Humberside Materials Laboratory Ltd
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TOPSOIL CLASSIFICATION - BS 3882:2015

Sample Ref	**S/70482/01**	**Client**	MDG Enterprises Ltd
Site	Cowbit	Date sampled	26/02/2024
Location	MCL/COW 1B	Sampled by	Client (Tested as received)

		Test data		Class limits			
Soil texture				Multipurpose	Acidic	Low fertility	Calcareous
Clay content	%	19		5-35			
Silt content	%	26		0-65			
Sand content	%	48		30-85			
**Soil organic matter clay 5-20*	%	7.1		3-20	3-30	1-10	3-30
Soil organic matter clay 20-35	%	n/a		5-20	3-30	1-10	5-30
Coarse fragments							
>2mm	%	7		0-30			
>20mm	%	0		0-10			
>50mm	%	0		0			
pH		8		5.5-8.5	3.5-5.5	3.5-9.0	7.5-9.0
Carbonate	%	0.1					>1
Available nutrients							
Nitrogen	%	3.6		>0.15	>0.15	See a)	>0.15
Extractable Phosphorus	mg/l	99		16-140	16-141	<20	16-140
Extractable Potassium	mg/l	787		121-1500	121-1500		121-1500
Extractable Magnesium	mg/l	160		51-600	51-600	<600	51-600
Carbon nitrogen ratio		1.0		<20:1	<20:1	<35:1	<20:1
Exchangeable sodium	%	NR					

Phytotoxic contaminants		pH:		> 7.0	6.0 - 7.0	< 6.0
Zinc	mg/kg	126		<300	<200	<200
Copper	mg/kg	31		<200	<135	<100
Nickel	mg/kg	11		<110	<75	<60

Visible contaminants							
>2mm	%	0		<0.5			
plastics	%	N.D.		<0.25			
Sharps	%	N.D.		0			
Conductivity	µs/cm	169					

				GAC levels	
				Domestic	Commercial
Contamination (Metals / PAH)					
Arsenic	mg/kg	7.3		37	640
Beryllium	mg/kg	0.4		1.7	12
Boron	mg/kg	0.9		290	240000
Cadmium	mg/kg	<1.6		11	410
Chromium	mg/kg	30		910	8600
Copper	mg/kg	15		2400	68000
Lead	mg/kg	16		200	2300
Mercury	mg/kg	<0.7		1.2	58
Nickel	mg/kg	15		130	980
Zinc	mg/kg	126		3700	730000
Selenium	mg/kg	<3		250	12000
Vanadium	mg/kg	50		410	9000
Naphthalene	mg/kg	<0.02		2.3	190
Acenaphthylene	mg/kg	<0.02		210	83000
Acenaphthene	mg/kg	<0.02		170	84000
Fluorene	mg/kg	<0.02		170	63000
Phenanthrene	mg/kg	<0.02		95	22000
Anthracene	mg/kg	<0.02		2400	520000
Fluoranthene	mg/kg	0.02		280	23000
Pyrene	mg/kg	0.02		620	54000
Benzo anthracene	mg/kg	0.03		7.2	170
Chrysene	mg/kg	<0.03		15	350
benzo (b) Fluoranthene	mg/kg	<0.02		2.6	44
benzo (k) Fluoranthene	mg/kg	<0.03		77	1200
Benzo pyrene	mg/kg	<0.02		2.2	35
Indeno pyrene	mg/kg	<0.02		27	500
Dibenzo anthracene	mg/kg	<0.02		0.24-0.3	3.5
Benzo perylene	mg/kg	<0.02		320-350	3900

Domestic - *General assessment criteria (GAC) domestic gardens with plant uptake included*

Commercial - *General assessment criteria (GAC) commercial situation*

Comments

Material classification Sandy Loamy Clay with Gravel

The GAC levels quoted are a maintained extract from LQM/CIEH report, (Generic assessment criteria S4ULs).

a) The total nitrogen concentration in low fertility topsoil is not critical. A concentration >0.15 can aid initial establishment of plants.

"NR" Not Required

File Ref 1615/6336

Date tested 28/02/2024 Signed

Date reported (Revision) 08/03/2024 M. Driver / D. Driver / C. Driver

ANALYTICAL TEST REPORT

Contract no: 130953

Contract name: Cowbit

Client reference: 1615/6336/G

Clients name: Humberside Materials Laboratory

Clients address: Atherton Way
Brigg
North Lincolnshire
DN20 8AR

Samples received: 28 February 2024

Analysis started: 28 February 2024

Analysis completed: 08 February 2024

Report issued: 08 February 2024

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by:

Samantha Rogerson
Reporting Manager

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
130953-1	S/70416-MCL/COW 1A	-	Sandy Loamy Clay with Gravel	-	-	28.3
130953-2	S/70417-SG/MC 1	-	Sandy Loamy Clay with Gravel	-	-	22.4
130953-3	S/70482-MCL/COW 1B	-	Sandy Loamy Clay with Gravel	-	-	25.6

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SOILS

Lab number			130953-1	130953-2	130953-3
Sample id			S/70416-MCL/COW 1A	S/70417-SG/MC 1	S/70482-MCL/COW 1B
Depth (m)			-	-	-
Date sampled			26/02/2024	26/02/2024	26/02/2024
Test	**Method**	**Units**			
Arsenic (total)	CE264 M	mg/kg As	<1.8	8.7	7.3
Beryllium (total)	CE264 M	mg/kg Be	<0.2	0.5	0.4
Boron (water soluble)	CE063 U	mg/kg B	0.9	0.9	0.9
Cadmium (total)	CE264 M	mg/kg Cd	<1.6	<1.6	<1.6
Chromium (total)	CE264 M	mg/kg Cr	<2	25	30
Copper (total)	CE264 U	mg/kg Cu	<1.6	14	15
Lead (total)	CE264 U	mg/kg Pb	2.6	23	16
Mercury (total)	CE264 U	mg/kg Hg	<0.7	<0.7	<0.7
Nickel (total)	CE264 M	mg/kg Ni	<2.1	14	15
Selenium (total)	CE264 U	mg/kg Se	<3	<3	<3
Vanadium (total)	CE264 U	mg/kg V	4.9	52	50
Copper (nitric acid extractable)	CE054	mg/kg Cu	34	35	31
Nickel (nitric acid extractable)	CE054	mg/kg Ni	16	19	11
Zinc (nitric acid extractable)	CE054	mg/kg Zn	77	94	126
Magnesium (extractable)	CE088	mg/kg	439	144	160
Phosphorus (extractable)	CE089	mg/kg	183	88	99
Potassium (extractable)	CE088	mg/kg	1005	462	787
pH	CE004 M	units	7.1	8.2	8.0
Electrical conductivity	CE007 U	µS/cm	133	124	169
Total Carbon	CE197	% w/w C	3.6	3.1	3.6
Total Organic Carbon (TOC)	CE197	% w/w C	3.5	3.0	3.6
Carbonate (by difference)	CE197	% w/w CO_3	0.5	0.6	0.1
Loss On Ignition at 440°C	CE006 U	% w/w	10.5	7.1	10.9
Nitrogen (total)	CE198	% w/w N	3.5	3.1	3.6
C:N Ratio	CE222	-	1.0	1.0	1.0
PAH					
Naphthalene	CE087 M	mg/kg	<0.02	<0.02	<0.02
Acenaphthylene	CE087 M	mg/kg	<0.02	<0.02	<0.02
Acenaphthene	CE087 M	mg/kg	<0.02	<0.02	<0.02
Fluorene	CE087 U	mg/kg	<0.02	<0.02	<0.02
Phenanthrene	CE087 M	mg/kg	0.06	0.04	<0.02
Anthracene	CE087 U	mg/kg	0.02	<0.02	<0.02
Fluoranthene	CE087 M	mg/kg	0.13	0.14	0.02
Pyrene	CE087 M	mg/kg	0.11	0.13	0.02
Benzo(a)anthracene	CE087 U	mg/kg	0.08	0.08	0.03
Chrysene	CE087 M	mg/kg	0.08	0.08	<0.03
Benzo(b)fluoranthene	CE087 M	mg/kg	0.08	0.09	<0.02
Benzo(k)fluoranthene	CE087 M	mg/kg	0.04	0.04	<0.03
Benzo(a)pyrene	CE087 U	mg/kg	0.07	0.07	<0.02
Indeno(123cd)pyrene	CE087 M	mg/kg	0.04	0.04	<0.02

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SOILS

Lab number			130953-1	130953-2	130953-3
Sample id			S/70416-MCL/COW 1A	S/70417-SG/MC 1	S/70482-MCL/COW 1B
Depth (m)			-	-	-
Date sampled			26/02/2024	26/02/2024	26/02/2024
Test	**Method**	**Units**			
Dibenz(ah)anthracene	CE087 [M]	mg/kg	<0.02	<0.02	<0.02
Benzo(ghi)perylene	CE087 [M]	mg/kg	0.04	0.04	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	0.74	0.76	<0.34
Subcontracted Analysis					
Asbestos (qualitative)	$	-	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.8	mg/kg As
CE264	Beryllium (total)	Aqua Regia Extraction, ICPOES	Dry	M	0.2	mg/kg Be
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cd
CE264	Chromium (total)	Aqua Regia Extraction, ICPOES	Dry	U	2.0	mg/kg Cr
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	2.3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	0.7	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	2.1	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Vanadium (total)	Aqua Regia Extraction, ICPOES	Dry	U	1.8	mg/kg V
CE054	Copper (nitric acid extractable)	Nitric acid digest, ICP-OES	Dry		1	mg/kg Cu
CE054	Nickel (nitric acid extractable)	Nitric acid digest, ICP-OES	Dry		1	mg/kg Ni
CE054	Zinc (nitric acid extractable)	Nitric acid digest, ICP-OES	Dry		5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE007	Electrical conductivity	Conductivity Meter	As received	U	10	µS/cm
CE197	Carbonate (by difference)	Calculation: Total Carbon - Total Organic Carbon	Dry		0.5	% w/w CO_3
CE006	Loss On Ignition at 440°C	Based on BS 1377, Gravimetry	Dry	U	0.1	% w/w
CE198	Nitrogen (total)	Combustion, Nitrogen analyser	Dry		0.01	% w/w N
CE222	C:N Ratio	Calculation: TOC/Nitrogen (total)	Dry		-	-
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-
$	Asbestos (quantitative)	HSG 248, Microscopy & Gravimetry	Dry	U	0.001	% w/w

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DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
130953-1	S/70416-MCL/COW 1A	-	N	
130953-2	S/70417-SG/MC 1	-	N	
130953-3	S/70482-MCL/COW 1B	-	N	

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ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.