



NMBAQC

NE Atlantic Marine Biological Analytical Quality Control Scheme

NMBAQC Scheme 2024/25

PS93 Report

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Revision and Amendment Register

Version Number	Version Type	Date	Section(s)	Page(s)	Summary of Changes	Approved by
1.0	Interim	07/03/2025	All	All	-	LMB
1.1	Interim	11/03/2025	2	10	Update errors in Table 7	LMB
1.2	Interim	28/03/2025	All	All	Update PSA_3105 results	LMB
2.0	Final	19/05/2025	All	All	-	LMB

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Abbreviations

a/d – awaiting data – extension granted.

n/p – Not participating at the current time.

n/r – no response from participant/ no data submitted.

“-“ – no data submitted.

1. BENCHMARK DATA

Table 1 Summary data for the Benchmark replicates distributed as PS93.

Sample	Method	% Gravel	% Sand	% Mud	Sediment Description
PSA_3136 BM REP 1	NMBAQC	53.47	42.11	4.43	Sandy Gravel
PSA_3137 BM REP2	NMBAQC	54.00	41.83	4.17	Sandy Gravel
PSA_3138 BM REP 3	NMBAQC	53.44	42.11	4.45	Sandy Gravel
PSA_3139 BM REP 4	NMBAQC	54.30	41.59	4.12	Sandy Gravel
PSA_3140 BM REP 5	NMBAQC	52.82	42.50	4.68	Sandy Gravel
BM Rep Average	NMBAQC	53.60	42.03	4.37	Sandy Gravel

Table 2 Summary of the sieve data the Benchmark replicates distributed as PS93.

Phi Interval; microns	PSA_3136 BM REP 1	PSA_3137 BM REP2	PSA_3138 BM REP 3	PSA_3139 BM REP 4	PSA_3140 BM REP 5	BM Rep Average
Starting Weight (>1 mm)	332.53	335	335.94	328.09	330.92	332.496
-6.50 to -6.00; 63 mm	0.00	0.00	0.00	0.00	0.00	0.00
-6.00 to -5.50; 45 mm	0.00	0.00	0.00	0.00	0.00	0.00
-5.50 to -5.00; 31.5 mm	0.00	0.00	0.00	0.00	0.00	0.00
-5.00 to -4.50; 22.4 mm	72.51	62.59	75.36	150.03	55.61	83.22
-4.50 to -4.00; 16 mm	127.39	139.83	119.27	62.99	130.07	115.91
-4.00 to -3.50; 11.2 mm	44.09	50.79	60.83	33.90	65.01	50.92
-3.50 to -3.00; 8 mm	23.02	18.04	15.46	22.21	16.92	19.13
-3.00 to -2.50; 5.6 mm	12.05	12.89	13.63	11.74	13.28	12.72
-2.50 to -2.00; 4 mm	12.67	12.55	10.95	11.59	11.44	11.84
-2.00 to -1.50; 2.8 mm	11.93	11.19	11.73	10.64	11.13	11.32
-1.50 to -1.00; 2 mm	14.72	13.74	13.61	12.38	13.20	13.53
-1.00 to -0.50; 1.4 mm	11.58	10.89	12.34	10.06	11.35	11.24
-0.50 to 0.00; 1.0 mm	1.88	1.79	2.02	2.02	2.25	1.99

Summary Data

>1.0mm		331.84	334.30	335.20	327.56	330.26	331.83
<1.0mm	Base Pan	0.69	0.66	0.67	0.47	0.57	0.61
	Oven dried	262.92	260.68	264.51	253.00	268.64	261.95
	Total	263.61	261.34	265.18	253.47	269.21	262.56
Total Weight		595.45	595.64	600.38	581.03	599.47	594.39
% increase/ decrease		0.00	-0.01	-0.02	-0.02	-0.03	-0.02

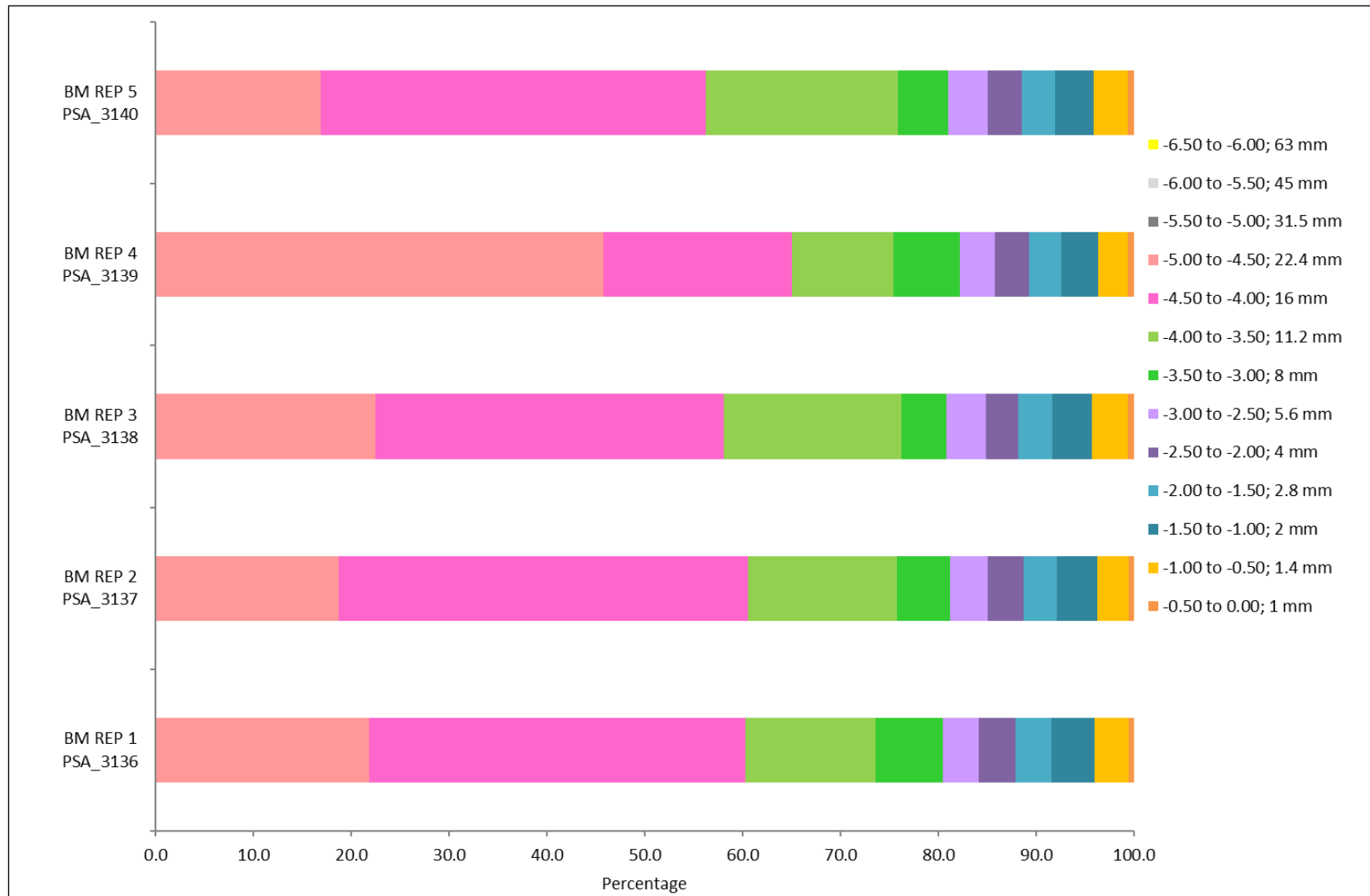


Figure 1 Bar charts showing percentage sediment in each sieve mesh for samples of sediment distributed as PS93 (Benchmark Data)

Table 3 Summary of the final laser data for the Benchmark replicates distributed as PS93.

Phi Interval; microns	PSA_3136 BM REP 1	PSA_3137 BM REP2	PSA_3138 BM REP 3	PSA_3139 BM REP 4	PSA_3140 BM REP 5	BM Rep Average
0.00 to 0.50; (707 μm)	22.36	22.42	22.33	22.59	21.60	22.26
0.50 to 1.00; (500 μm)	30.90	31.37	30.64	31.40	30.64	30.99
1.00 to 1.50; (353.6 μm)	22.38	22.65	22.79	22.45	22.78	22.61
1.50 to 2.00; (250 μm)	7.95	8.06	7.90	7.97	8.15	8.01
2.00 to 2.50; (176.8 μm)	2.69	2.57	2.63	2.57	2.70	2.63
2.50 to 3.00; (125 μm)	1.66	1.55	1.82	1.71	1.84	1.71
3.00 to 3.50; (88.39 μm)	1.17	1.13	1.01	1.07	1.08	1.09
3.50 to 4.00; (62.5 μm)	0.89	0.74	0.81	0.80	0.80	0.81
4.00 to 4.50; (44.19 μm)	0.71	0.72	0.76	0.73	0.80	0.75
4.50 to 5.00; (31.25 μm)	0.74	0.76	0.85	0.77	0.80	0.78
5.00 to 5.50; (22.097 μm)	0.82	0.77	0.85	0.77	0.88	0.82
5.50 to 6.00; (15.625 μm)	0.79	0.71	0.75	0.72	0.72	0.74
6.00 to 6.50; (11.049 μm)	1.11	1.04	1.09	0.97	1.10	1.06
6.50 to 7.00; (7.813 μm)	1.00	0.90	0.95	0.87	0.96	0.94
7.00 to 7.50; (5.524 μm)	1.08	0.98	1.03	0.98	1.07	1.03
7.50 to 8.00; (3.906 μm)	1.05	0.99	1.03	0.98	1.10	1.03
8.00 to 8.50; (2.762 μm)	0.69	0.66	0.68	0.66	0.73	0.68
8.50 to 9.00; (1.953 μm)	0.46	0.45	0.46	0.45	0.51	0.46
9.00 to 9.50; (1.381 μm)	0.41	0.41	0.43	0.41	0.47	0.43
9.50 to 10.00; (0.977 μm)	0.32	0.32	0.33	0.33	0.35	0.33
10.00 to 10.50; (0.691 μm)	0.20	0.19	0.19	0.20	0.20	0.20
10.50 to 11.00; (0.488 μm)	0.12	0.12	0.13	0.12	0.14	0.12
11.00 to 11.50; (0.345 μm)	0.10	0.11	0.12	0.10	0.14	0.12
11.50 to 12.00; (0.244 μm)	0.11	0.12	0.13	0.10	0.15	0.12
12.00 to 12.50; (0.173 μm)	0.10	0.10	0.11	0.10	0.12	0.11
12.50 to 13.00; (0.122 μm)	0.09	0.09	0.09	0.08	0.09	0.09
13.00 to 13.50; (0.086 μm)	0.06	0.06	0.05	0.06	0.05	0.06
13.50 to 14.00; (0.061 μm)	0.03	0.03	0.03	0.03	0.02	0.03
14.00 to 14.50; (0.043 μm)	0.01	0.00	0.00	0.01	0.00	0.00
>14.50; (0.01 μm)	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00
Mean	457.83	470.28	458.58	470.34	446.62	463.04
Sorting	2.75	2.66	2.74	2.67	2.83	2.72
Skewness	-0.53	-0.51	-0.53	-0.52	-0.55	-0.52
Kurtosis	2.96	2.95	2.96	2.94	3.02	2.97
Mode	Unimodal	Unimodal	Unimodal	Unimodal	Unimodal	Unimodal
Primary Mode	603.5	603.5	603.5	603.5	603.5	603.5

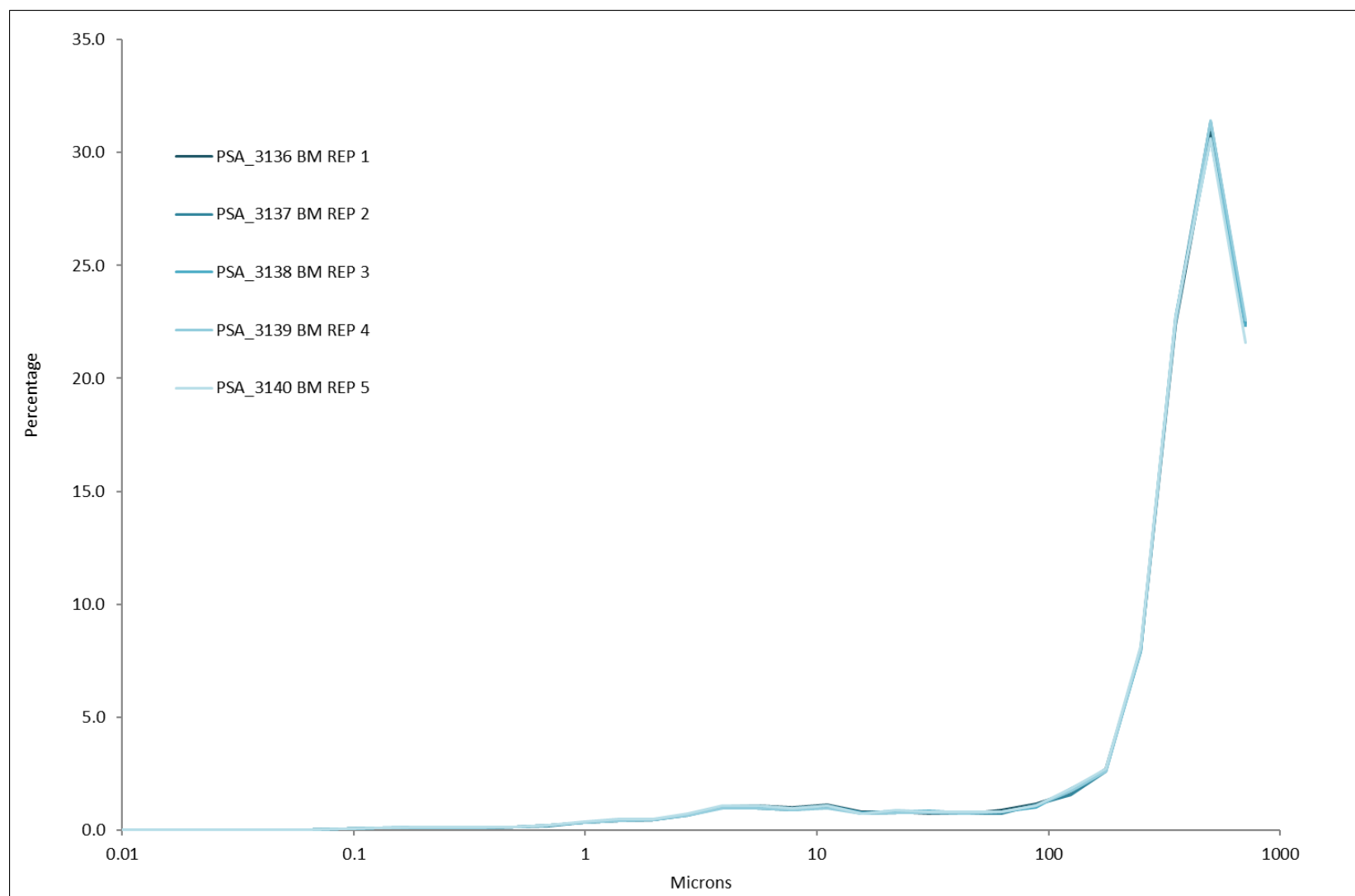


Figure 2 Particle size distribution curves resulting from final laser analysis of 5 replicate samples of sediment distributed as PS93 (Benchmark Data)

Table 4 Summary of Coefficient of Variation for Benchmark laser replicates for PS93.

		PSA_3136 BM REP 1	PSA_3137 BM REP2	PSA_3138 BM REP 3	PSA_3139 BM REP 4	PSA_3140 BM REP 5
D ₁₀	Sub-sample 1	8.14	12.37	8.13	5.42	9.41
	Sub-sample 2	8.04	9.70	7.23	18.05	11.20
	Sub-sample 3	3.43	4.91	6.05	5.99	8.42
D ₅₀	Sub-sample 1	0.55	0.65	0.15	0.21	0.48
	Sub-sample 2	0.34	0.42	0.38	0.81	0.18
	Sub-sample 3	0.12	0.39	0.68	0.09	0.30
D ₉₀	Sub-sample 1	0.16	0.30	0.12	0.14	0.48
	Sub-sample 2	0.05	0.24	0.26	0.39	0.32
	Sub-sample 3	0.06	0.28	0.35	0.08	0.32

$$COV = \left(\frac{StDev}{Mean} \right) * 100$$

ISO 133020 defines good reproducibility when: COV is <3% for D50

COV is <5% for D10 and D90

All limits double when the D50 is <10microns.

In reality 3% and 5% are low and greater variability is expected for natural sediment samples therefore a maximum of 20% (based on three replicates being measured) will be used as a guide.

The Benchmark replicates show good reproducibility.

Table 5 Laser Metadata for the Benchmark replicates for PS93.

	Benchmark Lab
Laser used:	Beckman Coulter LS 13320
Dispersion Unit:	Aqueous Liquid Module
Analysis model:	Mie
Dispersion Used	Water (RI – 1.33)
Particle Refractive Index	1.55
Particle Absorption Index:	0.1
Fines extension	PIDS system
Obscuration	10%
Pump Speed (% or rpm)	80%
Stirrer speed (% or rpm)	n/a
Ultrasonic duration	20
Ultrasonic level	2

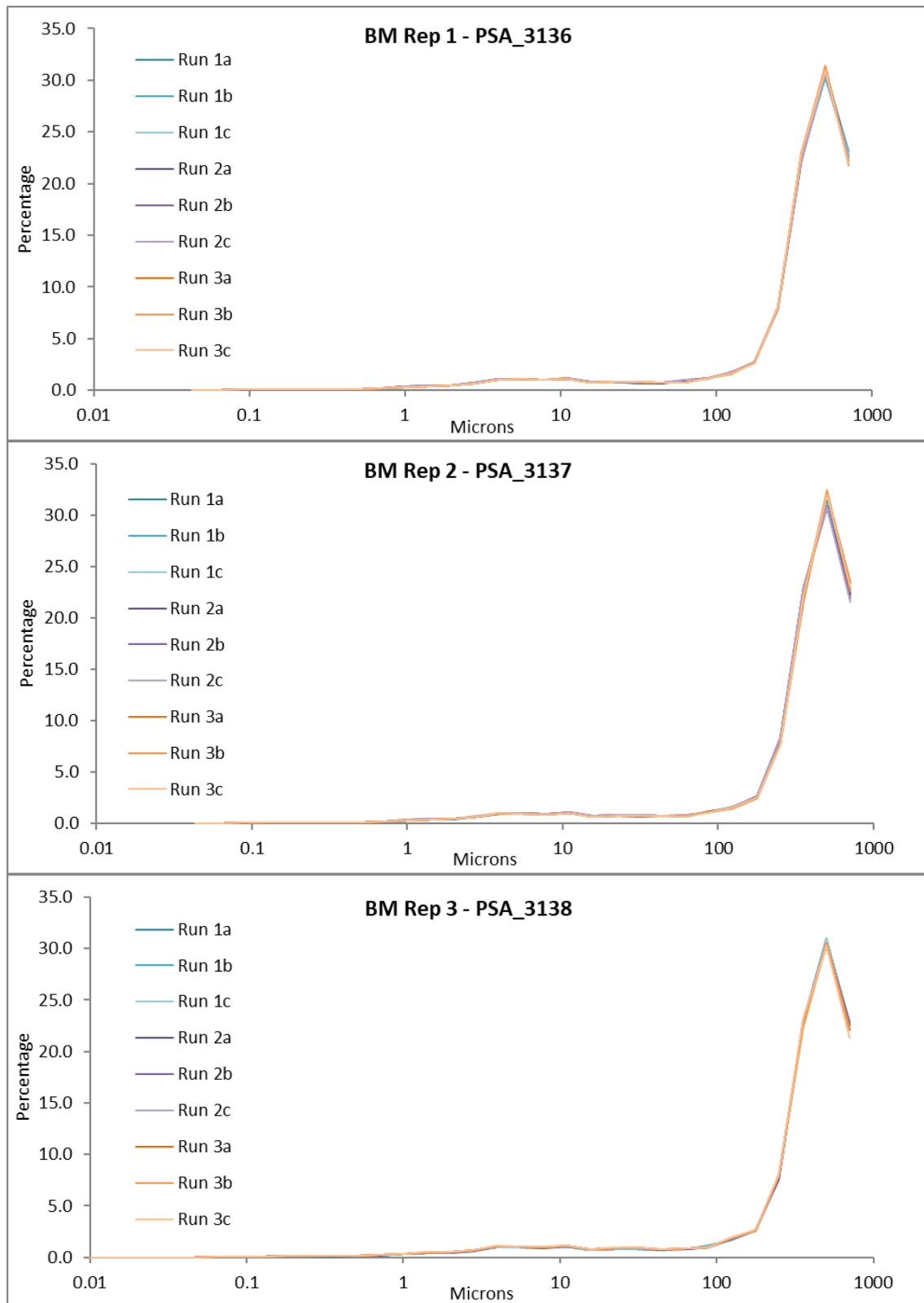


Figure 3 Particle size distribution curves resulting from laser analysis of five replicate samples of sediment distributed as PS93.

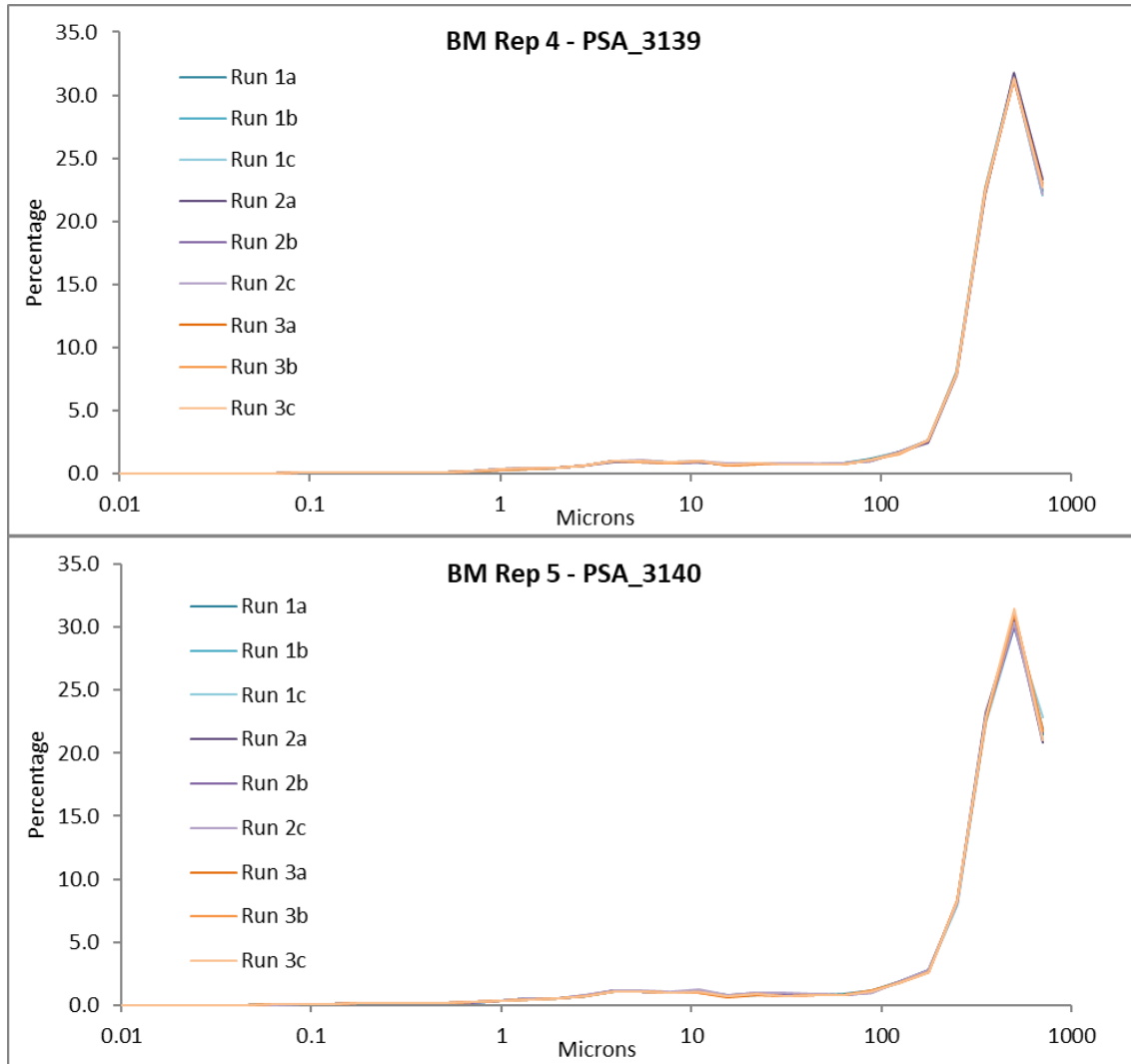


Figure 3 Particle size distribution curves resulting from laser analysis of five replicate samples of sediment distributed as PS93.

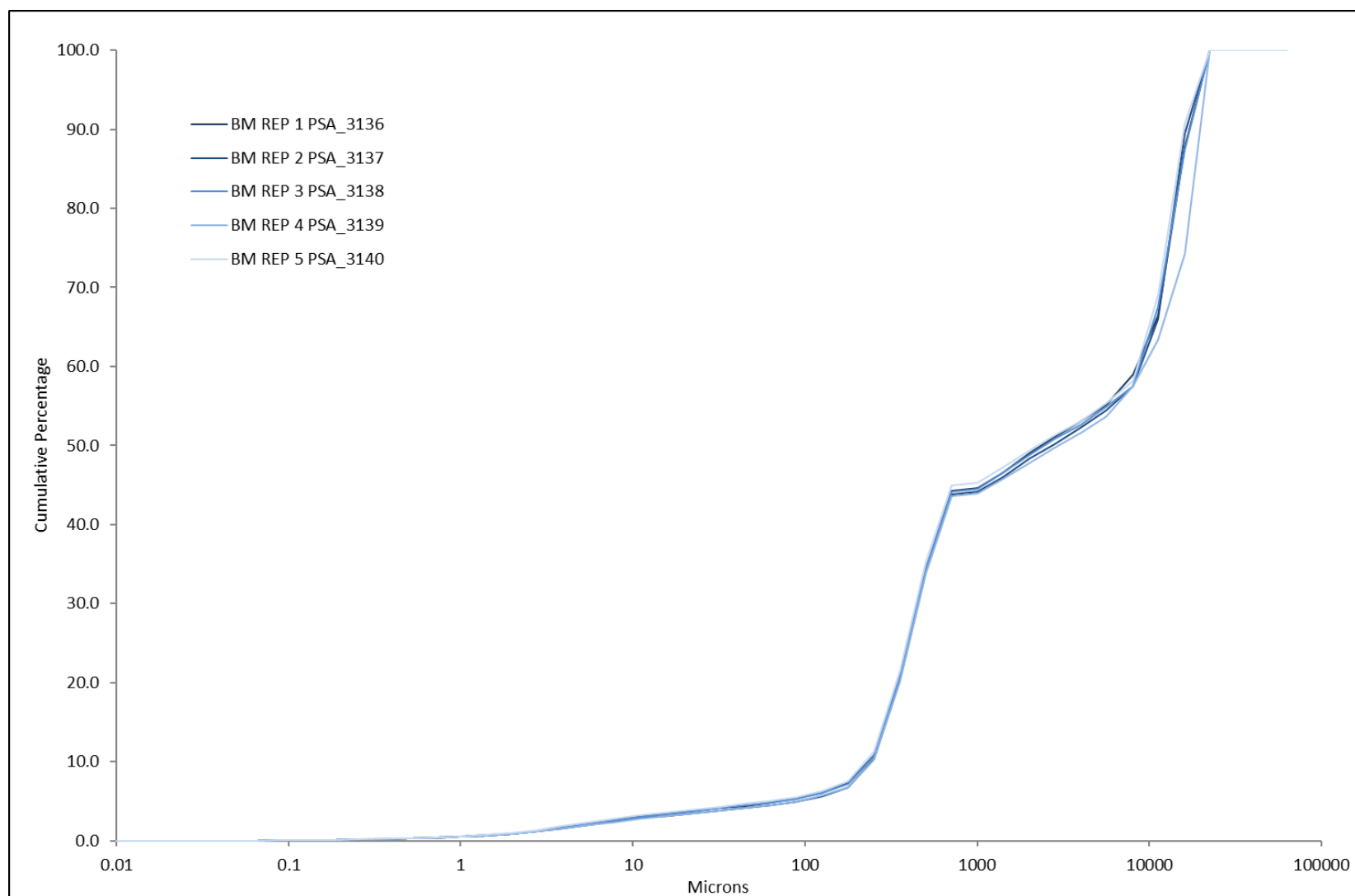


Figure 4 Particle size distribution curves resulting from analysis of 5 replicate samples of sediment distributed as PS93 (Benchmark Data).

2. PARTICIPANT DATA

Table 6 Summary of equipment and methods used by participants and sample summary data provided by participants for sediment distributed as PS93.

Lab	Equipment Used		Method Used	Chemical Dispersant	Peroxide pre-treatment	Summary Data			Sediment Description	
	Sieves	Laser				% Gravel	% Sand	% Mud	(post analysis)	Gradistat Textural Group
BM Average	Yes	Yes	NMBAQC	No	No	53.60	42.03	4.37	Sandy Gravel	Sandy Gravel
PSA_3101	Yes	Yes	NMBAQC	No	No	56.92	38.73	4.35	Muddy Sandy Gravel	Muddy Sandy Gravel
PSA_3102	Yes	Yes	NMBAQC	No	No	54.70	43.10	2.20	Sandy Gravel	Sandy Gravel
PSA_3103	Yes	Yes	NMBAQC	No	No	53.10	39.80	7.10	Muddy Sandy Gravel	Muddy Sandy Gravel
PSA_3104	Yes	Yes	NMBAQC	No	No	58.87	38.52	2.61	-	Sandy Gravel
PSA_3105	Yes	Yes	NMBAQC	No	No	58.13	36.58	5.29	Muddy Sandy Gravel	Muddy Sandy Gravel
PSA_3106	Yes	Yes	NMBAQC	No	No	52.63	43.31	4.06	Sandy Gravel	Sandy Gravel
PSA_3107	Yes	Yes	NMBAQC	No	No	53.63	42.10	4.27	Sandy Gravel	Sandy Gravel
PSA_3108_a	Yes	Yes	NMBAQC	No	No	55.51	36.61	7.88	Muddy Sandy Gravel	Muddy Sandy Gravel
PSA_3108_b	Yes	Yes	NMBAQC	No	No	55.42	37.37	7.22	Muddy Sandy Gravel	Muddy Sandy Gravel
PSA_3109	Yes	Yes	Other	No	No	54.86	41.22	3.93	Sandy Gravel	Sandy Gravel
PSA_3110	Yes	Yes	NMBAQC	No	No	53.30	43.90	2.80	-	Sandy Gravel
PSA_3111	Yes	Yes	Other	No	No	55.14	40.68	4.18	Sandy Gravel	Sandy Gravel
PSA_3112	Yes	Yes	Other	No	No	56.76	37.12	6.12	Gravel with Sand	Muddy Sandy Gravel
PSA_3113	Yes	Yes	NMBAQC	No	No	53.50	43.63	2.87	Sandy Gravel	Sandy Gravel
PSA_3114	Yes	Yes	NMBAQC	No	No	52.65	45.05	2.30	Sandy Gravel	Sandy Gravel
PSA_3115	Yes	Yes	NMBAQC	No	No	43.41	36.92	19.67	Muddy Sandy Gravel	Muddy Sandy Gravel
PSA_3116	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r
PSA_3117	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r	n/r

Table 7 Summary of the sieve data provided by participants for sediment distributed as PS93.

Phi interval (explicit); Sieve mesh (mm)		BM Average	PSA_3101	PSA_3102	PSA_3103	PSA_3104	PSA_3105	PSA_3106	PSA_3107	PSA_3108_a	PSA_3108_b
Starting weight (>1.0mm)		332.496	325.13	317.28	338.02	318.18	362.44	311.57	328.44	308.28	308.62
-6.50 to -6.00; 63 mm		0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-6.00 to -5.50; 45 mm		0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-5.50 to -5.00; 31.5 mm		0.00	0.00	-	73.65	0.00	86.69	70.91	0.00	0.00	0.00
-5.00 to -4.50; 22.4 mm		83.22	110.77	58.08	0.00	40.27	0.00	4.08	74.17	45.78	45.91
-4.50 to -4.00; 16 mm		115.91	95.83	146.34	127.21	122.06	129.48	86.28	129.49	132.67	142.04
-4.00 to -3.50; 11.2 mm		50.92	47.47	42.27	48.02	78.54	53.23	61.54	45.22	56.19	46.71
-3.50 to -3.00; 8 mm		19.13	17.92	13.38	21.96	20.03	21.40	19.05	18.00	18.72	17.57
-3.00 to -2.50; 5.6 mm		12.72	9.59	12.01	14.31	10.06	15.58	11.65	10.76	11.78	12.64
-2.50 to -2.00; 4 mm		11.84	8.27	8.96	11.15	8.38	9.10	9.27	10.28	7.41	8.24
-2.00 to -1.50; 2.8 mm		11.32	10.22	11.40	11.70	11.29	11.89	11.66	12.57	9.14	8.64
-1.50 to -1.00; 2 mm		13.53	12.04	11.85	14.61	12.73	13.16	12.40	13.61	11.69	11.29
-1.00 to -0.50; 1.4 mm		11.24	9.23	10.90	13.64	11.96	10.46	12.27	11.51	10.74	10.82
-0.50 to 0.00; 1 mm		1.99	1.91	1.58	1.77	1.37	1.86	1.38	2.07	1.40	1.52
Total		331.83	323.25	316.77	338.02	316.69	352.85	300.50	327.68	305.52	305.37
Summary Data											
>1 mm		331.83	323.25	316.77	338.02	316.69	352.85	300.50	327.68	305.52	305.37
<1 mm	Base pan	0.61	1.72	0.69	2.55	1.43	9.40	10.69	0.67	2.84	3.21
	Oven dried	261.95	223.38	239.09	266.97	197.17	223.52	233.88	257.30	220.21	220.21
	Total	262.56	225.10	239.78	269.52	198.60	232.92	244.57	257.97	223.05	223.42
Total Sample Weight		594.39	548.35	556.55	607.54	515.29	585.77	545.07	585.65	528.57	528.79
% increase/ decrease		-0.02	-0.05	0.06	0.75	-0.02	-0.05	-0.12	-0.03	0.03	-0.01

Table 7 Summary of the sieve data provided by participants for sediment distributed as PS93.

Phi interval (explicit); Sieve mesh (mm)	BM Average	PSA_3109	PSA_3110	PSA_3111	PSA_3112	PSA_3113	PSA_3114	PSA_3115	PSA_3116	PSA_3117
Starting weight (>1.0mm)	332.496	-	341.37	349.83	-	337.65	263.7	212.4	n/r	n/r
-6.50 to -6.00; 63 mm	0.00	-	0.00	-	-	0.00	0.00	0.00	n/r	n/r
-6.00 to -5.50; 45 mm	0.00	-	0.00	-	-	52.63	0.00	0.00	n/r	n/r
-5.50 to -5.00; 31.5 mm	0.00	-	0.00	-	-	47.35	0.00	0.00	n/r	n/r
-5.00 to -4.50; 22.4 mm	83.22	-	39.70	64.50	-	102.13	70.91	75.49	n/r	n/r
-4.50 to -4.00; 16 mm	115.91	-	163.97	140.43	-	0.00	91.82	16.00	n/r	n/r
-4.00 to -3.50; 11.2 mm	50.92	-	48.23	47.33	-	48.19	27.47	55.57	n/r	n/r
-3.50 to -3.00; 8 mm	19.13	-	17.60	21.77	-	19.01	16.69	17.23	n/r	n/r
-3.00 to -2.50; 5.6 mm	12.72	-	16.73	18.43	-	14.68	15.15	14.29	n/r	n/r
-2.50 to -2.00; 4 mm	11.84	-	12.02	11.07	-	9.77	12.43	9.37	n/r	n/r
-2.00 to -1.50; 2.8 mm	11.32	-	10.17	15.63	-	13.29	10.43	10.55	n/r	n/r
-1.50 to -1.00; 2 mm	13.53	336.36	18.21	17.10	355.14	16.84	0.96	13.13	n/r	n/r
-1.00 to -0.50; 1.4 mm	11.24	-	12.51	10.90	-	11.07	16.13	-	n/r	n/r
-0.50 to 0.00; 1 mm	1.99	11.25	1.99	2.67	-	2.00	1.73	-	n/r	n/r
Total	331.83	347.61	341.13	349.83	355.14	336.96	263.72	211.63	n/r	n/r
Summary Data										
>1 mm	331.83	347.61	341.13	349.83	355.14	336.96	263.72	211.63	n/r	n/r
<1 mm	Base pan	0.61	-	5.23	-	-	0.69	0.80	0.71	n/r
	Oven dried	261.95	-	266.49	259.97	316.47	267.72	202.48	275.13	n/r
	Total	262.56	-	271.72	259.97	316.47	268.41	203.28	275.84	n/r
Total Sample Weight	594.39	-	612.85	609.80	671.61	605.37	467.00	487.47	n/r	n/r
% increase/ decrease	-0.02	-	1.46	0.00	-	0.00	0.31	-0.03	n/r	n/r

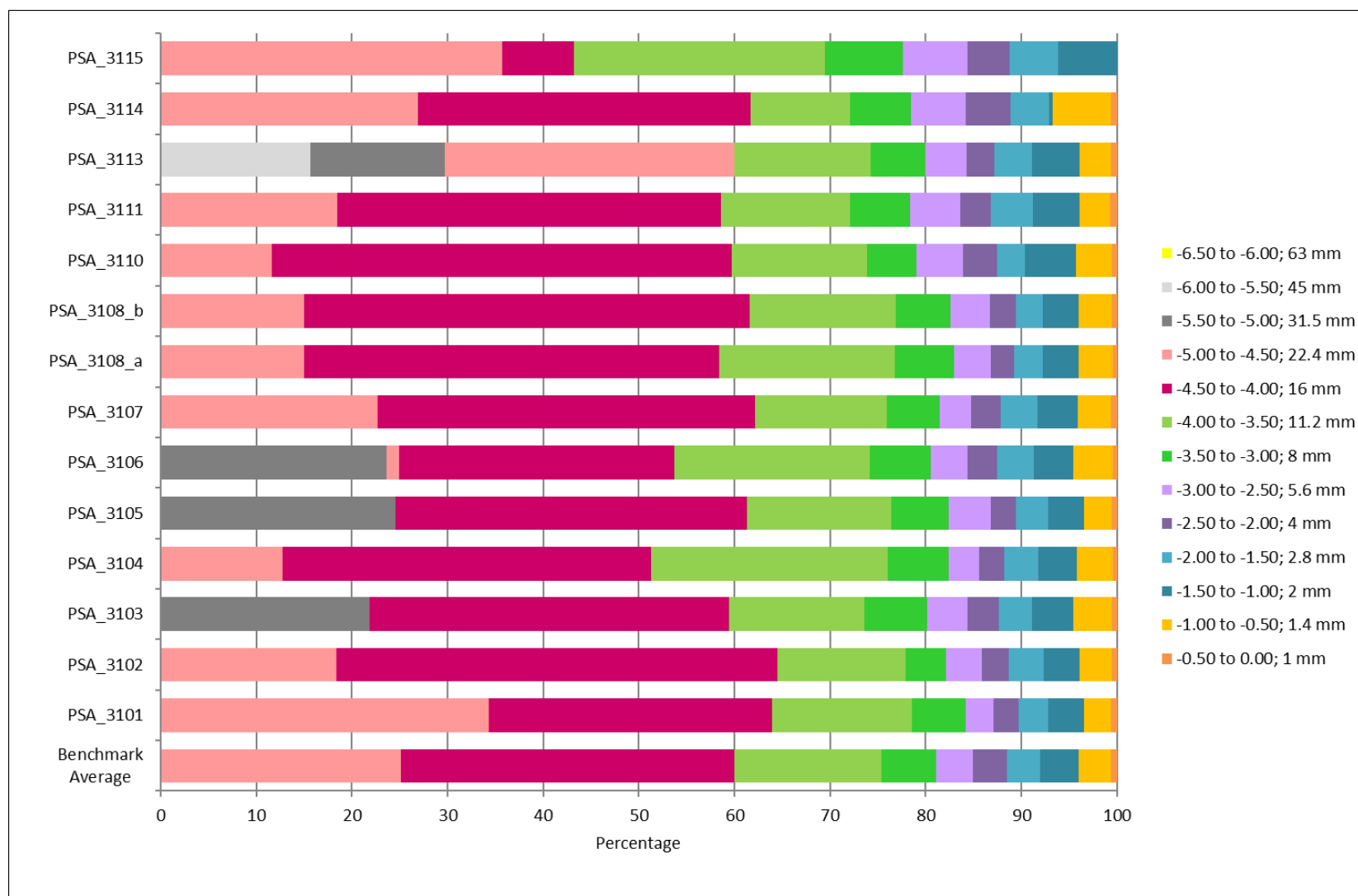


Figure 5 Final sieve data (in percentages) provided by each participant for sediment distributed as PS93

Table 8 Summary of final laser data for the participants for sediment distributed as PS93 with Gradistat output.

Microns	Benchmark Average	PSA_3101	PSA_3102	PSA_3103	PSA_3104	PSA_3105	PSA_3106	PSA_3107	PSA_3108_a	PSA_3108_b
1400	-	-	-	-	-	-	-	-	-	-
1000	-	-	-	-	-	-	-	-	-	-
707	22.26	17.82	22.35	17.23	23.19	18.51	19.49	21.98	15.05	13.49
500	30.99	26.67	30.25	25.34	31.21	26.55	32.19	31.42	22.79	22.79
353.6	22.61	24.18	24.98	22.62	23.78	22.98	24.56	22.60	21.53	22.83
250	8.01	12.98	11.88	11.98	8.82	11.33	8.21	8.02	12.23	13.53
176.8	2.63	3.90	2.77	3.09	2.92	3.07	2.99	2.68	4.31	4.90
125	1.71	1.06	0.46	0.44	1.52	1.00	1.70	1.67	1.61	1.68
88.39	1.09	1.37	0.97	1.28	1.06	1.59	1.23	1.21	1.86	1.79
62.5	0.81	1.43	0.99	1.95	0.72	1.68	0.57	0.72	1.95	1.91
44.19	0.75	0.96	0.52	1.62	0.67	1.32	0.77	0.74	1.55	1.49
31.25	0.78	0.71	0.31	1.17	0.45	1.24	0.65	0.82	1.31	1.18
22.097	0.82	0.83	0.44	1.14	0.71	1.46	0.75	0.80	1.45	1.26
15.625	0.74	0.99	0.60	1.38	0.40	1.61	0.77	0.74	1.74	1.48
11.049	1.06	1.09	0.64	1.62	0.53	1.60	0.99	1.05	2.04	1.68
7.813	0.94	1.16	0.69	1.75	0.66	1.50	0.95	0.94	2.31	1.92
5.524	1.03	1.25	0.70	1.76	0.65	1.36	0.96	1.03	2.42	2.10
3.906	1.03	1.20	0.63	1.64	0.59	1.14	0.86	1.00	2.16	2.01
2.762	0.68	1.00	0.50	1.41	0.47	0.89	0.61	0.66	1.64	1.65
1.953	0.46	0.68	0.30	1.07	0.39	0.59	0.42	0.44	1.00	1.08
1.381	0.43	0.36	0.02	0.69	0.32	0.31	0.34	0.39	0.49	0.56
0.977	0.33	0.23	0.00	0.42	0.24	0.19	0.26	0.31	0.31	0.35
0.691	0.20	0.15	0.00	0.28	0.17	0.08	0.17	0.19	0.25	0.31
0.488	0.12	0.00	0.00	0.12	0.14	0.00	0.12	0.12	0.01	0.01
0.345	0.12	0.00	0.00	0.00	0.12	0.00	0.11	0.10	0.00	0.00
0.244	0.12	0.00	0.00	0.00	0.10	0.00	0.11	0.11	0.00	0.00
0.173	0.11	0.00	0.00	0.00	0.07	0.00	0.09	0.10	0.00	0.00
0.122	0.09	0.00	0.00	0.00	0.05	0.00	0.07	0.08	0.00	0.00
0.086	0.06	0.00	0.00	0.00	0.03	0.00	0.04	0.06	0.00	0.00
0.061	0.03	0.00	0.00	0.00	0.02	0.00	0.02	0.03	0.00	0.00
0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
MEAN:	463.04	409.34	490.23	270.85	488.05	336.32	460.40	465.59	210.92	237.64
SORTING:	2.72	2.82	1.99	4.09	2.27	3.26	2.58	2.68	4.74	4.28
SKEWNESS:	-0.52	-0.50	-0.38	-0.67	-0.45	-0.61	-0.51	-0.52	-0.68	-0.66
KURTOSIS:	2.97	2.51	1.92	2.46	2.43	2.33	2.97	2.95	1.84	2.08
MODE:	Uni	Uni	Uni	Uni	Uni	Uni	Uni	Uni	Uni	Uni
Primary Mode	603.50	603.50	603.50	603.50	603.50	603.50	603.5	603.5	603.5	426.8

Table 8 Summary of final laser data for the participants for sediment distributed as PS93 with Gradistat output.

Microns	Benchmark Average	PSA_3109	PSA_3110	PSA_3111	PSA_3112	PSA_3113	PSA_3114	PSA_3115	PSA_3116	PSA_3117
1400	-	0.28	-	-	4.18	-	-	0.25	n/r	n/r
1000	-	7.49	-	-	14.44	-	-	5.90	n/r	n/r
707	22.26	17.07	19.49	17.67	22.86	18.98	0.00	26.81	n/r	n/r
500	30.99	23.98	29.80	26.59	22.35	29.66	17.49	24.09	n/r	n/r
353.6	22.61	21.98	26.76	24.19	13.11	26.67	34.97	6.37	n/r	n/r
250	8.01	12.82	13.11	12.93	4.65	13.03	28.16	1.21	n/r	n/r
176.8	2.63	4.31	2.58	4.03	1.36	2.94	9.57	0.15	n/r	n/r
125	1.71	0.84	0.03	1.29	1.32	0.24	2.12	0.22	n/r	n/r
88.39	1.09	0.83	0.56	1.69	1.48	0.88	1.24	0.18	n/r	n/r
62.5	0.81	1.32	1.35	1.80	1.27	1.13	0.69	0.06	n/r	n/r
44.19	0.75	1.27	1.17	1.31	1.21	0.69	0.48	0.02	n/r	n/r
31.25	0.78	1.04	0.74	0.97	1.44	0.39	0.48	0.03	n/r	n/r
22.097	0.82	0.97	0.61	0.96	1.60	0.47	0.47	0.66	n/r	n/r
15.625	0.74	0.99	0.66	1.01	1.61	0.64	0.50	2.50	n/r	n/r
11.049	1.06	0.98	0.69	1.01	1.54	0.73	0.57	3.25	n/r	n/r
7.813	0.94	0.90	0.64	0.98	1.44	0.79	0.67	5.31	n/r	n/r
5.524	1.03	0.80	0.54	0.95	1.28	0.84	0.75	5.42	n/r	n/r
3.906	1.03	0.70	0.45	0.85	1.05	0.79	0.74	3.58	n/r	n/r
2.762	0.68	0.57	0.37	0.69	0.74	0.62	0.59	4.05	n/r	n/r
1.953	0.46	0.42	0.27	0.49	0.41	0.39	0.38	3.01	n/r	n/r
1.381	0.43	0.28	0.18	0.29	0.30	0.13	0.15	1.70	n/r	n/r
0.977	0.33	0.15	0.00	0.17	0.28	0.00	0.00	1.65	n/r	n/r
0.691	0.20	0.00	0.00	0.12	0.02	0.00	0.00	1.13	n/r	n/r
0.488	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.63	n/r	n/r
0.345	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.65	n/r	n/r
0.244	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.51	n/r	n/r
0.173	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.29	n/r	n/r
0.122	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.26	n/r	n/r
0.086	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.09	n/r	n/r
0.061	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-	n/r	n/r
0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	n/r	n/r
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	n/r	n/r
Total	100.00	100.00	100.00	100.00	99.93	100.00	100.00	100.00	n/r	n/r
MEAN:	463.04	465.36	474.42	406.43	447.65	468.62	488.68	132.28	n/r	n/r
SORTING:	2.72	2.59	2.04	2.63	3.54	2.23	1.91	10.17	n/r	n/r
SKEWNESS:	-0.52	-0.37	-0.37	-0.49	-0.58	-0.40	-0.39	-0.81	n/r	n/r
KURTOSIS:	2.97	2.15	2.07	2.25	2.28	2.43	2.15	0.61	n/r	n/r
MODE:	Uni	Uni	Uni	Uni	Uni	Uni	Uni	Uni	n/r	n/r
Primary Mode	603.50	603.5	603.5	603.5	853.5	603.5	603.5	853.5	n/r	n/r

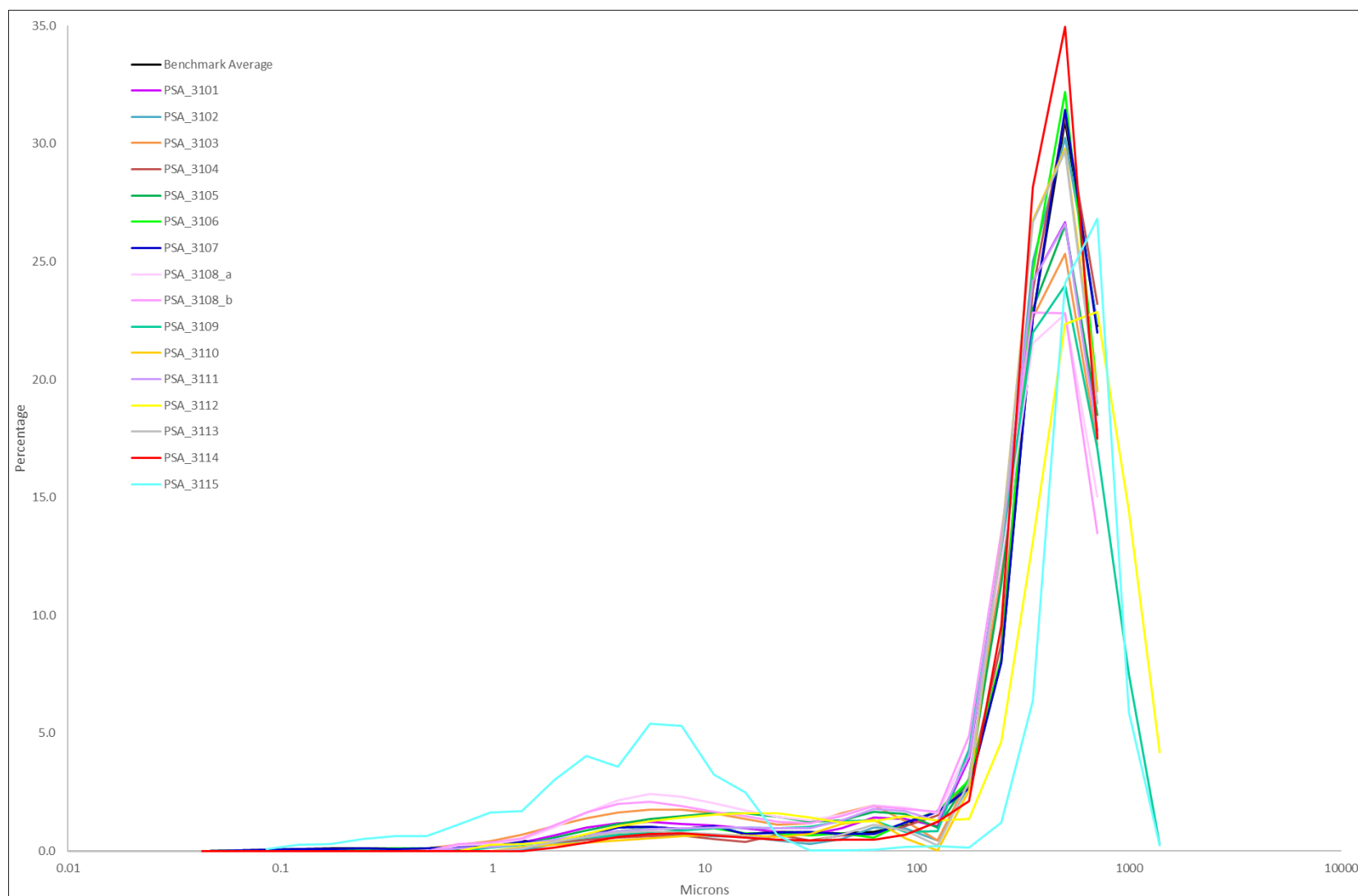


Figure 6 Final laser data (in percentages) provided by each participant and the Benchmark average for sediment distributed as PS93.

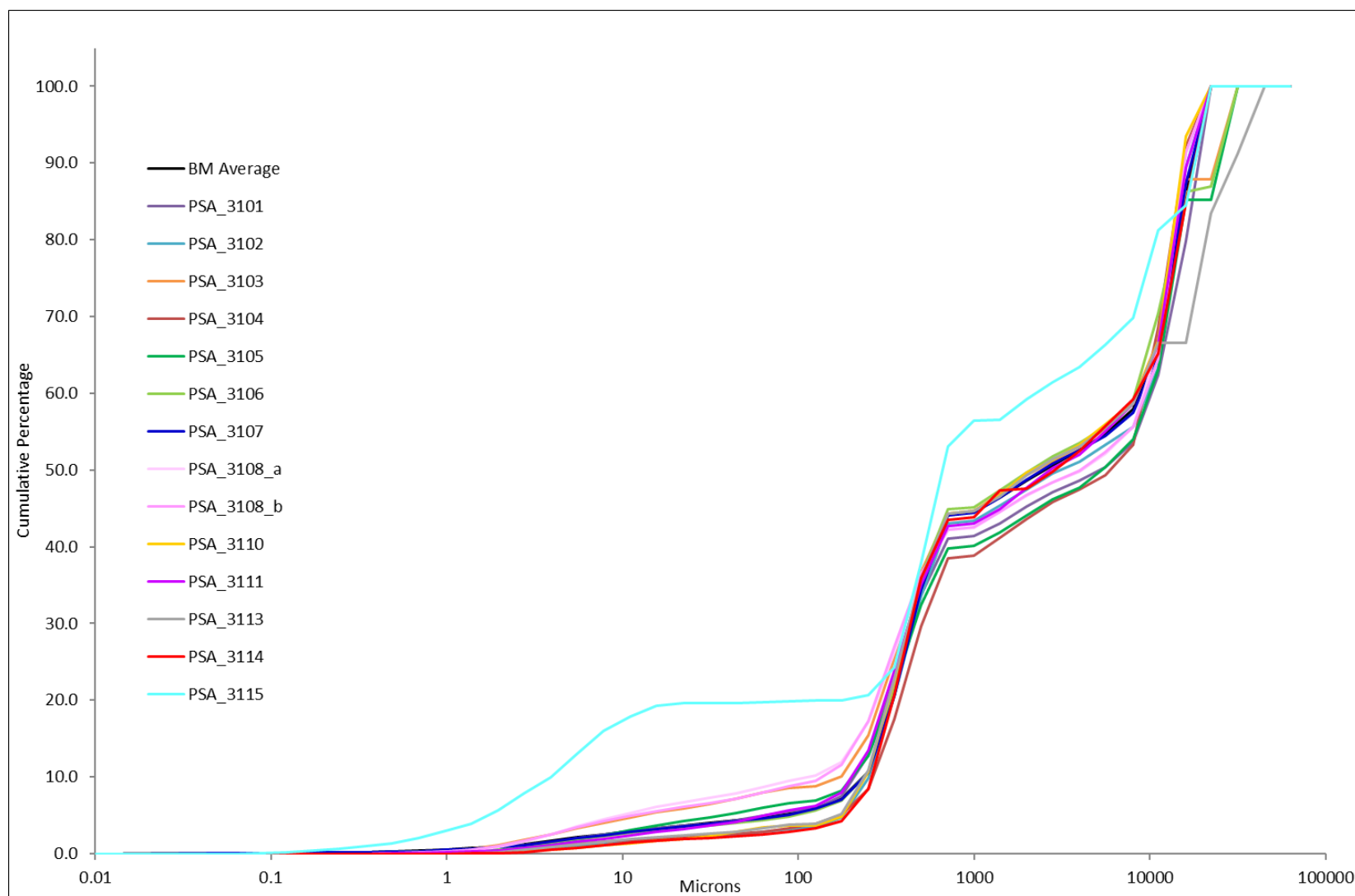


Figure 7 Particle size distribution curves from all participating laboratories and the Benchmark average for sediment distributed as PS93.

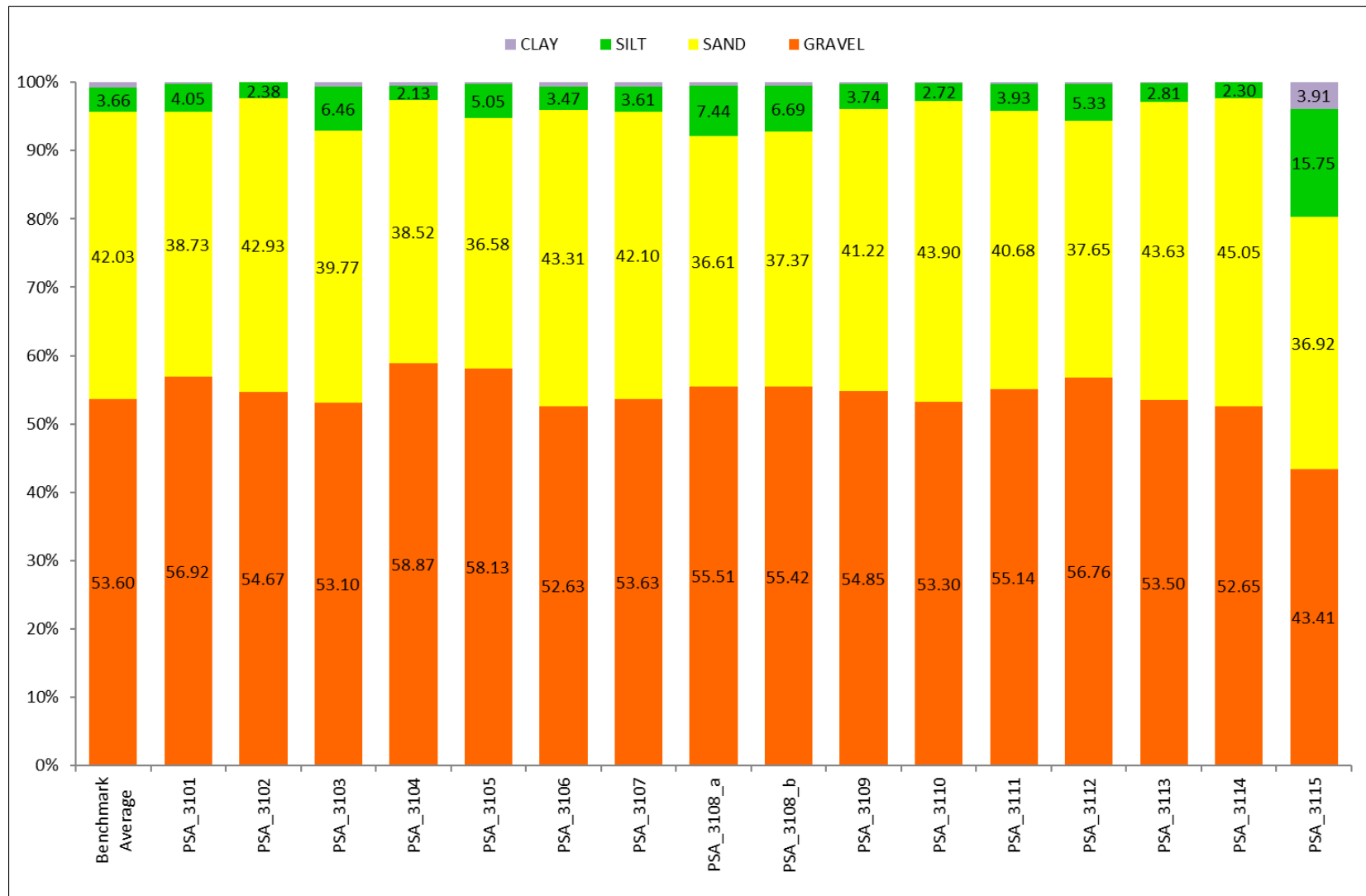
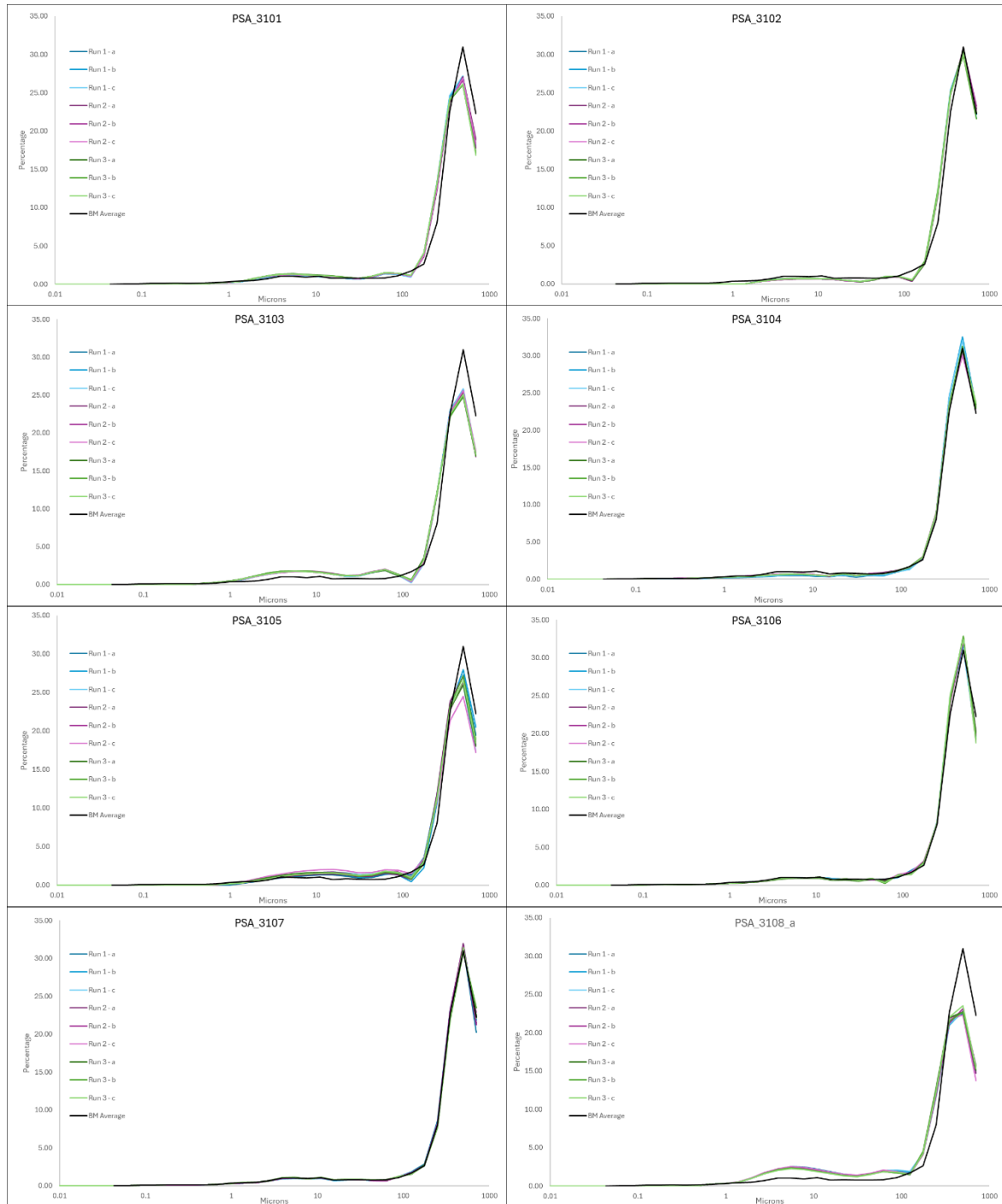


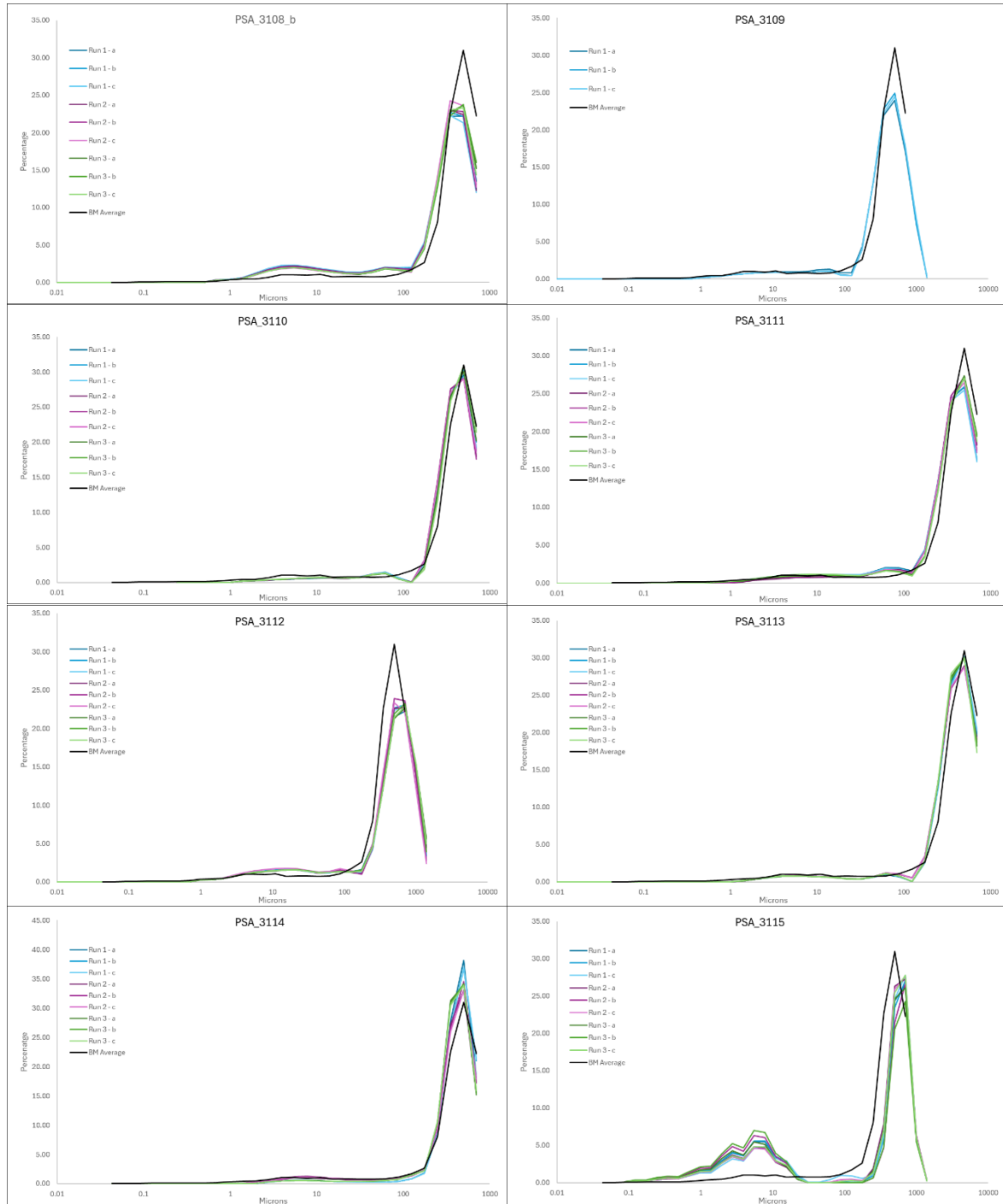
Figure 8 Bar charts showing the percentage gravel, sand, silt and clay recorded by each participating laboratory and the Benchmark average for PS93.

3. APPENDICES

Appendix 1 – Participant Laser Replicate Graphs

Benchmark and Participant laser replicate data can be found in the associated embedded Excel file – PS92 Appendix 1.





Appendix 2 – Gradistat output of size categories based on final merged data provided by each participant and the Benchmark Average for sediment distributed as PS93.

Benchmark and Participant data can be found in the associated embedded Excel file – PS93 Appendix 2.

Appendix 3 – Benchmark Lab and Participant Final Merged Data for sediment distributed as PS93.

Data can be found in the associated embedded Excel file – PS93 Appendix 3.

Appendix 4 – Benchmark Lab and Participant Sieve Data for sediment distributed as PS93.

Bar charts can be found in the associated embedded Excel file – PS93 Appendix 4.