



Jones Environmental Laboratory

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Attention : [REDACTED]
Date : 21st September, 2016
Your reference : 60320634
Our reference : Test Report 16/14370 Batch 1
Location : Water Of Leith Basin
Date samples received : 15th September, 2016
Status : Final report
Issue : 1

Eight samples were received for analysis on 15th September, 2016 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:



[REDACTED]
Project Manager

Client Name: AECOM
 Reference: 60320634
 Location: Water Of Leith Basin
 Contact:
 JE Job No.: 16/14370

Report : Solid

Solids V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-14	15-16	17-18	19-20					
Sample ID	LOCATION 1	LOCATION 2	LOCATION 3	LOCATION 4	NT 15981 66563	NT 20951 71012	NT 14245 66722	NT 16429 66662					
Depth													
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J	V J	V J	V J					
Sample Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016					
											LOD/LOR	Units	Method No.
Arsenic ^{#M}	4.0	4.0	2.9	3.7	-	-	-	-			<0.5	mg/kg	TM30/PM15
Cadmium ^{#M}	0.9	1.0	1.0	1.3	0.1	1.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Chromium ^{#M}	88.8	82.3	80.4	75.7	64.8	64.1	92.6	80.6			<0.5	mg/kg	TM30/PM15
Copper ^{#M}	69	84	87	93	9	47	<1	22			<1	mg/kg	TM30/PM15
Lead ^{#M}	126	149	146	145	16	72	11	36			<5	mg/kg	TM30/PM15
Mercury ^{#M}	0.4	0.4	0.3	0.3	0.9	<0.1	<0.1	<0.1			<0.1	mg/kg	TM30/PM15
Nickel ^{#M}	34.5	39.0	31.6	43.4	24.8	23.9	23.7	20.8			<0.7	mg/kg	TM30/PM15
Zinc ^{#M}	365	426	448	507	100	262	78	90			<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene ^{#M}	<0.04	<0.04	<0.04	<0.04	-	-	-	-			<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	-	-	-	-			<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	<0.05	<0.05	<0.05	<0.05	-	-	-	-			<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	<0.04	<0.04	<0.04	<0.04	-	-	-	-			<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	0.63	0.57	0.39	0.40	-	-	-	-			<0.03	mg/kg	TM4/PM8
Anthracene #	0.26	0.22	<0.04	0.20	-	-	-	-			<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	1.71	1.39	0.96	1.23	-	-	-	-			<0.03	mg/kg	TM4/PM8
Pyrene #	1.45	1.30	0.92	1.19	-	-	-	-			<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.86	0.73	0.67	0.59	-	-	-	-			<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	0.92	0.85	0.67	0.79	-	-	-	-			<0.02	mg/kg	TM4/PM8
Benzo(k)fluoranthene ^{#M}	1.58	1.45	1.06	1.33	-	-	-	-			<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.86	0.73	0.53	0.69	-	-	-	-			<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	0.56	0.57	0.39	0.49	-	-	-	-			<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	-	-	-	-			<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.53	0.47	0.34	0.49	-	-	-	-			<0.04	mg/kg	TM4/PM8
PAH 16 Total	9.4	8.3	5.9	7.4	-	-	-	-			<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.14	1.04	0.76	0.96	-	-	-	-			<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.44	0.41	0.30	0.37	-	-	-	-			<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	107	98	103	99	-	-	-	-			<0	%	TM4/PM8
TPH CWG													
Aliphatics													
>C5-C6 ^{#M}	<0.1	<0.1	<0.1	<0.1	-	-	-	-			<0.1	mg/kg	TM36/PM12
>C6-C8 ^{#M}	<0.1	<0.1	<0.1	<0.1	-	-	-	-			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	-	-	-	-			<0.1	mg/kg	TM36/PM12
>C10-C12 ^{#M}	<0.2	<0.2	<0.2	<0.2	-	-	-	-			<0.2	mg/kg	TM5/PM16
>C12-C16 ^{#M}	<4	<4	<4	<4	-	-	-	-			<4	mg/kg	TM5/PM16
>C16-C21 ^{#M}	33	<7	<7	40	-	-	-	-			<7	mg/kg	TM5/PM16
>C21-C35 ^{#M}	283	354	366	543	-	-	-	-			<7	mg/kg	TM5/PM16
Total aliphatics C5-35	316	354	366	583	-	-	-	-			<19	mg/kg	TM5/PM16 PM12/PM15

Please see attached notes for all abbreviations and acronyms

Client Name: AECOM
 Reference: 60320634
 Location: Water Of Leith Basin
 Contact:
 JE Job No.: 16/14370

Report : Solid

Solids V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-3	4-6	7-9	10-12	13-14	15-16	17-18	19-20						
	Sample ID	LOCATION 1	LOCATION 2	LOCATION 3	LOCATION 4	NT 15981 66563	NT 20951 71012	NT 14245 66722						
Depth														
COC No / misc														
Containers	V J T	V J T	V J T	V J T	V J	V J	V J	V J						
Sample Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1	1						
Date of Receipt	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016	15/09/2016						
									LOD/LOR	Units	Method No.			
TPH CWG														
Aromatics														
>C5-EC7	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12			
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12			
>EC8-EC10 ^{#M}	<0.1	<0.1	<0.1	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12			
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM16			
>EC12-EC16	<4	<4	<4	<4	-	-	-	-	<4	mg/kg	TM5/PM16			
>EC16-EC21	76	35	43	35	-	-	-	-	<7	mg/kg	TM5/PM16			
>EC21-EC35	441	562	675	686	-	-	-	-	<7	mg/kg	TM5/PM16			
Total aromatics C5-35	517	597	718	721	-	-	-	-	<19	mg/kg	TM5/PM16			
Total aliphatics and aromatics(C5-35)	833	951	1084	1304	-	-	-	-	<38	mg/kg	TM5/PM16			
MTBE [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM31/PM12			
Benzene [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM31/PM12			
Toluene [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM31/PM12			
Ethylbenzene [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM31/PM12			
m/p-Xylene [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM31/PM12			
o-Xylene [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM31/PM12			
PCB 28 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
PCB 52 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
PCB 101 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
PCB 118 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
PCB 138 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
PCB 153 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
PCB 180 [#]	<5	<5	<5	<5	-	-	-	-	<5	ug/kg	TM17/PM8			
Total 7 PCBs [#]	<35	<35	<35	<35	-	-	-	-	<35	ug/kg	TM17/PM8			
Natural Moisture Content	229 3	215 9	382 0	393 8	-	-	-	-	<0.1	%	PM4/PM0			
Total Organic Carbon [#]	6 04	5 99	8.79	6 67	-	-	-	-	<0.02	%	TM21/PM24			
Sample Type	Other	Other	Other	Other	Sand	Sand	Sand	Sand		None	PM13/PM0			
Sample Colour	Dark Brown	Medium Brown	Dark Brown	Dark Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown		None	PM13/PM0			
Other Items	sludge	sludge	sludge and roots	sludge and vegetat on	stones	stones	stones	stones		None	PM13/PM0			

Please see attached notes for all abbreviations and acronyms

Client Name: AECOM
Reference: 60320634
Location: Water Of Leith Basin
Contact: [Redacted]

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
16/14370	1	LOCATION 1		1-3	GRO	Solid Samples were received at a temperature above 9°C.
16/14370	1	LOCATION 2		4-6	GRO	Solid Samples were received at a temperature above 9°C.
16/14370	1	LOCATION 3		7-9	GRO	Solid Samples were received at a temperature above 9°C.
16/14370	1	LOCATION 4		10-12	GRO	Solid Samples were received at a temperature above 9°C.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/14370

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/14370

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-F D.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-F D.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-F D. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX.	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis /Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

JE Job No: 16/14370

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes