

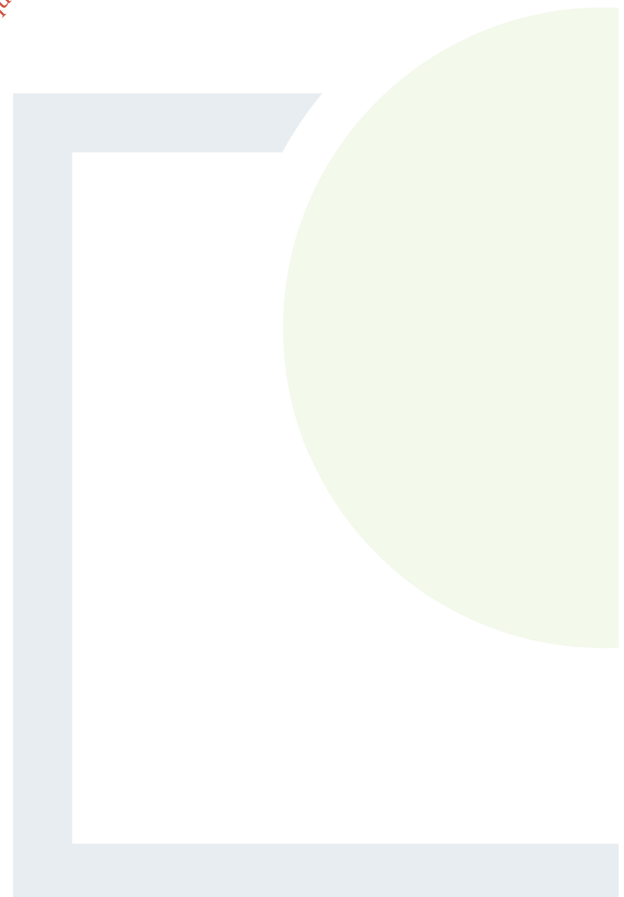


CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

APPENDIX 4

Groundwater & Surface
Water Sampling Analysis
Results

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





Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

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: 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
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 516269
Superseded Report: 515690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.

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



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

Results Legend



Test


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

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

20365870

20365883

20365911

20365921

SW-01 Ahascra

SW-02 Ahascra

SW-01 Ardert

SW-02 Ardert

0.00 - 0.00

0.00 - 0.00

0.00 - 0.00

0.00 - 0.00

HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)
NaOH (ALE245)
SW

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

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

20365901	SW-02 Leanamore		0.00 - 0.00	NaOH (ALE245)	SW														
				HNO3 Filtered (ALE204)	SW														
				H2SO4 (ALE244)	SW														
				500ml Plastic (ALE208)	SW		X												
				0.5l glass bottle (ALE227)	SW		X												
20365892	SW-01 Leanamore		0.00 - 0.00	NaOH (ALE245)	SW														X
				HNO3 Filtered (ALE204)	SW														
				H2SO4 (ALE244)	SW											X			
				500ml Plastic (ALE208)	SW		X												
				0.5l glass bottle (ALE227)	SW		X												
																			X
20365921	SW-02 Ardert		0.00 - 0.00	NaOH (ALE245)	SW														



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

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)								
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)
Suspended solids, Total	<2 mg/l	TM022	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365870
Alkalinity, Total as CaCO3	<2 mg/l	TM043	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365883
Oxygen, dissolved	<0.3 mg/l	TM046	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365911
Organic Carbon, Total	<3 mg/l	TM090	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365921
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365892
Fluoride	<0.5 mg/l	TM104	0.00 - 0.00	Surface Water (SW)	16/07/2019				20365901
COD, unfiltered	<7 mg/l	TM107							
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120							
Arsenic (diss.filt)	<0.5 µg/l	TM152							
Barium (diss.filt)	<0.2 µg/l	TM152							
Boron (diss.filt)	<10 µg/l	TM152							
Cadmium (diss.filt)	<0.08 µg/l	TM152							
Chromium (diss.filt)	<1 µg/l	TM152							
Copper (diss.filt)	<0.3 µg/l	TM152							
Lead (diss.filt)	<0.2 µg/l	TM152							
Manganese (diss.filt)	<3 µg/l	TM152							
Nickel (diss.filt)	<0.4 µg/l	TM152							
Phosphorus (diss.filt)	<10 µg/l	TM152							
Selenium (diss.filt)	<1 µg/l	TM152							
Thallium (diss.filt)	<2 µg/l	TM152							
Zinc (diss.filt)	<1 µg/l	TM152							
Sodium (Dis.Filt)	<0.076 mg/l	TM152							
Magnesium (Dis.Filt)	<0.036 mg/l	TM152							
Potassium (Dis.Filt)	<0.2 mg/l	TM152							
Calcium (Dis.Filt)	<0.2 mg/l	TM152							
Iron (Dis.Filt)	<0.019 mg/l	TM152							
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172							
Mercury (diss.filt)	<0.01 µg/l	TM183							
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184							
Chloride	<2 mg/l	TM184							
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184							
Sulphate (soluble) as S	<1 mg/l	TM184							
PCB congener 28	<0.015 µg/l	TM197							



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

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 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365870	0.00 - 0.00 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365883	0.00 - 0.00 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365911	0.00 - 0.00 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365921	0.00 - 0.00 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365892	0.00 - 0.00 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365901	0.00 - 0.00 Surface Water (SW) 16/07/2019 19/07/2019 190719-99 20365901
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								
PCB congener 52	<0.015 µg/l	TM197		<0.015	<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	<0.015
PCB congener 118	<0.015 µg/l	TM197		<0.015	<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	<0.015
PCB congener 153	<0.015 µg/l	TM197		<0.015	<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	<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	<0.105
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<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	<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01	<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	<0.01
Heptachlor	<0.01 µg/l	TM343		<0.01	<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	<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01	<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	<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01	<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	<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<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	<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<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	<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<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	<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<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	<0.01
o,p'-DDT	<0.01 µg/l	TM343		<0.05	<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	<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02	<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	<0.05
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.05	<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	<0.05



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 Ahasra	SW-02 Ahasra	SW-01 Ardfert	SW-02 Ardfert	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			19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
	Trigger breach confirmed			190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
(F)	Sample deviation (see appendix)			20365870	20365883	20365911	20365921	20365892	20365901
1-3*5@									
Component	LOD/Units	Method							
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.04	<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	<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	<0.02	<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	<0.02	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.02	<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	<0.02	
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	



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 Ahasra	SW-02 Ahasra	SW-01 Ardfert	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			19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
				190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
(F)	Trigger breach confirmed			20365870	20365883	20365911	20365921	20365892	20365901
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	
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	
Etriphos	<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	



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 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
dis.filt	Dissolved / filtered sample.			19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
tot.unfilt	Total / unfiltered sample.			190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
*	Subcontracted - refer to subcontractor report for accreditation status.			20365870	20365883	20365911	20365921	20365892	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								
(F)	Trigger breach confirmed								
1-3+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2-Chlorophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2-Methylphenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2-Nitroaniline (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
2-Nitrophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
3-Nitroaniline (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Methylphenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Nitroaniline (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
Azobenzene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
Acenaphthylene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
Acenaphthene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
Anthracene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<20	<16	<2	<4	<2	<2
				#	@ #	#	@ #	#	#
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10	<8	<1	<2	<1	<1
				#	@ #	#	@ #	#	#



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 Ardfert	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 / filtered 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	
			#	@ #	#	@ #	#	#	



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 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)
sq	Aqueous / settled sample.				16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
dis.filt	Dissolved / filtered sample.				19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
tot.unfilt	Total / unfiltered sample.				190719-99	190719-99	190719-99	190719-99	190719-99	190719-99
*	Subcontracted - refer to subcontractor report for accreditation status.				20365870	20365883	20365911	20365921	20365892	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									
(F)	Trigger breach confirmed									
1-3*§@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM208	108	104	105	105	103	116		
			1	1	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	1	1
4-Bromofluorobenzene**	%	TM208	94.6	97.3	93	94.5	94.8	94		
			1	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	4.26	8.28	12.8	9.78	9.43	9.61		
			1 #	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: 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 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.			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							
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 #	
Bromoform	<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 #	



CERTIFICATE OF ANALYSIS

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).



CERTIFICATE OF ANALYSIS

SDG: 190719-99
Location: North Kerry LandfillsClient Reference: P1766 North Kerry
Order Number: Z1658Report Number: 516269
Superseded Report: 515690

Test Completion Dates

Lab Sample No(s)	20365870	20365883	20365911	20365921	20365892	20365901
Customer Sample Ref.	SW-01 Ahasra	SW-02 Ahasra	SW-01 Ardert	SW-02 Ardert	SW-01 Leamore	SW-02 Leamore
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 CaCO ₃	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

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



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.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

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: 20 September 2019
Customer: Fehily Timoney
Sample Delivery Group (SDG): 190906-105
Your Reference: P1766 North Kerry
Location: North Kerry Landfills
Report No: 522225

We received 2 samples on Friday September 06, 2019 and 2 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: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
20668666	SW01 Lenamore		0.00 - 0.00	03/09/2019
20668690	SW02 Lenamore		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.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore				
#	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						
Suspended solids, Total	<2 mg/l	TM022	<6	4.53				
			#	#				
Alkalinity, Total as CaCO3	<2 mg/l	TM043	63.4	69.7				
			#	#				
Oxygen, dissolved	<0.3 mg/l	TM046	10.1	9.07				
Organic Carbon, Total	<3 mg/l	TM090	37	41.9				
			@ #	@ #				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.456	<0.2				
			#	#				
Fluoride	<0.5 mg/l	TM104	<0.5	<0.5				
COD, unfiltered	<7 mg/l	TM107	106	92.5				
			#	#				
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.229	0.228				
			#	#				
Arsenic (diss.filt)	<0.5 µg/l	TM152	4.92	4.35				
			#	#				
Barium (diss.filt)	<0.2 µg/l	TM152	8.59	6.93				
			#	#				
Boron (diss.filt)	<10 µg/l	TM152	15.1	14.9				
			#	#				
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	<0.08				
			#	#				
Chromium (diss.filt)	<1 µg/l	TM152	<1	<1				
			#	#				
Copper (diss.filt)	<0.3 µg/l	TM152	2.91	2.69				
			#	#				
Lead (diss.filt)	<0.2 µg/l	TM152	1.56	0.501				
			#	#				
Manganese (diss.filt)	<3 µg/l	TM152	126	110				
			#	#				
Nickel (diss.filt)	<0.4 µg/l	TM152	3.48	3.23				
			#	#				
Phosphorus (diss.filt)	<10 µg/l	TM152	15.5	<10				
			#	#				
Selenium (diss.filt)	<1 µg/l	TM152	<1	<1				
			#	#				
Thallium (diss.filt)	<2 µg/l	TM152	<2	<2				
			#	#				
Zinc (diss.filt)	<1 µg/l	TM152	18.4	17.1				
			#	#				
Sodium (Dis.Filt)	<0.076 mg/l	TM152	16	15.4				
			#	#				
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	5.46	4.93				
			#	#				
Potassium (Dis.Filt)	<0.2 mg/l	TM152	1.16	0.893				
			#	#				
Calcium (Dis.Filt)	<0.2 mg/l	TM152	42	29.3				
			#	#				
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.806	0.79				
			#	#				
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	<100	<100				
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	<0.01				
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	<0.05				
			#	#				
Chloride	<2 mg/l	TM184	24.6	24.6				
			#	#				
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	0.281	0.331				
			#	#				
Sulphate (soluble) as S	<1 mg/l	TM184	6.8	7.23				
			#	#				
PCB congener 28	<0.015 µg/l	TM197	<0.015	<0.015				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - 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					
PCB congener 52	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 101	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 118	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 138	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 153	<0.015 µg/l	TM197	<0.015	<0.015			
PCB congener 180	<0.015 µg/l	TM197	<0.015	<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105	<0.105			
Cyanide, Total	<0.05 mg/l	TM227	<0.05	<0.05			
pH	<1 pH Units	TM256	7.32	7.54			
Trifluralin	<0.01 µg/l	TM343	<0.01	<0.01			
alpha-HCH	<0.01 µg/l	TM343	<0.01	<0.01			
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01	<0.01			
Heptachlor	<0.01 µg/l	TM343	<0.01	<0.01			
Aldrin	<0.01 µg/l	TM343	<0.01	<0.01			
beta-HCH	<0.01 µg/l	TM343	<0.01	<0.01			
Isodrin	<0.01 µg/l	TM343	<0.01	<0.01			
delta-HCH	<0.01 µg/l	TM343	<0.01	<0.01			
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01			
Endosulphan I	<0.01 µg/l	TM343	<0.01	<0.01			
trans-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01			
cis-Chlordane	<0.01 µg/l	TM343	<0.01	<0.01			
p,p'-DDE	<0.01 µg/l	TM343	<0.01	<0.01			
Dieldrin	<0.01 µg/l	TM343	<0.01	<0.01			
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01			
Endrin	<0.01 µg/l	TM343	<0.02	<0.02			
o,p'-DDT	<0.01 µg/l	TM343	<0.03	<0.03			
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01	<0.01			
Endosulphan II	<0.02 µg/l	TM343	<0.02	<0.02			
p,p'-DDT	<0.01 µg/l	TM343	<0.03	<0.03			
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.03	<0.03			
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.04	<0.04			



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.						
aq	Aqueous / settled sample.		0.00 - 0.00	0.00 - 0.00			
diss.filt	Dissolved / filtered sample.		Surface Water (SW)	Surface Water (SW)			
tot.unfilt	Total / unfiltered sample.		03/09/2019	03/09/2019			
*	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			
(F)	Trigger breach confirmed		190906-105	190906-105			
1-3*5@	Sample deviation (see appendix)		20668666	20668690			
Component	LOD/Units	Method					
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.06	<0.06			
Permethrin I	<0.01 µg/l	TM343	<0.01	<0.01			
Permethrin II	<0.01 µg/l	TM343	<0.01	<0.01			
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01	<0.01			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Dichlorvos	<0.01 µg/l	TM344	<0.01	<0.01			
Dichlobenil	<0.01 µg/l	TM344	<0.01	<0.01			
Mevinphos	<0.01 µg/l	TM344	<0.01	<0.01			
Tecnazene	<0.01 µg/l	TM344	<0.01	<0.01			
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01	<0.01			
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01	<0.01			
Phorate	<0.01 µg/l	TM344	<0.01	<0.01			
Diazinon	<0.01 µg/l	TM344	<0.01	<0.01			
Triallate	<0.01 µg/l	TM344	<0.01	<0.01			
Atrazine	<0.01 µg/l	TM344	<0.01	<0.01			
Simazine	<0.01 µg/l	TM344	<0.01	<0.01			
Disulfoton	<0.01 µg/l	TM344	<0.01	<0.01			
Propetamphos	<0.01 µg/l	TM344	<0.01	<0.01			
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01	<0.01			
Dimethoate	<0.01 µg/l	TM344	<0.01	<0.01			
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01	<0.01			
Chlorpyrifos	<0.01 µg/l	TM344	<0.01	<0.01			
Methyl Parathion	<0.01 µg/l	TM344	<0.01	<0.01			
Malathion	<0.01 µg/l	TM344	<0.01	<0.01			
Fenthion	<0.01 µg/l	TM344	<0.01	<0.01			
Fenitrothion	<0.01 µg/l	TM344	<0.01	<0.01			
Triadimefon	<0.01 µg/l	TM344	<0.01	<0.01			
Pendimethalin	<0.01 µg/l	TM344	<0.01	<0.01			
Parathion	<0.01 µg/l	TM344	<0.01	<0.01			
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01	<0.01			



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

Results Legend			Customer Sample Ref.		SW01 Lenamore	SW02 Lenamore			
#	ISO17025 accredited.		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 190906-105 20668666	0.00 - 0.00 Surface Water (SW) 03/09/2019 06/09/2019 190906-105 20668690				
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							
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01				
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.01				
Ethion	<0.01 µg/l	TM344		<0.01	<0.01				
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.01				
Triazophos	<0.01 µg/l	TM344		<0.01	<0.01				
Phosalone	<0.01 µg/l	TM344		<0.01	<0.01				
Azinphos methyl	<0.02 µg/l	TM344		<0.02	<0.02				
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.02				
Etridiazole	<0.01 µg/l	TM345		<0.01	<0.01				
Pentachlorobenzene	<0.01 µg/l	TM345		<0.01	<0.01				
Propachlor	<0.01 µg/l	TM345		<0.01	<0.01				
Quintozone (PCNB)	<0.01 µg/l	TM345		<0.01	<0.01				
Omethoate	<0.01 µg/l	TM345		<0.01	<0.01				
Propazine	<0.01 µg/l	TM345		<0.01	<0.01				
Propyzamide	<0.01 µg/l	TM345		<0.01	<0.01				
Alachlor	<0.01 µg/l	TM345		<0.01	<0.01				
Prometryn	<0.01 µg/l	TM345		<0.01	<0.01				
Telodrin	<0.01 µg/l	TM345		<0.01	<0.01				
Terbutryn	<0.01 µg/l	TM345		<0.01	<0.01				
Chlorothalonil	<0.01 µg/l	TM345		<0.01	<0.01				
Etrimphos	<0.01 µg/l	TM345		<0.01	<0.01				
Metazachlor	<0.01 µg/l	TM345		<0.01	<0.01				
Cyanazine	<0.01 µg/l	TM345		<0.01	<0.01				
Trietazine	<0.01 µg/l	TM345		<0.01	<0.01				
Coumaphos	<0.01 µg/l	TM345		<0.01	<0.01				
Phosphamidon I	<0.01 µg/l	TM345		<0.01	<0.01				
Phosphamidon II	<0.01 µg/l	TM345		<0.01	<0.01				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore				
#	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*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2-Chlorophenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2-Methylphenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2-Nitroaniline (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
2-Nitrophenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
3-Nitroaniline (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
4-Chloroaniline (aq)	<1 µg/l	TM176	<8	<4				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
4-Methylphenol (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
4-Nitroaniline (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
4-Nitrophenol (aq)	<1 µg/l	TM176	<8	<4				
Azobenzene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
Acenaphthylene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
Acenaphthene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
Anthracene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<16	<8				
			@ #	@ #				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<8	<4				
			@ #	@ #				

11:58:05 20/09/2019



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore				
#	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				
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)				
aq	Aqueous / settled sample.		03/09/2019	03/09/2019				
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		06/09/2019	06/09/2019				
*	Subcontracted - refer to subcontractor report for accreditation status.		190906-105	190906-105				
**	% 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		20668666	20668690				
(F)	Trigger breach confirmed							
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Carbazole (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Chrysene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Dibenzofuran (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Diethyl phthalate (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Dimethyl phthalate (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<40	<20	@ #	@ #		
Fluoranthene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Fluorene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Hexachlorobenzene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Pentachlorophenol (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Phenol (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Hexachloroethane (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Nitrobenzene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Naphthalene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Isophorone (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Phenanthrene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		
Pyrene (aq)	<1 µg/l	TM176	<8	<4	@ #	@ #		



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore				
#	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						
Dibromofluoromethane**	%	TM208	111	107				
			1	1				
Toluene-d8**	%	TM208	100	99.4				
			1	1				
4-Bromofluorobenzene**	%	TM208	98.6	99.5				
			1	1				
Dichlorodifluoromethane	<1 µg/l	TM208	<1	<1				
			1	1				
Chloromethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Vinyl chloride	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Bromomethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Chloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Trichlorofluoromethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1-Dichloroethene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Carbon disulphide	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Dichloromethane	<3 µg/l	TM208	<3	<3				
			1 #	1 #				
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1-Dichloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
2,2-Dichloropropane	<1 µg/l	TM208	<1	<1				
			1	1				
Bromochloromethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Chloroform	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1,1-Trichloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1-Dichloropropene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Carbontetrachloride	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2-Dichloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Benzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Trichloroethene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2-Dichloropropane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Dibromomethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Bromodichloromethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Toluene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1,2-Trichloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,3-Dichloropropane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				

11:58:05 20/09/2019



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore				
#	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				
M	mCERTS accredited.		Surface Water (SW)	Surface Water (SW)				
aq	Aqueous / settled sample.		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				
**	% 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		190906-105	190906-105				
(F)	Trigger breach confirmed		20668666	20668690				
1-3*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Tetrachloroethene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Dibromochloromethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2-Dibromoethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Chlorobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Ethylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
m,p-Xylene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
o-Xylene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Styrene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Bromoform	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Isopropylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Bromobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Propylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
2-Chlorotoluene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
4-Chlorotoluene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
tert-Butylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
sec-Butylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
4-iso-Propyltoluene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
n-Butylbenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	<1				
			1	1				
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Hexachlorobutadiene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
Naphthalene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	<1				
			1 #	1 #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-105
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522225
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).



CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-105	Client Reference:	P1766 North Kerry	Report Number:	522225
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	20668666	20668690
Customer Sample Ref.	SW01 Lenamore	SW02 Lenamore
AGS Ref.		
Depth	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water

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

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



CERTIFICATE OF ANALYSIS

SDG:	190906-105	Client Reference:	P1766 North Kerry	Report Number:	522225
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	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	
		BATCH NUMBER	19-02871
Project:	Leanamore		

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 Dunrune 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.

(registered office)

4 park business centre | farranfore | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrune | killarney | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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 - Leanamore		Customer Sample Code:	
Project:	Leanamore	Sampled By:	Emily Archer
Our Reference:	9236 (19-02871)	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	408
SMP 124	Faecal coliforms	MPN/100mL	<10	< 10

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

(registered office)

4 park business centre | **farranfore** | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrine | **killarney** | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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: SW-01 - Leanamore		Customer Sample Code:	
Project:	Leanamore	Sampled By:	Emily Archer
Our Reference:	9237 (19-02871)	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	2.5

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

(registered office)

4 park business centre | **farranfore** | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrine | **killarney** | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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: SW-02 - Leanamore		Customer Sample Code:	
Project:	Leanamore	Sampled By:	Emily Archer
Our Reference:	9238 (19-02871)	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	1.8

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

(registered office)

4 park business centre | **farranfore** | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrine | **killarney** | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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





Certificate of Analysis

Customer:	Fehily Timoney & Co	Project:	Lenamore
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 - 13/09/2019
Quote No.		Issue Date:	13/09/2019
		BATCH NUMBER:	19-03587

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 Dunrune 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.

(registered office)

4 park business centre | farranfore | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrune | killarney | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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 - Lenamore	Customer Sample Code:	
Project:	Lenamore	Sampled By:	Emily Archer
Our Reference:	11191 (19-03587)	Sample Matrix:	Ground Water
Date Sampled:	03/09/2019	Time Sampled:	08:30

Method:	Parameter:	Units	LOD	Result
<u>Microbiological Analysis: (D)</u>				
SMP 019	Coliforms	MPN/100mL	<10	12997
SMP 124	Faecal coliforms	MPN/100mL	<10	63

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

(registered office)

4 park business centre | **farranfore** | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrune | **killarney** | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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:	SW 01 - Lenamore	Customer Sample Code:	
Project:	Lenamore	Sampled By:	Emily Archer
Our Reference:	11192 (19-03587)	Sample Matrix:	Surface Water
Date Sampled:	03/09/2019	Time Sampled:	08:30

Method:	Parameter:	Units	LOD	Result
	<u>Chemical Analysis: (F)</u>			
SCP 015	Biological Oxygen Demand (BOD)	mg/L	1.0	1.6

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

(registered office)

4 park business centre | **farranfore** | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrine | **killarney** | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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:	SW 02 - Lenamore	Customer Sample Code:	
Project:	Lenamore	Sampled By:	Emily Archer
Our Reference:	11193 (19-03587)	Sample Matrix:	Surface Water
Date Sampled:	03/09/2019	Time Sampled:	08:30

Method:	Parameter:	Units	LOD	Result
	<u>Chemical Analysis: (F)</u>			
SCP 015	Biological Oxygen Demand (BOD)	mg/L	1.0	1.8

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

(registered office)

4 park business centre | **farranfore** | county kerry | ireland | telephone +353 66 976 3588 | fax +353 66 976 3589
dunrine | **killarney** | county kerry | ireland | telephone +353 64 66 33922 | fax +353 64 66 39022

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





Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

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: 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.

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



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

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

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)		0.00 - 0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Container		Vial (ALE297)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Sample Type		GW																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
			Vial (ALE297)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 3	X							X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					



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



Test



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

pH Value

Phosphate by Kone (w)

SVOC MS (W) - Aqueous

Total Dissolved Solids

Total Organic and Inorganic Carbon

VOC MS (W)

NDPs: 0
Tests: 3

NDPs: 0
Tests: 3

NDPs: 0
Tests: 3

NDPs: 0
Tests: 3

NDPs: 0
Tests: 3

NDPs: 0
Tests: 3

20365959

BH-01 Ahasca

0.00 - 0.00

Vial (ALE297)

GW

20365981

BH-02 Ahasca

0.00 - 0.00

Vial (ALE297)

GW

20365936

BH-01 Leammore

0.00 - 0.00

Vial (ALE297)

GW

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



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.							
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
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						
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			



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&@	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			



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						
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			
Quintozone (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			
Clpyralid	<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			



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.								
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							
MCPB	<0.05 µg/l	TM411	<0.05	<0.25	<0.05				
2,4-DB	<0.1 µg/l	TM411	<0.1	<0.5	<0.1				
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411	<0.05	<0.25	<0.05				
Dichlorprop	<0.1 µg/l	TM411	<0.1	<0.5	<0.1				
Triclopyr	<0.05 µg/l	TM411	<0.05	<0.25	<0.1				
Fenoprop (Silvex)	<0.1 µg/l	TM411	<0.1	<0.5	<0.1				
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.05	<0.25	<0.05				
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.05	<0.25	<0.05				
Bromoxynil	<0.04 µg/l	TM411	<0.04	<0.2	<0.04				
Benazolin	<0.04 µg/l	TM411	<0.08	<0.4	<0.04				
Ioxynil	<0.05 µg/l	TM411	<0.05	<0.25	<0.05				
Pentachlorophenol	<0.04 µg/l	TM411	<0.04	<0.2	<0.04				
Fluoroxypyr	<0.1 µg/l	TM411	<0.1	<0.5	<0.1				



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.							
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*5@	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 0.00 - 0.00 Ground Water (GW) 16/07/2019 19/07/2019 190719-100 20365959	BH-02 Ahasra 0.00 - 0.00 Ground Water (GW) 16/07/2019 19/07/2019 190719-100 20365981	BH-01 Leanamore 0.00 - 0.00 Ground Water (GW) 16/07/2019 19/07/2019 190719-100 20365936			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference							
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - 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 #				



CERTIFICATE OF ANALYSIS

Validated

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.																
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)			Sample Type			Date Sampled			Sample Time			Date Received		
Dibromofluoromethane**	%	TM208	0.00 - 0.00			Ground Water (GW)			16/07/2019			16/07/2019			16/07/2019		
Toluene-d8**	%	TM208	0.00 - 0.00			Ground Water (GW)			16/07/2019			16/07/2019			16/07/2019		
4-Bromofluorobenzene**	%	TM208	0.00 - 0.00			Ground Water (GW)			16/07/2019			16/07/2019			16/07/2019		
Dichlorodifluoromethane	<1 µg/l	TM208	16/07/2019			19/07/2019			19/07/2019			19/07/2019			19/07/2019		
Chloromethane	<1 µg/l	TM208	190719-100			190719-100			190719-100			190719-100			190719-100		
Vinyl chloride	<1 µg/l	TM208	20365959			20365981			20365981			20365981			20365981		
Bromomethane	<1 µg/l	TM208															
Chloroethane	<1 µg/l	TM208															
Trichlorofluoromethane	<1 µg/l	TM208															
1,1-Dichloroethene	<1 µg/l	TM208															
Carbon disulphide	<1 µg/l	TM208															
Dichloromethane	<3 µg/l	TM208															
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208															
trans-1,2-Dichloroethene	<1 µg/l	TM208															
1,1-Dichloroethane	<1 µg/l	TM208															
cis-1,2-Dichloroethene	<1 µg/l	TM208															
2,2-Dichloropropane	<1 µg/l	TM208															
Bromochloromethane	<1 µg/l	TM208															
Chloroform	<1 µg/l	TM208															
1,1,1-Trichloroethane	<1 µg/l	TM208															
1,1-Dichloropropene	<1 µg/l	TM208															
Carbontetrachloride	<1 µg/l	TM208															
1,2-Dichloroethane	<1 µg/l	TM208															
Benzene	<1 µg/l	TM208															
Trichloroethene	<1 µg/l	TM208															
1,2-Dichloropropane	<1 µg/l	TM208															
Dibromomethane	<1 µg/l	TM208															
Bromodichloromethane	<1 µg/l	TM208															
cis-1,3-Dichloropropene	<1 µg/l	TM208															
Toluene	<1 µg/l	TM208															
trans-1,3-Dichloropropene	<1 µg/l	TM208															
1,1,2-Trichloroethane	<1 µg/l	TM208															
1,3-Dichloropropane	<1 µg/l	TM208															



CERTIFICATE OF ANALYSIS

Validated

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.							
*	Subcontracted - refer to subcontractor report for accreditation status.		19/07/2019	19/07/2019	19/07/2019			
**	% 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		190719-100	190719-100	190719-100			
(F)	Trigger breach confirmed		20365959	20365981	20365936			
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			
			#	#	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
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).



CERTIFICATE OF ANALYSIS

Validated

SDG: 190719-100
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number:

Report Number: 515983
Superseded Report:

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

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



CERTIFICATE OF ANALYSIS

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



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

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: 19 September 2019
Customer: Fehily Timoney
Sample Delivery Group (SDG): 190906-107
Your Reference: P1766 North Kerry
Location: North Kerry Landfills
Report No: 522156

We received 1 sample on Friday September 06, 2019 and 1 of these samples were scheduled for analysis which was completed on Thursday September 19, 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:	190906-107	Client Reference:	P1766 North Kerry	Report Number:	522156
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
20668746	BH01 Lenamore		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.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

Results Legend



Test



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)

20668746

Customer Sample Reference

BH01 Lenamore

AGS Reference

Depth (m)

0.00 - 0.00

Container

Vial (ALE297)
NaOH (ALE245)
HNO3 Filtered (ALE204)
H2SO4 (ALE244)
500ml Plastic (ALE208)
0.5l glass bottle (ALE227)

Sample Type

GW
GW
GW
GW
GW
GW

Acid Herbicides by GCMS

All

NDPs: 0
Tests: 1

X

Alkalinity as CaCO3

All

NDPs: 0
Tests: 1

X

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 1

X

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 1

X

Cyanide Comp/Free/Total/Thiocyanate

All

NDPs: 0
Tests: 1

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 1

X

Dissolved Oxygen by Probe

All

NDPs: 0
Tests: 1

X

Fluoride

All

NDPs: 0
Tests: 1

X

Mercury Dissolved

All

NDPs: 0
Tests: 1

X

Mineral Oil C10-40 Aqueous (W)

All

NDPs: 0
Tests: 1

X

PCB Congeners - Aqueous (W)

All

NDPs: 0
Tests: 1

X

Pesticides (Suite I) by GCMS

All

NDPs: 0
Tests: 1

X

Pesticides (Suite II) by GCMS

All

NDPs: 0
Tests: 1

X

Pesticides (Suite III) by GCMS

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

Results Legend



Test


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)

20668746

Customer
Sample Reference

BH01 Lenamore

AGS Reference

Depth (m)

0.00 - 0.00

Container

Vial (ALE297)
NaOH (ALE245)
HNO3 Filtered
(ALE204)
H2SO4 (ALE244)
500ml Plastic
(ALE208)
0.5l glass bottle
(ALE227)

Sample Type

GW GW GW GW GW GW

pH Value

All

NDPs: 0
Tests: 1

X

Phosphate by Kone (w)

All

NDPs: 0
Tests: 1

X

SVOC MS (W) - Aqueous

All

NDPs: 0
Tests: 1

X

Total Dissolved Solids

All

NDPs: 0
Tests: 1

X

Total Organic and Inorganic Carbon

All

NDPs: 0
Tests: 1

X

VOC MS (W)

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	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)						
Component	LOD/Units	Method					
Alkalinity, Total as CaCO3	<2 mg/l	TM043	1220	#			
Oxygen, dissolved	<0.3 mg/l	TM046	8.09				
Organic Carbon, Total	<3 mg/l	TM090	23.9	@ #			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.262	#			
Fluoride	<0.5 mg/l	TM104	<0.5	#			
Conductivity @ 20 deg.C	<0.005 mS/cm	TM120	0.894	#			
Dissolved solids, Total (meter)	<5 mg/l	TM123	719	#			
Arsenic (diss.filt)	<0.5 µg/l	TM152	2.39	#			
Barium (diss.filt)	<0.2 µg/l	TM152	38.2	#			
Boron (diss.filt)	<10 µg/l	TM152	13	#			
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#			
Chromium (diss.filt)	<1 µg/l	TM152	<1	#			
Copper (diss.filt)	<0.3 µg/l	TM152	1.63	#			
Lead (diss.filt)	<0.2 µg/l	TM152	0.429	#			
Manganese (diss.filt)	<3 µg/l	TM152	4290	#			
Nickel (diss.filt)	<0.4 µg/l	TM152	3.74	#			
Phosphorus (diss.filt)	<10 µg/l	TM152	<10	#			
Selenium (diss.filt)	<1 µg/l	TM152	<1	#			
Thallium (diss.filt)	<2 µg/l	TM152	<2	#			
Zinc (diss.filt)	<1 µg/l	TM152	4.08	#			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	35.7	#			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	14.1	#			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	2.23	#			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	159	#			
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.405	#			
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	<100				
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	#			
Phosphate (Ortho as PO4)	<0.05 mg/l	TM184	<0.05	#			
Chloride	<2 mg/l	TM184	41.2	#			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1	#			
Sulphate (soluble) as S	<1 mg/l	TM184	<1	#			
PCB congener 28	<0.015 µg/l	TM197	<0.015				
PCB congener 52	<0.015 µg/l	TM197	<0.015				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00				
M	mCERTS accredited.		Ground Water (GW)				
aq	Aqueous / settled sample.		03/09/2019				
diss.filt	Dissolved / filtered sample.		06/09/2019				
tot.unfilt	Total / unfiltered sample.		190906-107				
*	Subcontracted - refer to subcontractor report for accreditation status.		20668746				
**	% 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					
PCB congener 101	<0.015 µg/l	TM197	<0.015				
PCB congener 118	<0.015 µg/l	TM197	<0.015				
PCB congener 138	<0.015 µg/l	TM197	<0.015				
PCB congener 153	<0.015 µg/l	TM197	<0.015				
PCB congener 180	<0.015 µg/l	TM197	<0.015				
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105				
Cyanide, Total	<0.05 mg/l	TM227	<0.05	#			
pH	<1 pH Units	TM256	7.41	#			
Trifluralin	<0.01 µg/l	TM343	<0.01				
alpha-HCH	<0.01 µg/l	TM343	<0.01				
gamma-HCH (Lindane)	<0.01 µg/l	TM343	<0.01				
Heptachlor	<0.01 µg/l	TM343	<0.01				
Aldrin	<0.01 µg/l	TM343	<0.01				
beta-HCH	<0.01 µg/l	TM343	<0.01				
Isodrin	<0.01 µg/l	TM343	<0.01				
delta-HCH	<0.01 µg/l	TM343	<0.01				
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01				
o,p'-DDE	<0.01 µg/l	TM343	<0.01				
Endosulphan I	<0.01 µg/l	TM343	<0.01				
trans-Chlordane	<0.01 µg/l	TM343	<0.01				
cis-Chlordane	<0.01 µg/l	TM343	<0.01				
p,p'-DDE	<0.01 µg/l	TM343	<0.01				
Dieldrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endrin	<0.01 µg/l	TM343	<0.01				
o,p'-DDT	<0.01 µg/l	TM343	<0.01				
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01				
Endosulphan II	<0.02 µg/l	TM343	<0.02				
p,p'-DDT	<0.01 µg/l	TM343	<0.02				
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01				
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01				
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.02				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00				
M	mCERTS accredited.		Ground Water (GW)				
aq	Aqueous / settled sample.		03/09/2019				
diss.filt	Dissolved / filtered sample.		.				
tot.unfilt	Total / unfiltered sample.		06/09/2019				
*	Subcontracted - refer to subcontractor report for accreditation status.		190906-107				
**	% 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		20668746				
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Permethrin I	<0.01 µg/l	TM343	<0.01				
Permethrin II	<0.01 µg/l	TM343	<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01				
Dichlorvos	<0.01 µg/l	TM344	<0.01				
Dichlobenil	<0.01 µg/l	TM344	<0.01				
Mevinphos	<0.01 µg/l	TM344	<0.01				
Tecnazene	<0.01 µg/l	TM344	<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344	<0.01				
Phorate	<0.01 µg/l	TM344	<0.01				
Diazinon	<0.01 µg/l	TM344	<0.01				
Triallate	<0.01 µg/l	TM344	<0.01				
Atrazine	<0.01 µg/l	TM344	<0.01				
Simazine	<0.01 µg/l	TM344	<0.01				
Disulfoton	<0.01 µg/l	TM344	<0.01				
Propetamphos	<0.01 µg/l	TM344	<0.01				
Chlorpyrifos-methyl	<0.01 µg/l	TM344	<0.01				
Dimethoate	<0.01 µg/l	TM344	<0.01				
Pirimiphos-methyl	<0.01 µg/l	TM344	<0.01				
Chlorpyrifos	<0.01 µg/l	TM344	<0.01				
Methyl Parathion	<0.01 µg/l	TM344	<0.01				
Malathion	<0.01 µg/l	TM344	<0.01				
Fenthion	<0.01 µg/l	TM344	<0.01				
Fenitrothion	<0.01 µg/l	TM344	<0.01				
Triadimefon	<0.01 µg/l	TM344	<0.01				
Pendimethalin	<0.01 µg/l	TM344	<0.01				
Parathion	<0.01 µg/l	TM344	<0.01				
Chlorfenvinphos	<0.01 µg/l	TM344	<0.01				
trans-Chlordane	<0.01 µg/l	TM344	<0.01				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00				
M	mCERTS accredited.		Ground Water (GW)				
aq	Aqueous / settled sample.		03/09/2019				
diss.filt	Dissolved / filtered sample.		.				
tot.unfilt	Total / unfiltered sample.		06/09/2019				
*	Subcontracted - refer to subcontractor report for accreditation status.		190906-107				
**	% 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		20668746				
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
cis-Chlordane	<0.01 µg/l	TM344	<0.01				
Ethion	<0.01 µg/l	TM344	<0.01				
Carbophenothion	<0.01 µg/l	TM344	<0.01				
Triazophos	<0.01 µg/l	TM344	<0.01				
Phosalone	<0.01 µg/l	TM344	<0.01				
Azinphos methyl	<0.02 µg/l	TM344	<0.02				
Azinphos ethyl	<0.02 µg/l	TM344	<0.02				
Etridiazole	<0.01 µg/l	TM345	<0.01				
Pentachlorobenzene	<0.01 µg/l	TM345	<0.01				
Propachlor	<0.01 µg/l	TM345	<0.01				
Quintozene (PCNB)	<0.01 µg/l	TM345	<0.01				
Omethoate	<0.01 µg/l	TM345	<0.01				
Propazine	<0.01 µg/l	TM345	<0.01				
Propyzamide	<0.01 µg/l	TM345	<0.01				
Alachlor	<0.01 µg/l	TM345	<0.01				
Prometryn	<0.01 µg/l	TM345	<0.01				
Telodrin	<0.01 µg/l	TM345	<0.01				
Terbutryn	<0.01 µg/l	TM345	<0.01				
Chlorothalonil	<0.01 µg/l	TM345	<0.01				
Etrimphos	<0.01 µg/l	TM345	<0.01				
Metazachlor	<0.01 µg/l	TM345	<0.01				
Cyanazine	<0.01 µg/l	TM345	<0.01				
Trietazine	<0.01 µg/l	TM345	<0.01				
Coumaphos	<0.01 µg/l	TM345	<0.01				
Phosphamidon I	<0.01 µg/l	TM345	<0.01				
Phosphamidon II	<0.01 µg/l	TM345	<0.01				
Dinitro-o-cresol	<0.1 µg/l	TM411	<1				
Clopyralid	<0.04 µg/l	TM411	<0.4				
MCPA	<0.05 µg/l	TM411	<0.5				
Mecoprop	<0.04 µg/l	TM411	<0.4				
Dicamba	<0.04 µg/l	TM411	<0.4				
MCPB	<0.05 µg/l	TM411	<0.5				



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH01 Lenamore					
#	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	<40	@ #				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<40	@ #				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<40	@ #				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<40	@ #				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<40	@ #				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<40	@ #				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<40	@ #				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<40	@ #				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<40	@ #				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<40	@ #				
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<40	@ #				
2-Chlorophenol (aq)	<1 µg/l	TM176	<40	@ #				
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<40	@ #				
2-Methylphenol (aq)	<1 µg/l	TM176	<40	@ #				
2-Nitroaniline (aq)	<1 µg/l	TM176	<40	@ #				
2-Nitrophenol (aq)	<1 µg/l	TM176	<40	@ #				
3-Nitroaniline (aq)	<1 µg/l	TM176	<40	@ #				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<40	@ #				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<40	@ #				
4-Chloroaniline (aq)	<1 µg/l	TM176	<40	@ #				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<40	@ #				
4-Methylphenol (aq)	<1 µg/l	TM176	<40	@ #				
4-Nitroaniline (aq)	<1 µg/l	TM176	<40	@ #				
4-Nitrophenol (aq)	<1 µg/l	TM176	<40	@ #				
Azobenzene (aq)	<1 µg/l	TM176	<40	@ #				
Acenaphthylene (aq)	<1 µg/l	TM176	<40	@ #				
Acenaphthene (aq)	<1 µg/l	TM176	<40	@ #				
Anthracene (aq)	<1 µg/l	TM176	<40	@ #				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<40	@ #				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<40	@ #				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<80	@ #				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<40	@ #				
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<40	@ #				

17:52:21 19/09/2019



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	ISO17025 accredited.	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) 03/09/2019 06/09/2019 190906-107 20668746				
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					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<40	@ #			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<40	@ #			
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<40	@ #			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<40	@ #			
Carbazole (aq)	<1 µg/l	TM176	<40	@ #			
Chrysene (aq)	<1 µg/l	TM176	<40	@ #			
Dibenzofuran (aq)	<1 µg/l	TM176	<40	@ #			
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<40	@ #			
Diethyl phthalate (aq)	<1 µg/l	TM176	<40	@ #			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<40	@ #			
Dimethyl phthalate (aq)	<1 µg/l	TM176	<40	@ #			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<200	@ #			
Fluoranthene (aq)	<1 µg/l	TM176	<40	@ #			
Fluorene (aq)	<1 µg/l	TM176	<40	@ #			
Hexachlorobenzene (aq)	<1 µg/l	TM176	<40	@ #			
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<40	@ #			
Pentachlorophenol (aq)	<1 µg/l	TM176	<40	@ #			
Phenol (aq)	<1 µg/l	TM176	<40	@ #			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<40	@ #			
Hexachloroethane (aq)	<1 µg/l	TM176	<40	@ #			
Nitrobenzene (aq)	<1 µg/l	TM176	<40	@ #			
Naphthalene (aq)	<1 µg/l	TM176	<40	@ #			
Isophorone (aq)	<1 µg/l	TM176	<40	@ #			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<40	@ #			
Phenanthrene (aq)	<1 µg/l	TM176	<40	@ #			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<40	@ #			
Pyrene (aq)	<1 µg/l	TM176	<40	@ #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	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					
Dibromofluoromethane**	%	TM208	107				
Toluene-d8**	%	TM208	98.5				
4-Bromofluorobenzene**	%	TM208	97.4				
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				

17:52:21 19/09/2019



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills

Client Reference: P1766 North Kerry
Order Number: Z1658

Report Number: 522156
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	BH01 Lenamore				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00				
M	mCERTS accredited.		Ground Water (GW)				
aq	Aqueous / settled sample.		03/09/2019				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		06/09/2019				
*	Subcontracted - refer to subcontractor report for accreditation status.		190906-107				
**	% 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		20668746				
(F)	Trigger breach confirmed						
1-3*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Tetrachloroethene	<1 µg/l	TM208	<1	#			
Dibromochloromethane	<1 µg/l	TM208	<1	#			
1,2-Dibromoethane	<1 µg/l	TM208	<1	#			
Chlorobenzene	<1 µg/l	TM208	<1	#			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	#			
Ethylbenzene	<1 µg/l	TM208	<1	#			
m,p-Xylene	<1 µg/l	TM208	<1	#			
o-Xylene	<1 µg/l	TM208	<1	#			
Styrene	<1 µg/l	TM208	<1	#			
Bromoform	<1 µg/l	TM208	<1	#			
Isopropylbenzene	<1 µg/l	TM208	<1	#			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	#			
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	#			
Bromobenzene	<1 µg/l	TM208	<1	#			
Propylbenzene	<1 µg/l	TM208	<1	#			
2-Chlorotoluene	<1 µg/l	TM208	<1	#			
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	#			
4-Chlorotoluene	<1 µg/l	TM208	<1	#			
tert-Butylbenzene	<1 µg/l	TM208	<1	#			
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	#			
sec-Butylbenzene	<1 µg/l	TM208	<1	#			
4-iso-Propyltoluene	<1 µg/l	TM208	<1	#			
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	#			
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	#			
n-Butylbenzene	<1 µg/l	TM208	<1	#			
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	#			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	#			
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	#			
Hexachlorobutadiene	<1 µg/l	TM208	<1	#			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	#			
Naphthalene	<1 µg/l	TM208	<1	#			
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 190906-107
Location: North Kerry Landfills**Client Reference:** P1766 North Kerry
Order Number: Z1658**Report Number:** 522156
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).



CERTIFICATE OF ANALYSIS

Validated

SDG:	190906-107	Client Reference:	P1766 North Kerry	Report Number:	522156
Location:	North Kerry Landfills	Order Number:	Z1658	Superseded Report:	

Test Completion Dates

Lab Sample No(s)	20668746
Customer Sample Ref.	BH01 Lenamore
AGS Ref.	
Depth	0.00 - 0.00
Type	Ground Water

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

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



CERTIFICATE OF ANALYSIS

SDG:	190906-107	Client Reference:	P1766 North Kerry	Report Number:	522156
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.



FEHILY TIMONEY

CONSULTANTS IN ENGINEERING,
ENVIRONMENTAL SCIENCE & PLANNING

www.fehilytimoney.ie

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

CORK OFFICE
Core House,
Pouladuff Road,
Cork, T12 D773,
Ireland
+353 21 496 4133

Dublin Office
J5 Plaza,
North Park Business Park,
North Road, Dublin 11, D11 PXT0,
Ireland
+353 1 658 3500

Carlow Office
Unit 6,
Bagenalstown Industrial Park,
Royal Oak Road, Muine Bheag,
Co. Carlow, R21 XW81,
Ireland
+353 59 972 3800

