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CHEMISTRY CERTIFICATE OF ANALYSIS

Report Number: XCHEM19S
Date Sample Received: 26/11/19
Laboratory Sample Number: See below
Sample Description: Sediments
Sample Storage Conditions: Frozen

Test Results

Metals

Method: SOP 2037, 2043 and 2161
Unit: in mg/kg (dry weight), total solids in %

Laboratory Sample Number	Sample Description	Total Solids (%)	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
2019/246113	Sample 1	81.4	9.07	<0.014	6.78	1.85	0.0197	5.50	7.40	24.2
2019/246114	Sample 2	93.9	8.42	<0.014	6.68	1.16	0.0114	4.97	6.06	20.6
2019/246115	Sample 3	85.0	7.30	<0.014	5.97	1.13	<0.01	4.61	7.78	19.0
2019/246116	Sample 4	81.8	7.65	<0.014	6.32	1.18	<0.01	4.78	6.01	19.3

Organotins

Method: SOP 3085 and 3086
Unit: in mg/kg (dry weight), total solids in %

Laboratory Sample Number	Sample Description	DBT* (mg/kg)	TBT* (mg/kg)
2019/246113	Sample 1	<0.002	<0.002
2019/246114	Sample 2	<0.002	<0.002
2019/246115	Sample 3	<0.002	<0.002
2019/246116	Sample 4	<0.002	<0.002

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PAHs/Total Hydrocarbon Content (THC)

Method: SOP 1597, 1598 and 1599
Unit**:** PAHs in µg/kg (dry weight); THC in mg/kg (dry weight)

Laboratory Sample Number	Sample Description	THC (mg/kg)	Acenaphthylene* (µg/kg)	Acenaphthene* (µg/kg)	Anthracene* (µg/kg)	Benz[a] anthracene* (µg/kg)
2019/246113	Sample 1	6.04	0.119	0.140	0.299	2.51
2019/246114	Sample 2	0.489	0.231	0.109	1.02	2.98
2019/246115	Sample 3	<0.1	0.121	0.143	0.107	<0.100
2019/246116	Sample 4	0.337	0.147	<0.100	0.17	<0.100

Laboratory Sample Number	Sample Description	Benzo[a] pyrene* (µg/kg)	Benzo[b] fluoranthene* (µg/kg)	Benzo[g,h,i] perylene* (µg/kg)	Benzo[e] pyrene* (µg/kg)	Benzo[k] fluoranthene* (µg/kg)
2019/246113	Sample 1	2.01	2.17	1.8	1.51	0.919
2019/246114	Sample 2	1.79	2.22	1.25	1.32	0.922
2019/246115	Sample 3	0.185	0.665	0.281	0.379	0.202
2019/246116	Sample 4	0.184	0.575	0.372	0.389	0.181

Laboratory Sample Number	Sample Description	methyl naphthalenes* (µg/kg)	methyl phenanthrene* (µg/kg)	dimethyl naphthalenes* (µg/kg)	trimethyl naphthalenes* (µg/kg)	Chrysene* (µg/kg)
2019/246113	Sample 1	0.555	3.95	0.955	2.16	1.57
2019/246114	Sample 2	0.590	4.52	1.05	1.95	2.22
2019/246115	Sample 3	0.533	3.96	0.809	2.25	0.437
2019/246116	Sample 4	0.411	3.79	0.839	2.04	0.451

Laboratory Sample Number	Sample Description	Dibenz[a,h] anthracene* (µg/kg)	Fluoranthene* (µg/kg)	Fluorene* (µg/kg)	Indeno[1,2,3-cd] pyrene* (µg/kg)	Naphthalene* (µg/kg)
2019/246113	Sample 1	0.760	5.75	0.180	2.22	0.416
2019/246114	Sample 2	0.684	6.87	0.300	1.71	0.383
2019/246115	Sample 3	0.435	1.85	0.226	0.331	0.396
2019/246116	Sample 4	0.473	1.88	0.163	0.307	0.314

Laboratory Sample Number	Sample Description	Perylene* (µg/kg)	Phenanthrene* (µg/kg)	Pyrene* (µg/kg)
2019/246113	Sample 1	0.931	2.04	4.46
2019/246114	Sample 2	1.02	2.80	4.22
2019/246115	Sample 3	0.567	1.32	0.989
2019/246116	Sample 4	0.484	1.39	1.03

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Particle Size Analysis*

Unit: % particle size, mm range

Laboratory Sample Number	2019/246113	2019/246114	2019/246115	2019/246116
Sample Description	1	2	3	4
% particle size > 45mm	0.00	0.00	0.00	0.00
% particle size > 31.5mm, < 45mm	0.00	0.00	0.00	0.00
% particle size > 22.4mm, < 31.5mm	0.00	0.00	0.00	0.00
% particle size > 16mm, < 22.4mm	0.00	0.00	0.00	0.00
% particle size > 11.2mm, < 16mm	0.00	0.00	0.00	0.00
% particle size > 8mm, < 11.2mm	0.00	0.00	0.00	0.00
% particle size > 5.6mm, < 8mm	0.00	0.00	0.00	0.00
% particle size > 4mm, < 5.6mm	0.00	0.00	0.00	0.53
% particle size > 2.8mm, < 4mm	0.31	0.00	0.00	0.54
% particle size > 2mm, < 2.8mm	0.69	0.09	0.09	0.76
% particle size > 1.4mm, < 2mm	1.55	0.54	0.02	1.43
% particle size > 1mm, < 1.4mm	2.05	0.49	0.06	1.16
% particle size > 0.707mm, < 1mm	7.82	4.44	2.14	5.81
% particle size > 0.5mm, < 0.707mm	9.96	8.00	2.11	6.91
% particle size > 0.354mm, < 0.5mm	22.11	19.98	11.73	19.67
% particle size > 0.25mm, < 0.354mm	31.93	31.81	36.05	33.84
% particle size > 0.176mm, < 0.25mm	18.30	24.87	35.65	22.37
% particle size > 0.125mm, < 0.176mm	2.94	7.34	9.66	4.90
% particle size > 0.088mm, < 0.125mm	0.45	0.77	0.69	0.79
% particle size > 0.063mm, < 0.088mm	0.20	0.29	0.40	0.22
% particle size > 0.0442mm, < 0.063mm	0.10	0.10	0.12	0.06

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Laboratory Sample Number	2019/246113	2019/246114	2019/246115	2019/246116
Sample Description	1	2	3	4
% particle size > 0.0313mm, < 0.0442mm	0.10	0.06	0.08	0.05
% particle size > 0.0221mm, < 0.0313mm	0.08	0.05	0.05	0.03
% particle size > 0.0156mm, < 0.0221mm	0.10	0.06	0.05	0.04
% particle size > 0.011mm, < 0.0156mm	0.13	0.08	0.06	0.05
% particle size > 0.0078mm, < 0.011mm	0.14	0.09	0.07	0.06
% particle size > 0.0055mm, < 0.0078mm	0.13	0.08	0.07	0.05
% particle size > 0.0039mm, < 0.0055mm	0.11	0.07	0.06	0.04
% particle size > 0.00275mm, < 0.0039mm	0.09	0.06	0.05	0.04
% particle size > 0.00195mm, < 0.00275mm	0.08	0.07	0.07	0.05
% particle size > 0.00138mm, < 0.00195mm	0.09	0.08	0.09	0.07
% particle size > 0.00098mm, < 0.00138mm	0.10	0.09	0.11	0.08
% particle size > 0.00069mm, < 0.00098mm	0.09	0.10	0.11	0.08
% particle size > 0.00049mm, < 0.00069mm	0.08	0.09	0.10	0.08
% particle size > 0.00035mm, < 0.00049mm	0.07	0.08	0.09	0.07
% particle size > 0.00024mm, < 0.00035mm	0.06	0.07	0.07	0.06
% particle size > 0.00017mm, < 0.00024mm	0.05	0.06	0.06	0.05
% particle size > 0.00012mm, < 0.00017mm	0.04	0.04	0.05	0.04
% particle size > 0.00009mm, < 0.00012mm	0.03	0.03	0.03	0.03
% particle size > 0.00006mm, < 0.00009mm	0.01	0.01	0.02	0.01
% particle size > 0.00004mm, < 0.00006mm	0.00	0.00	0.00	0.00
% particle size <0.00004mm	0.00	0.00	0.00	0.00
Gravel % (> 2mm particle size)	1.01	0.09	0.09	1.83
Sand % (> 0.063mm to < 2mm particle size)	97.31	98.52	98.51	97.12
Silt/clay % (< 0.063mm particle size)	1.68	1.38	1.41	1.05

Departure from testing conditions	Results marked with an asterisk fall outside the scope of accreditation.
Comments	The results provided in this report only relate to the sample(s) tested

Report authorised by: Dr Lee Warford	**Signature:** 
Position: Technical Manager Metals	**Date:** 12/12/19

Authorised Signatories: Jon Barber, Philippe Bersuder, Clare Hynes, Lee Warford