mg/l	TM046	8.63	8.88	9.49	8.58	9.12	9.58	
Organic Carbon, Total	<3 mg/l	TM090	51.7	51.6	<3	<3	11.8	11.1	
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Fluoride	<0.5 mg/l	TM104	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
COD, unfiltered	<7 mg/l	TM107	183	183	19.8	<7	29.7	31.1	
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.17	0.17	0.691	0.684	0.558	0.546	
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5	0.578	<0.5	<0.5	3.82	<0.5	
Barium (diss.filt)	<0.2 µg/l	TM152	2.42	2.52	6.41	6.61	15.3	2.65	
Boron (diss.filt)	<10 µg/l	TM152	11	12.6	18.7	25.8	18.6	16.8	
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	
Chromium (diss.filt)	<1 µg/l	TM152	<1	<1	<1	<1	<1	<1	
Copper (diss.filt)	<0.3 µg/l	TM152	2.2	2.29	2.67	3.14	3.96	1.79	
Lead (diss.filt)	<0.2 µg/l	TM152	1.15	1.14	<0.2	<0.2	<0.2	1.07	
Manganese (diss.filt)	<3 µg/l	TM152	89.7	88.5	5.52	6.41	170	90.2	
Nickel (diss.filt)	<0.4 µg/l	TM152	1.11	1.27	1.79	2.11	3.73	0.873	
Phosphorus (diss.filt)	<10 µg/l	TM152	20.1	18.7	<10	<10	10.2	25.1	
Selenium (diss.filt)	<1 µg/l	TM152	<1	<1	1.12	1.18	<1	<1	
Thallium (diss.filt)	<2 µg/l	TM152	<2	<2	<2	<2	<2	<2	
Zinc (diss.filt)	<1 µg/l	TM152	32.4	32.2	24.6	25.6	16.8	25.8	
Sodium (Dis.Filt)	<0.076 mg/l	TM152	22.7	22.8	25.2	25.4	26.2	22.6	
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	3.96	3.93	8.76	8.91	14.5	4.1	
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.65	0.667	3.46	3.54	2.92	0.442	
Calcium (Dis.Filt)	<0.2 mg/l	TM152	7.93	7.67	126	124	88.3	8.4	
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.801	0.774	<0.019	<0.019	0.161	0.766	
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	<100	<100	<100	<100	<100	<100	
Mercury (diss.filt)	<0.01 µg/l	TM183	0.0102	<0.01	<0.01	<0.01	<0.01	<0.01	
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Chloride	<2 mg/l	TM184	32.6	42.8	45.7	45.8	32.1	32.2	
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1	<0.1	4.84	4.89	0.386	0.36	
Sulphate (soluble) as S	<1 mg/l	TM184	<5	<5	9.33	7.9	<1	<1	
PCB congener 28	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	



CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690

Results Legend		Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardferd	SW-02 Ardferd	SW-01 Leanamore	SW-02 Leanamore
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
diss.filt	Dissolved / filtered sample.	
tot.unfilt	Total / unfiltered sample.		19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
*	Subcontracted - refer to subcontractor report for accreditation status.		190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		20365870	20365883	20365911	20365921	20365892	20365901
(F)	Trigger breach confirmed							
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
PCB congener 52	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 101	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 118	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 138	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 153	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 180	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105	<0.105	<0.105	<0.105	<0.105	<0.105
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	<1 pH Units	TM256	6.29	6.39	8.09	7.99	7.86	7.86
Trifluralin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDT	<0.01 µg/l	TM343	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690

#	Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardferd	SW-02 Ardferd	SW-01 Leanamore	SW-02 Leanamore																																																																																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Results Legend</td> <td style="width: 20%;">Depth (m)</td> <td>0.00 - 0.00</td> <td>0.00 - 0.00</td> <td>0.00 - 0.00</td> <td>0.00 - 0.00</td> <td>0.00 - 0.00</td> <td>0.00 - 0.00</td> </tr> <tr> <td># ISO17025 accredited.</td> <td>Sample Type</td> <td>Surface Water (SW)</td> <td>Surface Water (SW)</td> <td>Surface Water (SW)</td> <td>Surface Water (SW)</td> <td>Surface Water (SW)</td> <td>Surface Water (SW)</td> </tr> <tr> <td>M mCERTS accredited.</td> <td>Date Sampled</td> <td>16/07/2019</td> <td>16/07/2019</td> <td>16/07/2019</td> <td>16/07/2019</td> <td>16/07/2019</td> <td>16/07/2019</td> </tr> <tr> <td>aq Aqueous / settled sample.</td> <td>Sample Time</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>diss.filt Dissolved / filtered sample.</td> <td>Date Received</td> <td>19/07/2019</td> <td>19/07/2019</td> <td>19/07/2019</td> <td>19/07/2019</td> <td>19/07/2019</td> <td>19/07/2019</td> </tr> <tr> <td>tot.unfilt Total / unfiltered sample.</td> <td>SDG Ref</td> <td>190719-99</td> <td>190719-99</td> <td>190719-99</td> <td>190719-99</td> <td>190719-99</td> <td>190719-99</td> </tr> <tr> <td colspan="2">Subcontracted - refer to subcontractor report for accreditation status.</td> <td>Lab Sample No.(s)</td> <td>20365870</td> <td>20365883</td> <td>20365911</td> <td>20365921</td> <td>20365901</td> </tr> <tr> <td colspan="2">% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery</td> <td>AGS Reference</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">(F) Trigger breach confirmed</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">1-3*5@ Sample deviation (see appendix)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								Results Legend	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	# ISO17025 accredited.	Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	M mCERTS accredited.	Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	aq Aqueous / settled sample.	Sample Time	diss.filt Dissolved / filtered sample.	Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	tot.unfilt Total / unfiltered sample.	SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99	Subcontracted - refer to subcontractor report for accreditation status.		Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365901	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		AGS Reference						(F) Trigger breach confirmed								1-3*5@ Sample deviation (see appendix)							
Results Legend	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00																																																																																
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Component	LOD/Units	Method																																																																																					
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04	<0.04	<0.04	<0.04	<0.04																																																																																
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02																																																																																
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02																																																																																
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02																																																																																
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02																																																																																
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Phorate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Triallate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Simazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Disulfoton	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Propetamphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Chlorpyrifos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Malathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01																																																																																

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CERTIFICATE OF ANALYSIS

Validated

SDG:	190719-99	Client Reference:	P1766 North Kerry	Report Number:	516269
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	515690

Results Legend		Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardferd	SW-02 Ardferd	SW-01 Leanamore	SW-02 Leanamore
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-3*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 16/07/2019	0.00 - 0.00 Surface Water (SW) 16/07/2019	0.00 - 0.00 Surface Water (SW) 16/07/2019	0.00 - 0.00 Surface Water (SW) 16/07/2019	0.00 - 0.00 Surface Water (SW) 16/07/2019	0.00 - 0.00 Surface Water (SW) 16/07/2019
Component	LOD/Units	Method						
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosalone	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos ethyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Etridiazole	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pentachlorobenzene	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tributylphosphate	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Omethoate	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propyzamide	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Alachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Prometryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Terbutryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorothalonil	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Etrimphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metazachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trietazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Coumaphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon I	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon II	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 516269
Superseded Report: 515690

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardferd	SW-02 Ardferd	SW-01 Leanamore	SW-02 Leanamore		
#	ISO17025 accredited.									
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery.									
(F)	Trigger breach confirmed									
1-3*§@	Sample deviation (see appendix)									
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365870	
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365883	
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365911	
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365921	
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2-Chloronaphthalene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2-Chlorophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2-Methylnaphthalene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2-Methylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2-Nitroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
2-Nitrophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
3-Nitroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Chloroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Methylphenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Nitroaniline (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
4-Nitrophenol (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
Azobenzene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
Acenaphthylene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
Acenaphthene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
Anthracene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<20							
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	
Benzo(a)anthracene (aq)	<1 µg/l	TM176	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892	



CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 516269
Superseded Report: 515690

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	SW-01 Ahasra	SW-02 Ahasra	SW-01 Ardert	SW-02 Ardert	SW-01 Leanamore	SW-02 Leanamore
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Carbazole (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Chrysene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Dibenzofuran (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Diethyl phthalate (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Dimethyl phthalate (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<50	<40	<5	<10	<5	<5
			#	@ #	#	@ #	#	#
Fluoranthene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Fluorene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Hexachlorobenzene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Pentachlorophenol (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Phenol (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Hexachloroethane (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Nitrobenzene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Naphthalene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Isophorone (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Phenanthrene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#
Pyrene (aq)	<1 µg/l	TM176	<10	<8	<1	<2	<1	<1
			#	@ #	#	@ #	#	#

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 516269
Superseded Report: 515690

VOC MS (W)

Results Legend			Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
#	ISO17025 accredited.								
M	mCERTS accredited.								
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery.								
(F)	Trigger breach confirmed								
1-3*§@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Dibromofluoromethane**	%	TM208	Surface Water (SW)	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
			Sample Type	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled	Date Sampled
			Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
			SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
			Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365892	20365901
			AGS Reference						
				108	104	105	105	103	116
				1	1	1	1	1	1
Toluene-d8**	%	TM208		97.1	98.2	95.5	99.2	103	103
				1	1	1	1	1	1
4-Bromofluorobenzene**	%	TM208		94.6	97.3	93	94.5	94.8	94
				1	1	1	1	1	1
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1	1	1	1	1	1
Chloromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Vinyl chloride	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Bromomethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Chloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Carbon disulphide	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Dichloromethane	<3 µg/l	TM208		4.26	8.28	12.8	9.78	9.43	9.61
				1 #	1 #	1 #	1 #	1 #	1 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1	1	1	1	1	1
Bromochloromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Chloroform	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Carbontetrachloride	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Benzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Trichloroethene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Dibromomethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Bromodichloromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
Toluene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
				1 #	1 #	1 #	1 #	1 #	1 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690

VOC MS (W)

Results Legend		Customer Sample Ref.	SW-01 Ahascra		SW-02 Ahascra		SW-01 Ardferd		SW-02 Ardferd		SW-01 Leanamore		SW-02 Leanamore	
#	ISO17025 accredited.		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.	Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	
aq	Aqueous / filtered sample.	Date Sampled	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019		
diss.filt	Dissolved / filtered sample.	Sample Time	-	-	-	-	-	-	-	-	-	-		
tot.unfilt	Total / unfiltered sample.	Date Received	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019		
*	Subcontracted - refer to subcontractor report for accreditation status.	SDG Ref	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99	190719-99		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	Lab Sample No.(s)	20365870	20365883	20365911	20365921	20365921	20365921	20365921	20365921	20365921	20365921		
(F)	Trigger breach confirmed	AGS Reference												
1-3*5@	Sample deviation (see appendix)													
Component	LOD/Units	Method												
Tetrachloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Dibromochloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,2-Dibromoethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Chlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Ethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
m,p-Xylene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
o-Xylene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Styrene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Bromofom	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Isopropylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Bromobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Propylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
2-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
4-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
tert-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
sec-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
4-iso-Propyltoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
n-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1	1	1	1	1	1	1	1	1	1		
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Hexachlorobutadiene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
Naphthalene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
			1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #	1 #		

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99 Client Reference: P1766 North Kerry Report Number: 516269
 Location: North Kerry Landfills Order Number: Z1658 Superseded Report: 515690

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269	
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690	

Test Completion Dates

Lab Sample No(s)	20365870	20365883	20365911	20365921	20365892	20365901
Customer Sample Ref.	SW-01 Ahascra	SW-02 Ahascra	SW-01 Ardfert	SW-02 Ardfert	SW-01 Leanamore	SW-02 Leanamore
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Alkalinity as CaCO3	24-Jul-2019	26-Jul-2019	26-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Ammoniacal Nitrogen	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	24-Jul-2019
Anions by Kone (w)	26-Jul-2019	26-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019
COD Unfiltered	21-Jul-2019	21-Jul-2019	21-Jul-2019	21-Jul-2019	21-Jul-2019	21-Jul-2019
Conductivity (at 20 deg.C)	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Cyanide Comp/Free/Total/Thiocyanate	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Dissolved Metals by ICP-MS	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019
Dissolved Oxygen by Probe	21-Jul-2019	21-Jul-2019	21-Jul-2019	20-Jul-2019	21-Jul-2019	21-Jul-2019
Fluoride	22-Jul-2019	22-Jul-2019	22-Jul-2019	22-Jul-2019	22-Jul-2019	22-Jul-2019
Mercury Dissolved	23-Jul-2019	23-Jul-2019	22-Jul-2019	22-Jul-2019	23-Jul-2019	23-Jul-2019
Mineral Oil C10-40 Aqueous (W)	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019
PCB Congeners - Aqueous (W)	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019	25-Jul-2019
Pesticides (Suite I) by GCMS	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019	26-Jul-2019
Pesticides (Suite II) by GCMS	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Pesticides (Suite III) by GCMS	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019	23-Jul-2019
pH Value	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
Phosphate by Kone (w)	20-Jul-2019	20-Jul-2019	20-Jul-2019	20-Jul-2019	20-Jul-2019	20-Jul-2019
Suspended Solids	24-Jul-2019	24-Jul-2019	23-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019
SVOC MS (W) - Aqueous	26-Jul-2019	29-Jul-2019	26-Jul-2019	31-Jul-2019	25-Jul-2019	26-Jul-2019
Total Organic and Inorganic Carbon	25-Jul-2019	25-Jul-2019	23-Jul-2019	25-Jul-2019	23-Jul-2019	26-Jul-2019
VOC MS (W)	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019	24-Jul-2019

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CERTIFICATE OF ANALYSIS

SDG: 190719-99	Client Reference: P1766 North Kerry	Report Number: 516269
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report: 515690

Appendix

General

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

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

3. 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.

4. 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.

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

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

7. Results relate only to the items tested.

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

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

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

11. 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.

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

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

14. 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.

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

16. 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.

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

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2107)*.

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

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

Certificate of Analysis

Customer	Fehily Timoney & Co	Date Received	17/07/2019
		Date Analysed	17/07/2019 - 24/07/2019
Office	Core House Pouladuff Rd Cork	Issue Date	24/07/2019
		Quote No.	
Customer Contact	Emily Archer	Customer PO	
		Project:	Ahascra Kerry
		BATCH NUMBER	19-02874

Conor Murphy

Conor Murphy
Operations Manager

Index to symbols used & Notes

*	Analysis is not INAB/UKAS accredited
**	Adapted from Standard Methods for the Examination of Water and Wastewater.
****	Customer specific limits
(F)	Analysis carried out at our Farranfore Laboratory.
(D)	Analysis carried out at our Dunrinc Laboratory.
LOD	Parameter Limit of Detection.
Note 6	Subcontracted Parameter.

Notes

- ◆ The results relate only to the items tested.
- ◆ Opinions and interpretations expressed herein are outside the scope of INAB accreditation.
- ◆ The analysis report shall not be reproduced except in full without written approval of the laboratory.
- ◆ Sampling is outside the scope of the laboratory activities.

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web site www.southernscientificireland.com | e-mail info@southernscientificireland.com

directors: K. Murphy, M. Murphy & C. Murphy
registered in ireland no 323196 | vat reg no IE 6343196 M



Customer Sample Ref: BH-01 - Ahascra	Customer Sample Code:
Project: Ahascra Kerry	Sampled By: Emily Archer
Our Reference: 9243 (19-02874)	Sample Matrix: Ground Water
Date Sampled: 16/07/2019	Time Sampled: :

Method:	Parameter:	Units	LOD	Result
	<u>Microbiological Analysis: (D)</u>			
SMP 019	Coliforms	MPN/100mL	<10	236
SMP 124	Faecal coliforms	MPN/100mL	<10	1354

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Customer Sample Ref: SW-01 - Ahascra	Customer Sample Code:
Project: Ahascra Kerry	Sampled By: Emily Archer
Our Reference: 9244 (19-02874)	Sample Matrix: Surface Water
Date Sampled: 16/07/2019	Time Sampled: :

Method:	Parameter:	Units	LOD	Result
	<u>Chemical Analysis: (F)</u>			
SCP 015	Biological Oxygen Demand (BOD)	mg/L	1.0	8.2

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southern scientific services ltd.

Report No. 19-02874 Rev 0

Page 4 of 5

Customer Sample Ref: SW-02 - Ahascra	Customer Sample Code:		
Project: Ahascra Kerry	Sampled By:	Emily Archer	
Our Reference: 9245 (19-02874)	Sample Matrix:	Surface Water	
Date Sampled: 16/07/2019	Time Sampled:	:	

Method:	Parameter:	Units	LOD	Result
	<u>Chemical Analysis: (F)</u>			
SCP 015	Biological Oxygen Demand (BOD)	mg/L	1.0	10.0

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Customer Sample Ref: BH-02 - Ahascra	Customer Sample Code:
Project: Ahascra Kerry	Sampled By: Emily Archer
Our Reference: 9246 (19-02874)	Sample Matrix: Ground Water
Date Sampled: 16/07/2019	Time Sampled: :

Method:	Parameter:	Units	LOD	Result
	<u>Microbiological Analysis: (D)</u>			
SMP 019	Coliforms	MPN/100mL	<10	189
SMP 124	Faecal coliforms	MPN/100mL	<10	< 10

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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Fehily Timoney
3rd Floor
North Park Offices
North Park Business Park
North Road
Dublin
Dublin 11

Attention: Daniel Hayden

CERTIFICATE OF ANALYSIS

Date of report Generation: 24 September 2019
Customer: Fehily Timoney
Sample Delivery Group (SDG): 190906-109
Your Reference: P1766 North Kerry
Location: North Kerry Landfills
Report No: 522621

We received 6 samples on Friday September 06, 2019 and 6 of these samples were scheduled for analysis which was completed on Tuesday September 24, 2019. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109	Client Reference: P1766 North Kerry	Report Number: 522621
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20668831	SW01 Ahascra		0.00 - 0.00	03/09/2019
20668850	SW02 Ahascra		0.00 - 0.00	03/09/2019
20668862	SW01 Ardfert		0.00 - 0.00	03/09/2019
20668877	SW02 Ardfert		0.00 - 0.00	03/09/2019
20668892	SW01 Listowel		0.00 - 0.00	03/09/2019
20668907	SW02 Listowel		0.00 - 0.00	03/09/2019

Maximum Sample/Coolbox Temperature (°C) :

16.2

ISO5667-3 Water quality - Sampling - Part3 -

During Transportation samples shall be stored in a cooling device capable of maintaining a temperature of (5±3)°C.

ALS have data which show that a cool box with 4 frozen icepacks is capable of maintaining pre-chilled samples at a temperature of (5±3)°C for a period of up to 24hrs.

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

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CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-109	Client Reference:	P1766 North Kerry	Report Number:	522621
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	X	Test	N	No Determination Possible								
Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other		20668831		SW01 Ahascra			0.00 - 0.00		0.5l glass bottle (ALE227)	SW		
		20668850		SW02 Ahascra			0.00 - 0.00		500ml Plastic (ALE208)	SW		
		20668862		SW01 Ardtert			0.00 - 0.00		500ml Plastic (ALE208)	SW		
		20668877		SW02 Ardtert			0.00 - 0.00		NaOH (ALE245)	SW		
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6	X									
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 6		X								
Anions by Kone (w)	All	NDPs: 0 Tests: 6	X									
COD Unfiltered	All	NDPs: 0 Tests: 6	X									
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 6	X									
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6										
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6										
Dissolved Oxygen by Probe	All	NDPs: 0 Tests: 6	X									
Fluoride	All	NDPs: 0 Tests: 6	X									
Mercury Dissolved	All	NDPs: 0 Tests: 6										
Mineral Oil C10-40 Aqueous (W)	All	NDPs: 0 Tests: 6	X									
PCB Congeners - Aqueous (W)	All	NDPs: 0 Tests: 6	X									
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 6	X									
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 6	X									
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 6	X									



CERTIFICATE OF ANALYSIS

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SDG: 190906-109	Client Reference: P1766 North Kerry	Report Number: 522621
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	20668831	SW01 Athasca		0.00 - 0.00	NaOH (ALE245) HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227)	SW
	20668850	SW02 Athasca		0.00 - 0.00	NaOH (ALE245) HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227)	SW
	20668862	SW01 Ardfert		0.00 - 0.00	NaOH (ALE245) HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227)	SW
	20668877	SW02 Ardert		0.00 - 0.00	NaOH (ALE245) HNO3 Filtered (ALE204) H2SO4 (ALE244) 500ml Plastic (ALE208) 0.5l glass bottle (ALE227)	SW
pH Value	All	NDPs: 0 Tests: 6				
Phosphate by Kone (w)	All	NDPs: 0 Tests: 6				
Suspended Solids	All	NDPs: 0 Tests: 6				
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6				
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6				
VOC MS (W)	All	NDPs: 0 Tests: 6				

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109	Client Reference: P1766 North Kerry	Report Number: 522621
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Results Legend			Customer Sample Ref.	SW01 Ahascra	SW02 Ahascra	SW01 Ardferit	SW02 Ardferit	SW01 Listowel	SW02 Listowel
#	ISO17025 accredited.								
M	mCERTS accredited.								
sq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-3*5@	Sample deviation (see appendix)								
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time						
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Component	LOD/Units	Method							
Suspended solids, Total	<2 mg/l	TM022	35.1	46	14.3	15.9	<4	4.47	
			#	#	#	#	#	#	#
Alkalinity, Total as CaCO3	<2 mg/l	TM043	9	12.7	291	292	24.4	18.7	
			#	#	#	#	#	#	#
Oxygen, dissolved	<0.3 mg/l	TM046	9.73	9.04	10.5	10.2	10.8	10.5	
Organic Carbon, Total	<3 mg/l	TM090	63.6	63.5	<3	<3	13	15.8	
			@#	@#	#	#	#	#	#
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
			#	#	#	#	#	#	#
Fluoride	<0.5 mg/l	TM104	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			#	#	#	#	#	#	#
COD, unfiltered	<7 mg/l	TM107	179	167	<7	<7	41.3	45.3	
			#	#	#	#	#	#	#
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.0973	0.0926	0.655	0.646	0.113	0.119	
			#	#	#	#	#	#	#
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5	0.683	0.52	<0.5	<0.5	<0.5	
			#	#	2#	#	#	#	#
Barium (diss.filt)	<0.2 µg/l	TM152	2.41	2.76	5.62	5.71	2.92	2.86	
			#	#	#	#	#	#	#
Boron (diss.filt)	<10 µg/l	TM152	16.7	16	21.6	22.2	<10	10.5	
			#	#	2#	#	#	#	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	
			#	#	2#	#	#	#	#
Chromium (diss.filt)	<1 µg/l	TM152	<1	<1	<1	<1	<1	<1	
			#	#	2#	#	#	#	#
Copper (diss.filt)	<0.3 µg/l	TM152	3.11	2.41	1.22	2.03	3.13	2.97	
			#	#	2#	#	#	#	#
Lead (diss.filt)	<0.2 µg/l	TM152	1.26	1.22	<0.2	0.29	0.31	0.349	
			#	#	2#	#	#	#	#
Manganese (diss.filt)	<3 µg/l	TM152	79.8	85.2	<3	4.78	38.3	38.2	
			#	#	2#	#	#	#	#
Nickel (diss.filt)	<0.4 µg/l	TM152	0.854	0.915	0.756	0.839	2.18	2.18	
			#	#	2#	#	#	#	#
Phosphorus (diss.filt)	<10 µg/l	TM152	12.2	12.1	16	28	29	28.4	
			#	#	2#	#	#	#	#
Selenium (diss.filt)	<1 µg/l	TM152	<1	<1	<1	<1	<1	<1	
			#	#	2#	#	#	#	#
Thallium (diss.filt)	<2 µg/l	TM152	<2	<2	<2	<2	<2	<2	
			#	#	2#	#	#	#	#
Zinc (diss.filt)	<1 µg/l	TM152	41.1	39.6	3.92	7.36	11.3	11.2	
			#	#	2#	#	#	#	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	12	11.8	24.3	25.9	10.7	10.8	
			#	#	2#	#	#	#	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	2.63	2.9	8.05	7.48	2.64	2.62	
			#	#	2#	#	#	#	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.281	0.372	2.99	2.98	1.57	1.55	
			#	#	2#	#	#	#	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	6.33	7.48	118	112	7.29	7.19	
			#	#	2#	#	#	#	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	1.19	1.13	<0.019	<0.019	0.631	0.668	
			#	#	2#	#	#	#	#
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	<100	<100	<100	<100	<100	<100	
			#	#	#	#	#	#	#
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			#	#	2	#	#	#	#
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	<0.05	0.08	0.064	<0.05	<0.05	
			#	#	#	#	#	#	#
Chloride	<2 mg/l	TM184	21.2	21.1	48.7	48.8	19.3	19.2	
			#	#	#	#	#	#	#
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.5	<0.5	4.94	4.95	0.997	1.15	
			#	#	#	#	#	#	#
Sulphate (soluble) as S	<1 mg/l	TM184	<5	<5	8.1	7.67	<1	1.73	
			#	#	#	#	#	#	#
PCB congener 28	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	
			#	#	#	#	#	#	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109	Client Reference: P1766 North Kerry	Report Number: 522621
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Results Legend		Customer Sample Ref.	SW01 Ahasra	SW02 Ahasra	SW01 Ardert	SW02 Ardert	SW01 Listowel	SW02 Listowel
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery. (F) Trigger breach confirmed 1-3*5@ Sample deviation (see appendix)		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-109 20668831	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-109 20668850	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-109 20668862	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-109 20668877	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-109 20668892	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-109 20668907
Component	LOD/Units	Method						
PCB congener 52	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 101	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 118	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 138	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 153	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
PCB congener 180	<0.015 µg/l	TM197	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105	<0.105	<0.105	<0.105	<0.105	<0.105
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH	<1 pH Units	TM256	6.14	6.08	8.11	8.23	7.19	7.1
Trifluralin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endrin	<0.01 µg/l	TM343	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02
o,p'-DDT	<0.01 µg/l	TM343	<0.03	<0.03	<0.01	<0.01	<0.03	<0.03
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343	<0.03	<0.03	<0.02	<0.01	<0.03	<0.03
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.03	<0.03	<0.01	<0.01	<0.03	<0.03
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.04	<0.04	<0.01	<0.01	<0.04	<0.04

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109	Client Reference: P1766 North Kerry	Report Number: 522621
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

Results Legend		Customer Sample Ref.	SW01 Ahasra	SW02 Ahasra	SW01 Ardert	SW02 Ardert	SW01 Listowel	SW02 Listowel
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
(F)	Trigger breach confirmed		20668831	20668850	20668862	20668877	20668892	20668907
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.06	<0.06	<0.02	<0.06	<0.06	<0.06
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phorate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triallate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Simazine	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Disulfoton	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propetamphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorpyrifos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Malathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Parathion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-109	Client Reference:	P1766 North Kerry	Report Number:	522621
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Results Legend		Customer Sample Ref.	SW01 Ahasra	SW02 Ahasra	SW01 Ardfert	SW02 Ardfert	SW01 Listowel	SW02 Listowel
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
(F)	Trigger breach confirmed		20668831	20668850	20668862	20668877	20668892	20668907
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
trans-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ethion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Carbophenothion	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Triazophos	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosalone	<0.01 µg/l	TM344	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Azinphos methyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Azinphos ethyl	<0.02 µg/l	TM344	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Etridiazole	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pentachlorobenzene	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Omethoate	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Propyzamide	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Alachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Prometryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Telodrin	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Terbutryn	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorothalonil	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Etrimphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Metazachlor	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cyanazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Trietazine	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Coumaphos	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon I	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phosphamidon II	<0.01 µg/l	TM345	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522621
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	SW01 Ahascra	SW02 Ahascra	SW01 Ardferd	SW02 Ardferd	SW01 Listowel	SW02 Listowel
#	ISO17025 accredited.								
M	mCERTS accredited.								
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery.								
(F)	Trigger breach confirmed								
1-3*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			190906-109	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			20668831	20668850	20668862	20668877	20668892	20668907	20668907
			SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref	SDG Ref
			Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)	Lab Sample No.(s)
			AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference	AGS Reference
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2-Chlorophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2-Methylphenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2-Nitroaniline (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
2-Nitrophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
3-Nitroaniline (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Chloroaniline (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Methylphenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Nitroaniline (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
4-Nitrophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
Azobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
Acenaphthylene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
Acenaphthene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
Anthracene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<40	<16	<4	<2	<8	<2	<2
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522621
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	SW01 Ahasra	SW02 Ahasra	SW01 Ardert	SW02 Ardert	SW01 Listowel	SW02 Listowel	
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
M	mCERTS accredited.			Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.			03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
(F)	Trigger breach confirmed			190906-109	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
1-3*5@	Sample deviation (see appendix)			20668831	20668850	20668862	20668877	20668892	20668907	20668907
Component	LOD/Units	Method								
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Carbazole (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Chrysene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Dibenzofuran (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Diethyl phthalate (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Dimethyl phthalate (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<100	<40	<10	<5	<20	<5	<5	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Fluoranthene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Fluorene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Hexachlorobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Pentachlorophenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Phenol (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Hexachloroethane (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Nitrobenzene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Naphthalene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Isophorone (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Phenanthrene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	
Pyrene (aq)	<1 µg/l	TM176	<20	<8	<2	<1	<4	<1	<1	
			@ #	@ #	@ #	@ #	@ #	@ #	@ #	

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CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109	Client Reference: P1766 North Kerry	Report Number: 522621
Location: North Kerry Landfills	Order Number: Z1658	Superseded Report:

VOC MS (W)

Results Legend			Customer Sample Ref.	SW01 Ahasca	SW02 Ahasca	SW01 Ardferit	SW02 Ardferit	SW01 Listowel	SW02 Listowel
# ISO17025 accredited.									
M mCERTS accredited.									
sq Aqueous / settled sample.									
dis.filt Dissolved / filtered sample.									
tot.unfilt Total / unfiltered sample.									
* Subcontracted - refer to subcontractor report for accreditation status.									
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F) Trigger breach confirmed									
1-3* Sample deviation (see appendix)									
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
			Sample Time						
			Date Received	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
			SDG Ref	190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
			Lab Sample No.(s)	20668831	20668850	20668862	20668877	20668892	20668907
			AGS Reference						
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM208	112	108	104	107	110	104	
			1	1	1	1	1	1	1
Toluene-d8**	%	TM208	101	100	99.9	99.6	100	101	
			1	1	1	1	1	1	1
4-Bromofluorobenzene**	%	TM208	99.6	99.6	99.7	100	100	101	
			1	1	1	1	1	1	1
Dichlorodifluoromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1	1	1	1	1	1	1
Chloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Vinyl chloride	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Bromomethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Chloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Trichlorofluoromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,1-Dichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Carbon disulphide	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Dichloromethane	<3 µg/l	TM208	<3	<3	<3	<3	<3	<3	<3
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,1-Dichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
2,2-Dichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1	1	1	1	1	1	1
Bromochloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Chloroform	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,1-Dichloropropene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Carbontetrachloride	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Benzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Trichloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Dibromomethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Bromodichloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
Toluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #
1,3-Dichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #	1 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-109
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522621
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	SW01 Ahasra	SW02 Ahasra	SW01 Ardferd	SW02 Ardferd	SW01 Listowel	SW02 Listowel
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
aq	Aqueous / settled sample.		03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019	03/09/2019
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
..	Subcontracted - refer to subcontractor report for accreditation status.		06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019	06/09/2019
*	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		190906-109	190906-109	190906-109	190906-109	190906-109	190906-109
(F)	Trigger breach confirmed		20668831	20668850	20668862	20668877	20668892	20668907
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Tetrachloroethene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Dibromochloromethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dibromoethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Chlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Ethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
m,p-Xylene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
o-Xylene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Styrene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Bromofom	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Isopropylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Bromobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Propylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
2-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
4-Chlorotoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
tert-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
sec-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
4-iso-Propyltoluene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
n-Butylbenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1	1	1	1	1	1
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Hexachlorobutadiene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
Naphthalene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	<1	<1	<1	<1	<1
			1 #	1 #	1 #	1 #	1 #	1 #

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SDG: 190906-109 Client Reference: P1766 North Kerry Report Number: 522621
 Location: North Kerry Landfills Order Number: Z1658 Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM046	Method 4500G, AWWA/APHA, 20th Ed., 1999	Measurement of Dissolved Oxygen by Oxygen Meter
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
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
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
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
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
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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SDG:	190906-109	Client Reference:	P1766 North Kerry	Report Number:	522621
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	20668831	20668850	20668862	20668877	20668892	20668907
Customer Sample Ref.	SW01 Ahasra	SW02 Ahasra	SW01 Ardfer	SW02 Ardfer	SW01 Listowel	SW02 Listowel
AGS Ref.						
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water

Alkalinity as CaCO3	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019
Ammoniacal Nitrogen	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Anions by Kone (w)	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019
COD Unfiltered	11-Sep-2019	11-Sep-2019	11-Sep-2019	10-Sep-2019	11-Sep-2019	11-Sep-2019
Conductivity (at 20 deg.C)	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019
Cyanide Comp/Free/Total/Thiocyanate	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
Dissolved Metals by ICP-MS	18-Sep-2019	17-Sep-2019	18-Sep-2019	18-Sep-2019	18-Sep-2019	18-Sep-2019
Dissolved Oxygen by Probe	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
Fluoride	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
Mercury Dissolved	11-Sep-2019	11-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
Mineral Oil C10-40 Aqueous (W)	16-Sep-2019	18-Sep-2019	16-Sep-2019	10-Sep-2019	18-Sep-2019	10-Sep-2019
PCB Congeners - Aqueous (W)	16-Sep-2019	16-Sep-2019	16-Sep-2019	11-Sep-2019	16-Sep-2019	11-Sep-2019
Pesticides (Suite I) by GCMS	11-Sep-2019	11-Sep-2019	12-Sep-2019	11-Sep-2019	11-Sep-2019	11-Sep-2019
Pesticides (Suite II) by GCMS	12-Sep-2019	11-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	11-Sep-2019
Pesticides (Suite III) by GCMS	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
pH Value	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	13-Sep-2019	13-Sep-2019
Phosphate by Kone (w)	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019	09-Sep-2019
Suspended Solids	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019	12-Sep-2019
SVOC MS (W) - Aqueous	19-Sep-2019	20-Sep-2019	24-Sep-2019	19-Sep-2019	19-Sep-2019	19-Sep-2019
Total Organic and Inorganic Carbon	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019	10-Sep-2019
VOC MS (W)	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019	13-Sep-2019

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SDG: 190906-109 Client Reference: P1766 North Kerry Report Number: 522621
 Location: North Kerry Landfills Order Number: Z1658 Superseded Report:

Appendix

General

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

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

3. 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.

4. 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.

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

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

7. Results relate only to the items tested.

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

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

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

11. 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.

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

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

14. 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.

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

16. 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.

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

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
§	Sampled on date not provided
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

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

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2107)*.

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

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

Certificate of Analysis

Customer:	Fehily Timoney & Co	Project:	Ahascra
Address:	Core House Pouladuff Rd Cork	Date Received:	04/09/2019
Report to:	Emily Archer	Condition of Sample:	Satisfactory
Customer PO		Date Analysed:	04/09/2019 - 17/09/2019
Quote No.		Issue Date:	17/09/2019
		BATCH NUMBER:	19-03588

Conor Murphy

Conor Murphy
Operations Manager

Index to symbols used & Notes

*	Analysis is not INAB/UKAS accredited
**	Adapted from Standard Methods for the Examination of Water and Wastewater.
****	Customer specific limits
(F)	Analysis carried out at our Farranfore Laboratory.
(D)	Analysis carried out at our Dunrinc Laboratory.
LOD	Parameter Limit of Detection.
Note 6	Subcontracted Parameter.

Notes

- ◆ The results relate only to the items tested.
- ◆ Opinions and interpretations expressed herein are outside the scope of INAB accreditation.
- ◆ The analysis report shall not be reproduced except in full without written approval of the laboratory.
- ◆ Sampling is outside the scope of the laboratory activities.

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dunrinc | killarney | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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directors: K. Murphy, M. Murphy & C. Murphy
registered in ireland no 323196 | vat reg no IE 6343196 M





Customer Sample Ref:	BH 01 - Ahascra	Customer Sample Code:	
Project:	Ahascra	Sampled By:	Emily Archer
Our Reference:	11194 (19-03588)	Sample Matrix:	Ground Water
Date Sampled:	03/09/2019	Time Sampled:	12:45

Method:	Parameter:	Units	LOD	Result
<u>Microbiological Analysis: (D)</u>				
SMP 019	Coliforms	MPN/100mL	<10	74
SMP 124	Faecal coliforms	MPN/100mL	<10	988

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Customer Sample Ref:	BH 02 - Ahascra	Customer Sample Code:	
Project:	Ahascra	Sampled By:	Emily Archer
Our Reference:	11195 (19-03588)	Sample Matrix:	Ground Water
Date Sampled:	03/09/2019	Time Sampled:	12:00

Method:	Parameter:	Units	LOD	Result
<u>Microbiological Analysis: (D)</u>				
SMP 019	Coliforms	MPN/100mL	<10	204
SMP 124	Faecal coliforms	MPN/100mL	<10	< 10

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Customer Sample Ref:	SW01 - Ahascra	Customer Sample Code:	
Project:	Ahascra	Sampled By:	Emily Archer
Our Reference:	11196 (19-03588)	Sample Matrix:	Surface Water
Date Sampled:	03/09/2019	Time Sampled:	:

Method:	Parameter:	Units	LOD	Result
<u>Chemical Analysis: (F)</u>				
SCP 015	Biological Oxygen Demand (BOD)	mg/L	1.0	4.5

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Customer Sample Ref:	SW02 - Ahascra	Customer Sample Code:	
Project:	Ahascra	Sampled By:	Emily Archer
Our Reference:	11197 (19-03588)	Sample Matrix:	Surface Water
Date Sampled:	03/09/2019	Time Sampled:	:

Method:	Parameter:	Units	LOD	Result
<u>Chemical Analysis: (F)</u>				
SCP 015	Biological Oxygen Demand (BOD)	mg/L	1.0	3.6

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