Materials Testing & Consulting, Inc.
Geotechnical Engineering • Special Inspection • Materials Testing • Environmental Consulting

Project:	LDW ENR/AC Pilot Study	**Date Received:**	October 1, 2020
Project #:	19S135	**Sampled By:**	Others
Client :	Wood	**Date Reported:**	November 18, 2020
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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Reviewed by: Elizabeth Goble

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Project: LDW ENR/AC Pilot Study
Project #: 19S135
Date Received: October 1, 2020
Date Tested: November 17, 2020

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-Y3-IN-ENR-CD-CORE	100.0	100.0	60.6	41.3	22.3	9.3	6.0	4.6	3.2	1.8	1.0	0.6	0.3	0.1
	100.0	100.0	64.1	42.3	23.3	10.0	6.4	4.7	3.6	1.8	1.0	0.5	0.4	0.3
	100.0	100.0	61.6	41.5	22.1	9.0	5.8	4.3	2.3	1.2	0.6	0.4	0.3	0.2
LDW-Y3-IN-ENR-CB-CORE	100.0	100.0	66.8	44.4	22.4	8.6	5.6	4.0	2.8	1.6	0.9	0.5	0.4	0.3
LDW-Y3-IN-ENR-CC-CORE	100.0	100.0	68.7	48.8	27.7	14.0	10.6	8.4	6.1	3.5	1.9	1.0	0.9	0.5
LDW-Y3-IN-ENR+AC-CA-CORE	100.0	100.0	71.2	52.9	29.8	13.0	8.1	5.0	3.3	1.8	1.0	0.6	0.4	0.1
LDW-Y3-IN-ENR+AC-CB-CORE	100.0	100.0	66.8	50.3	29.5	15.5	10.2	6.4	3.8	2.2	1.3	0.8	0.6	0.2
LDW-Y3-IN-ENR+AC-CC-CORE	100.0	100.0	63.4	42.5	21.1	8.2	5.3	3.6	2.3	1.3	0.7	0.4	0.3	0.1

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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-Y3-IN-ENR-CD-CORE	39.4	19.3	19.0	13.0	3.3	1.4	1.4	1.4	0.8	0.4	0.2	0.2	0.1	4.6
	35.9	21.7	19.0	13.3	3.6	1.7	1.1	1.8	0.9	0.4	0.1	0.1	0.3	4.7
	38.4	20.1	19.4	13.1	3.3	1.4	2.0	1.1	0.6	0.3	0.1	0.1	0.2	4.3
LDW-Y3-IN-ENR-CB-CORE	33.2	22.4	22.0	13.8	3.1	1.6	1.2	1.2	0.7	0.4	0.1	0.2	0.3	4.0
LDW-Y3-IN-ENR-CC-CORE	31.3	19.9	21.1	13.7	3.4	2.2	2.3	2.5	1.7	0.8	0.2	0.3	0.5	8.4
LDW-Y3-IN-ENR+AC-CA-CORE	28.8	18.3	23.1	16.8	4.9	3.1	1.7	1.5	0.8	0.4	0.2	0.2	0.1	5.0
LDW-Y3-IN-ENR+AC-CB-CORE	33.2	16.6	20.8	14.0	5.2	3.8	2.6	1.6	0.9	0.5	0.2	0.4	0.2	6.4
LDW-Y3-IN-ENR+AC-CC-CORE	36.6	20.8	21.4	12.9	3.0	1.6	1.4	0.9	0.6	0.3	0.1	0.2	0.1	3.6

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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-Y3-IN-ENR-CD-CORE	100.0	100.0	60.6	41.3	22.3	9.3	6.0	4.6	3.2	1.8	1.0	0.6	0.3	0.1
	100.0	100.0	64.1	42.3	23.3	10.0	6.4	4.7	3.6	1.8	1.0	0.5	0.4	0.3
	100.0	100.0	61.6	41.5	22.1	9.0	5.8	4.3	2.3	1.2	0.6	0.4	0.3	0.2
AVE	100.0	100.0	62.1	41.7	22.6	9.4	6.1	4.5	3.0	1.6	0.9	0.5	0.3	0.2
STDEV	0.0	0.0	1.5	0.5	0.5	0.4	0.3	0.2	0.5	0.3	0.2	0.1	0.0	0.1
%RSD	0.0	0.0	2.3	1.1	2.3	4.3	4.3	3.7	17.8	17.7	18.4	17.1	11.4	45.3

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-Y3-IN-ENR-CD-CORE	10/1/2020	11/2/2020	11/17/2020	99.9		7.0
	10/1/2020	11/2/2020	11/17/2020	99.9		7.1
	10/1/2020	11/2/2020	11/17/2020	100.3		6.5
LDW-Y3-IN-ENR-CB-CORE	10/1/2020	11/2/2020	11/17/2020	100.1		6.1
LDW-Y3-IN-ENR-CC-CORE	10/1/2020	11/2/2020	11/17/2020	100.0		12.7
LDW-Y3-IN-ENR+AC-CA-CORE	10/1/2020	11/2/2020	11/17/2020	99.8		7.5
LDW-Y3-IN-ENR+AC-CB-CORE	10/1/2020	11/2/2020	11/17/2020	100.5		9.7
LDW-Y3-IN-ENR+AC-CC-CORE	10/1/2020	11/2/2020	11/17/2020	100.4		5.4

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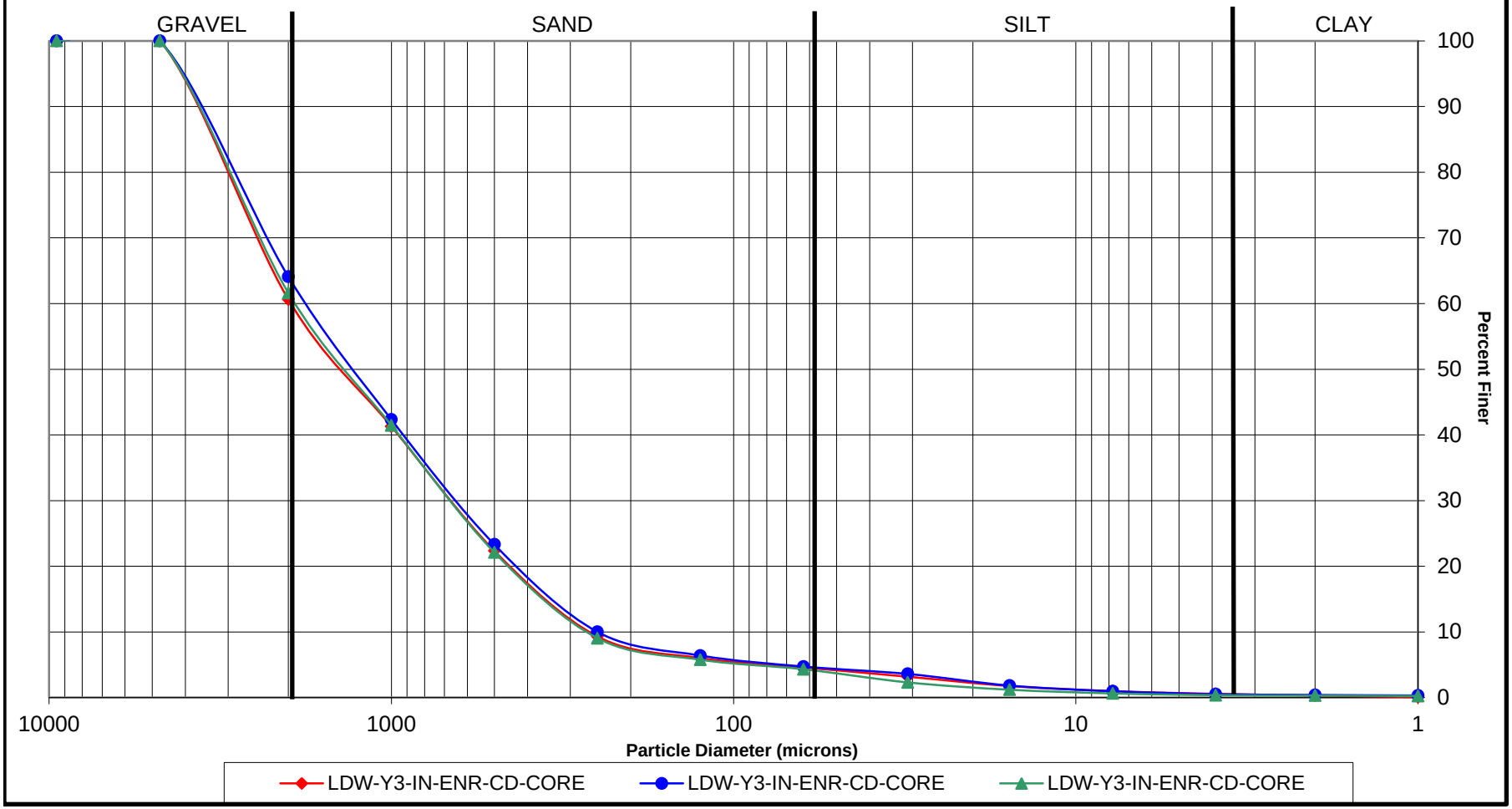
PSEP Grain Size Distribution

Triplicate Sample Plot



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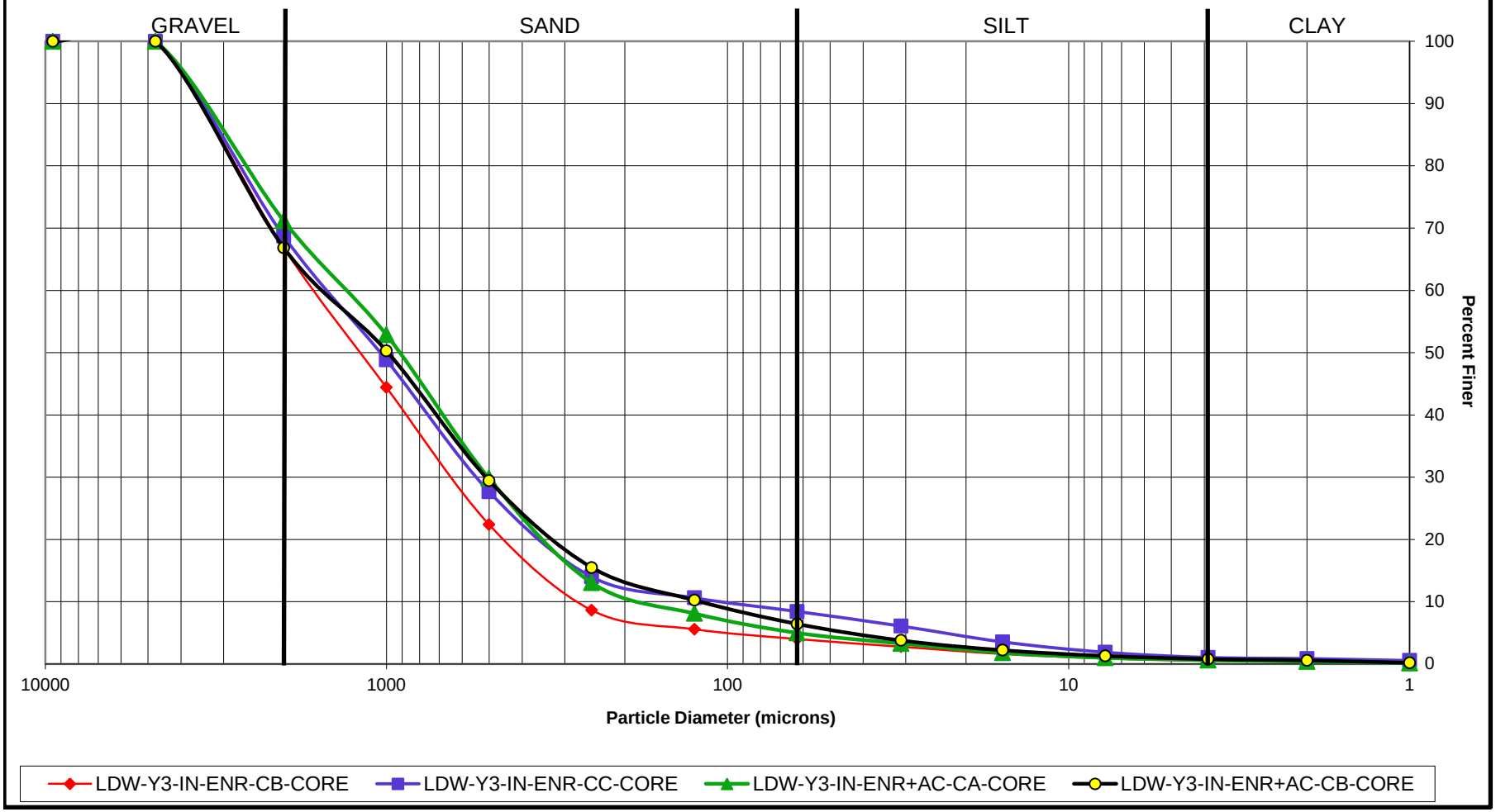
PSEP Grain Size Distribution



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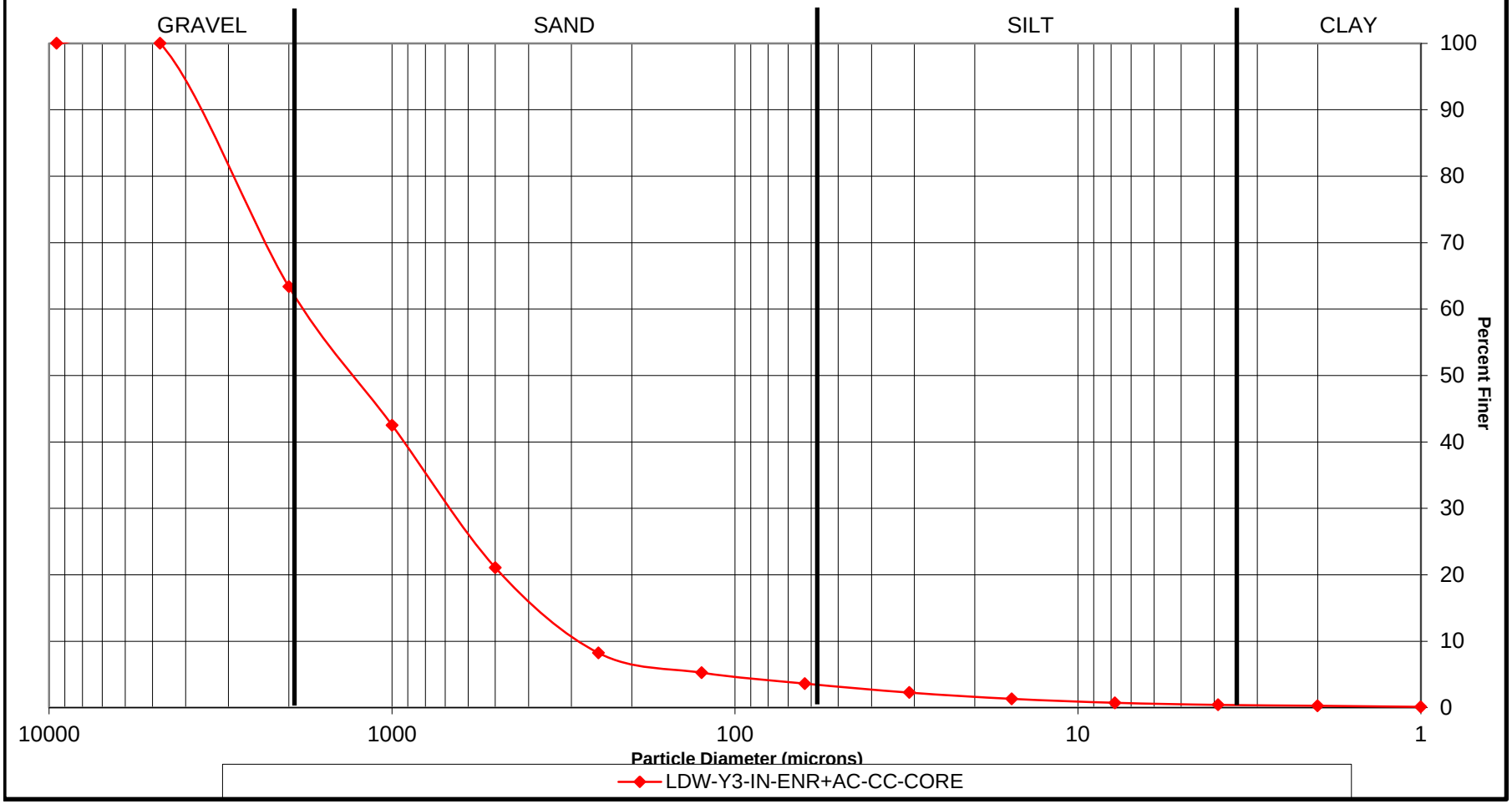
PSEP Grain Size Distribution