Materials Testing & Consulting, Inc.

Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project:	LDW ENR/AC Pilot Study	**Date Received:**	April 30, 2019
Project #:	19S135	**Sampled By:**	Others
Client :	Wood	**Date Reported:**	May 30, 2019
Source:	Multiple	**Tested By:**	B. Goble
MTC Sample#:	Multiple		

CASE NARRATIVE

1. Six samples were submitted for grain size analysis according to Puget Sound Estuary Protocol (PSEP) methodology.
2. The samples were run in a single batch and one sample from this job was chosen for triplicate analysis. The triplicate data is reported on the QA summary.
3. The data is provided in summary tables and plots.
4. There were no noted anomalies during this testing.

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Project #: 19S135
Date Received: April 30, 2019
Date Tested: May 26, 2019

Client: Wood
Sampled by: Others
Tested by: B. Goble

Apparent Grain Size Distribution Summary

Percent Finer Than Indicated Size

Sample No.	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4 (4750)	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (63)	31.0	15.6	7.8	3.9	2.0	1.0
LDW-Y2-SU-ENR-CC-CORE	100.0	99.7	80.0	56.8	34.4	15.6	8.5	6.5	5.2	3.9	2.8	2.0	1.5	0.8
	100.0	99.1	79.2	57.9	34.4	15.6	8.7	6.7	5.2	3.9	2.7	2.0	1.6	0.8
	100.0	99.3	80.5	56.8	34.4	15.8	8.7	6.6	5.2	3.8	2.7	1.9	1.6	0.8
LDW-Y2-SU-ENR-CA-CORE	100.0	96.9	75.2	54.8	35.0	17.7	11.3	11.1	7.8	6.0	3.8	2.7	2.2	1.1
LDW-Y2-SU-ENR-CB-CORE	100.0	99.4	80.3	62.3	43.9	26.1	18.7	15.9	13.3	6.3	3.7	2.9	2.5	1.4
LDW-Y2-SU-ENR+AC-CA-CORE	100.0	97.6	82.4	68.0	48.8	27.7	18.3	15.6	13.6	7.5	4.4	3.5	3.0	1.6
LDW-Y2-SU-ENR+AC-CB-CORE	100.0	98.3	80.9	65.0	47.1	27.4	18.1	15.9	14.5	10.9	6.2	4.7	3.9	2.0
LDW-Y2-SU-ENR+AC-CC-CORE	100.0	99.3	86.4	71.6	51.9	31.2	21.5	18.9	16.3	11.6	6.3	4.8	4.1	2.1

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Tested by: B. Goble

Apparent Grain Size Distribution Summary

Percent Retained in Each Size Fraction

Sample No.	Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Coarse Silt	Medium Silt	Fine Silt	Very Fine Silt	Clay			Total Fines
Phi Size	< -1	-1 to 0	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	> 10	> 4
Sieve Size (microns)	> #10 (2000)	10-18 (2000-1000)	18-35 (1000-500)	35-60 (500-250)	60-120 (250-125)	120-230 (125-62)	62.5-31.0	31.0-15.6	15.6-7.8	7.8-3.9	3.9-2.0	2.0-1.0	<1.0	<230 (<62)
LDW-Y2-SU-ENR-CC-CORE	20.0	23.2	22.3	18.8	7.0	2.0	1.3	1.3	1.2	0.8	0.5	0.7	0.8	6.5
	20.8	21.2	23.5	18.9	6.9	2.0	1.5	1.3	1.2	0.7	0.4	0.7	0.8	6.7
	19.5	23.7	22.4	18.7	7.1	2.0	1.4	1.4	1.1	0.8	0.4	0.8	0.8	6.6
LDW-Y2-SU-ENR-CA-CORE	24.8	20.4	19.7	17.4	6.4	0.2	3.3	1.8	2.2	1.1	0.5	1.0	1.1	11.1
LDW-Y2-SU-ENR-CB-CORE	19.7	18.1	18.4	17.8	7.4	2.8	2.7	7.0	2.6	0.8	0.4	1.1	1.4	15.9
LDW-Y2-SU-ENR+AC-CA-CORE	17.6	14.4	19.2	21.1	9.5	2.6	2.0	6.1	3.1	0.9	0.5	1.4	1.6	15.6
LDW-Y2-SU-ENR+AC-CB-CORE	19.1	15.9	17.8	19.7	9.3	2.2	1.4	3.6	4.7	1.5	0.8	2.0	2.0	15.9
LDW-Y2-SU-ENR+AC-CC-CORE	13.6	14.8	19.7	20.8	9.7	2.6	2.6	4.7	5.4	1.4	0.7	2.0	2.1	18.9

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Relative Standard Deviation, By Phi Size

Sample ID	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
LDW-Y2-SU-ENR-CC-CORE	100.0	99.7	80.0	56.8	34.4	15.6	8.5	6.5	5.2	3.9	2.8	2.0	1.5	0.8
	100.0	99.1	79.2	57.9	34.4	15.6	8.7	6.7	5.2	3.9	2.7	2.0	1.6	0.8
	100.0	99.3	80.5	56.8	34.4	15.8	8.7	6.6	5.2	3.8	2.7	1.9	1.6	0.8
AVE	100.0	99.4	79.9	57.2	34.4	15.6	8.6	6.6	5.2	3.9	2.7	2.0	1.5	0.8
STDEV	0.0	0.2	0.5	0.5	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
%RSD	0.0	0.2	0.7	1.0	0.0	0.5	0.7	1.0	0.6	0.7	0.6	1.2	1.8	2.4

The Triplicate Applies To The Following Samples

Client ID	Date Sampled	Date Extracted	Date Complete	QA Ratio (95-105)	Data Qualifiers	Pipette Portion (5.0-25.0g)
LDW-Y2-SU-ENR-CC-CORE	4/25/2019	5/20/2019	5/26/2019	100.5		8.7
	4/25/2019	5/20/2019	5/26/2019	100.6		8.5
	4/25/2019	5/20/2019	5/26/2019	100.5		8.5
LDW-Y2-SU-ENR-CA-CORE	4/25/2019	5/20/2019	5/26/2019	102.5		14.2
LDW-Y2-SU-ENR-CB-CORE	4/25/2019	5/20/2019	5/26/2019	100.7		20.2
LDW-Y2-SU-ENR+AC-CA-CORE	4/25/2019	5/20/2019	5/26/2019	100.4		18.6
LDW-Y2-SU-ENR+AC-CB-CORE	4/25/2019	5/20/2019	5/26/2019	99.9		14.1
LDW-Y2-SU-ENR+AC-CC-CORE	4/25/2019	5/20/2019	5/26/2019	100.7		14.9

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Reviewed by: Elizabeth Goble

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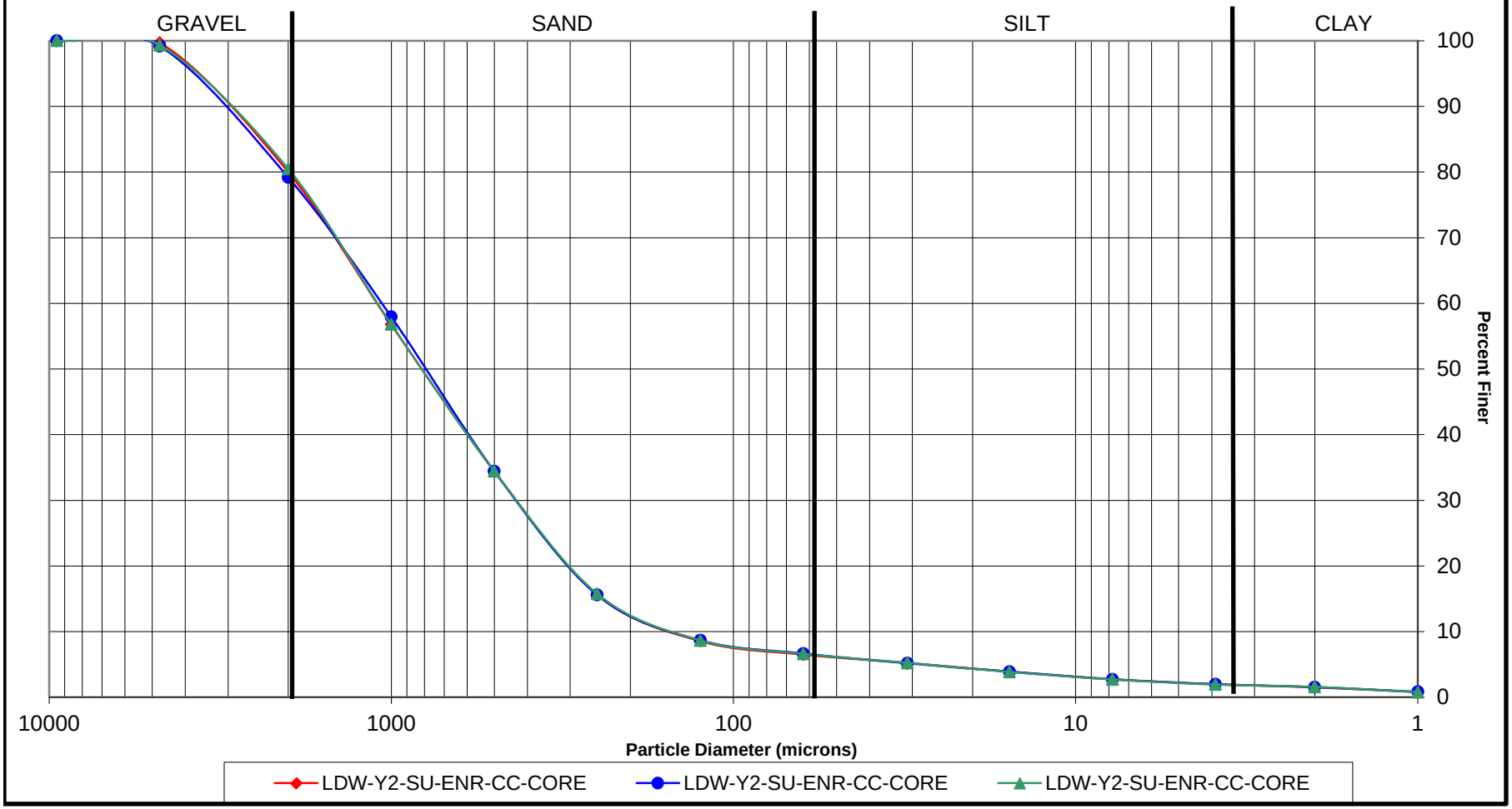
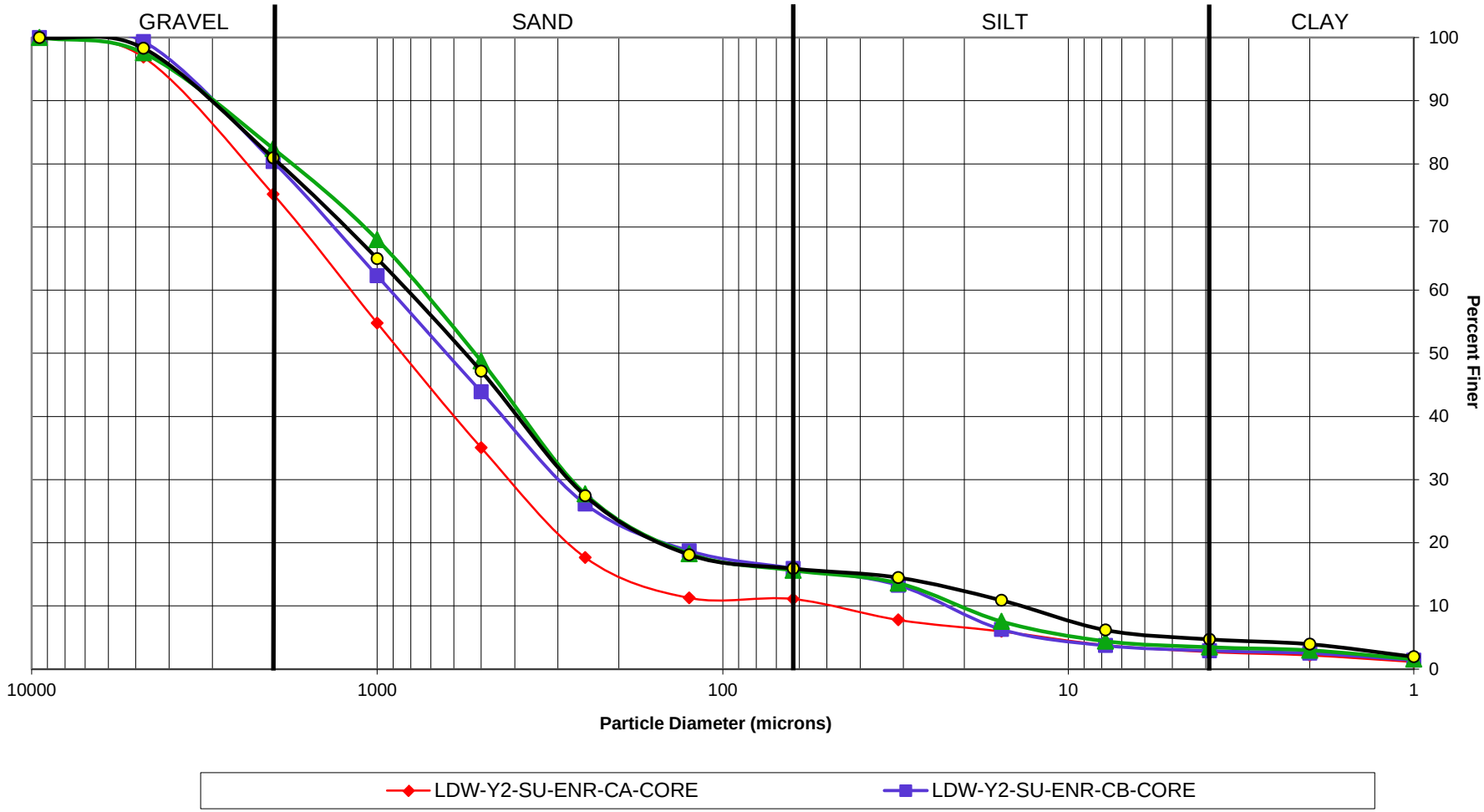
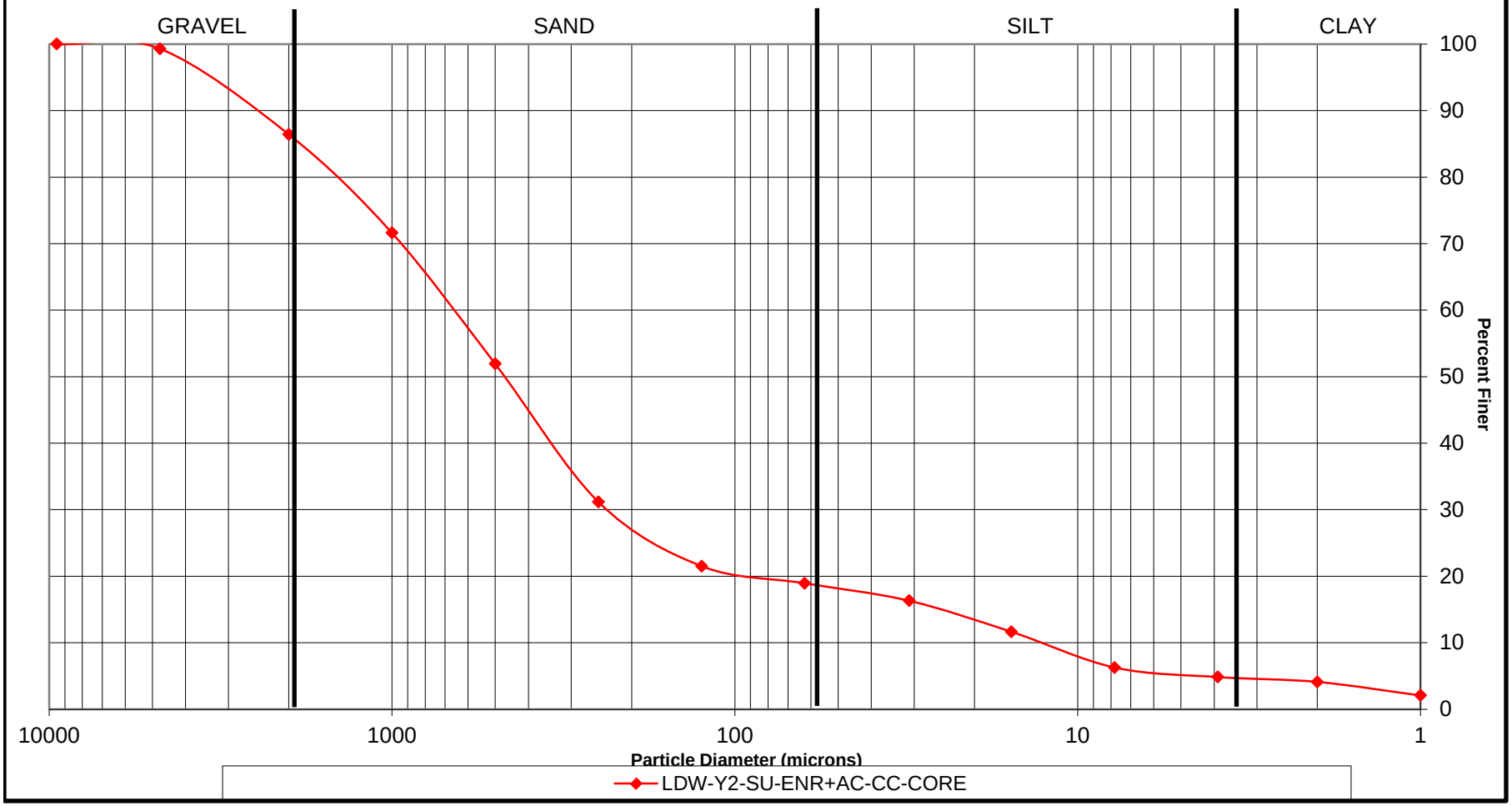
PSEP Grain Size Distribution

Triplicate Sample Plot



PSEP Grain Size Distribution



PSEP Grain Size Distribution