NMBAQC

NE Atlantic Marine Biological Analytical Quality Control Scheme

Particle Size Report – PS87

Particle Size Component 2022/23

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CONTENTS

APPENDICES

- No data provided.
n/p - not participating in this exercise at current time/ non-participation not communicated.
n/p* - not participating in this exercise at current time - non-participation communicated.

At the time of issue participant PSA_2907 and the contract manager and administrator were still in discussions regarding a review of their analysis and therefore have been excluded from this version.

Participant PSA_2912 was trialling a new laser analyser and have therefore submitted two sets of results.

BENCHMARK DATA

NOTE FROM BENCHMARK LAB: PS87 contained a lot of sediment right up to 1 mm, including shell fragments. In fact, I suspect these samples had been pre-screened at 1 mm to remove any particles larger than 1 mm. Samples were wet separated through a 1 mm screen and no >1 mm sediment remained. The samples contain some shell fragments longer than 1 mm, but these pass through the 1 mm sieve after thorough washing. Any fragments identified as larger than 1 mm in the laser analysis are mathematically removed in the sample reporting below.

Table 1. Summary data for the benchmark replicates distributed as PS87.

	Method	% Gravel	% Sand	% Mud	Sediment Description (Post analysis)
PSA_2936 BM REP 1	NMBAQC	0.00	97.91	2.09	Sand
PSA_2937 BM REP 2	NMBAQC	0.00	97.82	2.18	Sand
PSA_2938 BM REP 3	NMBAQC	0.00	97.70	2.30	Sand
PSA_2939 BM REP 4	NMBAQC	0.00	97.95	2.05	Sand
PSA_2940 BM REP 5	NMBAQC	0.00	97.97	2.03	Sand
BM REP AVERAGE	NMBAQC	0.00	97.87	2.13	Sand

Table 2. Summary of sieve data for the benchmark replicates distributed as PS87.

		PSA_2936 BM REP 1	PSA_2937 BM REP 2	PSA_2938 BM REP 3	PSA_2939 BM REP 4	PSA_2940 BM REP 5	BM Average
Sieves used		No	No	No	No	No	No
Phi interval	Microns						
-6.5 to -6.0	>63000	**Weight in grams**					
-6.0 to -5.5	45000 - 63000						
-5.5 to -5.0	31500 - 45000						
-5.0 to -4.5	22400 - 31500						
-4.5 to -4.0	16000 - 22400		No sediment greater than 1mm recorded.				
-4.0 to -3.5	11200 - 16000						
-3.5 to -3.0	8000 - 11200						
-3.0 to -2.5	5600 - 8000						
-2.5 to -2.0	4000 - 5600						
-2.0 to -1.5	2800 - 4000						
-1.5 to -1.0	2000 - 2800						
-1.0 to -0.5	1400 - 2000						
-0.5 to 0.0	1000 - 1400						
>1.0 mm							
<1.0 mm	Base Pan						
	Oven Dried						
Total Weight (g)							

BENCHMARK DATA

Table 3. Summary of final laser data for the benchmark replicates distributed as PS87.

Phi interval	Microns	PSA_2936 BM REP 1	PSA_2937 BM REP 2	PSA_2938 BM REP 3	PSA_2939 BM REP 4	PSA_2940 BM REP 5	BM AVERAGE
0.0 to 0.5	710 - 1000	46.21	46.70	46.41	46.21	45.94	46.29
0.5 to 1.0	500 - 710	27.06	27.03	27.28	26.58	26.23	26.84
1.0 to 1.5	355 - 500	5.67	5.60	5.70	5.57	5.47	5.60
1.5 to 2.0	250 - 355	3.75	3.76	3.67	3.86	4.02	3.81
2.0 to 2.5	180 - 250	6.65	6.37	6.26	6.83	7.08	6.64
2.5 to 3.0	125 - 180	5.90	5.72	5.68	6.15	6.32	5.95
3.0 to 3.5	90 - 125	2.10	2.05	2.06	2.16	2.30	2.13
3.5 to 4.0	63 - 90	0.57	0.59	0.65	0.60	0.61	0.60
4.0 to 4.5	44.19 - 63	0.22	0.24	0.24	0.22	0.21	0.23
4.5 to 5.0	31.25 - 44.19	0.18	0.20	0.20	0.17	0.15	0.18
5.0 to 5.5	22.097 - 31.25	0.19	0.21	0.19	0.18	0.16	0.19
5.5 to 6.0	15.625 - 22.097	0.18	0.19	0.19	0.18	0.16	0.18
6.0 to 6.5	11.049 - 15.625	0.20	0.22	0.22	0.21	0.19	0.21
6.5 to 7.0	7.813 - 11.049	0.18	0.19	0.20	0.19	0.18	0.19
7.0 to 7.5	5.524 - 7.813	0.17	0.17	0.19	0.16	0.17	0.17
7.5 to 8.0	3.906 - 5.524	0.14	0.14	0.16	0.14	0.15	0.14
8.0 to 8.5	2.762 - 3.906	0.10	0.10	0.11	0.10	0.10	0.10
8.5 to 9.0	1.953 - 2.762	0.07	0.07	0.08	0.07	0.07	0.08
9.0 to 9.5	1.381 - 1.953	0.07	0.07	0.08	0.07	0.08	0.08
9.5 to 10.0	0.977 - 1.381	0.08	0.08	0.08	0.08	0.08	0.08
10.0 to 10.5	0.691 - .0977	0.07	0.07	0.08	0.07	0.08	0.07
10.5 to 11.0	0.488 - 0.691	0.07	0.06	0.07	0.06	0.07	0.06
11.0 to 11.5	0.345 - 0.488	0.06	0.05	0.06	0.05	0.05	0.05
11.5 to 12.0	0.244 - 0.345	0.05	0.04	0.05	0.04	0.04	0.04
12.0 to 12.5	0.173 - 0.244	0.04	0.03	0.04	0.03	0.03	0.03
12.5 to 13.0	0.122 - 0.173	0.03	0.02	0.03	0.02	0.02	0.02
13.0 to 13.5	0.086 - 0.122	0.02	0.01	0.02	0.01	0.01	0.02
13.5 to 14.0	0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01
14.0 to 14.5	0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00
> 14.5	0.01 - 0.043	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:	518.59	523.18	521.92	514.65	509.68	517.41
	SORTING:	1.90	1.89	1.90	1.91	1.92	1.90
	SKEWNESS:	-0.62	-0.62	-0.62	-0.62	-0.62	-0.62
	KURTOSIS:	1.36	1.42	1.43	1.29	1.22	1.34
	MODE:	Unimodal	Unimodal	Unimodal	Unimodal	Bimodal	Unimodal
	MODE 1 (µm):	853.5	853.5	853.5	853.5	853.5	853.5
	MODE 2 (µm):	-	-	-	-	213.4	-
	MODE 3 (µm):	-	-	-	-	-	-

BENCHMARK DATA

Table 4. Summary of Coefficient of Variation for Benchmark laser replicates for PS87.

		PSA_2936 BM REP 1	PSA_2937 BM REP 2	PSA_2938 BM REP 3	PSA_2939 BM REP 4	PSA_2940 BM REP 5
D_{10}	Subsample 1	0.94	0.27	0.42	0.22	0.40
	Subsample 2	0.31	1.55	0.76	0.77	0.43
	Subsample 3	0.43	0.37	0.52	0.51	1.25
					n	
D_{50}	Subsample 1	0.16	0.21	0.24	0.20	0.09
	Subsample 2	0.16	0.17	0.17	0.10	0.29
	Subsample 3	0.25	0.10	0.10	0.60	0.50
D_{90}	Subsample 1	0.02	0.03	0.03	0.03	0.01
	Subsample 2	0.02	0.02	0.02	0.02	0.04
	Subsample 3	0.04	0.01	0.01	0.07	0.08

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

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 Benchmark replicates for PS87.

If laser used, provide manufacturer/model:	Beckman Coulter LS 13320
Dispersion unit:	Universal Liquid Module
Analysis model:	Mie
Dispersant used:	Water (RI - 1.33)
Particle Refractive Index:	1.55
Particle Absorption Index:	0.1
Fines extension	PIDS system
Obscuration (average):	10%
Pump speed (% or rpm)	80%
Stirrer speed (% or rpm)	n/a
Ultrasonic duration (seconds)	20
Ultrasonic level (eg %, unit as described by instrument manual)	2

Figure 1a. Percentage bar charts resulting from final sieve analysis of 5 replicate samples of sediment distibuted as PS87 (Benchmark Data).

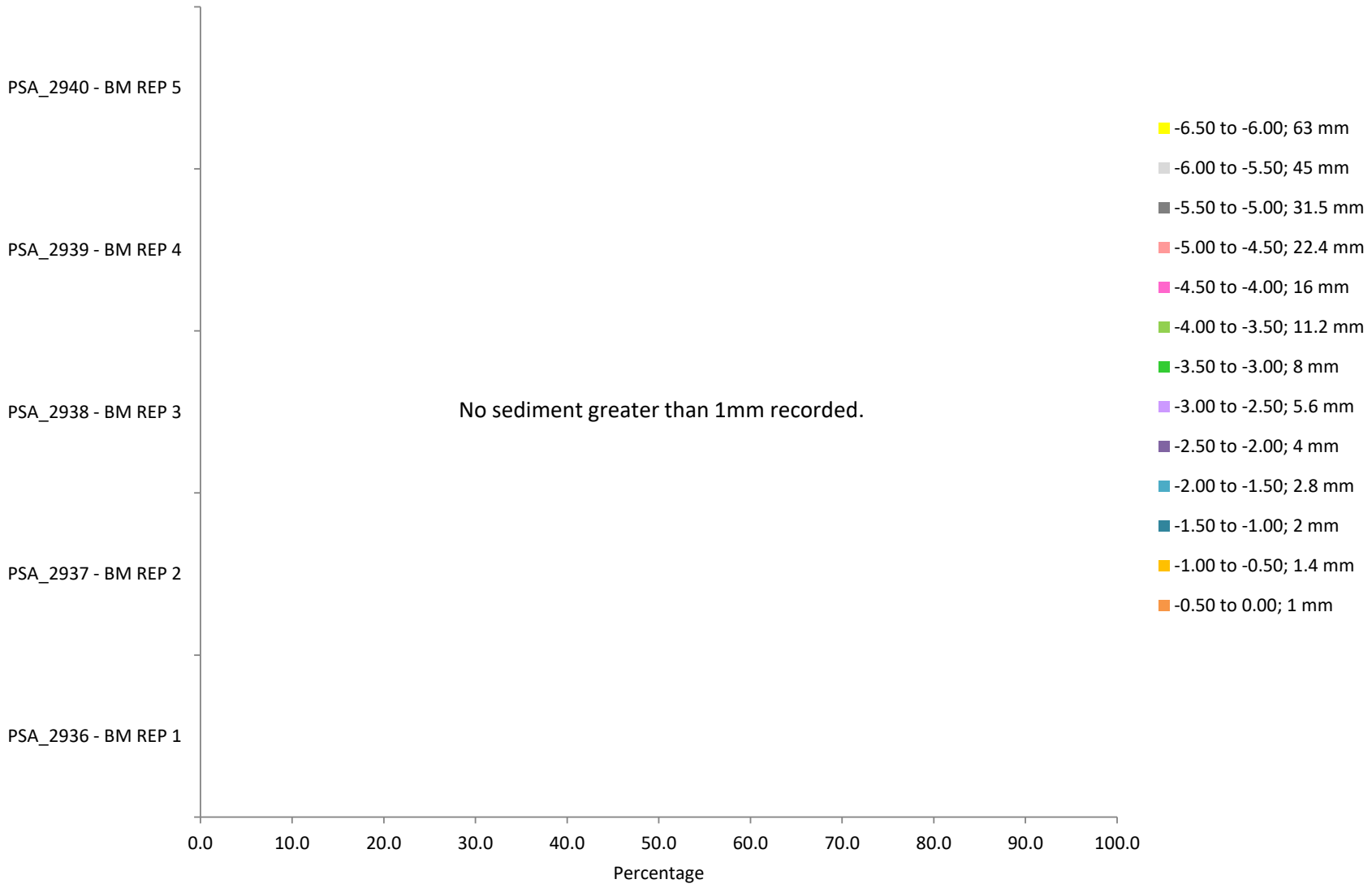

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Figure 1b. Particle size distribution curves resulting from final laser analysis of 5 replicate samples of sediment distibuted as PS87 (Benchmark Data).

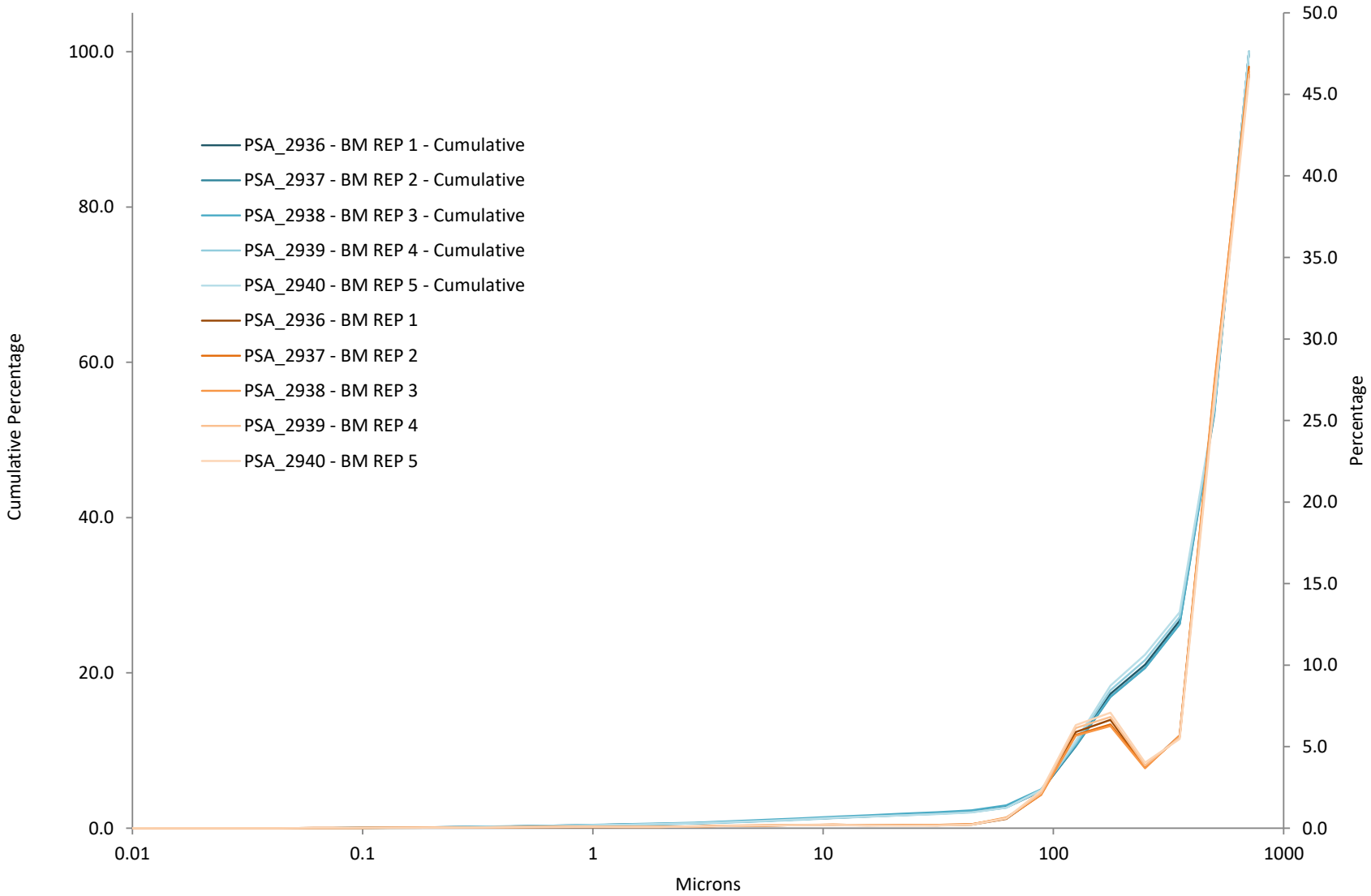

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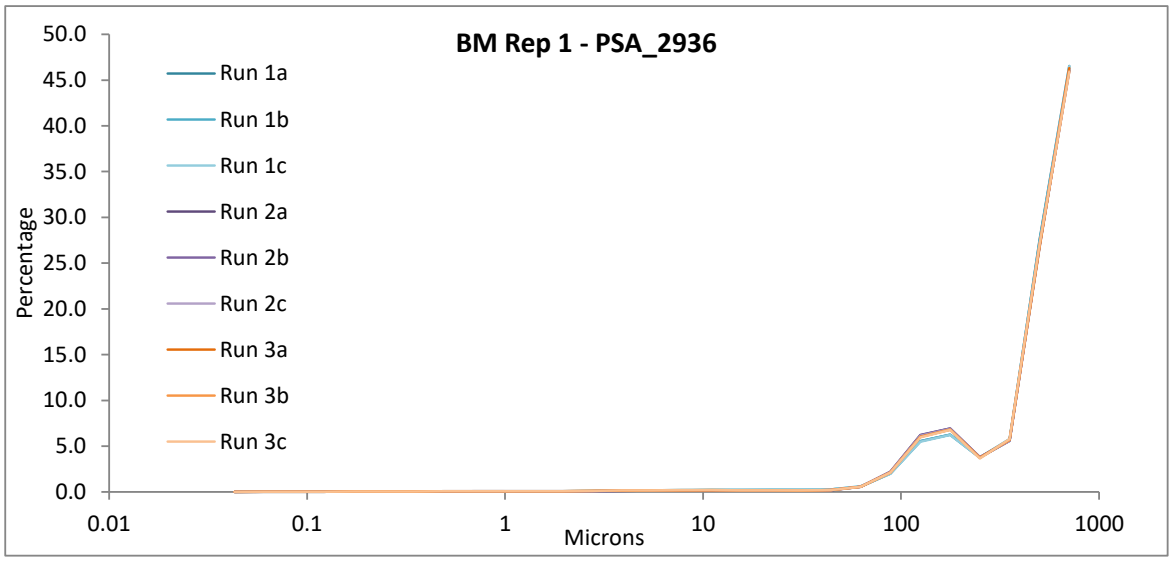
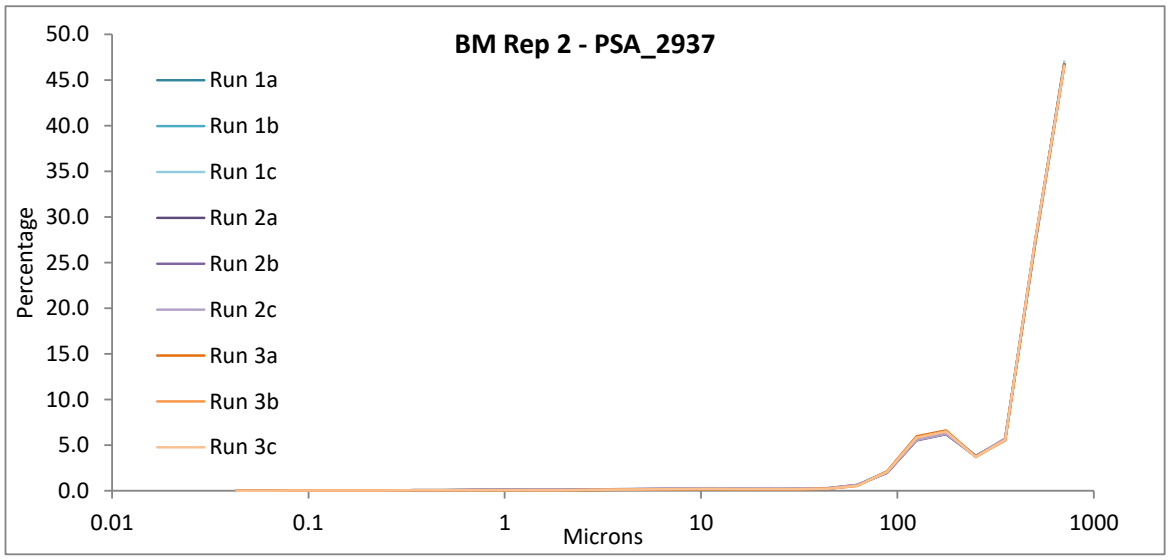
Figure 2. Particle size distribution curves resulting from laser analysis of five replicate samples of sediment distributed as PS87.





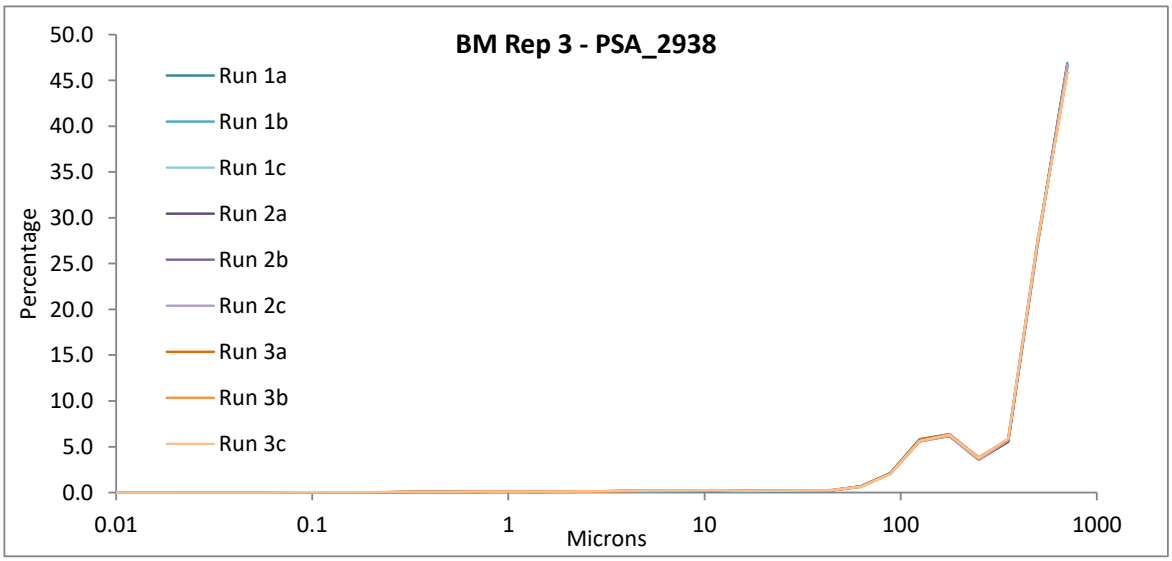
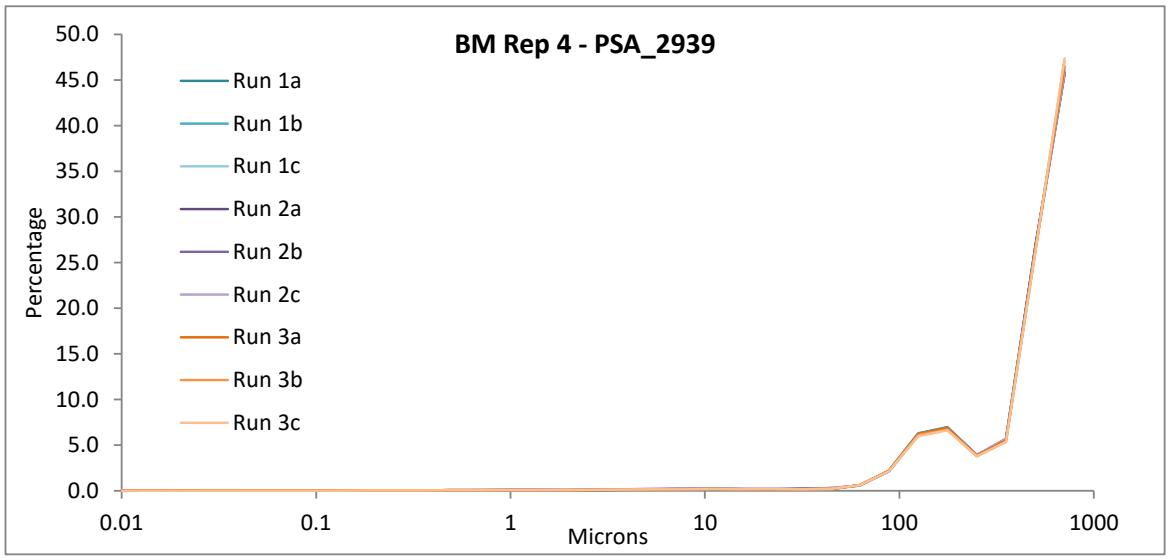


Figure 2. Particle size distribution curves resulting from laser analysis of five replicate samples of sediment distributed as PS87.



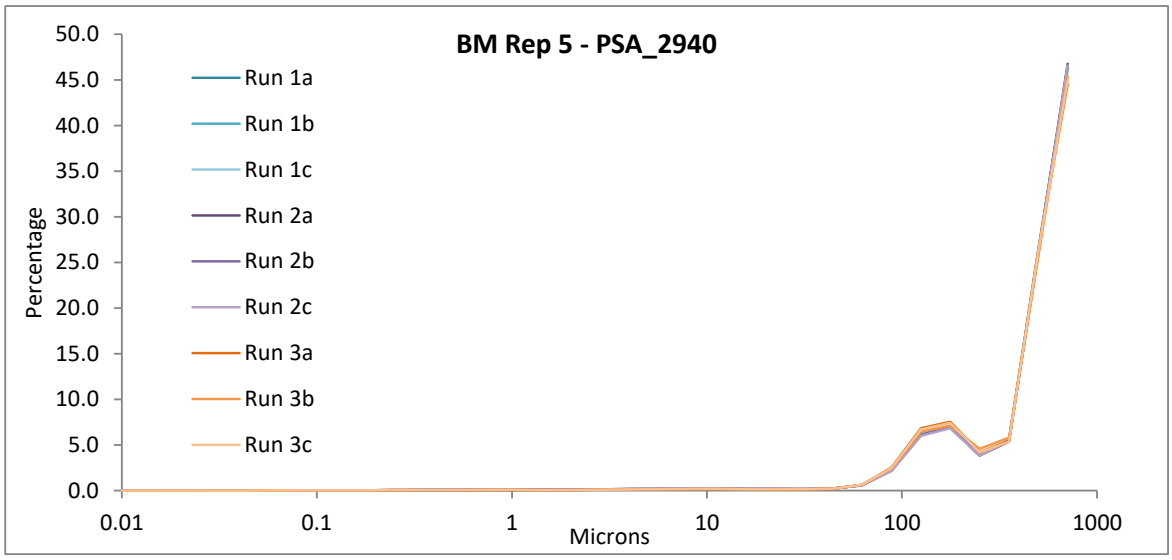
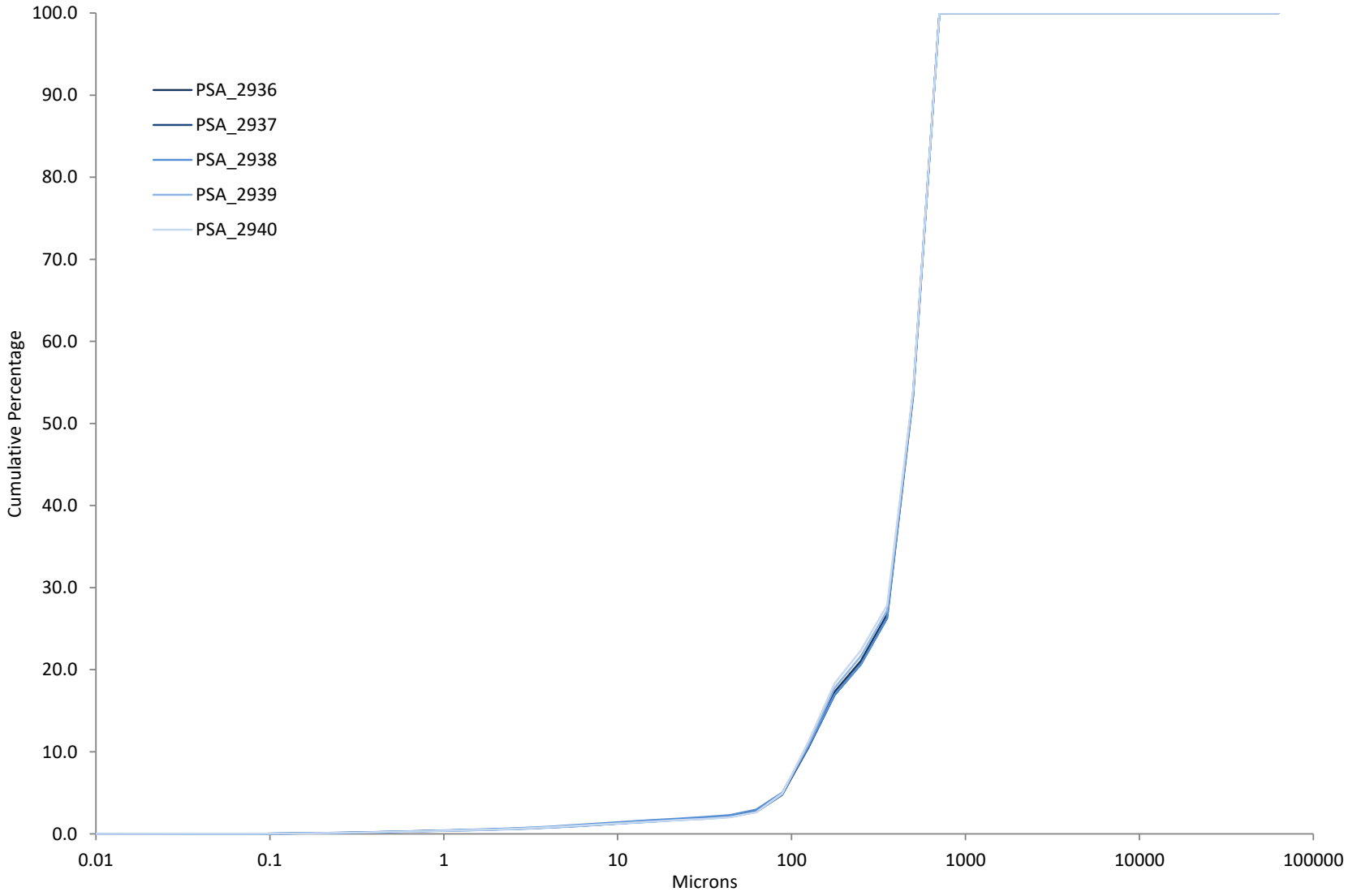


Figure 3. Particle size distribution curves resulting from analysis of 5 replicate samples of sediment distibuted as PS87 (Benchmark Data).



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PARTICIPANT DATA

Table 6. Summary of equipment and methods used by participants and sample summary data provided by participants for sediment distributed as PS87.

Lab	Equipment Used		Method Used	Chemical Dispersant Used	Peroxide pre-treatment Used	Summary Data			Sediment Description (Post Analysis)	Sediment Description* Gradistat Textural Group
	Sieves	Laser				% Gravel	% Sand	% Mud		
Benchmark Average	No	Yes	NMBAQC	No	No	0.00	97.87	2.13	Sand	Sand
PSA_2901	Yes	Yes	NMBAQC	No	No	0.00	98.53	1.47	Sand	Sand
PSA_2902	No	Yes	NMBAQC	No	No	0.00	97.10	2.90	Sand	Sand
PSA_2903	No	Yes	NMBAQC	No	No	0.0	100.0	0.0	Sand	Sand
PSA_2904	Yes	Yes	NMBAQC	No	No	0.00	98.15	1.85	Sand	Sand
PSA_2905	Yes	Yes	OTHER	No	No	0.00	100.00	0.00	Sand	Sand
PSA_2906	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p
PSA_2908	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*
PSA_2909	Yes	Yes	NMBAQC	No	No	0.00	97.44	2.56	Sand	Sand
PSA_2910	Yes	Yes	NMBAQC	No	No	0.00	99.70	0.30	Sand	Sand
PSA_2911	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*	n/p*
PSA_2912	Yes	Yes	NMBAQC	No	No	0.00	100.00	0.00	Sand	Sand
PSA_2913	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p	n/p
PSA_2914	Yes	Yes	OTHER	No	No	0.00	99.99	0.01	Sand	Sand
PSA_2916	No	Yes	NMBAQC	No	No	0.00	98.92	1.08	Sand	Sand
PSA_2917	No	Yes	NMBAQC	No	No	0.00	97.92	2.08	Sand	Sand
PSA_2918	Yes	Yes	NMBAQC	No	No	0.0	97.6	2.4	Sand	Sand
PSA_2912B	Yes	Yes	NMBAQC	No	No	0.00	99.20	0.80	Sand	Sand

NB: Decimal places as supplied by participant.

* Sediment description from Gradistat textural group based on final data supplied by participant.

PARTICIPANT DATA

Table 7. Raw sieve data (weight in grams) provided by participants for sediment distributed as PS87.

			Participant																
Phi interval	Microns	Benchmark Average	PSA_2901	PSA_2902	PSA_2903	PSA_2904	PSA_2905	PSA_2906	PSA_2908	PSA_2909	PSA_2910	PSA_2911	PSA_2912	PSA_2913	PSA_2914	PSA_2916	PSA_2917	PSA_2918	PSA_2912_B
Sieves Used		No	Yes [1]	No	No	Yes	Yes	n/p	n/p*	Yes	Yes [1]	n/p*	Yes	n/p	Yes	No	No	Yes	Yes
-6.5 to -6.0	>63000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-6.0 to -5.5	45000 - 63000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-5.5 to -5.0	31500 - 45000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-5.0 to -4.5	22400 - 31500	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-4.5 to -4.0	16000 - 22400	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-4.0 to -3.5	11200 - 16000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-3.5 to -3.0	8000 - 11200	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-3.0 to -2.5	5600 - 8000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-2.5 to -2.0	4000 - 5600	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-2.0 to -1.5	2800 - 4000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-1.5 to -1.0	2000 - 2800	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	-	-	0.00	0.00
-1.0 to -0.5	1400 - 2000	-	0.00	-	-	0.00	0.00	n/p	n/p*	0.00	0.00	n/p*	0.004	n/p	0.00	-	-	0.00	0.004
-0.5 to 0.0	1000 - 1400	-	0.00	-	-	0.06	0.63	n/p	n/p*	0.01	0.00	n/p*	0.015	n/p	0.34	-	-	0.02	0.015
	Total *	-	0.00	-	-	0.06	0.63	n/p	a/d	0.01	0.00	n/p*	0.019	n/p	0.34	-	-	0.02	0.019
Summary Data																			
< 0.00; >1 mm		-	0.00	-	-	0.06	0.63	n/p	n/p*	0.01	0.00	n/p*	0.019	n/p	0.34	-	-	0.02	0.019
> 0.00;	Base pan	-	9.84	-	-	2.45	-	n/p	n/p*	0.42	0.30	n/p*	1.387	n/p	-	-	-	0.59	1.387
<1 mm	Oven dried	-	132.31	-	-	97.95	161.33	n/p	n/p*	120.27	124.46	n/p*	153.940	n/p	-	-	-	126.22	153.940
Total Sample Weight		-	142.15	-	-	100.46	161.96	n/p	n/p*	120.70	124.76	n/p*	155.346	n/p	0.34	-	-	126.83	155.346

Yes [1] Sample was wet split at 1mm and greater than 1mm fraction oven dried but no material greater than 1mm was retained after dry sieving.

PARTICIPANT DATA

Table 8. Summary of final laser data for the participants for sediment distributed as PS87 with Gradistat output.

Microns	Benchmark Average	PSA_2901	PSA_2902	PSA_2903	PSA_2904	PSA_2905	PSA_2906	PSA_2908	PSA_2909
1400 - 2000	-	3.81	-	-	-	-	n/p	n/p*	-
1000 - 1400	-	17.72	-	-	-	-	n/p	n/p*	-
710 - 1000	46.29	32.04	33.04	38.12	25.90	36.34	n/p	n/p*	43.39
500 - 710	26.84	23.04	25.33	29.68	19.10	25.83	n/p	n/p*	27.27
355 - 500	5.60	5.86	11.91	13.84	8.82	10.29	n/p	n/p*	5.99
250 - 355	3.81	3.01	5.33	4.82	7.95	4.76	n/p	n/p*	4.00
180 - 250	6.64	5.92	6.36	4.44	13.34	7.82	n/p	n/p*	7.36
125 - 180	5.95	4.95	7.49	5.23	14.14	8.95	n/p	n/p*	6.47
90 - 125	2.13	1.70	5.01	3.24	7.48	5.00	n/p	n/p*	2.32
63 - 90	0.60	0.48	1.56	0.62	1.42	1.00	n/p	n/p*	0.64
44.19 - 63	0.23	0.18	0.01	0.00	0.00	0.00	n/p	n/p*	0.28
31.25 - 44.19	0.18	0.16	0.06	0.00	0.00	0.00	n/p	n/p*	0.21
22.097 - 31.25	0.19	0.16	0.48	0.00	0.03	0.00	n/p	n/p*	0.28
15.625 - 22.097	0.18	0.13	0.58	0.00	0.27	0.00	n/p	n/p*	0.20
11.049 - 15.625	0.21	0.14	0.54	0.00	0.31	0.00	n/p	n/p*	0.18
7.813 - 11.049	0.19	0.13	0.56	0.00	0.31	0.00	n/p	n/p*	0.22
5.524 - 7.813	0.17	0.11	0.59	0.00	0.33	0.00	n/p	n/p*	0.21
3.906 - 5.524	0.14	0.08	0.53	0.00	0.32	0.00	n/p	n/p*	0.17
2.762 - 3.906	0.10	0.05	0.38	0.00	0.22	0.00	n/p	n/p*	0.13
1.953 - 2.762	0.08	0.04	0.21	0.00	0.05	0.00	n/p	n/p*	0.11
1.381 - 1.953	0.08	0.04	0.01	0.00	0.00	0.00	n/p	n/p*	0.10
0.977 - 1.381	0.08	0.04	0.00	0.00	0.00	0.00	n/p	n/p*	0.10
0.691 - .0977	0.07	0.04	0.00	0.00	0.00	0.00	n/p	n/p*	0.09
0.488 - 0.691	0.06	0.04	0.00	0.00	0.00	0.00	n/p	n/p*	0.07
0.345 - 0.488	0.05	0.03	0.00	0.00	0.00	0.00	n/p	n/p*	0.06
0.244 - 0.345	0.04	0.03	0.00	0.00	0.00	0.00	n/p	n/p*	0.05
0.173 - 0.244	0.03	0.02	0.00	0.00	0.00	0.00	n/p	n/p*	0.04
0.122 - 0.173	0.02	0.02	0.00	0.00	0.00	0.00	n/p	n/p*	0.03
0.086 - 0.122	0.02	0.01	0.00	0.00	0.00	0.00	n/p	n/p*	0.02
0.061 - 0.086	0.01	0.01	0.00	0.00	0.00	0.00	n/p	n/p*	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00
0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	n/p	n/p*	100.00
GRADISTAT OUTPUTS									
MEAN:	671.58	623.19	424.20	541.45	361.23	454.03	n/p	n/p*	496.17
SORTING:	2.12	1.97	2.21	1.76	2.18	2.02	n/p	n/p*	1.96
SKEWNESS:	-0.70	-0.42	-0.54	-0.46	-0.25	-0.52	n/p	n/p*	-0.60
KURTOSIS:	3.61	1.49	0.94	1.24	0.67	0.87	n/p	n/p*	1.17
MODE:	Unimodal	Bimodal	Bimodal	Unimodal	Bimodal	Bimodal	n/p	n/p*	Bimodal
MODE 1 (µm):	853.5	853.5	853.5	853.5	853.5	853.5	n/p	n/p*	853.50
MODE 2 (µm):	-	213.4	150.9	-	150.9	150.9	n/p	n/p*	213.40

PARTICIPANT DATA

Table 8. Summary of final laser data for the participants for sediment distributed as PS87 with Gradistat output.

Microns	Benchmark Average	PSA_2910	PSA_2911	PSA_2912	PSA_2913	PSA_2914	PSA_2916	PSA_2917	PSA_2918	PSA_2912_B
1400 - 2000	-	-	n/p*	-	n/p	7.76	-	-	-	-
1000 - 1400	-	-	n/p*	-	n/p	16.40	-	-	-	-
710 - 1000	46.29	38.09	n/p*	37.44	n/p	21.28	31.83	45.90	28.65	26.87
500 - 710	26.84	28.12	n/p*	27.76	n/p	17.21	23.23	25.95	21.83	19.33
355 - 500	5.60	12.27	n/p*	12.18	n/p	9.36	10.17	5.45	10.01	9.15
250 - 355	3.81	4.55	n/p*	4.79	n/p	5.92	6.32	3.93	6.88	8.26
180 - 250	6.64	5.36	n/p*	5.86	n/p	7.37	10.06	7.28	10.79	13.29
125 - 180	5.95	6.36	n/p*	6.88	n/p	8.01	11.07	6.49	11.65	13.64
90 - 125	2.13	3.99	n/p*	4.23	n/p	5.16	6.10	2.31	6.39	7.23
63 - 90	0.60	0.99	n/p*	0.86	n/p	1.53	1.23	0.60	1.34	1.39
44.19 - 63	0.23	0.01	n/p*	0.00	n/p	0.01	0.00	0.23	0.01	0.00
31.25 - 44.19	0.18	0.02	n/p*	0.00	n/p	0.00	0.00	0.17	0.11	0.00
22.097 - 31.25	0.19	0.14	n/p*	0.00	n/p	0.00	0.00	0.19	0.45	0.00
15.625 - 22.097	0.18	0.10	n/p*	0.00	n/p	0.00	0.00	0.19	0.48	0.00
11.049 - 15.625	0.21	0.00	n/p*	0.00	n/p	0.00	0.00	0.20	0.37	0.00
7.813 - 11.049	0.19	0.00	n/p*	0.00	n/p	0.00	0.00	0.18	0.31	0.04
5.524 - 7.813	0.17	0.00	n/p*	0.00	n/p	0.00	0.00	0.16	0.30	0.23
3.906 - 5.524	0.14	0.00	n/p*	0.00	n/p	0.00	0.00	0.13	0.27	0.29
2.762 - 3.906	0.10	0.00	n/p*	0.00	n/p	0.00	0.00	0.09	0.14	0.26
1.953 - 2.762	0.08	0.00	n/p*	0.00	n/p	0.00	0.00	0.07	0.00	0.02
1.381 - 1.953	0.08	0.00	n/p*	0.00	n/p	0.00	0.00	0.07	0.00	0.00
0.977 - 1.381	0.08	0.00	n/p*	0.00	n/p	0.00	0.00	0.08	0.00	0.00
0.691 - .0977	0.07	0.00	n/p*	0.00	n/p	0.00	0.00	0.07	0.00	0.00
0.488 - 0.691	0.06	0.00	n/p*	0.00	n/p	0.00	0.00	0.06	0.00	0.00
0.345 - 0.488	0.05	0.00	n/p*	0.00	n/p	0.00	0.00	0.05	0.00	0.00
0.244 - 0.345	0.04	0.00	n/p*	0.00	n/p	0.00	0.00	0.04	0.00	0.00
0.173 - 0.244	0.03	0.00	n/p*	0.00	n/p	0.00	0.00	0.03	0.00	0.00
0.122 - 0.173	0.02	0.00	n/p*	0.00	n/p	0.00	0.00	0.02	0.00	0.00
0.086 - 0.122	0.02	0.00	n/p*	0.00	n/p	0.00	0.00	0.02	0.00	0.00
0.061 - 0.086	0.01	0.00	n/p*	0.00	n/p	0.00	0.00	0.01	0.00	0.00
0.043 - 0.061	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
0.01 - 0.043	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
Total	100.00	100.00	n/p*	100.00	n/p	100.00	100.00	100.00	100.00	100.00
GRADISTAT OUTPUTS										
MEAN:	671.58	498.57	n/p*	489.05	n/p	523.28	420.42	506.61	395.20	373.24
SORTING:	2.12	1.89	n/p*	1.91	n/p	2.37	2.09	1.93	2.17	2.15
SKEWNESS:	-0.70	-0.52	n/p*	-0.51	n/p	-0.33	-0.47	-0.62	-0.44	-0.28
KURTOSIS:	3.61	1.18	n/p*	1.13	n/p	0.91	0.72	1.19	0.71	0.67
MODE:	Unimodal	Bimodal	n/p*	Bimodal	n/p	Bimodal	Bimodal	Bimodal	Bimodal	Bimodal
MODE 1 (µm):	853.5	853.50	n/p*	853.50	n/p	853.50	853.50	853.50	853.50	853.50
MODE 2 (µm):	-	150.90	n/p*	150.90	n/p	150.90	150.90	213.40	150.90	150.90

Figure 4. Final sieve data (in percentages) provided by each participant for sediment distributed as PS87.

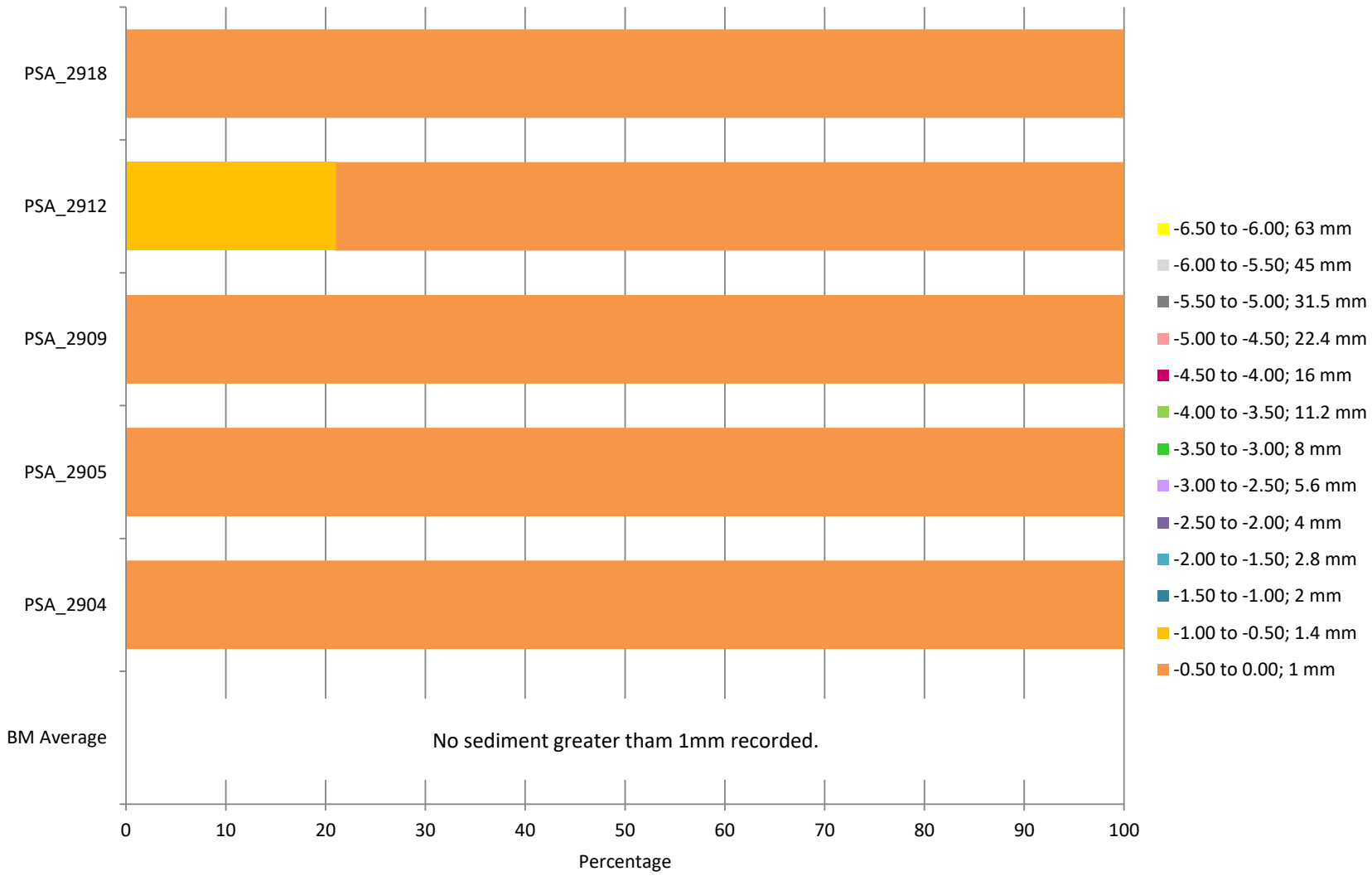

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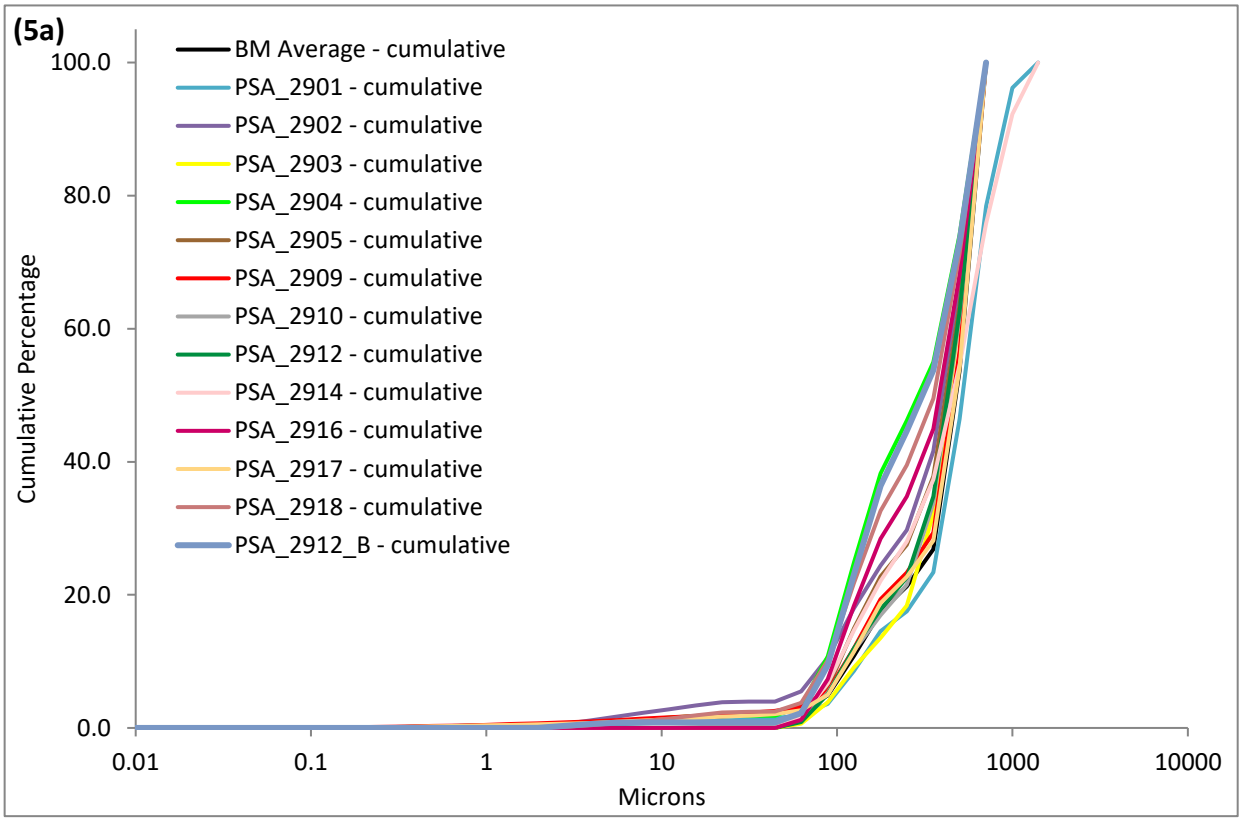
Figure 5. (a) Cumulative and (b) Differential final laser data provided by the participants and Benchmark average for sediment distributed as PS87.



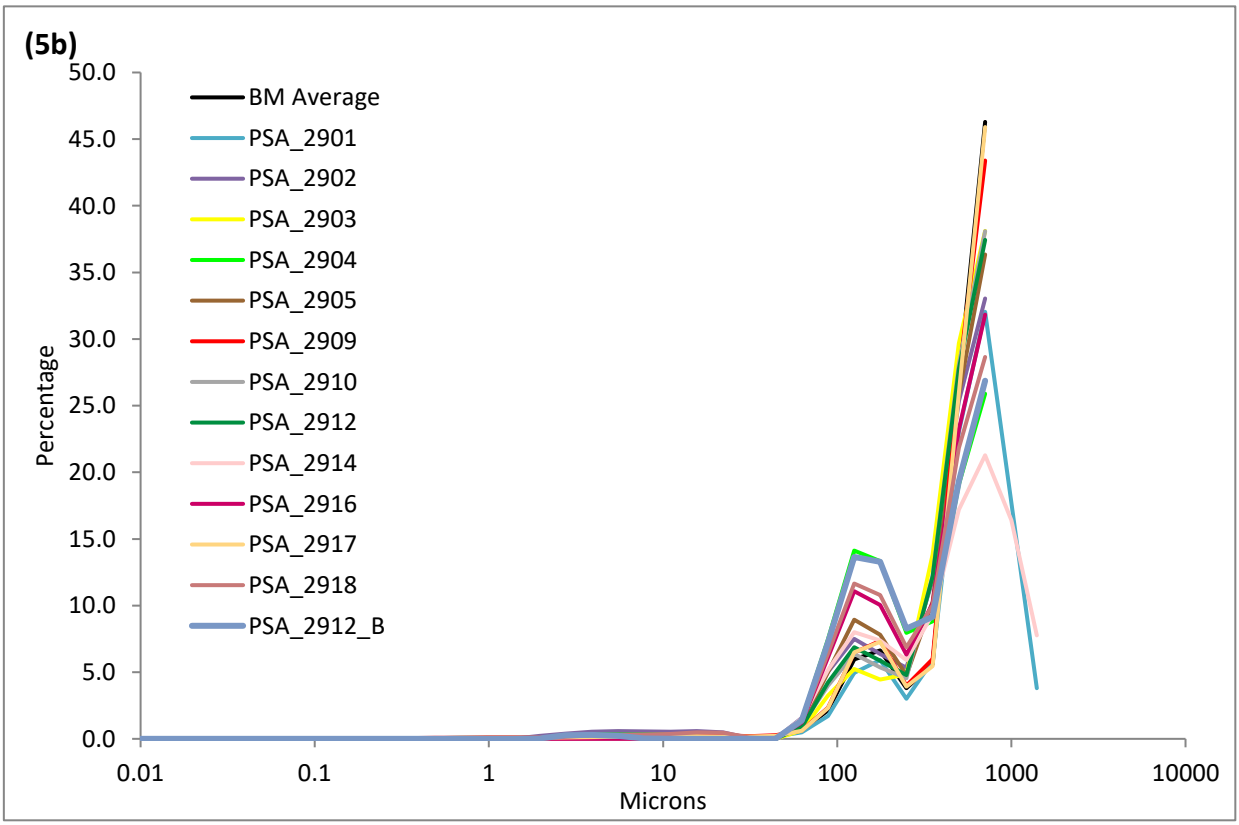


Figure 6. Particle size distribution curves from all participating laboratories and the Benchmark Average for sediment distributed as PS87.

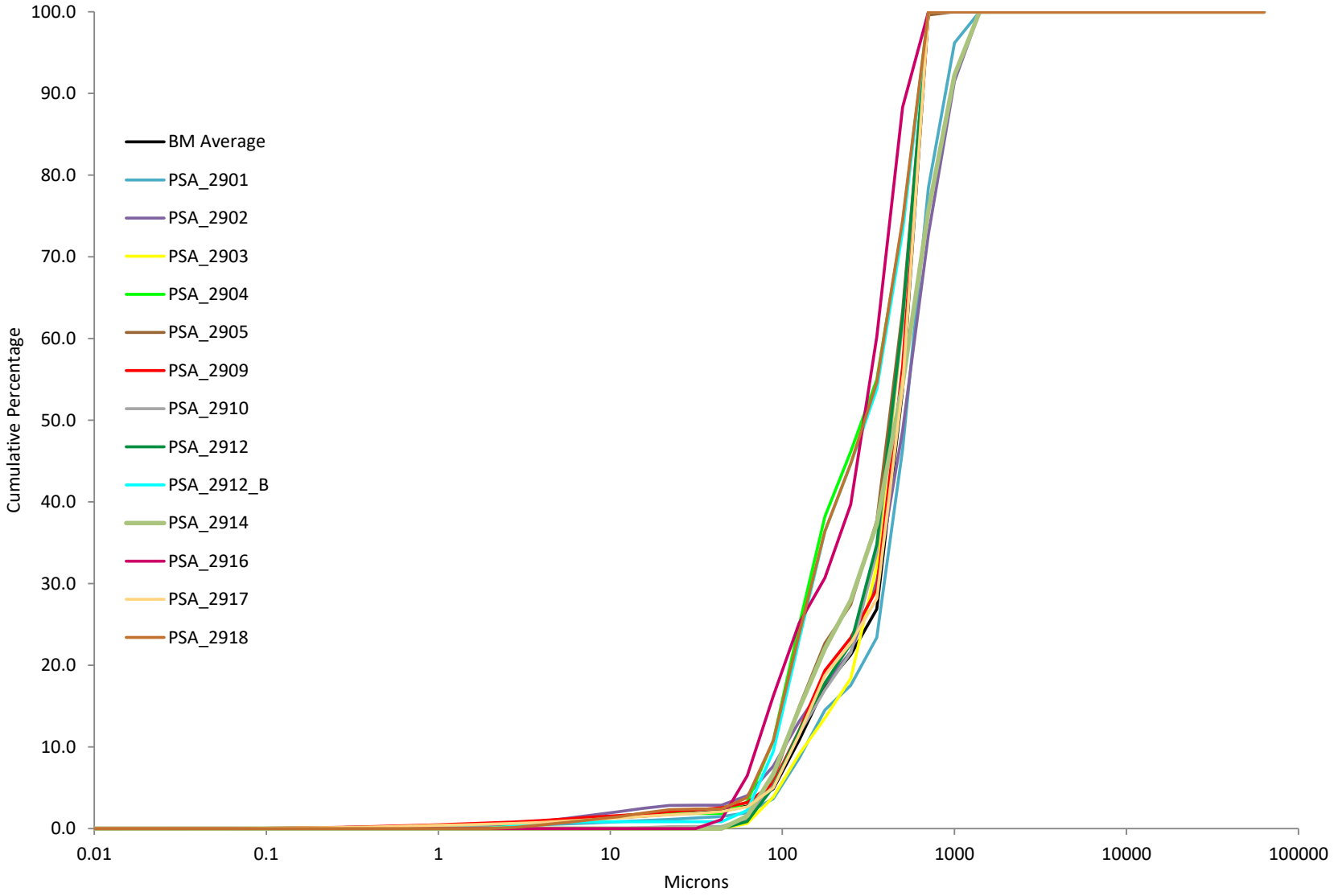


Figure 7. Bar chart showing the percentage gravel, sand, and mud recorded by each participating laboratory and the Benchmark Average for PS87.

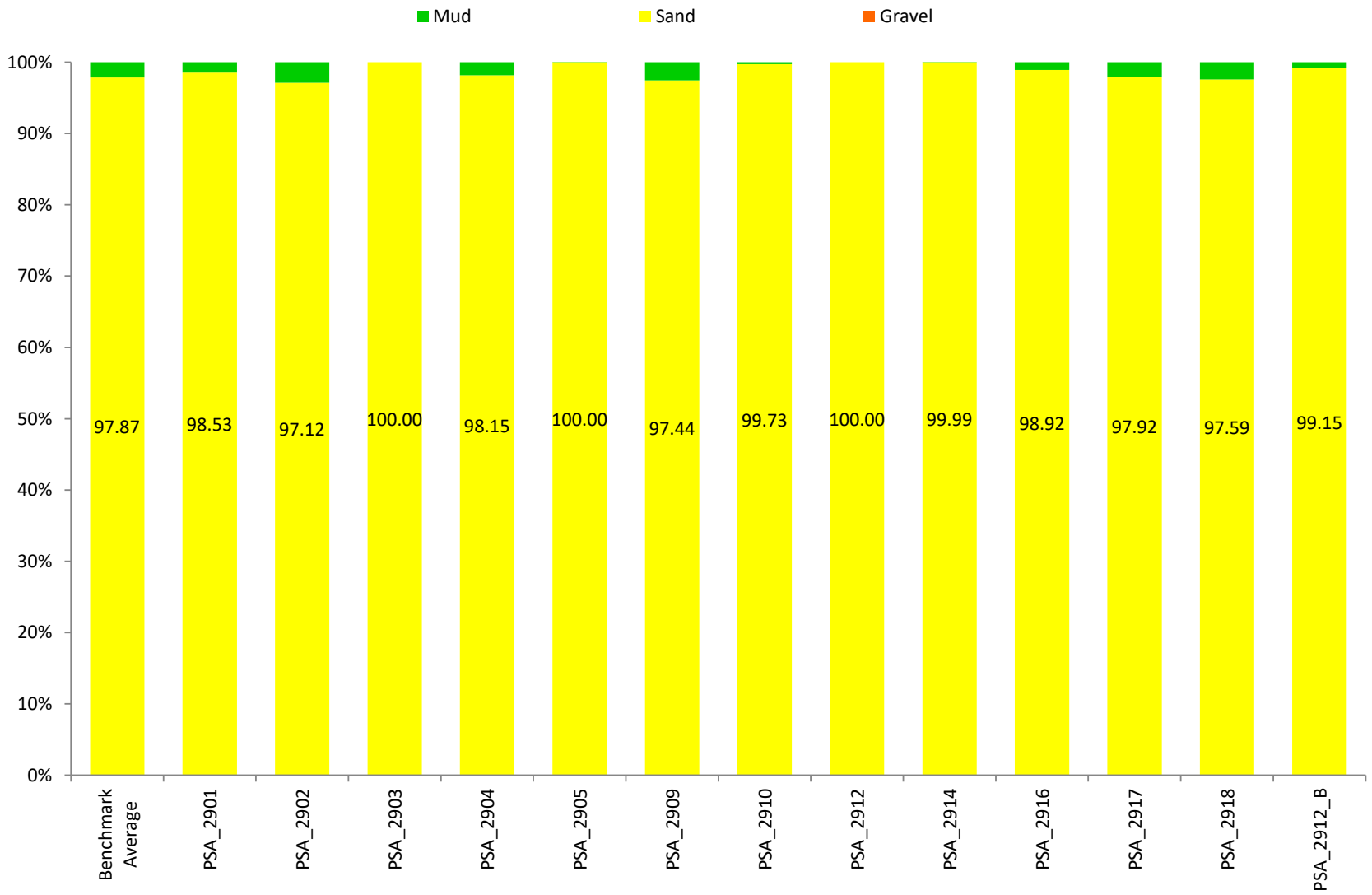


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Figure 8. Individual comparisons of participant sieve data with the Benchmark Average for sediment distributed as PS87.

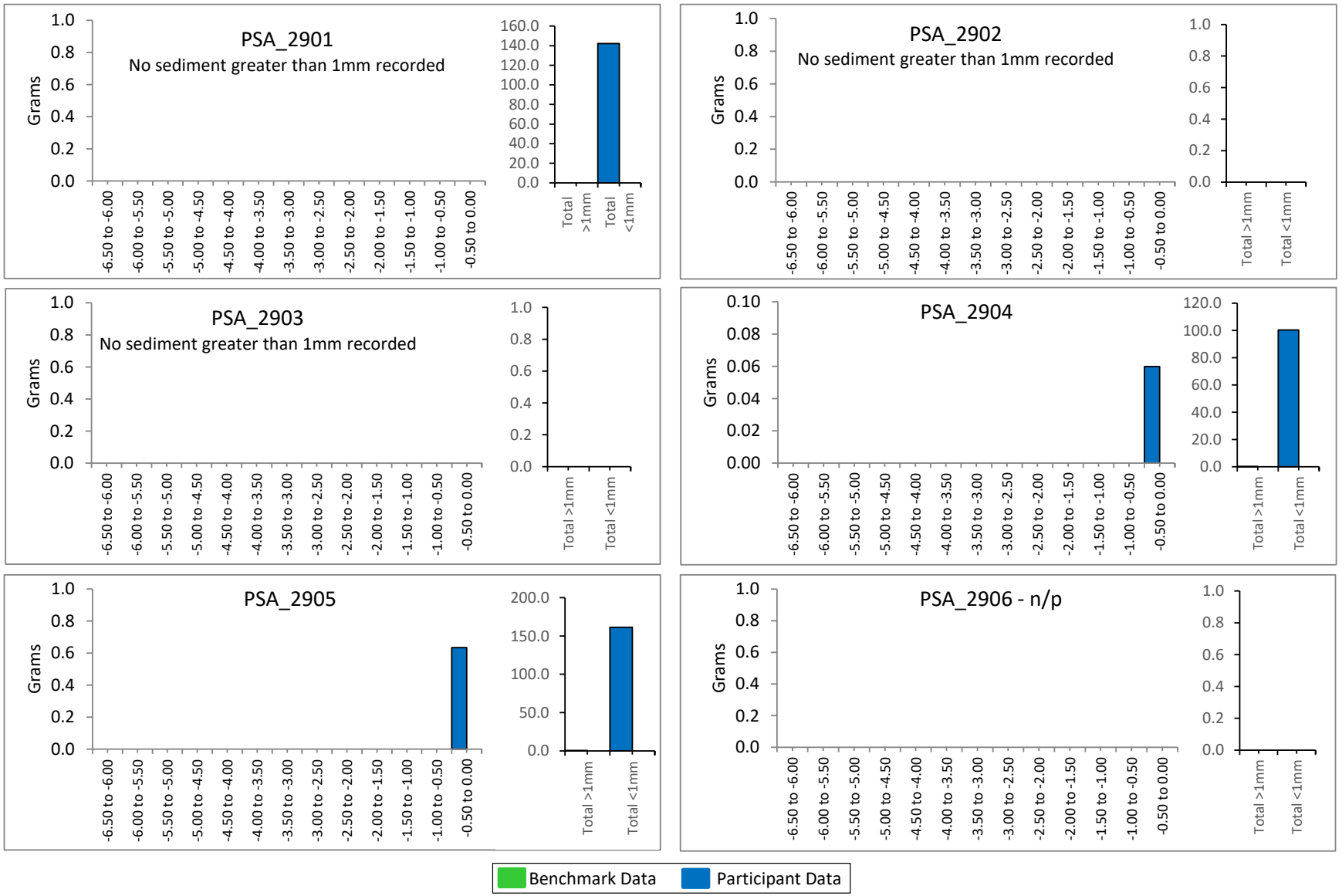
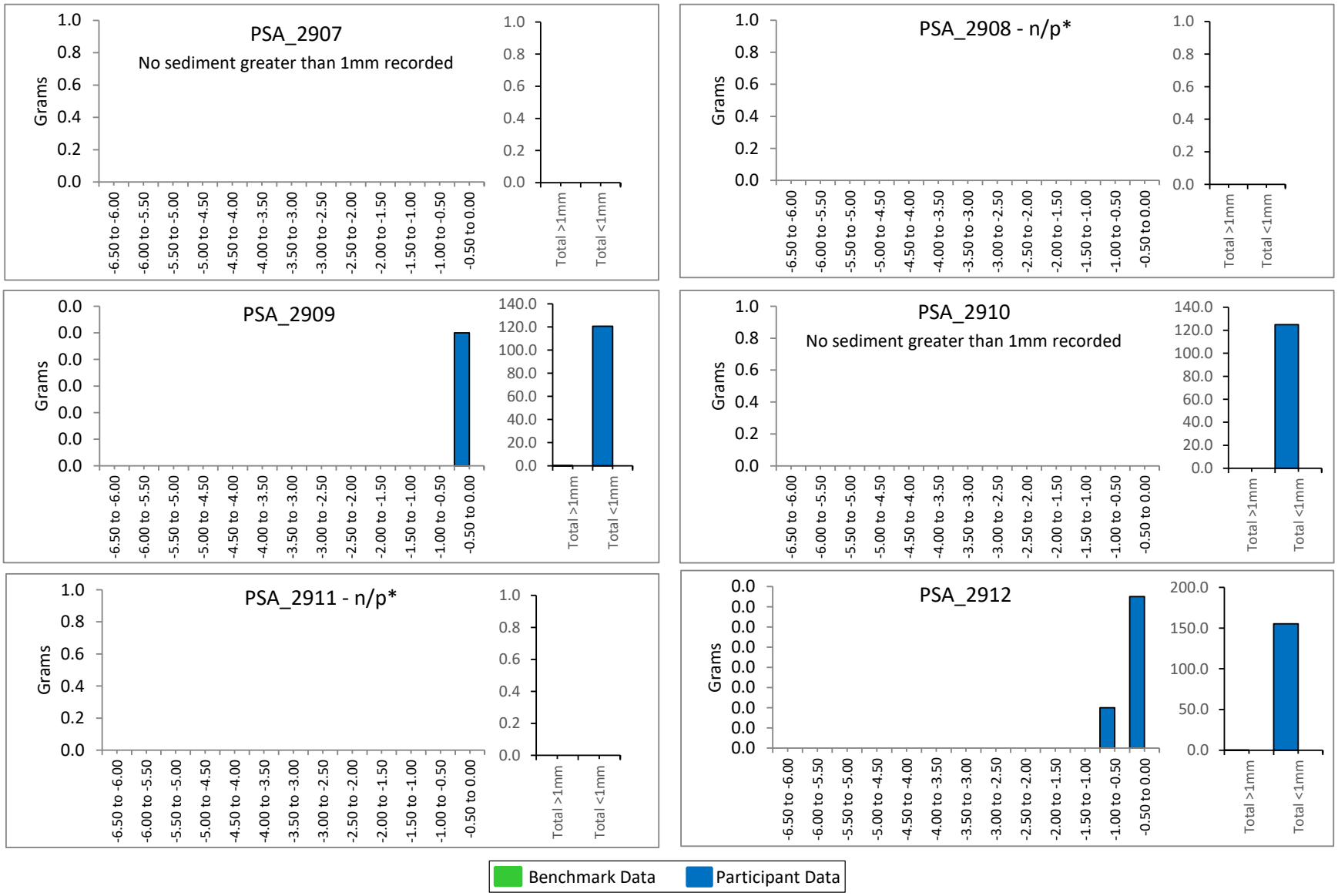


Figure 8. Individual comparisons of participant sieve data with the Benchmark Average for sediment distributed as PS87.



NMBAQC Particle Size Analysis
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Figure 8. Individual comparisons of participant sieve data with the Benchmark Average for sediment distributed as PS87.

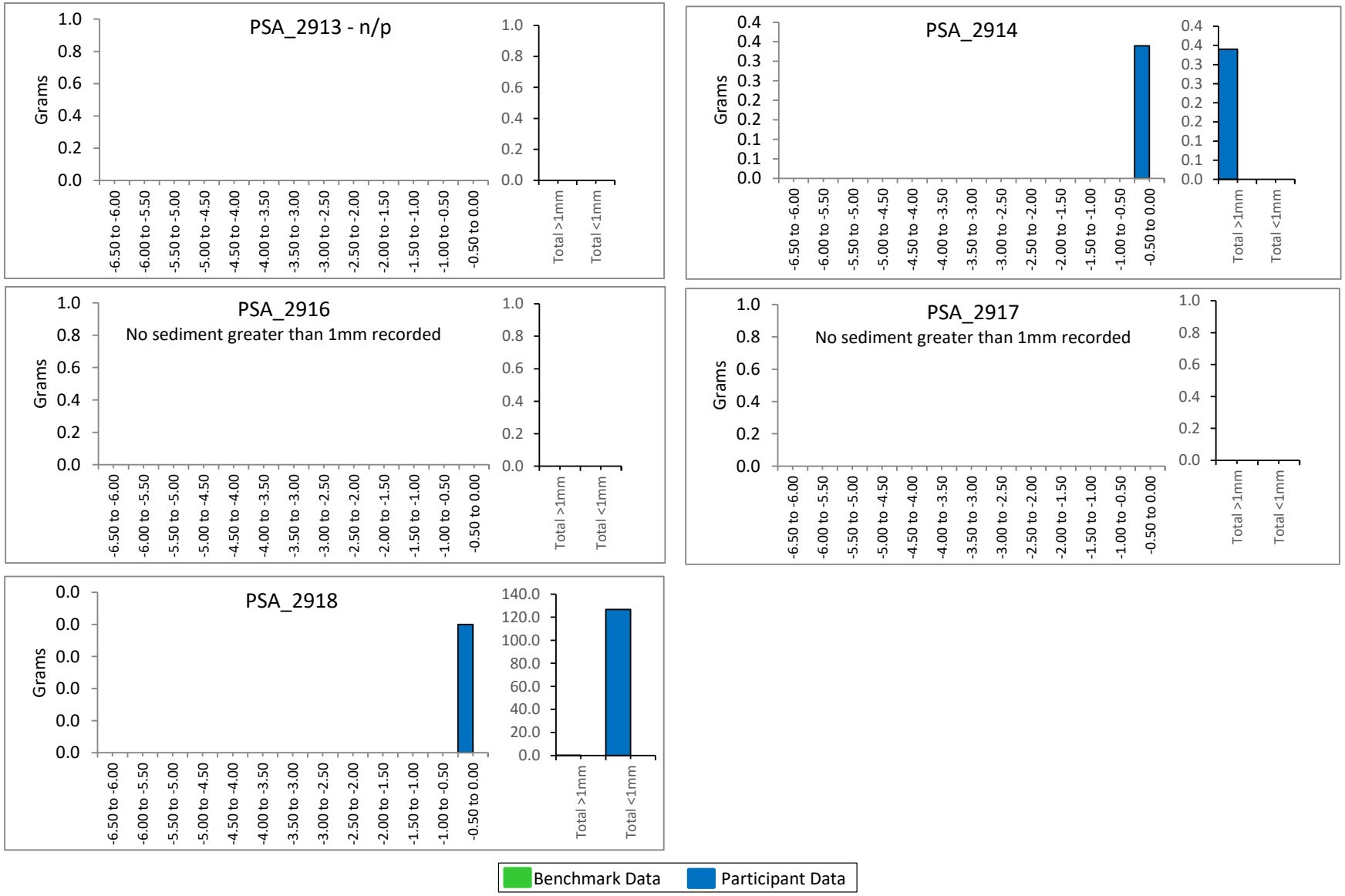
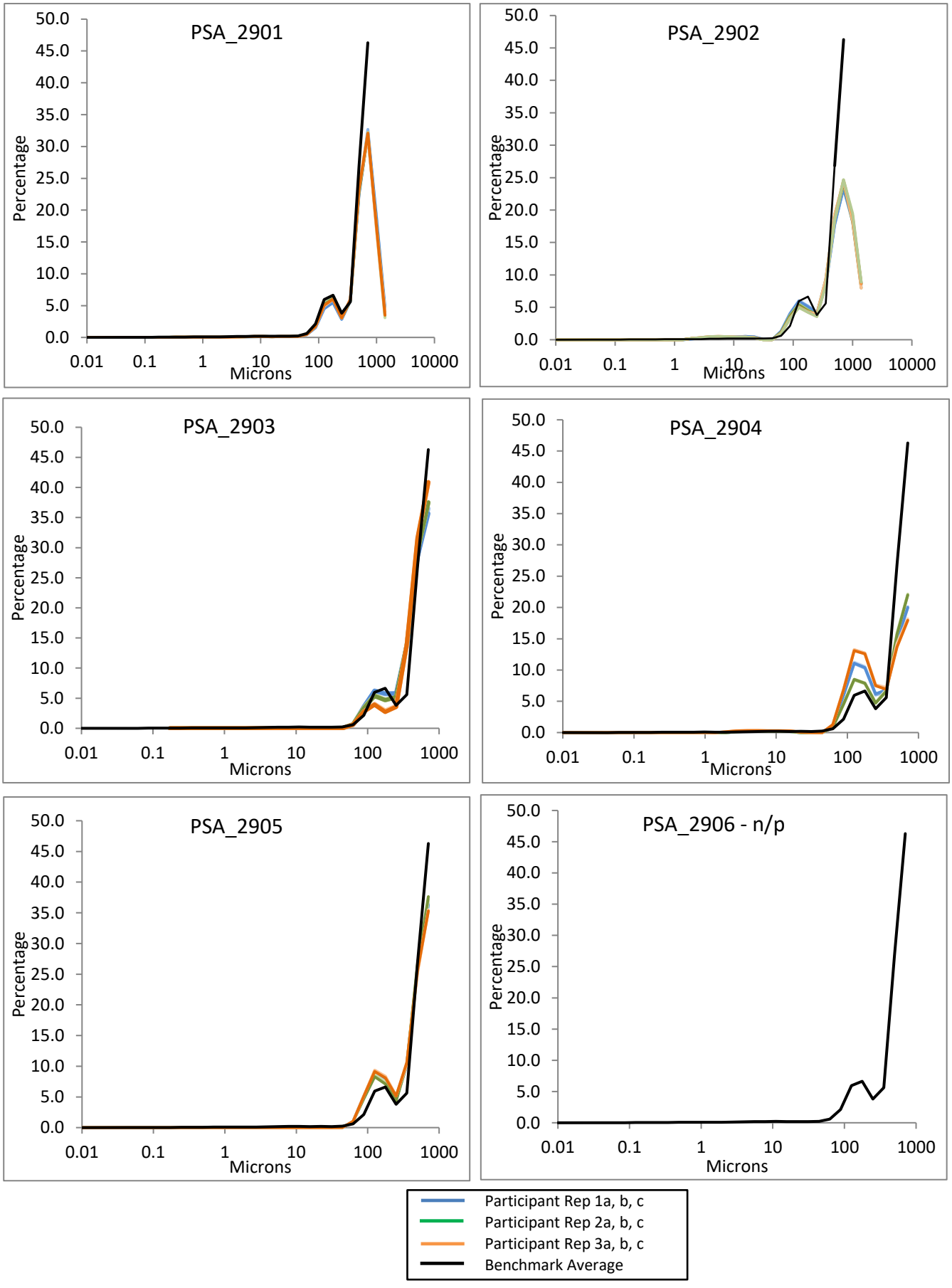


Figure 8. Comparison of participant laser replicate data with the Benchmark Average for sediment distributed as PS87.



NMBAQC Particle Size Analysis
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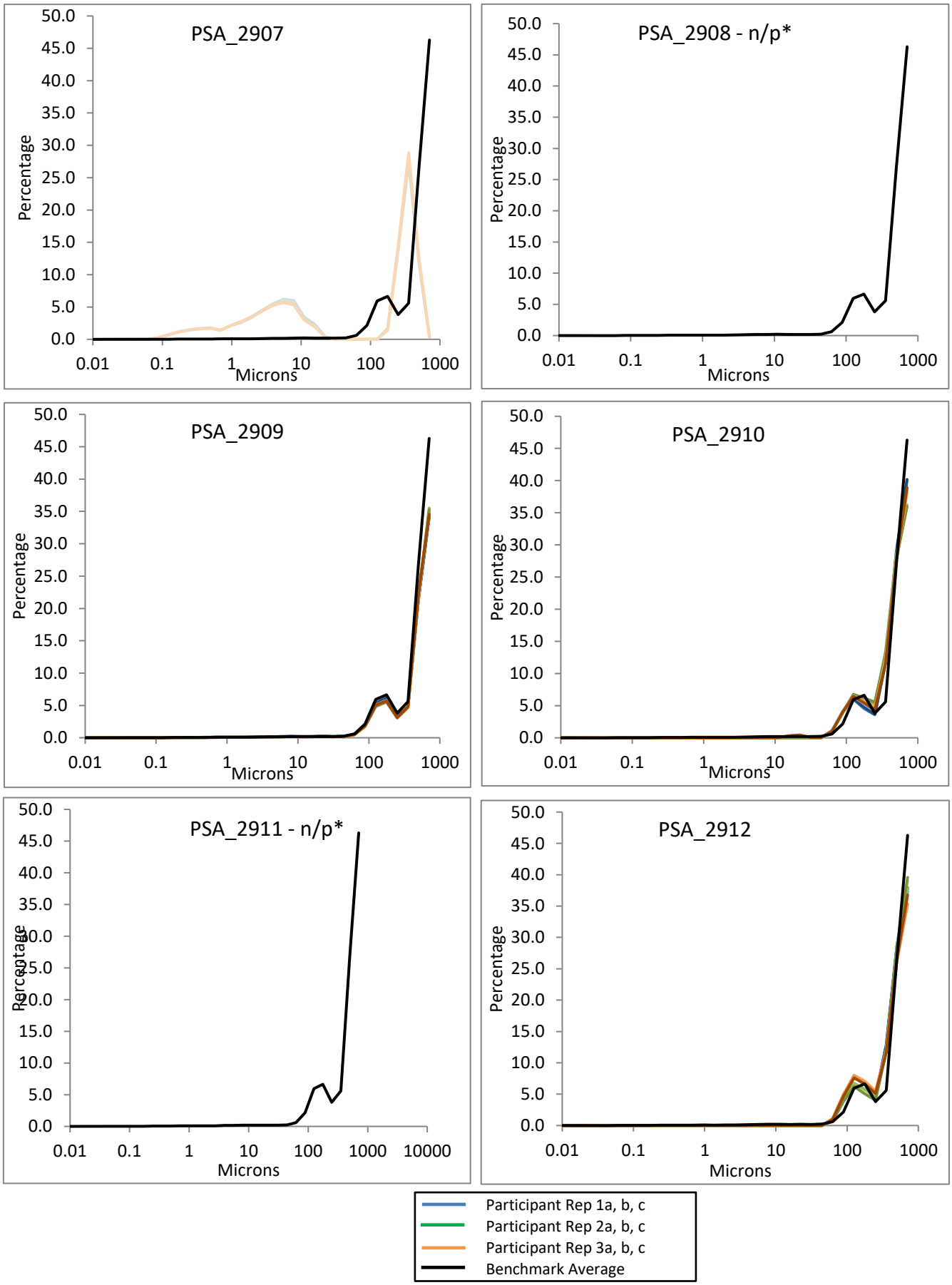
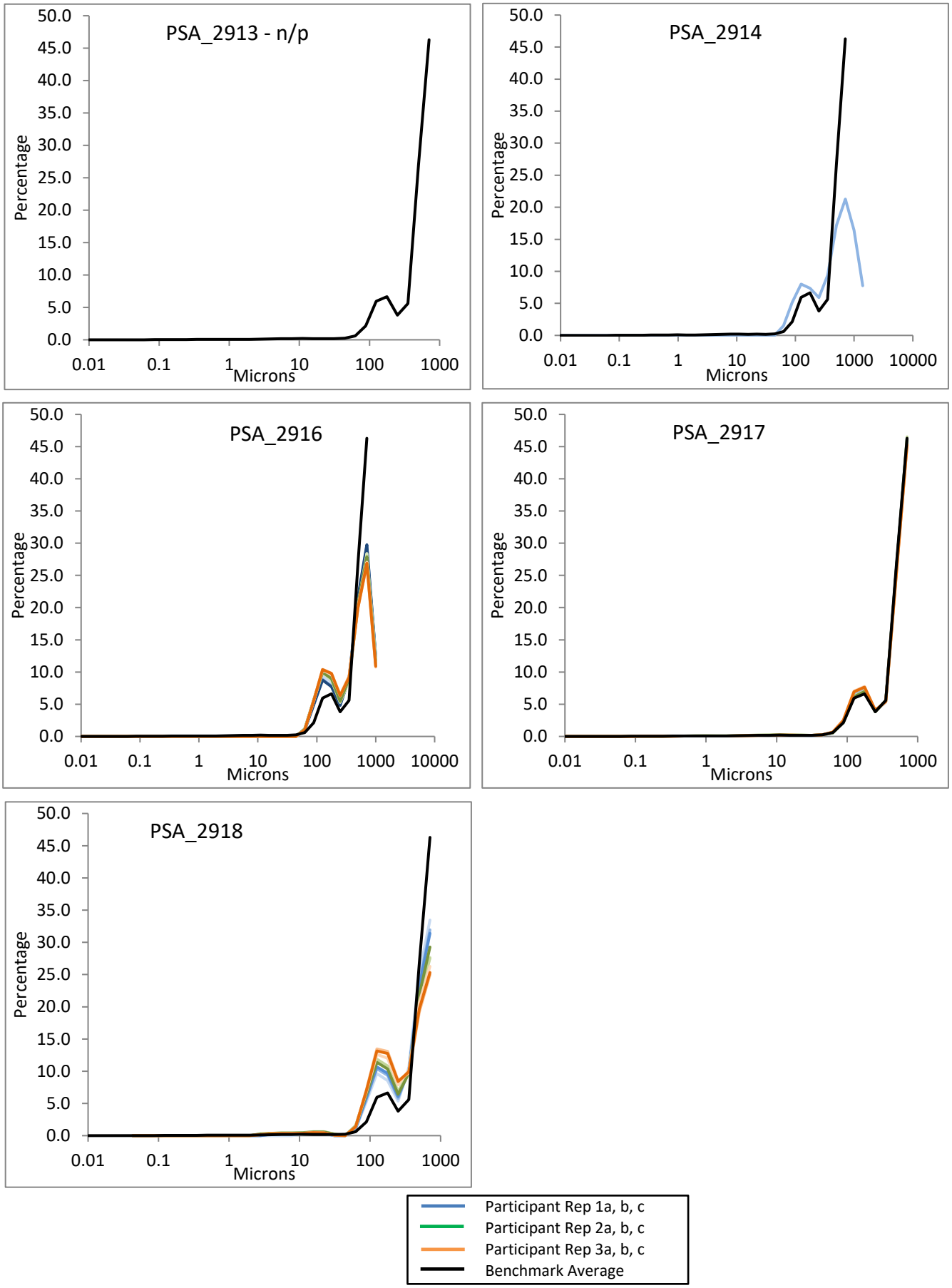
Figure 8. Comparison of participant laser replicate data with the Benchmark Average for sediment distributed as PS87.



NMBAQC Particle Size Analysis
2022/23 - PS87

Figure 8. Comparison of participant laser replicate data with the Benchmark Average for sediment distributed as PS87.



NMBAQC Particle Size Analysis
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APPENDICES

APPENDIX 1. Benchmark laser replicate data for sediment distributed as PS87.

	Replicate Sample 1								
	Subsample 1			Subsample 2			Subsample 3		
Microns	Run 1a	Run 1b	Run 1c	Run 2a	Run 2b	Run 2c	Run 3a	Run 3b	Run 3c
710 - 1000	46.55	46.32	46.53	46.10	45.97	46.25	46.31	46.00	45.88
500 - 710	27.57	27.41	27.17	26.90	26.92	26.72	26.77	26.97	27.07
355 - 500	5.61	5.77	5.77	5.59	5.60	5.58	5.67	5.70	5.78
250 - 355	3.76	3.77	3.73	3.76	3.80	3.77	3.74	3.71	3.66
180 - 250	6.24	6.26	6.23	6.95	6.93	6.88	6.80	6.80	6.76
125 - 180	5.55	5.55	5.49	6.21	6.19	6.13	6.02	5.99	5.96
90 - 125	2.01	2.00	1.98	2.21	2.20	2.18	2.12	2.12	2.09
63 - 90	0.57	0.60	0.61	0.56	0.56	0.56	0.56	0.56	0.55
44.19 - 63	0.26	0.27	0.28	0.18	0.19	0.20	0.20	0.21	0.21
31.25 - 44.19	0.21	0.24	0.26	0.13	0.13	0.14	0.15	0.16	0.16
22.097 - 31.25	0.21	0.23	0.25	0.15	0.16	0.16	0.17	0.18	0.19
15.625 - 22.097	0.19	0.21	0.23	0.14	0.15	0.15	0.16	0.17	0.18
11.049 - 15.625	0.20	0.22	0.24	0.16	0.17	0.18	0.19	0.20	0.21
7.813 - 11.049	0.18	0.20	0.21	0.15	0.16	0.17	0.18	0.19	0.20
5.524 - 7.813	0.16	0.17	0.18	0.14	0.15	0.16	0.17	0.18	0.19
3.906 - 5.524	0.13	0.14	0.15	0.11	0.12	0.13	0.14	0.15	0.16
2.762 - 3.906	0.09	0.10	0.11	0.08	0.09	0.09	0.10	0.11	0.12
1.953 - 2.762	0.07	0.07	0.08	0.06	0.06	0.07	0.08	0.08	0.09
1.381 - 1.953	0.06	0.07	0.07	0.06	0.06	0.07	0.07	0.08	0.08
0.977 - 1.381	0.07	0.07	0.08	0.06	0.07	0.07	0.08	0.08	0.09
0.691 - .0977	0.07	0.07	0.07	0.06	0.07	0.07	0.08	0.08	0.08
0.488 - 0.691	0.06	0.06	0.07	0.06	0.06	0.06	0.07	0.07	0.07
0.345 - 0.488	0.05	0.05	0.06	0.05	0.05	0.06	0.06	0.06	0.06
0.244 - 0.345	0.04	0.04	0.05	0.04	0.04	0.05	0.05	0.05	0.05
0.173 - 0.244	0.03	0.03	0.04	0.03	0.04	0.04	0.04	0.04	0.04
0.122 - 0.173	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.086 - 0.122	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

d10	173.81	171.58	170.66	170.02	169.23	169.04	169.68	168.68	168.27
d50	676.97	674.84	676.44	672.36	671.28	673.49	674.02	671.63	670.71
d90	928.22	927.87	928.20	927.55	927.35	927.78	927.86	927.40	927.22

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	172.02	1.62	0.94	169.43	0.52	0.31	168.88	0.72	0.43
d50	676.08	1.11	0.16	672.37	1.10	0.16	672.12	1.71	0.25
d90	928.10	0.19	0.02	927.56	0.21	0.02	927.49	0.33	0.04

APPENDIX 1. Benchmark laser replicate data for sediment distributed as PS87.

	Replicate Sample 2								
	Subsample 1			Subsample 2			Subsample 3		
Microns	Run 1a	Run 1b	Run 1c	Run 2a	Run 2b	Run 2c	Run 3a	Run 3b	Run 3c
710 - 1000	46.80	46.69	47.03	46.74	46.66	46.52	46.73	46.58	46.57
500 - 710	26.95	27.12	26.91	27.16	26.90	26.78	27.03	27.22	27.21
355 - 500	5.59	5.58	5.61	5.68	5.57	5.73	5.51	5.61	5.55
250 - 355	3.82	3.80	3.79	3.76	3.81	3.76	3.72	3.68	3.70
180 - 250	6.47	6.39	6.21	6.19	6.27	6.23	6.61	6.50	6.47
125 - 180	5.80	5.72	5.60	5.52	5.60	5.56	5.96	5.87	5.82
90 - 125	2.09	2.06	2.01	1.98	1.99	1.99	2.12	2.10	2.07
63 - 90	0.60	0.60	0.61	0.62	0.63	0.64	0.54	0.55	0.55
44.19 - 63	0.22	0.23	0.25	0.25	0.27	0.30	0.21	0.22	0.23
31.25 - 44.19	0.18	0.19	0.22	0.23	0.25	0.27	0.15	0.17	0.19
22.097 - 31.25	0.18	0.20	0.22	0.23	0.25	0.29	0.15	0.17	0.18
15.625 - 22.097	0.17	0.18	0.20	0.21	0.23	0.26	0.15	0.16	0.18
11.049 - 15.625	0.18	0.20	0.22	0.24	0.26	0.29	0.17	0.18	0.20
7.813 - 11.049	0.16	0.18	0.19	0.21	0.23	0.25	0.15	0.17	0.18
5.524 - 7.813	0.14	0.15	0.17	0.18	0.20	0.22	0.13	0.15	0.16
3.906 - 5.524	0.12	0.13	0.14	0.15	0.17	0.18	0.11	0.12	0.13
2.762 - 3.906	0.08	0.09	0.10	0.11	0.12	0.13	0.08	0.09	0.09
1.953 - 2.762	0.06	0.07	0.08	0.08	0.09	0.09	0.06	0.06	0.07
1.381 - 1.953	0.06	0.07	0.08	0.08	0.09	0.09	0.06	0.06	0.07
0.977 - 1.381	0.07	0.07	0.08	0.08	0.09	0.10	0.06	0.07	0.08
0.691 - .0977	0.06	0.07	0.07	0.08	0.08	0.09	0.06	0.07	0.07
0.488 - 0.691	0.06	0.06	0.06	0.07	0.07	0.07	0.06	0.06	0.06
0.345 - 0.488	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
0.244 - 0.345	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
0.173 - 0.244	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.122 - 0.173	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03
0.086 - 0.122	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

d10	172.85	172.32	171.91	171.53	168.37	166.33	172.78	172.41	171.55
d50	678.54	677.73	680.45	678.17	677.22	675.84	677.99	676.85	676.78
d90	928.60	928.43	928.92	928.50	928.38	928.17	928.49	928.26	928.25

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	172.36	0.47	0.27	168.74	2.62	1.55	172.25	0.63	0.37
d50	678.91	1.40	0.21	677.08	1.17	0.17	677.20	0.68	0.10
d90	928.65	0.25	0.03	928.35	0.17	0.02	928.33	0.14	0.01

APPENDIX 1. Benchmark laser replicate data for sediment distributed as PS87.

	Replicate Sample 3								
	Subsample 1			Subsample 2			Subsample 3		
Microns	Run 1a	Run 1b	Run 1c	Run 2a	Run 2b	Run 2c	Run 3a	Run 3b	Run 3c
710 - 1000	46.60	46.93	46.58	46.72	46.47	46.69	45.89	45.95	45.82
500 - 710	27.20	27.11	27.17	27.35	27.22	27.01	27.40	27.62	27.42
355 - 500	5.64	5.54	5.68	5.57	5.65	5.72	5.81	5.79	5.89
250 - 355	3.67	3.63	3.64	3.59	3.65	3.57	3.81	3.72	3.76
180 - 250	6.36	6.25	6.29	6.17	6.20	6.18	6.36	6.27	6.29
125 - 180	5.82	5.74	5.72	5.61	5.65	5.56	5.75	5.60	5.62
90 - 125	2.12	2.10	2.09	2.05	2.05	2.02	2.08	2.04	2.03
63 - 90	0.66	0.65	0.66	0.66	0.67	0.67	0.64	0.63	0.63
44.19 - 63	0.22	0.23	0.24	0.24	0.25	0.26	0.23	0.24	0.25
31.25 - 44.19	0.17	0.17	0.19	0.20	0.21	0.22	0.19	0.20	0.22
22.097 - 31.25	0.16	0.18	0.18	0.19	0.21	0.23	0.18	0.20	0.20
15.625 - 22.097	0.16	0.17	0.17	0.19	0.20	0.21	0.18	0.19	0.20
11.049 - 15.625	0.18	0.19	0.20	0.22	0.23	0.25	0.21	0.23	0.25
7.813 - 11.049	0.17	0.18	0.19	0.20	0.22	0.23	0.20	0.21	0.23
5.524 - 7.813	0.15	0.16	0.17	0.18	0.20	0.21	0.19	0.20	0.21
3.906 - 5.524	0.13	0.14	0.15	0.16	0.17	0.18	0.16	0.17	0.19
2.762 - 3.906	0.09	0.10	0.11	0.11	0.12	0.13	0.12	0.12	0.13
1.953 - 2.762	0.07	0.07	0.08	0.08	0.09	0.10	0.08	0.09	0.10
1.381 - 1.953	0.06	0.07	0.08	0.08	0.09	0.09	0.08	0.09	0.09
0.977 - 1.381	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.09	0.10
0.691 - .0977	0.07	0.07	0.08	0.08	0.08	0.09	0.08	0.09	0.09
0.488 - 0.691	0.06	0.06	0.07	0.07	0.07	0.08	0.07	0.07	0.08
0.345 - 0.488	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
0.244 - 0.345	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
0.173 - 0.244	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
0.122 - 0.173	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.086 - 0.122	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

d10	171.33	171.10	169.99	170.24	168.17	167.88	169.20	169.73	168.02
d50	677.08	679.77	676.82	678.21	675.94	677.65	671.22	671.96	670.61
d90	928.30	928.78	928.26	928.47	928.10	928.44	927.23	927.32	927.12

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	170.81	0.72	0.42	168.77	1.29	0.76	168.98	0.87	0.52
d50	677.89	1.63	0.24	677.27	1.18	0.17	671.26	0.68	0.10
d90	928.45	0.29	0.03	928.34	0.20	0.02	927.22	0.10	0.01

APPENDIX 1. Benchmark laser replicate data for sediment distributed as PS87.

	Replicate Sample 4								
	Subsample 1			Subsample 2			Subsample 3		
Microns	Run 1a	Run 1b	Run 1c	Run 2a	Run 2b	Run 2c	Run 3a	Run 3b	Run 3c
710 - 1000	45.74	45.88	46.05	45.80	45.64	45.82	46.47	47.11	47.39
500 - 710	26.78	26.71	26.76	26.81	26.84	26.41	26.43	26.28	26.22
355 - 500	5.68	5.63	5.65	5.60	5.67	5.70	5.53	5.35	5.36
250 - 355	3.92	3.91	3.84	3.90	3.85	3.91	3.84	3.77	3.77
180 - 250	6.98	6.91	6.82	6.85	6.84	6.85	6.87	6.70	6.61
125 - 180	6.28	6.26	6.11	6.13	6.12	6.12	6.23	6.11	5.96
90 - 125	2.21	2.18	2.13	2.13	2.14	2.15	2.20	2.16	2.12
63 - 90	0.59	0.62	0.63	0.61	0.58	0.56	0.61	0.59	0.61
44.19 - 63	0.22	0.16	0.15	0.20	0.28	0.34	0.19	0.24	0.19
31.25 - 44.19	0.13	0.18	0.22	0.21	0.18	0.14	0.18	0.14	0.16
22.097 - 31.25	0.18	0.19	0.18	0.17	0.18	0.20	0.16	0.18	0.18
15.625 - 22.097	0.17	0.16	0.16	0.18	0.20	0.23	0.16	0.18	0.18
11.049 - 15.625	0.18	0.19	0.21	0.23	0.24	0.25	0.21	0.19	0.20
7.813 - 11.049	0.16	0.17	0.19	0.21	0.22	0.23	0.17	0.17	0.18
5.524 - 7.813	0.14	0.15	0.16	0.18	0.19	0.20	0.13	0.15	0.16
3.906 - 5.524	0.11	0.12	0.14	0.15	0.16	0.17	0.11	0.13	0.13
2.762 - 3.906	0.08	0.09	0.10	0.11	0.11	0.12	0.08	0.09	0.09
1.953 - 2.762	0.06	0.07	0.07	0.08	0.09	0.09	0.06	0.07	0.07
1.381 - 1.953	0.06	0.07	0.07	0.08	0.09	0.09	0.06	0.07	0.07
0.977 - 1.381	0.07	0.07	0.08	0.08	0.09	0.10	0.07	0.07	0.08
0.691 - .0977	0.06	0.07	0.07	0.08	0.08	0.09	0.06	0.06	0.07
0.488 - 0.691	0.05	0.06	0.06	0.06	0.07	0.07	0.05	0.05	0.06
0.345 - 0.488	0.04	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.05
0.244 - 0.345	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.04
0.173 - 0.244	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03
0.122 - 0.173	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.086 - 0.122	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

d10	168.24	167.60	168.23	166.64	165.51	164.09	168.45	169.00	170.14
d50	669.09	670.24	671.74	669.65	668.31	669.26	675.01	680.56	683.02
d90	927.00	927.22	927.47	927.09	926.84	927.12	928.10	929.04	929.45

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	168.02	0.36	0.22	165.41	1.28	0.77	169.20	0.87	0.51
d50	670.36	1.33	0.20	669.07	0.69	0.10	679.53	4.10	0.60
d90	927.23	0.23	0.03	927.02	0.15	0.02	928.86	0.69	0.07

APPENDIX 1. Benchmark laser replicate data for sediment distributed as PS87.

	Replicate Sample 5								
	Subsample 1			Subsample 2			Subsample 3		
Microns	Run 1a	Run 1b	Run 1c	Run 2a	Run 2b	Run 2c	Run 3a	Run 3b	Run 3c
710 - 1000	46.23	46.39	46.31	46.76	46.31	46.57	44.53	45.41	44.92
500 - 710	26.49	26.31	26.23	26.07	26.22	26.16	26.48	25.78	26.36
355 - 500	5.43	5.35	5.54	5.40	5.49	5.47	5.46	5.80	5.33
250 - 355	3.88	3.89	3.91	3.82	3.88	3.84	4.18	4.57	4.17
180 - 250	7.03	6.99	6.96	6.91	6.93	6.83	7.55	7.11	7.40
125 - 180	6.27	6.27	6.20	6.10	6.10	5.98	6.83	6.49	6.69
90 - 125	2.26	2.24	2.21	2.18	2.18	2.14	2.55	2.40	2.49
63 - 90	0.58	0.61	0.60	0.59	0.59	0.59	0.64	0.62	0.65
44.19 - 63	0.21	0.20	0.21	0.22	0.23	0.24	0.20	0.20	0.21
31.25 - 44.19	0.14	0.15	0.16	0.16	0.17	0.19	0.13	0.14	0.15
22.097 - 31.25	0.15	0.16	0.17	0.18	0.19	0.20	0.14	0.14	0.15
15.625 - 22.097	0.15	0.16	0.16	0.17	0.18	0.20	0.15	0.15	0.16
11.049 - 15.625	0.17	0.19	0.20	0.21	0.22	0.24	0.17	0.17	0.19
7.813 - 11.049	0.16	0.17	0.18	0.19	0.21	0.22	0.16	0.16	0.18
5.524 - 7.813	0.15	0.16	0.17	0.18	0.20	0.22	0.14	0.15	0.16
3.906 - 5.524	0.13	0.14	0.15	0.16	0.17	0.19	0.11	0.12	0.14
2.762 - 3.906	0.09	0.10	0.10	0.11	0.12	0.13	0.08	0.09	0.10
1.953 - 2.762	0.06	0.07	0.08	0.08	0.09	0.09	0.06	0.07	0.07
1.381 - 1.953	0.07	0.07	0.08	0.08	0.09	0.10	0.06	0.07	0.07
0.977 - 1.381	0.07	0.08	0.08	0.09	0.10	0.10	0.07	0.07	0.08
0.691 - .0977	0.07	0.07	0.08	0.08	0.09	0.09	0.07	0.07	0.08
0.488 - 0.691	0.06	0.06	0.07	0.07	0.07	0.07	0.06	0.06	0.07
0.345 - 0.488	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.06
0.244 - 0.345	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05
0.173 - 0.244	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
0.122 - 0.173	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03
0.086 - 0.122	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

d10	167.81	166.67	166.66	166.73	165.46	165.55	161.40	164.62	160.87
d50	672.98	674.19	673.37	677.23	673.40	675.64	658.17	664.73	661.33
d90	927.74	927.99	927.86	928.54	927.87	928.26	925.09	926.49	925.72

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	167.04	0.66	0.40	165.91	0.71	0.43	162.30	2.03	1.25
d50	673.51	0.62	0.09	675.42	1.93	0.29	661.41	3.28	0.50
d90	927.86	0.12	0.01	928.22	0.34	0.04	925.77	0.70	0.08

APPENDIX 2. Gradistat output of size categories based on final merged data provided by each participant and the Benchmark Average for sediment distributed as PS87 (used to create Figure 7).

	BM Average	PSA_2901	PSA_2902	PSA_2903	PSA_2904	PSA_2905	PSA_2906	PSA_2908	PSA_2909	PSA_2910
VERY COARSE GRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00	0.00
COARSE GRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00	0.00
MEDIUM GRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00	0.00
FINE GRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00	0.00
VERY FINE GRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00	0.00
VERY COARSE SAND	0.00	21.53	27.22	0.00	0.06	0.39	n/p	n/p*	0.01	0.00
COARSE SAND	73.13	55.08	42.48	67.80	44.97	61.94	n/p	n/p*	70.65	66.21
MEDIUM SAND	9.41	8.87	12.55	18.66	16.76	14.99	n/p	n/p*	9.99	16.82
FINE SAND	12.59	10.87	10.08	9.67	27.46	16.70	n/p	n/p*	13.83	11.72
VERY FINE SAND	2.74	2.18	4.78	3.87	8.90	5.98	n/p	n/p*	2.96	4.98
VERY COARSE SILT	0.41	0.34	0.05	0.00	0.00	0.00	n/p	n/p*	0.49	0.02
COARSE SILT	0.37	0.29	0.77	0.00	0.30	0.00	n/p	n/p*	0.48	0.24
MEDIUM SILT	0.40	0.27	0.80	0.00	0.62	0.00	n/p	n/p*	0.41	0.00
FINE SILT	0.31	0.19	0.81	0.00	0.65	0.00	n/p	n/p*	0.37	0.00
VERY FINE SILT	0.18	0.09	0.43	0.00	0.27	0.00	n/p	n/p*	0.24	0.00
CLAY	0.47	0.29	0.01	0.00	0.00	0.00	n/p	n/p*	0.58	0.00

GRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	n/p	n/p*	0.00	0.00
SAND	97.87	98.53	97.12	100.00	98.15	100.00	n/p	n/p*	97.44	99.73
SILT	1.66	1.18	2.87	0.00	1.85	0.00	n/p	n/p*	1.98	0.27
CLAY	0.47	0.29	0.01	0.00	0.00	0.00	n/p	n/p*	0.58	0.00

APPENDIX 2. Gradistat output of size categories based on final merged data provided by each participant and the Benchmark Average for sediment distributed as PS87 (used to create Figure 7).

	BM Average	PSA_2911	PSA_2912	PSA_2913	PSA_2914	PSA_2916	PSA_2917	PSA_2918	PSA_2912_B
VERY COARSE GRAVEL	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
COARSE GRAVEL	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
MEDIUM GRAVEL	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
FINE GRAVEL	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
VERY FINE GRAVEL	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
VERY COARSE SAND	0.00	n/p*	0.01	n/p	24.32	0.00	0.00	0.02	0.01
COARSE SAND	73.13	n/p*	65.20	n/p	38.40	39.79	71.86	45.36	46.20
MEDIUM SAND	9.41	n/p*	16.97	n/p	15.25	29.51	9.38	18.20	17.40
FINE SAND	12.59	n/p*	12.73	n/p	15.34	14.46	13.78	25.68	26.93
VERY FINE SAND	2.74	n/p*	5.09	n/p	6.68	15.16	2.91	8.33	8.61
VERY COARSE SILT	0.41	n/p*	0.00	n/p	0.01	1.08	0.40	0.08	0.00
COARSE SILT	0.37	n/p*	0.00	n/p	0.00	0.00	0.38	0.88	0.00
MEDIUM SILT	0.40	n/p*	0.00	n/p	0.00	0.00	0.38	0.69	0.04
FINE SILT	0.31	n/p*	0.00	n/p	0.00	0.00	0.29	0.61	0.52
VERY FINE SILT	0.18	n/p*	0.00	n/p	0.00	0.00	0.16	0.15	0.29
CLAY	0.47	n/p*	0.00	n/p	0.00	0.00	0.46	0.00	0.00

GRAVEL	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
SAND	97.87	n/p*	100.00	n/p	99.99	98.92	97.92	97.59	99.15
SILT	1.66	n/p*	0.00	n/p	0.01	1.08	1.61	2.41	0.85
CLAY	0.47	n/p*	0.00	n/p	0.00	0.00	0.46	0.00	0.00

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2901 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000	3.62	4.00	4.77	3.30	3.08	4.02	3.91	4.10	3.48
1000 - 1400	19.02	18.46	18.69	17.21	16.87	17.62	16.89	17.42	17.29
710 - 1000	32.35	32.69	32.12	31.70	32.24	31.70	31.78	31.72	32.09
500 - 710	22.52	22.80	22.41	23.19	23.42	22.75	23.76	23.22	23.29
355 - 500	5.71	5.80	5.73	5.98	5.76	5.76	6.05	5.95	6.00
250 - 355	2.92	2.89	2.82	3.10	3.13	3.03	3.03	3.12	3.05
180 - 250	5.64	5.50	5.47	6.31	6.32	6.11	5.97	5.95	6.01
125 - 180	4.70	4.50	4.52	5.36	5.33	5.20	4.98	4.92	5.06
90 - 125	1.59	1.53	1.55	1.85	1.83	1.79	1.71	1.70	1.74
63 - 90	0.47	0.43	0.45	0.51	0.51	0.50	0.47	0.47	0.48
44.19 - 63	0.20	0.18	0.19	0.19	0.19	0.19	0.16	0.16	0.17
31.25 - 44.19	0.17	0.15	0.16	0.16	0.16	0.16	0.16	0.15	0.16
22.097 - 31.25	0.16	0.15	0.16	0.16	0.16	0.17	0.16	0.16	0.16
15.625 - 22.097	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.12	0.13
11.049 - 15.625	0.14	0.13	0.14	0.14	0.14	0.14	0.14	0.14	0.15
7.813 - 11.049	0.12	0.12	0.13	0.13	0.13	0.14	0.14	0.14	0.15
5.524 - 7.813	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.12
3.906 - 5.524	0.08	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08
2.762 - 3.906	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05
1.953 - 2.762	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1.381 - 1.953	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
0.977 - 1.381	0.04	0.04	0.04	0.05	0.05	0.05	0.04	0.04	0.05
0.691 - .0977	0.04	0.04	0.04	0.05	0.05	0.05	0.04	0.04	0.05
0.488 - 0.691	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
0.345 - 0.488	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.03	0.03
0.244 - 0.345	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.173 - 0.244	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.122 - 0.173	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.086 - 0.122	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.061 - 0.086	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	197.26	202.40	200.89	184.55	184.94	186.90	191.60	192.77	189.57
d50	745.88	746.76	750.90	724.30	723.89	733.29	727.16	732.46	729.19
d90	1250.64	1255.06	1274.14	1228.21	1219.66	1248.88	1240.07	1249.18	1233.11

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	200.19	2.64	1.32	185.46	1.26	0.68	191.31	1.62	0.85
d50	747.85	2.68	0.36	727.16	5.31	0.73	729.60	2.67	0.37
d90	1259.95	12.49	0.99	1232.25	15.02	1.22	1240.79	8.06	0.65

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2902 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000	8.81	8.40	8.67	8.76	8.60	7.98	7.95	8.61	8.91
1000 - 1400	18.81	18.21	18.54	18.95	18.72	18.15	18.33	19.13	19.48
710 - 1000	23.56	23.28	23.38	24.13	24.10	24.22	24.44	24.63	24.68
500 - 710	17.62	17.82	17.74	18.33	18.61	19.27	19.31	18.73	18.52
355 - 500	8.17	8.50	8.40	8.49	8.81	9.33	9.28	8.60	8.43
250 - 355	3.97	4.18	4.07	3.74	3.87	3.97	3.94	3.64	3.57
180 - 250	5.08	5.20	5.07	4.58	4.53	4.42	4.31	4.28	4.22
125 - 180	5.93	6.03	5.92	5.50	5.39	5.30	5.03	5.02	4.95
90 - 125	3.96	4.04	3.99	3.72	3.64	3.63	3.33	3.29	3.23
63 - 90	1.28	1.33	1.31	1.15	1.12	1.13	0.99	0.96	0.94
44.19 - 63	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
31.25 - 44.19	0.05	0.12	0.05	0.02	0.02	0.02	0.03	0.03	0.03
22.097 - 31.25	0.43	0.44	0.44	0.30	0.29	0.29	0.31	0.32	0.31
15.625 - 22.097	0.49	0.51	0.50	0.38	0.38	0.38	0.39	0.39	0.38
11.049 - 15.625	0.42	0.44	0.44	0.35	0.35	0.35	0.40	0.41	0.40
7.813 - 11.049	0.39	0.40	0.40	0.36	0.36	0.36	0.46	0.47	0.46
5.524 - 7.813	0.37	0.39	0.39	0.39	0.39	0.38	0.51	0.52	0.51
3.906 - 5.524	0.32	0.34	0.33	0.36	0.36	0.36	0.46	0.47	0.45
2.762 - 3.906	0.24	0.24	0.24	0.27	0.27	0.27	0.33	0.33	0.32
1.953 - 2.762	0.11	0.11	0.11	0.18	0.17	0.17	0.19	0.19	0.18
1.381 - 1.953	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	139.96	137.25	138.77	146.24	147.95	148.47	149.25	149.83	151.78
d50	719.31	705.56	713.20	726.07	721.57	710.55	714.20	730.93	738.25
d90	1370.52	1359.35	1366.60	1369.61	1365.09	1348.49	1348.21	1366.20	1373.96

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	138.66	1.35	0.98	147.55	1.17	0.79	150.29	1.32	0.88
d50	712.69	6.89	0.97	719.40	7.99	1.11	727.79	12.33	1.69
d90	1365.49	5.67	0.42	1361.06	11.12	0.82	1362.79	13.21	0.97

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2903 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400									
710 - 1000	35.67	36.52	35.69	37.55	37.55	37.51	40.80	40.86	40.89
500 - 710	28.29	28.38	28.38	29.35	29.18	29.33	31.29	31.32	31.62
355 - 500	13.75	13.53	13.87	13.94	13.78	13.96	13.87	13.83	13.98
250 - 355	5.77	5.58	5.82	5.08	5.08	5.16	3.69	3.67	3.54
180 - 250	5.86	5.68	5.80	4.65	4.77	4.69	2.93	2.92	2.71
125 - 180	6.37	6.18	6.24	5.37	5.51	5.35	4.06	4.05	3.94
90 - 125	3.68	3.55	3.59	3.36	3.44	3.33	2.77	2.76	2.74
63 - 90	0.60	0.58	0.60	0.69	0.69	0.67	0.59	0.59	0.59
44.19 - 63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.625 - 22.097	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.049 - 15.625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.813 - 11.049	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.524 - 7.813	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.906 - 5.524	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.762 - 3.906	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244									
0.122 - 0.173									
0.086 - 0.122									
0.061 - 0.086									
0.043 - 0.061									
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	170.65	173.77	172.59	184.60	181.53	185.55	240.06	240.73	250.75
d50	593.24	599.73	593.70	610.38	609.88	610.06	638.52	639.05	639.82
d90	907.38	909.42	907.42	911.80	911.80	911.72	918.52	918.65	918.70

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	172.33	1.58	0.91	183.90	2.10	1.14	243.85	5.99	2.46
d50	595.56	3.62	0.61	610.11	0.26	0.04	639.13	0.66	0.10
d90	908.07	1.17	0.13	911.77	0.05	0.01	918.62	0.09	0.01

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2904 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000	7.11	7.61	7.32	9.63	10.26	10.20	3.96	4.48	5.52
1000 - 1400	15.09	15.55	15.17	17.51	18.11	17.85	12.52	12.85	12.86
710 - 1000	19.89	20.11	19.97	22.06	22.14	21.98	18.20	18.06	17.93
500 - 710	14.61	14.56	14.75	16.01	15.64	15.69	14.22	13.83	13.66
355 - 500	6.72	6.55	6.81	6.91	6.55	6.66	7.26	7.06	6.90
250 - 355	6.22	6.01	6.17	4.83	4.67	4.72	7.63	7.64	7.49
180 - 250	10.56	10.30	10.40	7.94	7.82	7.90	12.70	12.74	12.58
125 - 180	11.26	11.01	11.09	8.55	8.41	8.52	13.26	13.23	13.11
90 - 125	6.08	5.93	5.97	4.55	4.46	4.53	6.91	6.87	6.79
63 - 90	1.21	1.17	1.17	0.86	0.83	0.85	1.30	1.28	1.26
44.19 - 63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.05	0.05
15.625 - 22.097	0.19	0.18	0.18	0.17	0.17	0.17	0.28	0.27	0.26
11.049 - 15.625	0.24	0.22	0.22	0.21	0.20	0.20	0.31	0.30	0.29
7.813 - 11.049	0.23	0.22	0.21	0.21	0.20	0.20	0.32	0.30	0.29
5.524 - 7.813	0.23	0.22	0.22	0.22	0.21	0.21	0.34	0.32	0.31
3.906 - 5.524	0.22	0.21	0.22	0.21	0.21	0.21	0.33	0.31	0.31
2.762 - 3.906	0.13	0.12	0.12	0.12	0.12	0.12	0.27	0.27	0.26
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.14	0.14
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	130.81	131.94	131.74	143.80	144.99	144.23	123.41	124.37	125.13
d50	586.19	602.60	592.32	694.89	712.70	707.28	474.44	481.38	499.03
d90	1312.68	1329.60	1319.24	1390.13	1412.88	1409.66	1190.43	1211.60	1244.97

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	131.50	0.60	0.46	144.34	0.60	0.42	124.30	0.86	0.69
d50	593.70	8.29	1.40	704.95	9.13	1.30	484.95	12.68	2.61
d90	1320.51	8.53	0.65	1404.23	12.31	0.88	1215.67	27.50	2.26

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2905 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000 - 1400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
710 - 1000	36.39	36.49	36.32	36.93	37.17	37.64	35.50	35.34	35.31
500 - 710	25.72	25.70	25.73	26.29	26.34	26.61	25.28	25.26	25.57
355 - 500	10.08	10.05	10.18	10.35	10.33	10.35	10.29	10.33	10.61
250 - 355	4.71	4.65	4.72	4.54	4.44	4.31	5.16	5.20	5.13
180 - 250	7.95	7.89	7.87	7.46	7.34	7.10	8.34	8.36	8.09
125 - 180	9.12	9.10	9.06	8.61	8.53	8.29	9.33	9.35	9.14
90 - 125	5.05	5.10	5.09	4.84	4.84	4.71	5.11	5.15	5.11
63 - 90	0.98	1.01	1.03	0.99	1.01	0.99	0.98	1.01	1.03
44.19 - 63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.625 - 22.097	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.049 - 15.625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.813 - 11.049	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.524 - 7.813	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.906 - 5.524	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.762 - 3.906	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	145.37	144.95	145.01	147.85	147.97	149.64	144.56	144.10	144.71
d50	588.59	589.31	588.06	595.12	597.24	601.94	579.63	578.25	579.43
d90	909.12	909.36	908.95	910.38	910.94	912.00	906.95	906.55	906.48

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	145.11	0.23	0.16	148.49	1.00	0.68	144.46	0.32	0.22
d50	588.65	0.63	0.11	598.10	3.49	0.58	579.10	0.75	0.13
d90	909.14	0.21	0.02	911.11	0.82	0.09	906.66	0.25	0.03

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2909 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000	1.64	1.72	1.52	1.69	1.50	1.55	1.93	1.94	1.88
1000 - 1400	18.30	18.34	18.24	18.84	18.63	18.72	18.86	18.73	18.31
710 - 1000	34.43	34.03	34.28	35.08	35.53	35.28	34.50	34.64	34.53
500 - 710	21.44	21.31	21.43	21.73	21.69	21.90	21.90	21.95	22.24
355 - 500	4.77	4.78	4.80	4.75	4.77	4.84	4.79	4.66	4.81
250 - 355	3.32	3.35	3.37	3.09	3.13	3.07	3.09	3.08	3.13
180 - 250	6.15	6.22	6.12	5.73	5.62	5.52	5.75	5.75	5.69
125 - 180	5.40	5.46	5.36	5.03	4.95	4.85	5.08	5.06	5.05
90 - 125	1.93	1.94	1.90	1.80	1.76	1.73	1.85	1.83	1.84
63 - 90	0.53	0.54	0.54	0.49	0.49	0.49	0.49	0.49	0.50
44.19 - 63	0.23	0.25	0.26	0.21	0.22	0.22	0.20	0.21	0.22
31.25 - 44.19	0.17	0.19	0.21	0.15	0.16	0.16	0.14	0.14	0.15
22.097 - 31.25	0.23	0.25	0.27	0.20	0.21	0.23	0.19	0.20	0.22
15.625 - 22.097	0.16	0.18	0.20	0.14	0.15	0.16	0.13	0.14	0.15
11.049 - 15.625	0.15	0.17	0.19	0.12	0.15	0.15	0.12	0.13	0.14
7.813 - 11.049	0.18	0.20	0.22	0.15	0.16	0.18	0.15	0.16	0.18
5.524 - 7.813	0.17	0.19	0.20	0.14	0.15	0.16	0.14	0.15	0.17
3.906 - 5.524	0.14	0.15	0.16	0.11	0.12	0.13	0.11	0.12	0.14
2.762 - 3.906	0.10	0.11	0.12	0.09	0.10	0.10	0.09	0.09	0.10
1.953 - 2.762	0.09	0.10	0.10	0.08	0.09	0.09	0.07	0.08	0.09
1.381 - 1.953	0.08	0.09	0.10	0.07	0.08	0.09	0.07	0.08	0.09
0.977 - 1.381	0.08	0.09	0.09	0.07	0.07	0.08	0.07	0.07	0.08
0.691 - .0977	0.07	0.08	0.08	0.06	0.06	0.07	0.06	0.07	0.07
0.488 - 0.691	0.06	0.07	0.07	0.05	0.05	0.06	0.05	0.06	0.06
0.345 - 0.488	0.05	0.05	0.06	0.04	0.05	0.05	0.04	0.05	0.05
0.244 - 0.345	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04
0.173 - 0.244	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.122 - 0.173	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02
0.086 - 0.122	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.02
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	80.05	79.93	80.24	79.47	79.86	79.72	79.20	79.31	79.80

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	177.33	173.99	173.91	186.74	186.59	186.89	185.86	185.08	183.27
d50	738.80	737.07	736.41	747.27	747.16	746.68	745.62	745.67	741.30
d90	1200.53	1202.72	1197.17	1206.81	1200.82	1202.81	1212.27	1211.38	1205.95

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	175.07	1.95	1.12	186.74	0.15	0.08	184.73	1.33	0.72
d50	737.43	1.23	0.17	747.04	0.31	0.04	744.19	2.51	0.34
d90	1200.14	2.80	0.23	1203.48	3.05	0.25	1209.87	3.42	0.28

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2910 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400									
710 - 1000	38.79	40.08	40.18	36.33	36.13	35.97	38.13	38.30	38.92
500 - 710	28.48	29.00	28.78	28.03	28.57	27.66	27.68	27.33	27.54
355 - 500	12.13	11.83	11.65	13.00	13.43	12.94	12.08	11.76	11.58
250 - 355	4.10	3.56	3.63	5.35	5.28	5.57	4.54	4.62	4.32
180 - 250	4.96	4.53	4.71	5.89	5.58	6.19	5.34	5.61	5.40
125 - 180	6.26	5.99	6.08	6.55	6.31	6.76	6.37	6.53	6.43
90 - 125	4.12	3.94	3.94	3.94	3.84	4.01	4.04	4.05	4.01
63 - 90	1.14	1.05	1.02	0.91	0.88	0.89	1.05	1.01	1.00
44.19 - 63	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.43	0.43
15.625 - 22.097	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.30	0.30
11.049 - 15.625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.813 - 11.049	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.524 - 7.813	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.906 - 5.524	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.762 - 3.906	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	162.36	166.96	166.57	164.19	167.15	162.32	156.60	155.83	156.72
d50	616.93	628.03	628.18	597.06	597.53	593.04	609.35	609.56	615.07
d90	914.50	917.14	917.33	908.97	908.49	908.10	913.07	913.45	914.77

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	165.30	2.55	1.54	164.55	2.44	1.48	156.39	0.48	0.31
d50	624.38	6.45	1.03	595.88	2.47	0.41	611.33	3.24	0.53
d90	916.32	1.58	0.17	908.52	0.43	0.05	913.77	0.89	0.10

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2912 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400									
710 - 1000	37.74	37.34	37.99	38.99	37.92	39.58	35.44	35.30	36.78
500 - 710	28.75	28.57	28.72	28.31	27.77	28.64	26.17	26.35	26.65
355 - 500	12.75	12.92	12.71	11.94	12.09	11.87	11.78	11.92	11.65
250 - 355	4.56	4.83	4.58	4.28	4.75	4.01	5.51	5.43	5.11
180 - 250	5.22	5.36	5.21	5.32	5.80	5.05	7.11	6.98	6.61
125 - 180	6.30	6.32	6.22	6.43	6.76	6.24	8.02	8.00	7.59
90 - 125	3.91	3.91	3.83	3.95	4.11	3.87	4.88	4.92	4.65
63 - 90	0.76	0.77	0.74	0.77	0.80	0.75	1.09	1.11	0.96
44.19 - 63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.625 - 22.097	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.049 - 15.625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.813 - 11.049	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.524 - 7.813	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.906 - 5.524	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.762 - 3.906	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	167.60	167.45	169.15	166.18	162.34	168.54	148.78	148.49	152.73
d50	609.91	606.35	611.62	617.93	608.10	623.24	583.06	582.75	595.40
d90	912.22	911.32	912.76	914.92	912.62	916.12	906.79	906.45	910.05

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	168.07	0.94	0.56	165.68	3.13	1.89	150.00	2.37	1.58
d50	609.29	2.69	0.44	616.42	7.68	1.25	587.07	7.21	1.23
d90	912.10	0.73	0.08	914.55	1.78	0.19	907.76	1.98	0.22

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2914 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000	7.76	-	-	-	-	-	-	-	-
1000 - 1400	16.40	-	-	-	-	-	-	-	-
710 - 1000	21.28	-	-	-	-	-	-	-	-
500 - 710	17.21	-	-	-	-	-	-	-	-
355 - 500	9.36	-	-	-	-	-	-	-	-
250 - 355	5.92	-	-	-	-	-	-	-	-
180 - 250	7.37	-	-	-	-	-	-	-	-
125 - 180	8.01	-	-	-	-	-	-	-	-
90 - 125	5.16	-	-	-	-	-	-	-	-
63 - 90	1.53	-	-	-	-	-	-	-	-
44.19 - 63	0.01	-	-	-	-	-	-	-	-
31.25 - 44.19	0.00	-	-	-	-	-	-	-	-
22.097 - 31.25	0.00	-	-	-	-	-	-	-	-
15.625 - 22.097	0.00	-	-	-	-	-	-	-	-
11.049 - 15.625	0.00	-	-	-	-	-	-	-	-
7.813 - 11.049	0.00	-	-	-	-	-	-	-	-
5.524 - 7.813	0.00	-	-	-	-	-	-	-	-
3.906 - 5.524	0.00	-	-	-	-	-	-	-	-
2.762 - 3.906	0.00	-	-	-	-	-	-	-	-
1.953 - 2.762	0.00	-	-	-	-	-	-	-	-
1.381 - 1.953	0.00	-	-	-	-	-	-	-	-
0.977 - 1.381	0.00	-	-	-	-	-	-	-	-
0.691 - .0977	0.00	-	-	-	-	-	-	-	-
0.488 - 0.691	0.00	-	-	-	-	-	-	-	-
0.345 - 0.488	0.00	-	-	-	-	-	-	-	-
0.244 - 0.345	0.00	-	-	-	-	-	-	-	-
0.173 - 0.244	0.00	-	-	-	-	-	-	-	-
0.122 - 0.173	0.00	-	-	-	-	-	-	-	-
0.086 - 0.122	0.00	-	-	-	-	-	-	-	-
0.061 - 0.086	0.00	-	-	-	-	-	-	-	-
0.043 - 0.061	0.00	-	-	-	-	-	-	-	-
Total	100.00	-	-	-	-	-	-	-	-

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	144.22	-	-	-	-	-	-	-	-
d50	644.97	-	-	-	-	-	-	-	-
d90	1337.11	-	-	-	-	-	-	-	-

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	144.22	-	-	-	-	-	-	-	-
d50	644.97	-	-	-	-	-	-	-	-
d90	1337.11	-	-	-	-	-	-	-	-

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2916 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400	12.43	12.48	12.36	12.06	11.80	11.29	10.91	10.79	10.90
710 - 1000	28.79	29.61	29.77	28.41	28.02	27.88	27.05	26.64	26.89
500 - 710	20.50	21.33	21.63	20.29	20.26	20.60	20.12	19.98	19.96
355 - 500	8.72	8.96	9.08	8.59	8.76	9.00	9.23	9.34	9.18
250 - 355	5.24	4.90	4.81	5.28	5.43	5.47	6.29	6.46	6.34
180 - 250	8.49	7.87	7.72	8.76	8.88	9.00	9.65	9.81	9.77
125 - 180	9.47	8.88	8.76	9.86	9.99	9.97	10.26	10.41	10.39
90 - 125	5.27	4.95	4.88	5.56	5.65	5.61	5.46	5.54	5.53
63 - 90	1.09	1.01	0.98	1.18	1.21	1.18	1.03	1.04	1.04
44.19 - 63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.625 - 22.097	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.049 - 15.625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.813 - 11.049	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.524 - 7.813	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.906 - 5.524	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.762 - 3.906	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	142.84	146.37	147.24	140.17	139.42	139.75	140.76	140.06	140.13
d50	609.50	621.79	623.32	600.85	593.99	589.34	574.67	568.53	571.96
d90	1068.04	1069.17	1066.42	1059.16	1052.58	1039.24	1028.39	1024.80	1028.13

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	145.48	2.33	1.60	139.78	0.38	0.27	140.32	0.39	0.27
d50	618.20	7.58	1.23	594.72	5.79	0.97	571.72	3.08	0.54
d90	1067.88	1.38	0.13	1050.33	10.15	0.97	1027.10	2.00	0.20

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2917 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400									
710 - 1000	46.30	46.05	46.19	46.45	46.52	46.04	45.19	45.13	45.27
500 - 710	26.07	26.22	26.30	25.86	26.07	26.29	25.52	25.83	25.42
355 - 500	5.39	5.51	5.49	5.43	5.46	5.58	5.39	5.37	5.41
250 - 355	3.91	3.90	3.87	3.90	3.83	3.85	4.02	4.02	4.08
180 - 250	7.20	7.15	7.08	7.10	6.96	6.98	7.75	7.66	7.67
125 - 180	6.42	6.37	6.23	6.27	6.14	6.15	7.04	6.89	6.93
90 - 125	2.27	2.27	2.21	2.23	2.17	2.15	2.54	2.49	2.49
63 - 90	0.56	0.57	0.57	0.58	0.57	0.56	0.66	0.65	0.67
44.19 - 63	0.21	0.22	0.23	0.23	0.24	0.24	0.23	0.23	0.24
31.25 - 44.19	0.15	0.15	0.16	0.17	0.17	0.19	0.17	0.17	0.17
22.097 - 31.25	0.17	0.18	0.18	0.19	0.20	0.21	0.18	0.18	0.19
15.625 - 22.097	0.18	0.18	0.19	0.20	0.20	0.21	0.18	0.19	0.19
11.049 - 15.625	0.18	0.19	0.20	0.21	0.22	0.23	0.18	0.19	0.20
7.813 - 11.049	0.16	0.17	0.18	0.19	0.21	0.22	0.16	0.17	0.18
5.524 - 7.813	0.14	0.15	0.16	0.17	0.19	0.20	0.14	0.15	0.16
3.906 - 5.524	0.11	0.12	0.13	0.14	0.15	0.17	0.11	0.12	0.13
2.762 - 3.906	0.08	0.09	0.09	0.10	0.11	0.12	0.08	0.08	0.09
1.953 - 2.762	0.06	0.07	0.07	0.08	0.08	0.09	0.06	0.06	0.07
1.381 - 1.953	0.06	0.07	0.07	0.08	0.08	0.09	0.06	0.07	0.07
0.977 - 1.381	0.07	0.07	0.08	0.08	0.09	0.09	0.07	0.07	0.08
0.691 - .0977	0.07	0.07	0.07	0.08	0.08	0.09	0.07	0.07	0.07
0.488 - 0.691	0.06	0.06	0.06	0.07	0.07	0.07	0.06	0.06	0.06
0.345 - 0.488	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.05
0.244 - 0.345	0.04	0.04	0.04	0.04	0.05	0.05	0.04	0.04	0.04
0.173 - 0.244	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.122 - 0.173	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
0.086 - 0.122	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	166.43	165.87	166.53	164.92	165.60	164.67	159.18	159.96	158.68
d50	673.12	671.04	672.39	674.19	675.05	671.02	662.30	662.33	662.83
d90	927.85	927.47	927.68	928.08	928.18	927.45	926.14	926.06	926.26

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	166.28	0.36	0.21	165.06	0.48	0.29	159.27	0.65	0.41
d50	672.18	1.06	0.16	673.42	2.12	0.31	662.49	0.30	0.05
d90	927.67	0.19	0.02	927.90	0.39	0.04	926.15	0.10	0.01

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2918 LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400									
710 - 1000	33.47	31.95	31.40	27.67	27.55	29.27	26.27	24.98	25.31
500 - 710	25.17	23.82	23.29	21.55	21.26	21.86	20.67	19.21	19.66
355 - 500	10.58	10.10	10.05	10.01	9.88	9.68	10.19	9.71	9.92
250 - 355	5.35	5.77	6.05	6.72	6.84	6.42	7.86	8.54	8.40
180 - 250	8.54	9.34	9.68	10.59	10.82	10.34	12.00	13.09	12.76
125 - 180	9.64	10.39	10.65	11.71	11.87	11.37	12.62	13.45	13.15
90 - 125	5.29	5.70	5.84	6.69	6.72	6.40	6.77	7.12	6.98
63 - 90	1.04	1.14	1.19	1.57	1.56	1.41	1.35	1.40	1.38
44.19 - 63	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.25	0.24	0.22	0.08	0.09	0.08
22.097 - 31.25	0.32	0.36	0.36	0.62	0.61	0.57	0.39	0.43	0.42
15.625 - 22.097	0.35	0.39	0.41	0.61	0.61	0.57	0.45	0.48	0.47
11.049 - 15.625	0.25	0.30	0.31	0.46	0.47	0.45	0.35	0.38	0.36
7.813 - 11.049	0.00	0.26	0.27	0.44	0.43	0.40	0.31	0.34	0.33
5.524 - 7.813	0.00	0.26	0.27	0.42	0.43	0.40	0.30	0.32	0.33
3.906 - 5.524	0.00	0.22	0.22	0.37	0.37	0.36	0.27	0.30	0.30
2.762 - 3.906	0.00	0.00	0.00	0.28	0.28	0.26	0.14	0.16	0.16
1.953 - 2.762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061									
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	137.92	130.82	129.68	114.11	114.11	118.09	122.43	118.94	120.17
d50	563.09	543.73	536.16	486.74	479.71	509.08	450.56	406.38	419.52
d90	901.58	897.15	895.47	882.23	881.76	888.30	876.36	870.40	871.99

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	132.81	4.47	3.36	115.44	2.30	1.99	120.51	1.77	1.47
d50	547.66	13.89	2.54	491.84	15.34	3.12	425.49	22.69	5.33
d90	898.07	3.16	0.35	884.10	3.65	0.41	872.92	3.09	0.35

APPENDIX 3. Participant laser replicate data for sediment distributed as PS87.

PSA_2912 B LASER DATA

Microns	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
1400 - 2000									
1000 - 1400									
710 - 1000	24.30	26.29	27.26	27.84	29.36	27.88	25.26	27.24	26.62
500 - 710	17.12	19.28	19.67	20.53	20.84	20.28	18.40	19.45	18.54
355 - 500	8.43	9.25	9.19	9.66	9.50	9.55	9.04	9.14	8.63
250 - 355	9.13	8.24	7.99	7.92	7.61	7.97	8.73	8.25	8.40
180 - 250	14.94	13.30	12.97	12.52	12.08	12.58	14.03	13.24	13.85
125 - 180	15.18	13.81	13.46	12.84	12.40	12.91	14.37	13.52	14.21
90 - 125	8.08	7.45	7.23	6.69	6.46	6.78	7.64	7.12	7.51
63 - 90	1.62	1.49	1.44	1.21	1.18	1.27	1.48	1.35	1.44
44.19 - 63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31.25 - 44.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.097 - 31.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.625 - 22.097	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.049 - 15.625	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.813 - 11.049	0.17	0.07	0.00	0.00	0.00	0.00	0.07	0.00	0.00
5.524 - 7.813	0.30	0.26	0.24	0.23	0.14	0.24	0.28	0.15	0.24
3.906 - 5.524	0.33	0.29	0.28	0.28	0.27	0.28	0.31	0.28	0.29
2.762 - 3.906	0.31	0.27	0.26	0.26	0.17	0.26	0.29	0.26	0.27
1.953 - 2.762	0.10	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
1.381 - 1.953	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.977 - 1.381	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.691 - .0977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.488 - 0.691	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.345 - 0.488	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.244 - 0.345	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.173 - 0.244	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.122 - 0.173	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.086 - 0.122	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.061 - 0.086	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.043 - 0.061	0.00	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

	Run 1 - a	Run 1 - b	Run 1 - c	Run 2 - a	Run 2 - b	Run 2 - c	Run 3 - a	Run 3 - b	Run 3 - c
d10	120.25	125.51	126.75	129.52	131.38	128.98	124.07	127.74	125.75
d50	351.58	423.53	445.37	471.63	501.66	467.81	392.17	441.04	411.72
d90	867.02	876.45	880.57	882.91	888.61	883.07	871.74	880.49	877.89

	Subsample 1			Subsample 2			Subsample 3		
	Mean	StDev	COV	Mean	StDev	COV	Mean	StDev	COV
d10	124.17	3.45	2.78	129.96	1.26	0.97	125.85	1.83	1.46
d50	406.82	49.08	12.06	480.37	18.54	3.86	414.98	24.60	5.93
d90	874.68	6.95	0.79	884.86	3.24	0.37	876.71	4.49	0.51

APPENDIX 4. Final Merged Data as supplied by participating laboratories (in percentages) and the Benchmark Replicates for sediment distributed as PS87 (This data is also embeded in the PDF as an exel file) .

		Benchmark Samples					Participant data					
Phi interval	Microns	PSA_2936	PSA_2937	PSA_2938	PSA_2939	PSA_2940	PSA_2901	PSA_2902	PSA_2903	PSA_2904	PSA_2905	PSA_2906
-6.50 to -6.00	>63000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-6.00 to -5.50	45000 - 63000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-5.50 to -5.00	31500 - 45000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-5.00 to -4.50	22400 - 31500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-4.50 to -4.00	16000 - 22400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-4.00 to -3.50	11200 - 16000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-3.50 to -3.00	8000 - 11200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-3.00 to -2.50	5600 - 8000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-2.50 to -2.00	4000 - 5600	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-2.00 to -1.50	2800 - 4000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-1.50 to -1.00	2000 - 2800	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
-1.00 to -0.50	1400 - 2000	0.00	0.00	0.00	0.00	0.00	3.81	8.52	0.00	0.00	0.00	n/p
-0.50 to 0.00	1000 - 1400	0.00	0.00	0.00	0.00	0.00	17.72	18.70	0.00	0.06	0.39	n/p
0.00 to 0.50	710 - 1000	46.21	46.70	46.41	46.21	45.94	32.04	24.05	38.12	25.88	36.20	n/p
0.50 to 1.00	500 - 710	27.06	27.03	27.28	26.58	26.23	23.04	18.44	29.68	19.08	25.73	n/p
1.00 to 1.50	355 - 500	5.67	5.60	5.70	5.57	5.47	5.86	8.67	13.84	8.82	10.25	n/p
1.50 to 2.00	250 - 355	3.75	3.76	3.67	3.86	4.02	3.01	3.88	4.82	7.95	4.74	n/p
2.00 to 2.50	180 - 250	6.65	6.37	6.26	6.83	7.08	5.92	4.63	4.44	13.34	7.79	n/p
2.50 to 3.00	125 - 180	5.90	5.72	5.68	6.15	6.32	4.95	5.45	5.23	14.13	8.91	n/p
3.00 to 3.50	90 - 125	2.10	2.05	2.06	2.16	2.30	1.70	3.65	3.24	7.48	4.98	n/p
3.50 to 4.00	63 - 90	0.57	0.59	0.65	0.60	0.61	0.48	1.13	0.62	1.42	1.00	n/p
4.00 to 4.50	44.19 - 63	0.22	0.24	0.24	0.22	0.21	0.18	0.01	0.00	0.00	0.00	n/p
4.50 to 5.00	31.25 - 44.19	0.18	0.20	0.20	0.17	0.15	0.16	0.04	0.00	0.00	0.00	n/p
5.00 to 5.50	22.097 - 31.25	0.19	0.21	0.19	0.18	0.16	0.16	0.35	0.00	0.03	0.00	n/p
5.50 to 6.00	15.625 - 22.097	0.18	0.19	0.19	0.18	0.16	0.13	0.42	0.00	0.27	0.00	n/p
6.00 to 6.50	11.049 - 15.625	0.20	0.22	0.22	0.21	0.19	0.14	0.40	0.00	0.31	0.00	n/p
6.50 to 7.00	7.813 - 11.049	0.18	0.19	0.20	0.19	0.18	0.13	0.41	0.00	0.31	0.00	n/p
7.00 to 7.50	5.524 - 7.813	0.17	0.17	0.19	0.16	0.17	0.11	0.43	0.00	0.33	0.00	n/p
7.50 to 8.00	3.906 - 5.524	0.14	0.14	0.16	0.14	0.15	0.08	0.38	0.00	0.32	0.00	n/p
8.00 to 8.50	2.762 - 3.906	0.10	0.10	0.11	0.10	0.10	0.05	0.28	0.00	0.22	0.00	n/p
8.50 to 9.00	1.953 - 2.762	0.07	0.07	0.08	0.07	0.07	0.04	0.16	0.00	0.05	0.00	n/p
9.00 to 9.50	1.381 - 1.953	0.07	0.07	0.08	0.07	0.08	0.04	0.01	0.00	0.00	0.00	n/p
9.50 to 10.00	0.977 - 1.381	0.08	0.08	0.08	0.08	0.08	0.04	0.00	0.00	0.00	0.00	n/p
10.00 to 10.50	0.691 - .0977	0.07	0.07	0.08	0.07	0.08	0.04	0.00	0.00	0.00	0.00	n/p
10.50 to 11.00	0.488 - 0.691	0.07	0.06	0.07	0.06	0.07	0.04	0.00	0.00	0.00	0.00	n/p
11.00 to 11.50	0.345 - 0.488	0.06	0.05	0.06	0.05	0.05	0.03	0.00	0.00	0.00	0.00	n/p
11.50 to 12.00	0.244 - 0.345	0.05	0.04	0.05	0.04	0.04	0.03	0.00	0.00	0.00	0.00	n/p
12.00 to 12.50	0.173 - 0.244	0.04	0.03	0.04	0.03	0.03	0.02	0.00	0.00	0.00	0.00	n/p
12.50 to 13.00	0.122 - 0.173	0.03	0.02	0.03	0.02	0.02	0.02	0.00	0.00	0.00	0.00	n/p
13.00 to 13.50	0.086 - 0.122	0.02	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	n/p
13.50 to 14.00	0.061 - 0.086	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	n/p
14.00 to 14.50	0.043 - 0.061	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p
> 14.50	0.01 - 0.043	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	n/p

APPENDIX 4. Final Merged Data as supplied by participating laboratories (in percentages) and the Benchmark Replicates for sediment distributed as PS87 (This data is also embeded in the PDF as an exel file) .

		Participant Data										
Phi interval	Microns	PSA_2908	PSA_2909	PSA_2910	PSA_2911	PSA_2912	PSA_2913	PSA_2914	PSA_2916	PSA_2917	PSA_2918	PSA_2912_B
-6.50 to -6.00	>63000	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-6.00 to -5.50	45000 - 63000	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-5.50 to -5.00	31500 - 45000	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-5.00 to -4.50	22400 - 31500	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-4.50 to -4.00	16000 - 22400	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-4.00 to -3.50	11200 - 16000	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-3.50 to -3.00	8000 - 11200	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-3.00 to -2.50	5600 - 8000	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-2.50 to -2.00	4000 - 5600	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-2.00 to -1.50	2800 - 4000	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-1.50 to -1.00	2000 - 2800	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
-1.00 to -0.50	1400 - 2000	n/p*	0.00	0.00	n/p*	0.00	n/p	7.74	0.00	0.00	0.00	0.00
-0.50 to 0.00	1000 - 1400	n/p*	0.01	0.00	n/p*	0.01	n/p	16.58	0.00	0.00	0.02	0.00
0.00 to 0.50	710 - 1000	n/p*	43.39	38.09	n/p*	37.43	n/p	21.23	11.67	45.90	25.52	26.87
0.50 to 1.00	500 - 710	n/p*	27.26	28.12	n/p*	27.76	n/p	17.17	28.12	25.95	19.84	19.33
1.00 to 1.50	355 - 500	n/p*	5.99	12.27	n/p*	12.18	n/p	9.34	20.52	5.45	9.94	9.15
1.50 to 2.00	250 - 355	n/p*	4.00	4.55	n/p*	4.79	n/p	5.91	8.99	3.93	8.26	8.25
2.00 to 2.50	180 - 250	n/p*	7.36	5.36	n/p*	5.85	n/p	7.35	5.58	7.28	12.61	13.29
2.50 to 3.00	125 - 180	n/p*	6.47	6.36	n/p*	6.88	n/p	7.99	8.88	6.49	13.07	13.64
3.00 to 3.50	90 - 125	n/p*	2.32	3.99	n/p*	4.23	n/p	5.15	9.77	2.31	6.96	7.23
3.50 to 4.00	63 - 90	n/p*	0.64	0.99	n/p*	0.86	n/p	1.53	5.38	0.60	1.38	1.39
4.00 to 4.50	44.19 - 63	n/p*	0.28	0.01	n/p*	0.00	n/p	0.01	1.08	0.23	0.00	0.00
4.50 to 5.00	31.25 - 44.19	n/p*	0.21	0.02	n/p*	0.00	n/p	0.00	0.00	0.17	0.08	0.00
5.00 to 5.50	22.097 - 31.25	n/p*	0.28	0.14	n/p*	0.00	n/p	0.00	0.00	0.19	0.41	0.00
5.50 to 6.00	15.625 - 22.097	n/p*	0.20	0.10	n/p*	0.00	n/p	0.00	0.00	0.19	0.47	0.00
6.00 to 6.50	11.049 - 15.625	n/p*	0.18	0.00	n/p*	0.00	n/p	0.00	0.00	0.20	0.36	0.00
6.50 to 7.00	7.813 - 11.049	n/p*	0.22	0.00	n/p*	0.00	n/p	0.00	0.00	0.18	0.32	0.04
7.00 to 7.50	5.524 - 7.813	n/p*	0.21	0.00	n/p*	0.00	n/p	0.00	0.00	0.16	0.32	0.23
7.50 to 8.00	3.906 - 5.524	n/p*	0.17	0.00	n/p*	0.00	n/p	0.00	0.00	0.13	0.29	0.29
8.00 to 8.50	2.762 - 3.906	n/p*	0.13	0.00	n/p*	0.00	n/p	0.00	0.00	0.09	0.15	0.26
8.50 to 9.00	1.953 - 2.762	n/p*	0.11	0.00	n/p*	0.00	n/p	0.00	0.00	0.07	0.00	0.02
9.00 to 9.50	1.381 - 1.953	n/p*	0.10	0.00	n/p*	0.00	n/p	0.00	0.00	0.07	0.00	0.00
9.50 to 10.00	0.977 - 1.381	n/p*	0.10	0.00	n/p*	0.00	n/p	0.00	0.00	0.08	0.00	0.00
10.00 to 10.50	0.691 - .0977	n/p*	0.09	0.00	n/p*	0.00	n/p	0.00	0.00	0.07	0.00	0.00
10.50 to 11.00	0.488 - 0.691	n/p*	0.07	0.00	n/p*	0.00	n/p	0.00	0.00	0.06	0.00	0.00
11.00 to 11.50	0.345 - 0.488	n/p*	0.06	0.00	n/p*	0.00	n/p	0.00	0.00	0.05	0.00	0.00
11.50 to 12.00	0.244 - 0.345	n/p*	0.05	0.00	n/p*	0.00	n/p	0.00	0.00	0.04	0.00	0.00
12.00 to 12.50	0.173 - 0.244	n/p*	0.04	0.00	n/p*	0.00	n/p	0.00	0.00	0.03	0.00	0.00
12.50 to 13.00	0.122 - 0.173	n/p*	0.03	0.00	n/p*	0.00	n/p	0.00	0.00	0.02	0.00	0.00
13.00 to 13.50	0.086 - 0.122	n/p*	0.02	0.00	n/p*	0.00	n/p	0.00	0.00	0.02	0.00	0.00
13.50 to 14.00	0.061 - 0.086	n/p*	0.01	0.00	n/p*	0.00	n/p	0.00	0.00	0.01	0.00	0.00
14.00 to 14.50	0.043 - 0.061	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00
> 14.50	0.01 - 0.043	n/p*	0.00	0.00	n/p*	0.00	n/p	0.00	0.00	0.00	0.00	0.00