3.2.2 Tables

Table 2: Soil Mass Distribution Data

Upper Watershed Soil (Mass in grams)							
Size Fraction (micror	DI Water	HMP #1	HMP #1a*	HMP #2	Sonication	H2O2	CDB
2000 to 200	49.928	14.469	14.469	14.070	38.596	13.328	13.490
200 to 53	24.162	12.246	12.246	11.695	18.419	13.809	13.661
53 to 25	6.243	4.361	4.361	4.169	5.830	4.511	4.724
25 to 10	5.828	5.739	5.739	5.666	8.198	5.754	5.185
10 to 2	4.369	7.390	7.390	7.970	10.622	10.904	7.298
2 to 0.45	2.537	*7.374*	*12.127*	12.661	9.904	8.043	11.742
0.45-10k	0.074	0.401	0.400	0.271	0.049	0.323	0.367
<10K	ND	ND	ND	ND	ND	ND	ND
total mass recovered	93.100	51.981	56.732	56.500	91.600	56.700	56.500
Mass Dispersed	100.756	61.200	61.200	60.348	100.380	61.811	60.596
% recovery	92.401	84.936	92.700	93.624	91.254	91.731	93.240

* Some of the fine fraction of HMP #1 2-0.45 micrometer was los
HMP #1 2-0.45 um was corrected by adjusting the amount in this fraction to obtain the average percent recovery (92.7%)

Lower Watershed Soil (Mass in grams)				
	DI Water 1	DI Water 2	HMP	Sonication
2000 to 200	42.145	20.708	12.635	43.953
200 to 53	28.074	12.615	10.762	19.126
53 to 25	6.102	2.746	3.015	4.348
25 to 10	6.862	3.953	4.367	7.546
10 to 2	5.378	4.400	5.881	8.846
2 to 0.45	4.150	2.139	10.284	5.266
0.45-10k	0.007	0.088	0.168	0.012
<10K	ND	ND	ND	ND
total mass recovered	92.719	46.650	47.200	89.000
Mass Dispersed	85.875	42.932	44.840	80.011
% recovery	92.619	92.031	95.000	89.900

ND: Not determined

Table 3: Soil Percent Mass Distribution Data

Upper Watershed Soil									
Size Fraction	DI Water	HMP #1	HMP #1a*	HMP #2	HMP Ave	HMP SD	Sonication	H2O2	CDB
2000 to 200	53.6	27.82	25.50	24.9	25.2	0.4	42.1	23.5	23.9
200 to 53	25.9	23.55	21.59	20.7	21.1	0.6	20.1	24.4	24.2
53 to 25	6.7	8.39	7.69	7.4	7.5	0.2	6.4	8.0	8.4
25 to 10	6.3	11.04	10.12	10.0	10.1	0.1	8.9	10.2	9.2
10 to 2	4.7	14.21	13.03	14.1	13.6	0.8	11.6	19.2	12.9
2 to 0.45	2.7	*14.18*	*21.38*	22.4	21.9	0.7	10.8	14.2	20.8
0.45-10k	0.1	0.77	0.71	0.5	0.6	0.2	0.1	0.6	0.7
<10K	ND	ND	ND	ND	ND		ND	ND	ND
% recovery	92.4	84.9	92.7	93.6			91.3	91.7	93.2

Some HMP#1: 2-0.45 um was lost

* HMP 2-0.45 um was corrected by adjusting the amount in this fraction to obtain the average percent recovery (92.7%)

Lower Watershed Soil						
	DI Water #1	DI Water # 2	DI Water Ave	DI SD	HMP	Sonication
2000 to 200	45.5	44.4	44.9	0.8	25.5	49.3
200 to 53	30.3	27.0	28.7	2.3	21.7	21.5
53 to 25	6.6	5.9	6.2	0.5	6.1	4.9
25 to 10	7.4	8.5	7.9	0.8	8.8	8.5
10 to 2	5.8	9.4	7.6	2.6	11.9	9.9
2 to 0.45	4.5	4.6	4.5	0.1	20.7	5.9
0.45-10k	0.0	0.2	0.1	0.1	0.4	0.0
<10K	ND	ND		ND	ND	
% recovery	92.6	92.0			95.0	89.9

ND: Not determined

Table 4: Pu 239/240 Concentration Data pCi Pu/g

Size Fraction	DI Water	HMP #1	HMP#1 Repeat	HMP #2	HMP #2 Repeat	HMP Ave.	SD	Sonication	H2O2	CDB
	Upper Watershed Soil									
2000 to 200	27.03	4.06		3.35		3.70	0.50	23.39	4.65	2.55
200 to 53	24.07	8.22		7.93		8.08	0.20	12.97	10.25	16.30
53 to 25	29.72	13.95	19.01	20.89		17.95	3.59	16.99	15.94	42.61
25 to 10	27.24	*67.85*	*22.11*	15.69	50.40	39.01	24.43	30.97	19.72	17.73
10 to 2	55.71	87.11		74.65	79.78	80.51	6.27	62.01	67.26	47.11
2 to 0.45	51.46	*60.54*		70.87		65.70	7.31	52.47	69.07	50.02
0.45-10k	4.17	60.52		71.69		66.11	7.90	6.57	130.22	281.41
Calculated pCi pu/g	28.46	36.17	31.93	33.09	37.30	34.62	2.53	29.19	30.56	31.90
Whole soil pCi/g	31.69									

Some of the fine fraction of HMP #1: 2-0.45 um lost

R: Pu reanalysis

	DI Water # 1	DI Water #2	DI Ave.	SD	HMP	Sonication
	Lower Watershed Soil					
2000 to 200	7.25	10.13	8.69	2.04	1.67	7.62
200 to 53	8.17	7.83	8.00	0.24	4.42	4.98
53 to 25	11.90	8.84	10.37	2.16	6.80	7.04
25 to 10	11.45	11.63	11.54	0.12	5.22	10.38
10 to 2	24.05	22.19	23.12	1.32	21.64	23.82
2 to 0.45	21.31	18.71	20.01	1.83	19.92	23.68
0.45-10k	45.11	4.41	24.76	28.78	24.84	7.56
Calculated pCi Pu/g	9.75	11.09	10.42	0.94	9.84	9.83
Whole soil pCi/g	8.97					

Table 5: Percent inventory of Pu 239/240 in each size fraction.

Size Fraction	DI Water	HMP Ave.	SD	Sonication	H2O2	CDB
	Upper Watershed Soil					
2000 to 200	50.95	2.71	0.43	33.77	3.57	1.91
200 to 53	21.94	4.96	0.47	8.94	8.17	12.36
53 to 25	7.00	4.08	0.78	3.71	4.15	11.17
25 to 10	5.99	11.07	6.46	9.50	6.55	5.10
10 to 2	9.18	32.23	2.31	24.64	42.33	19.08
2 to 0.45	4.93	41.72	5.06	19.44	32.06	32.58
0.45-10k	0.01	1.12	0.18	0.01	2.43	5.74
< 10K	0.00	2.11	0.15	0.00	0.74	12.07
Calculated pCi pu/g	28.46	34.62	2.52	29.19	30.56	31.90
Whole soil pCi/g	31.69					

	DI Ave.	SD	HMP	Sonication
	Lower Watershed Soil			
2000 to 200	37.18	4.80	4.54	38.24
200 to 53	22.24	4.44	10.24	10.88
53 to 25	6.36	2.36	4.41	3.50
25 to 10	8.79	0.14	4.90	8.95
10 to 2	16.59	3.23	27.40	24.07
2 to 0.45	8.76	1.44	44.09	14.24
0.45-10k	0.06	0.03	0.90	0.01
< 10K	0.03	0.04	3.52	0.11
Calculated pCi Pu/g	10.42	0.94	9.84	9.84
Whole soil pCi/g	8.73			

Table 6. Specific Surface Area (m2/g)

	Upper Watershed Soil							
Size Fraction (microns)	DI Water	HMP #1	HMP #2	HMP Ave.	HMP SD	Sonication	H2O2	CDB
2000 to 200	7.5	0.51	0.45	0.48	0.04	5.36	0.60	0.36
200 to 53	8.8	0.75	0.51	0.63	0.17	1.66	1.09	0.84
53 to 25	11.8	1.06	1.03	1.05	0.02	1.43	1.21	2.24
25 to 10	17.5	2.84	3.47	3.16	0.45	7.95	12.65	4.18
10 to 2	33.1	8.69	12.36	10.53	2.60	21.56	31.94	12.02
2 to 0.45	88.1	*42.29*	73.61	*73.61*	*ND*	84.33	69.06	30.45
Calculated Average SA	12.16	*7.96*	18.88	*18.20*	*ND*	15.01	17.73	8.74
Unfractionated Soil SA	10.66							

	Lower Watershed Soil					
	DI Water #1	DI Water #2	DI Ave	SD	HMP	Sonication
2000 to 200	5.07	4.93	5.00	0.10	0.85	4.27
200 to 53	5.22	5.42	5.32	0.14	0.99	2.18
53 to 25	7.1	7.33	7.22	0.16	1.20	1.68
25 to 10	11.54	10.98	11.26	0.40	3.21	6.86
10 to 2	20.85	23.44	22.15	1.83	12.51	19.90
2 to 0.45	54.17	59.31	56.74	3.63	43.24	51.04
Calculated Average SA	8.84	9.95	9.39	0.78	11.81	8.24
Unfractionated Soil SA	6.88					

ND: Not determined

Table 7. Inventory of the percent of the total specific surface area in each size fraction.

	Upper Watershed Soil					
Size Fraction (microns)	DI Water	HMP ave	HMP SD	Sonication	H2O2	CDB
2000 to 200	33.21	0.90	0.43	15.04	0.80	0.98
200 to 53	18.78	1.03	0.66	2.22	1.50	2.32
53 to 25	6.49	0.58	0.25	0.61	0.54	2.14
25 to 10	9.00	2.25	0.57	4.74	7.24	4.39
10 to 2	12.76	9.84	0.86	16.65	34.65	17.76
2 to 0.45	19.76	85.41	2.77	60.73	55.27	72.40

	Lower Watershed Soil			
	DI Water ave.	DI Water SD	HMP	Sonication
2000 to 200	24.03	2.87	1.93	25.60
200 to 53	16.31	2.22	1.91	5.69
53 to 25	4.81	0.67	0.65	1.00
25 to 10	9.51	0.22	2.52	7.06
10 to 2	17.95	6.04	13.20	24.01
2 to 0.45	27.39	0.06	79.79	36.65

Table 8: Percent organic carbon concentration data.

	Upper Watershed Soil									
Size Fraction	DI Water	SD	HMP #1	SD	HMP #2	SD	Sonication	SD	H2O2	SD
2000 to 200	3.26	0.11	2.13	0.32	2.27	0.35	2.71	0.42	1.72	0.11
200 to 53	2.51	0.17	1.96	0.21	2.13	0.17	1.74	0.02	0.94	0.18
53 to 25	2.53	0.13	3.18	0.21	3.37	0.01	2.54	0.18	1.64	0.22
25 to 10	2.63	0.03	1.47	0.02	1.67	0.13	2.35	0.01	0.93	0.03
10 to 2	4.14	0.05	5.77	0.00	5.80	0.20	5.35	0.06	4.19	0.44
2 to 0.45	2.68	0.17	3.22	0.23	2.33	0.16	2.66	0.35	2.15	0.04
Whole soil	2.81	0.04								

	Lower Watershed Soil							
	DI Water #1	SD	DI Water #2	SD	HMP	SD	Sonication	SD
2000 to 200	3.18	0.09	3.92	0.11	2.75	0.41	4.25	0.18
200 to 53	3.08	0.17	2.74	0.01	2.66	0.54	2.68	0.06
53 to 25	3.64	0.06	3.52	0.15	4.26	0.28	3.62	0.15
25 to 10	3.23	0.21	3.33	0.16	2.46	0.06	3.59	0.19
10 to 2	5.26	0.01	5.44	0.06	6.19	0.71	6.41	0.13
2 to 0.45	2.84	0.00	2.94	0.08	2.33	0.14	3.67	0.43
Whole Soil	4.09	0.16971						

Table 9: Inventory of the percent ot the total organic carbonconcnetration in each size fraction.

	Upper Watershed Soil					
Size Fraction (microns)	DI Water	HMP Ave	HMP SD	Sonication	H2O2	CDB
2000 to 200	57.65	19.34	0.69	40.28	17.64	ND
200 to 53	21.55	15.08	0.58	12.34	9.99	ND
53 to 25	5.61	8.61	0.17	5.68	5.69	ND
25 to 10	5.45	5.51	0.51	7.39	4.12	ND
10 to 2	6.43	27.44	1.86	21.84	35.15	ND
2 to 0.45	2.42	21.15	3.92	10.14	13.24	ND
0.45-10K	0.50	1.42	0.05	0.18	6.40	ND
<10K	0.40	1.46	0.06	2.14	7.77	ND

	Lower Watershed Soil			
	DI Water Ave.	DI Water SD	HMP	Sonication
2000 to 200	45.16	2.40	22.94	52.05
200 to 53	24.02	5.75	18.87	14.30
53 to 25	6.39	1.16	8.48	4.38
25 to 10	7.40	0.28	7.09	7.56
10 to 2	11.49	3.27	24.05	15.82
2 to 0.45	3.73	0.14	15.84	5.39
0.45-10K	0.38	0.11	1.22	0.15
<10K	1.44	1.00	1.51	0.35

3.2.3 Figures

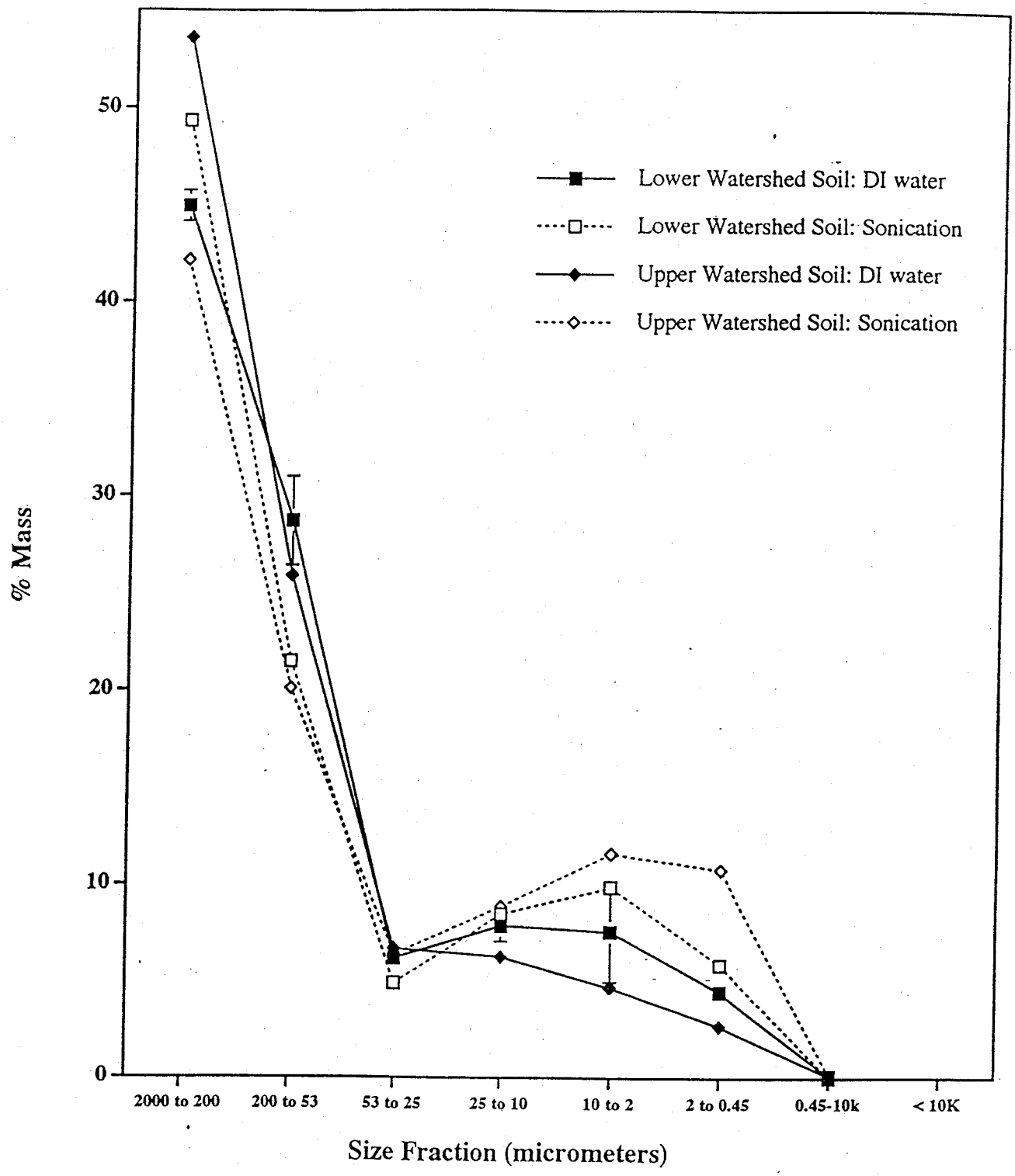

Figure 7. Soil aggregate mechanical stability: Influence of sonication on the mass distributions of the upper and lower watershed soils.

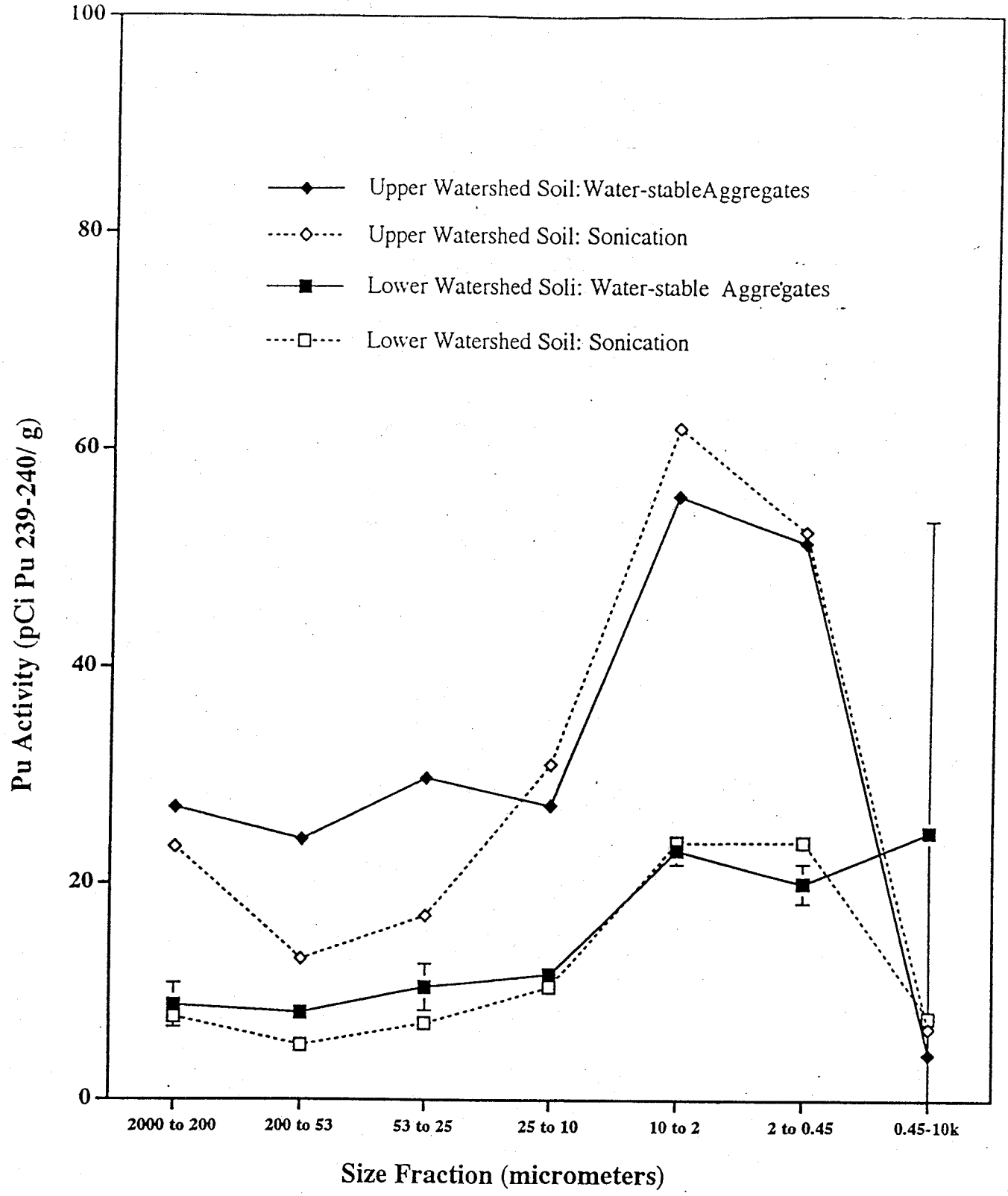

Figure 8. Soil aggregate mechanical stability: Influence of sonication on the Pu 239/240 activities of the upper and lower watershed soils.

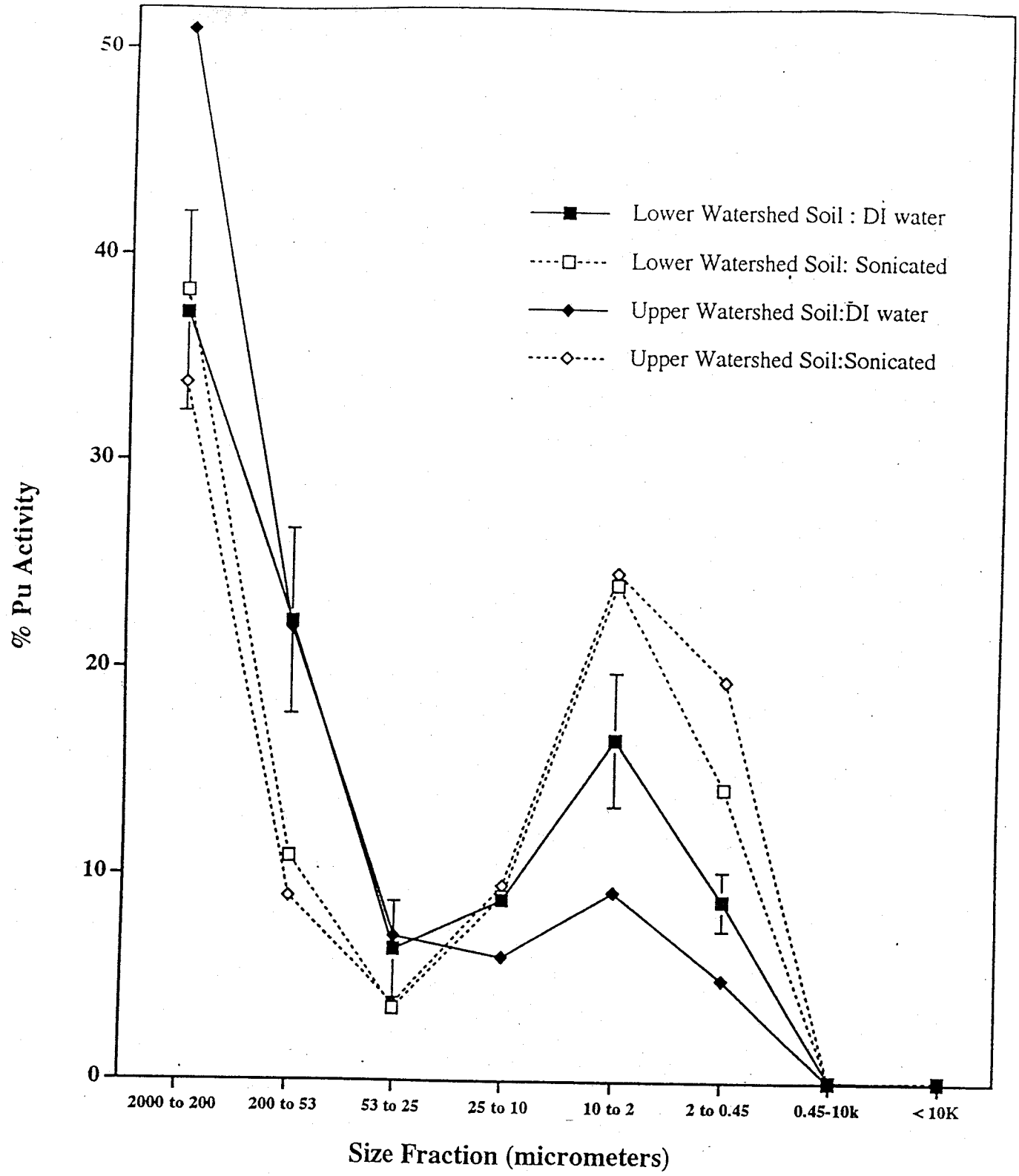

Figure 9. Soil aggregate mechanical stability: Influence of sonication on the Pu 239/240 percent activity inventory of the upper and lower watershed soils.

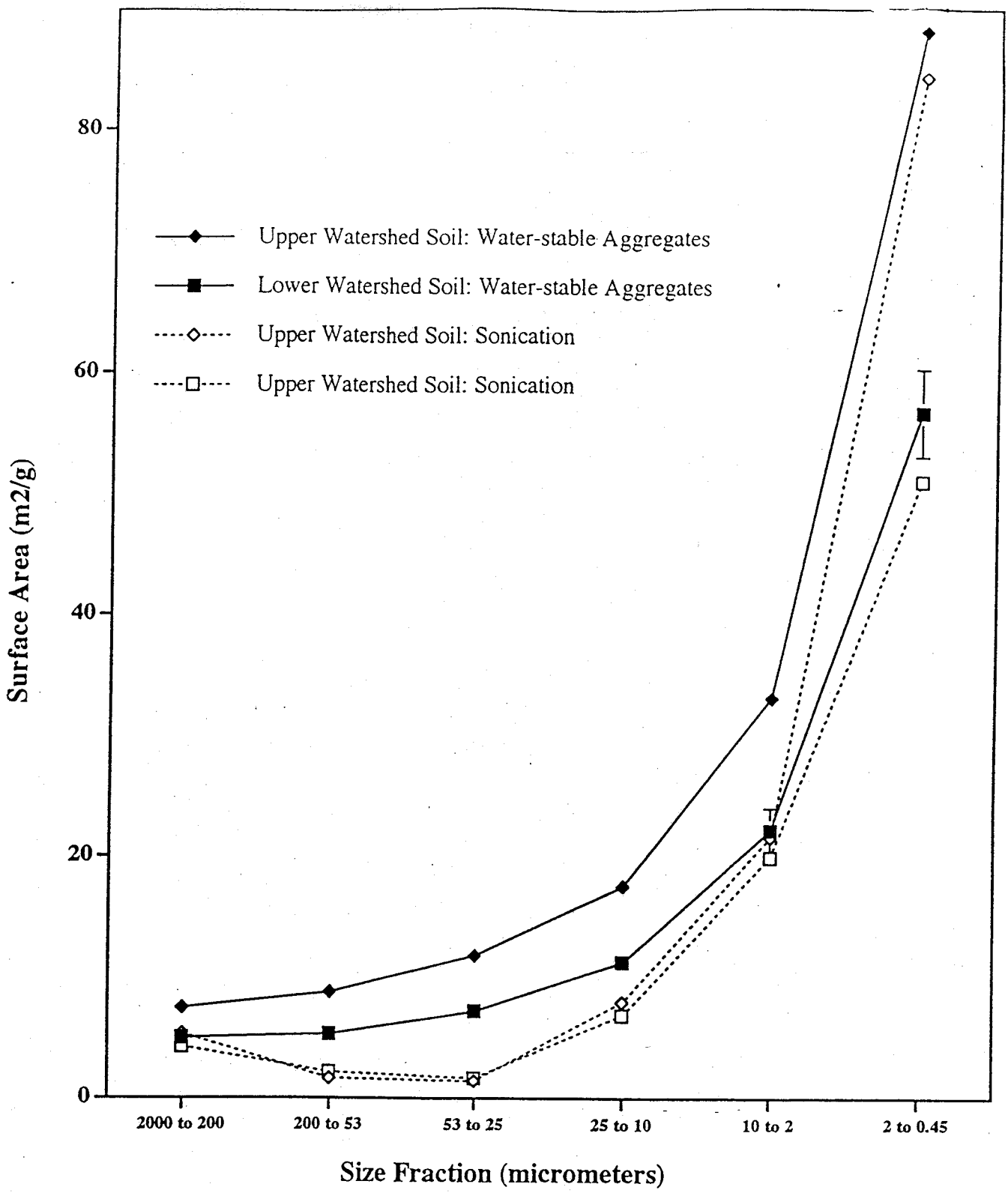

Figure 10. Soil aggregate mechanical stability: Influence of sonication on the specific surface area (m^2/g) of the upper and lower watershed soils.

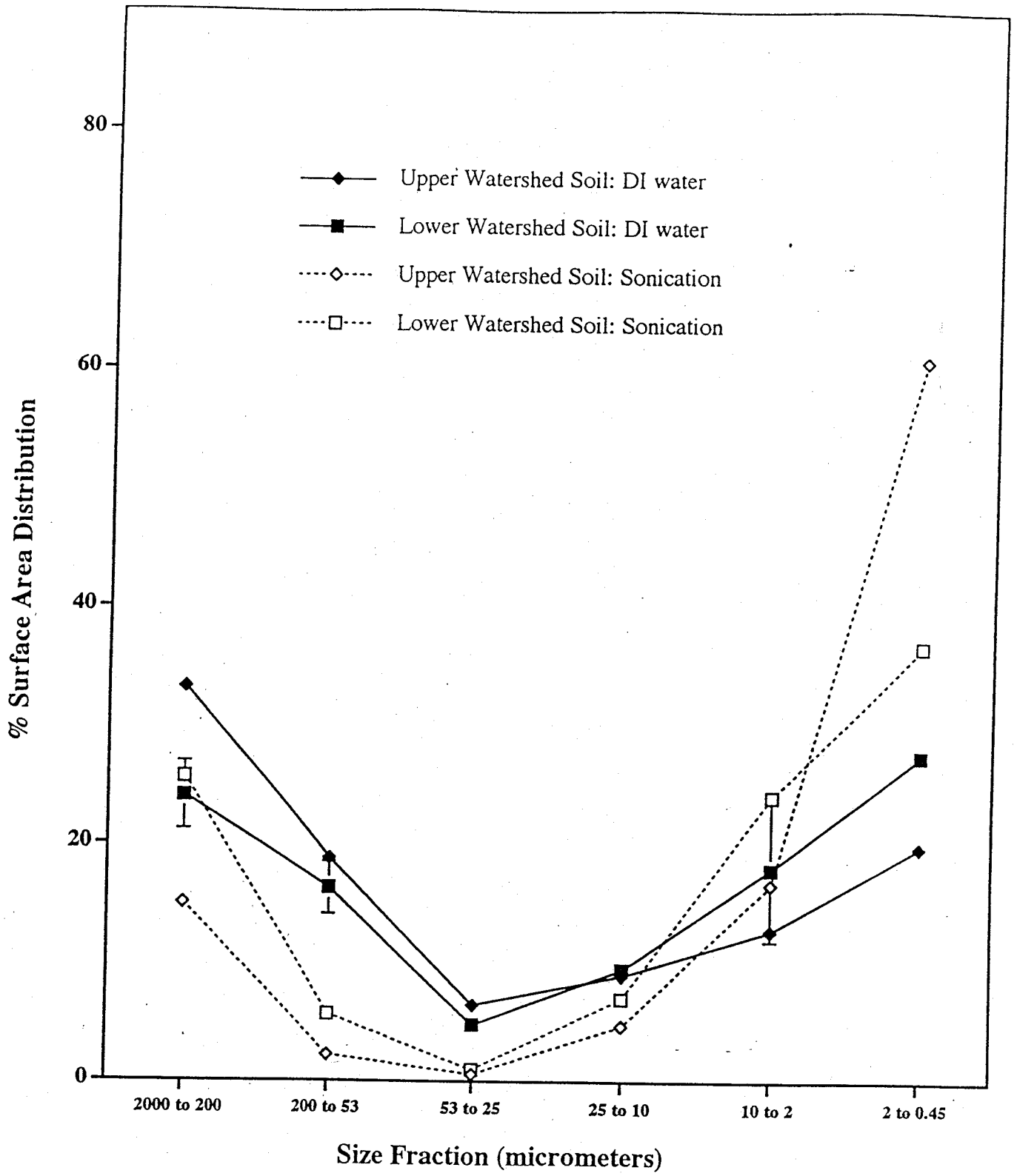

Figure 11. Soil aggregate mechanical stability: Influence of sonication on the percent specific surface area inventory of the upper and lower watershed soils.

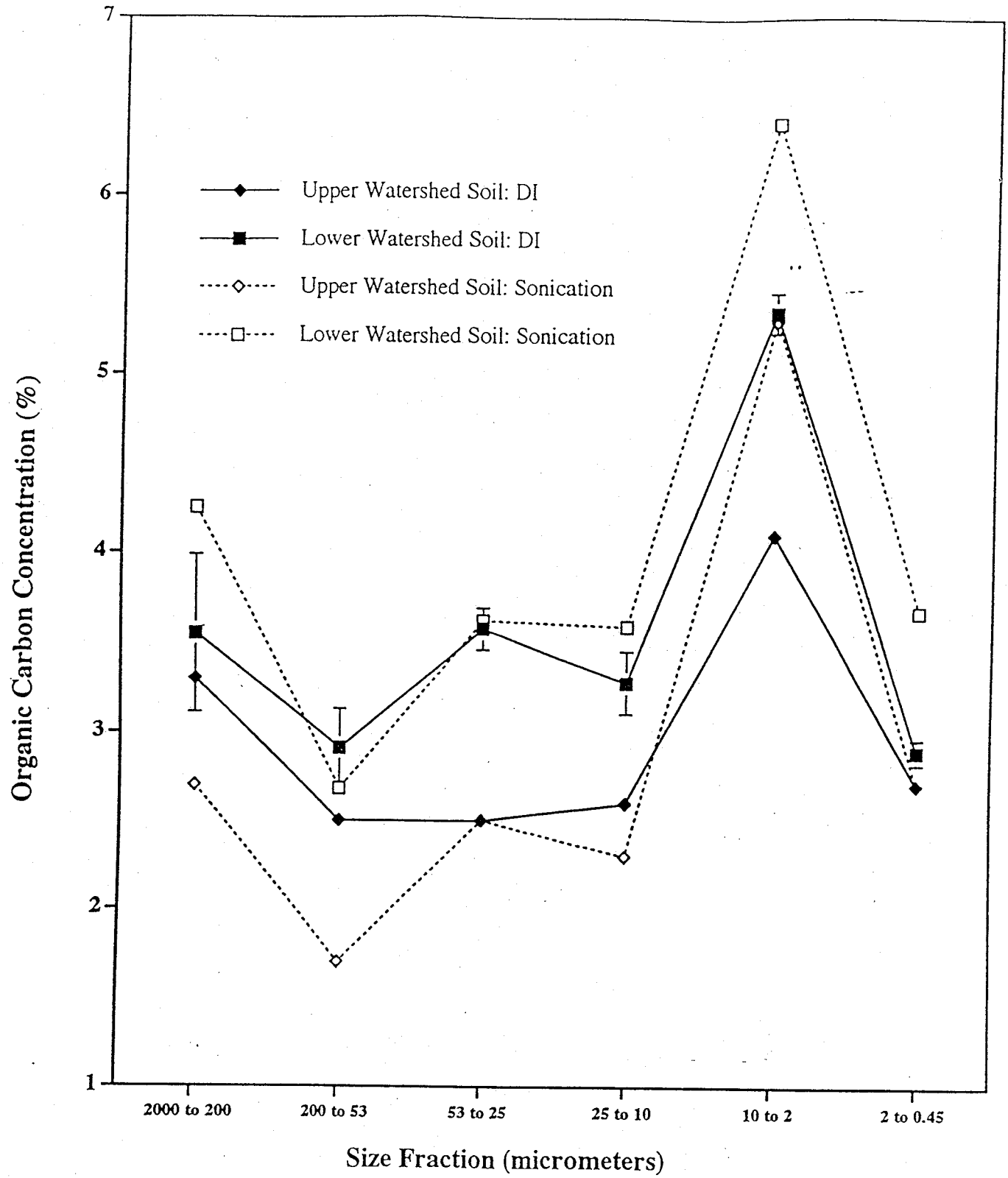

Figure 12. Soil aggregate mechanical stability: Influence of sonication on the organic carbon concentration (%) of the upper and lower watershed soils.

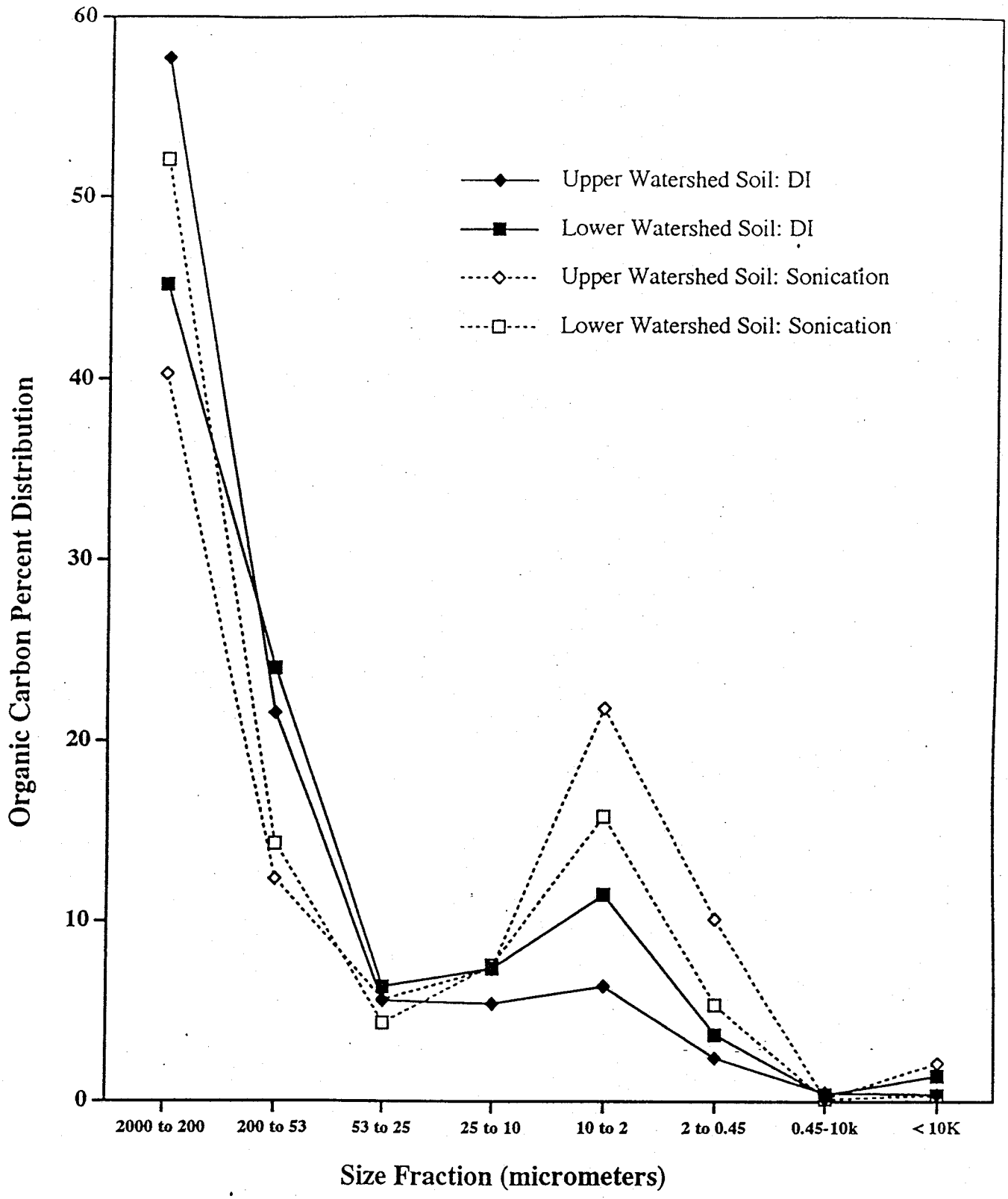

Figure 13. Soil aggregate mechanical stability: Influence of sonication on the percent organic carbon inventory of the upper and lower watershed soils.

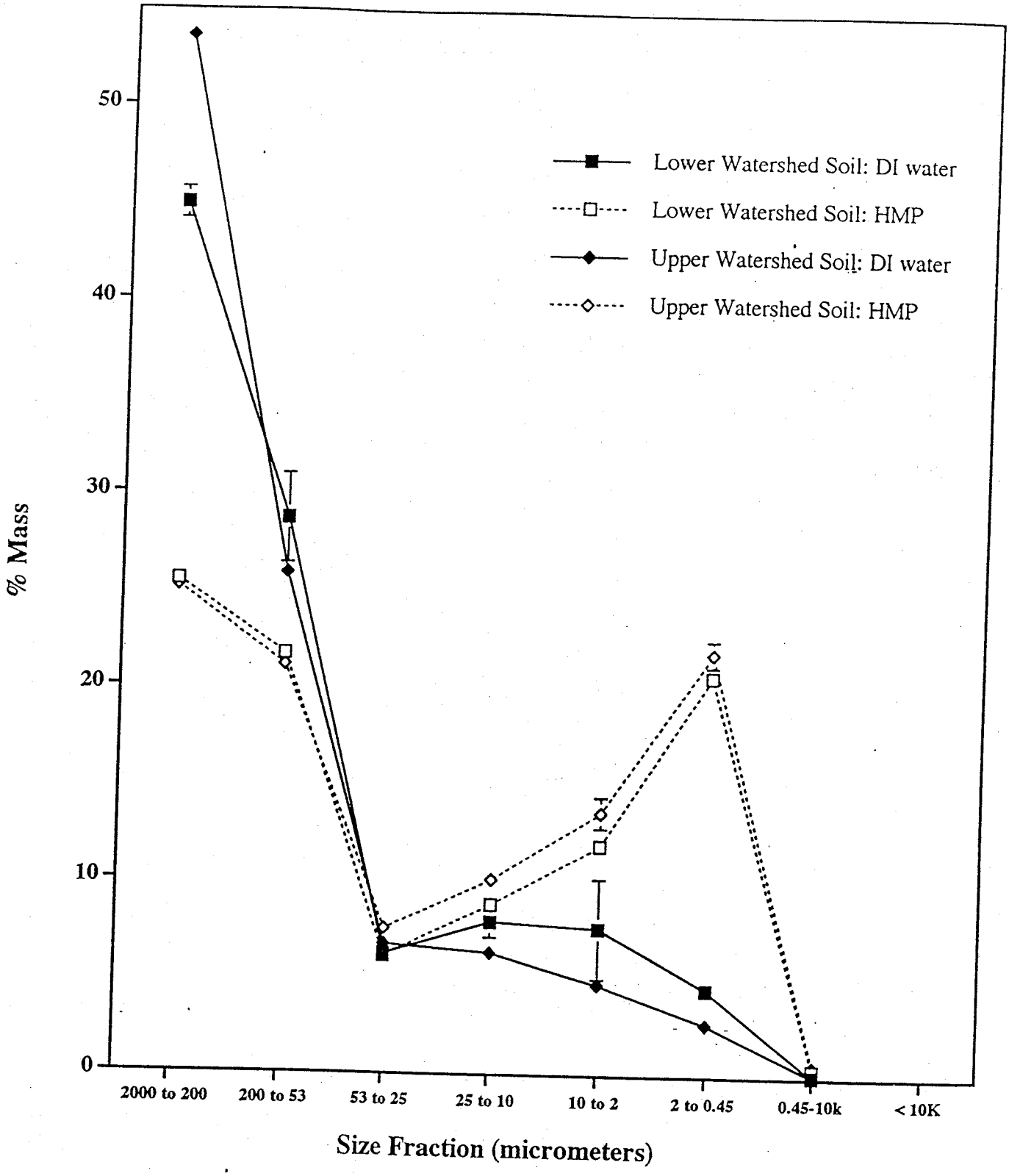

Figure 14. Soil aggregate chemical stability: Influence of hexametaphosphate on the mass distributions of the upper and lower watershed soils.

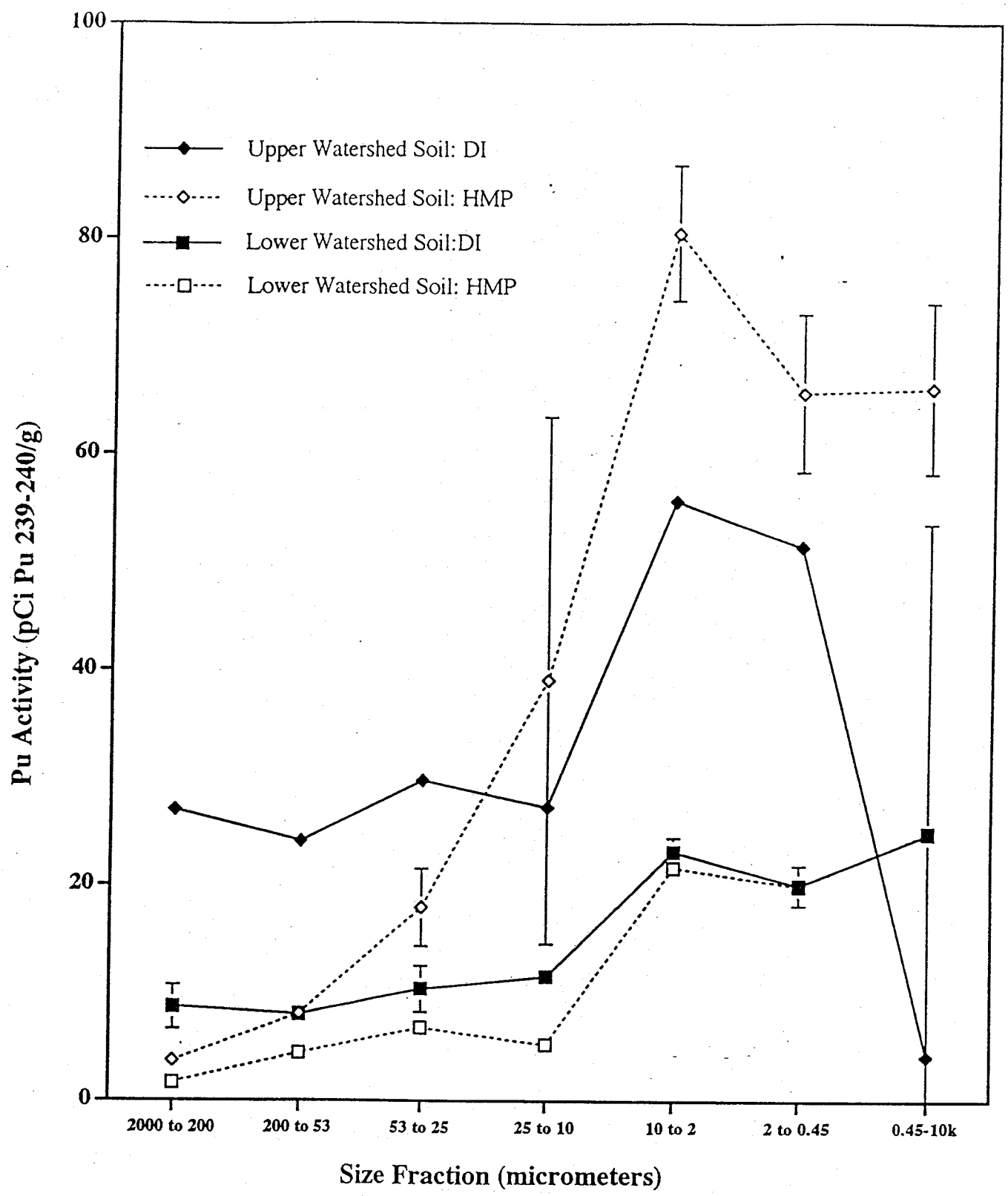

Figure 15. Soil aggregate chemical stability: Influence of hexametaphosphate on the Pu 239/240 activities (pCi Pu/g) of the upper and lower watershed soils.

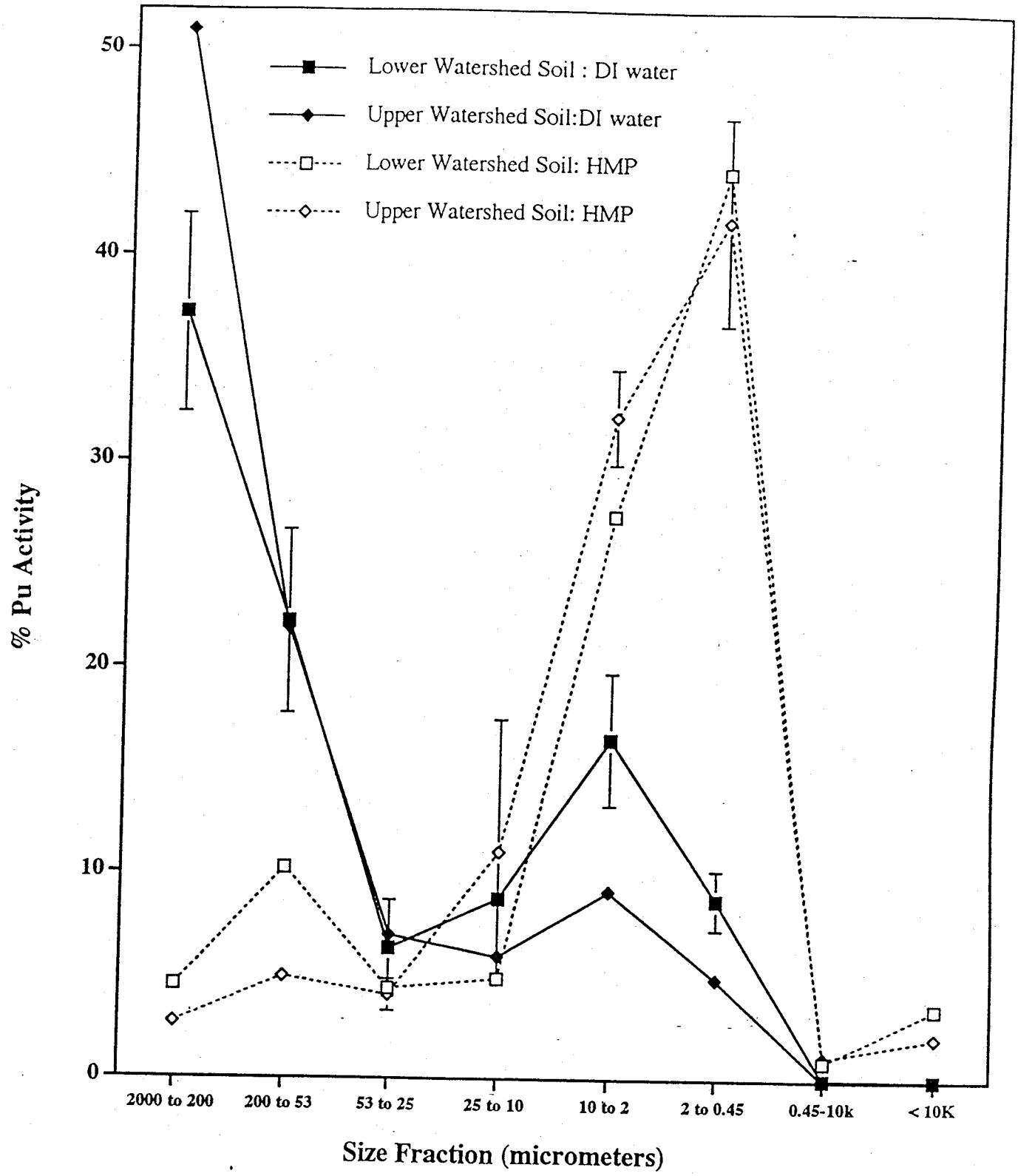

Figure 16. Soil aggregate chemical stability: Influence of hexametaphosphate on the the Pu 239/240 percent activity inventory of the upper and lower watershed soils.

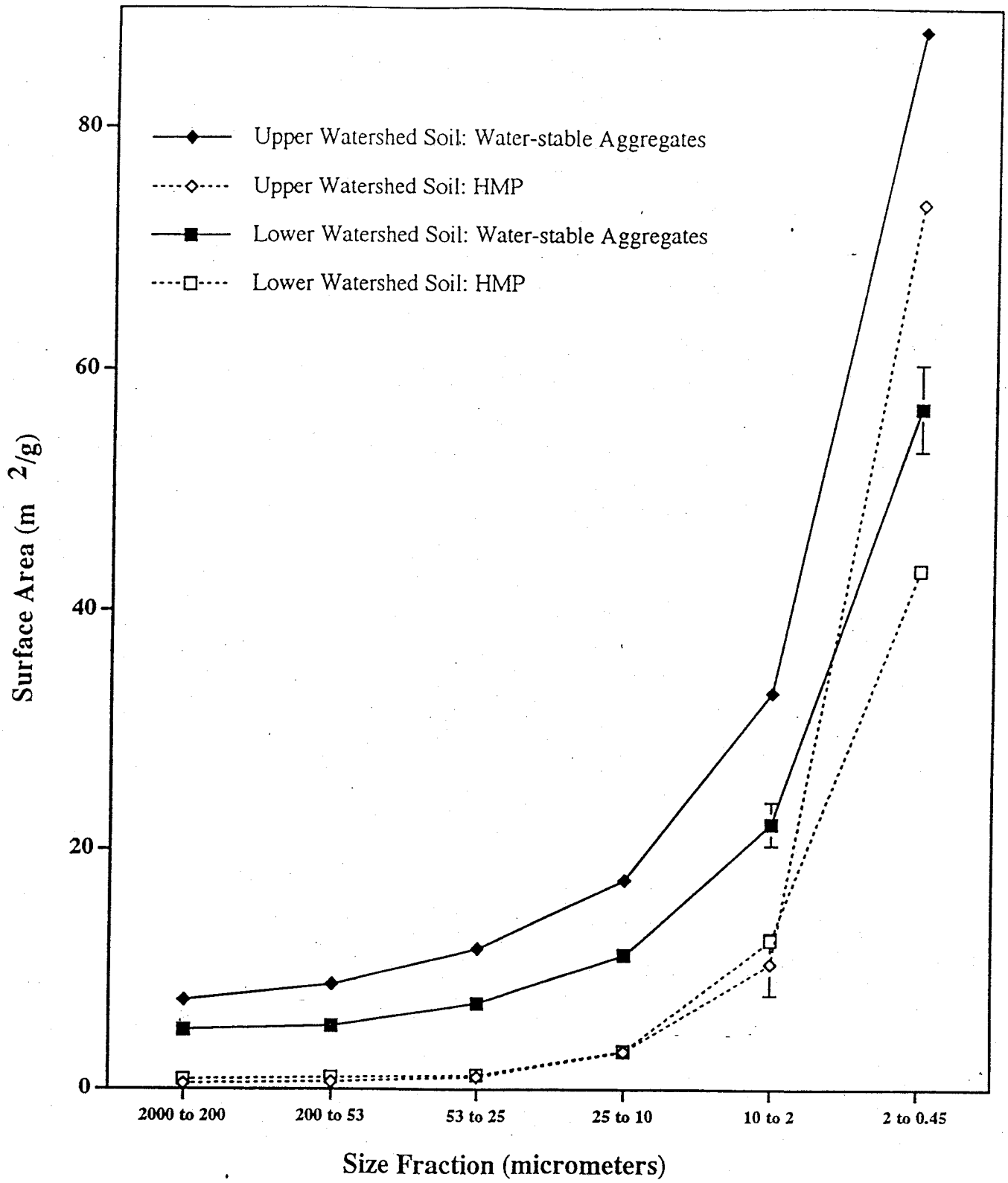

Figure 17. Soil aggregate chemical stability: Influence of hexametaphosphate on the specific surface area (m^2/g) of the upper and lower watershed soils.

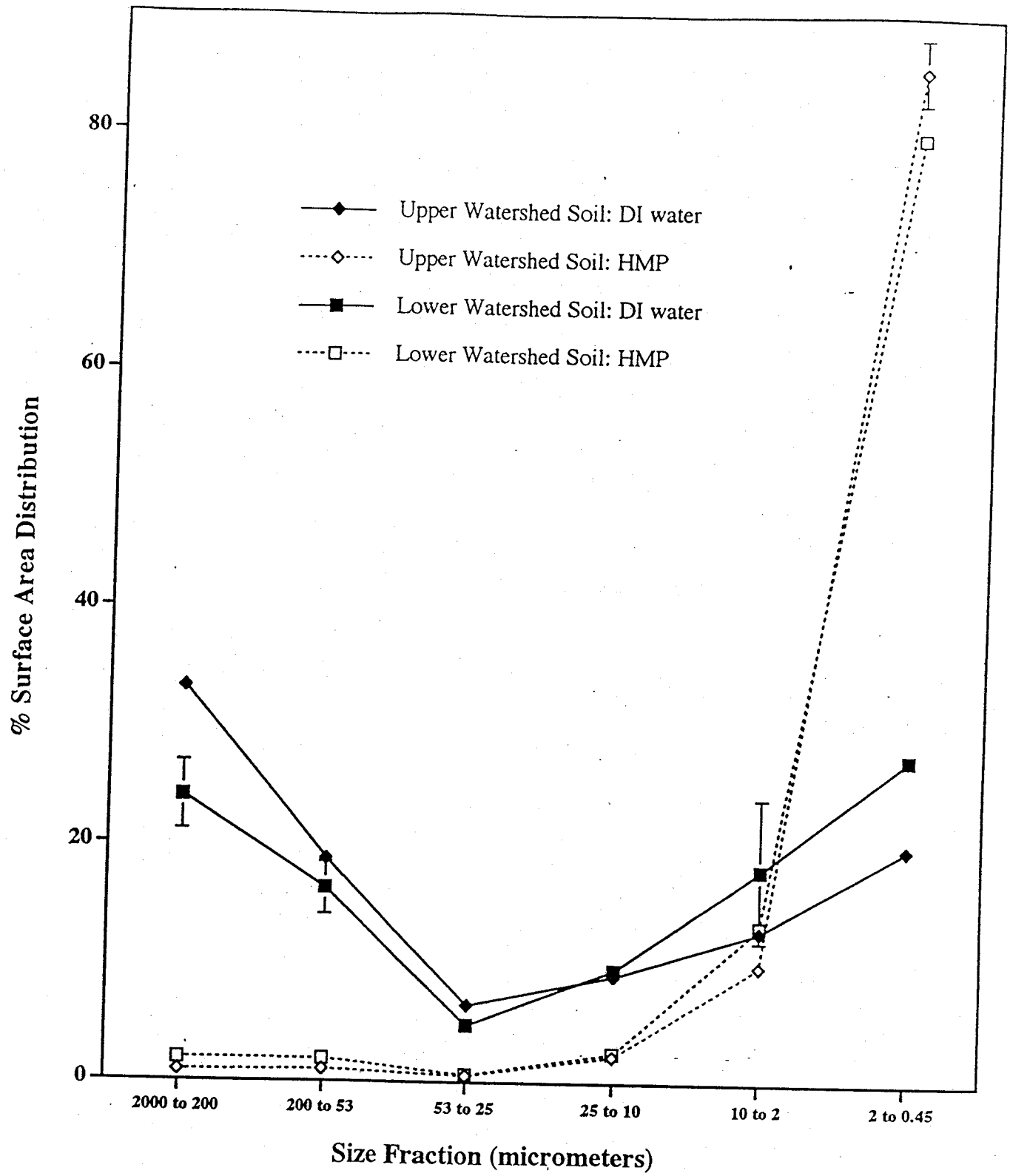

Figure 18. Soil aggregate chemical stability: Influence of hexametaphosphate on the percent specific surface area inventory of the upper and lower watershed soils.

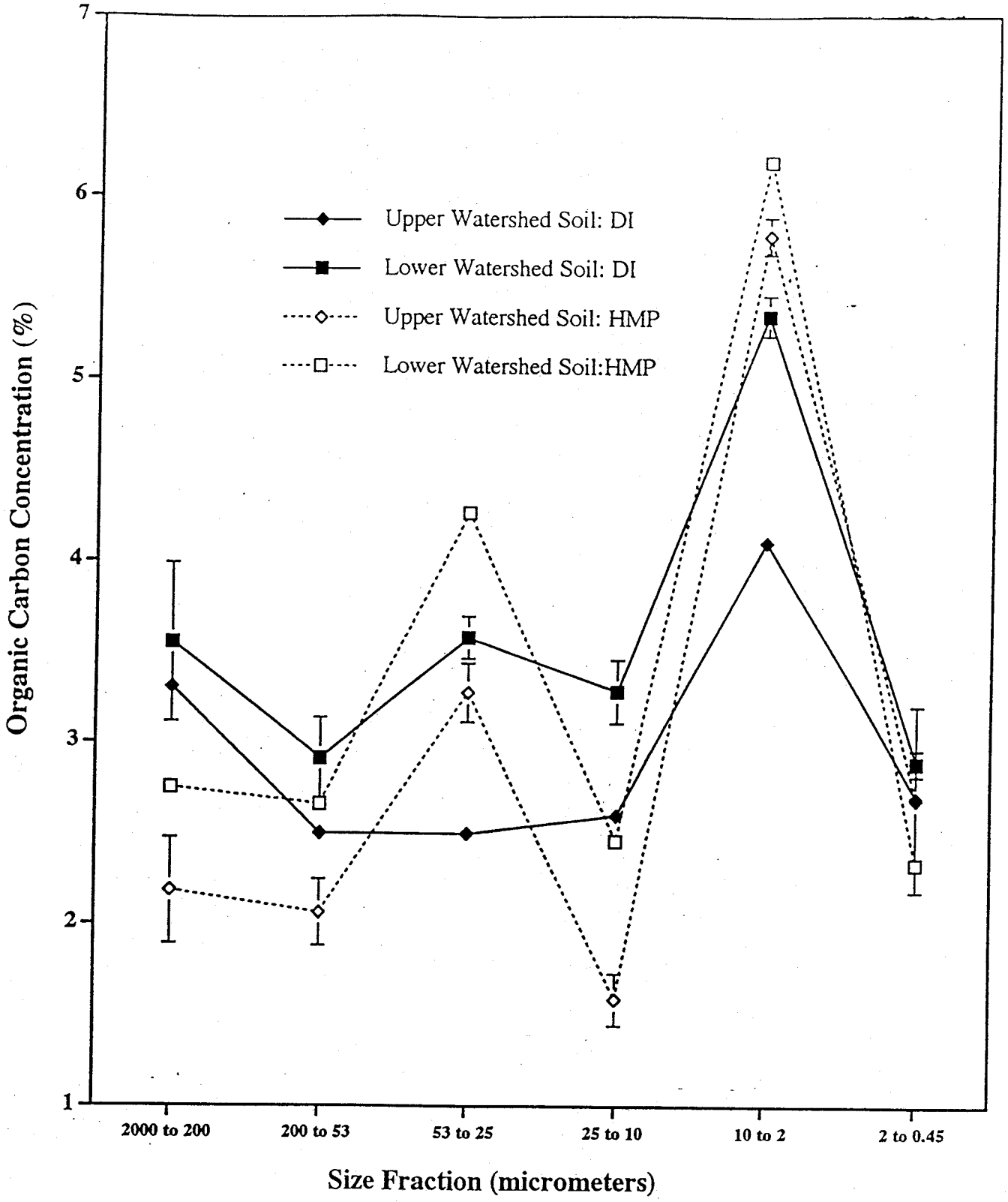

Figure 19. Soil aggregate chemical stability: Influence of hexametaphosphate on the organic carbon concentration (%) of the upper and lower watershed soils.

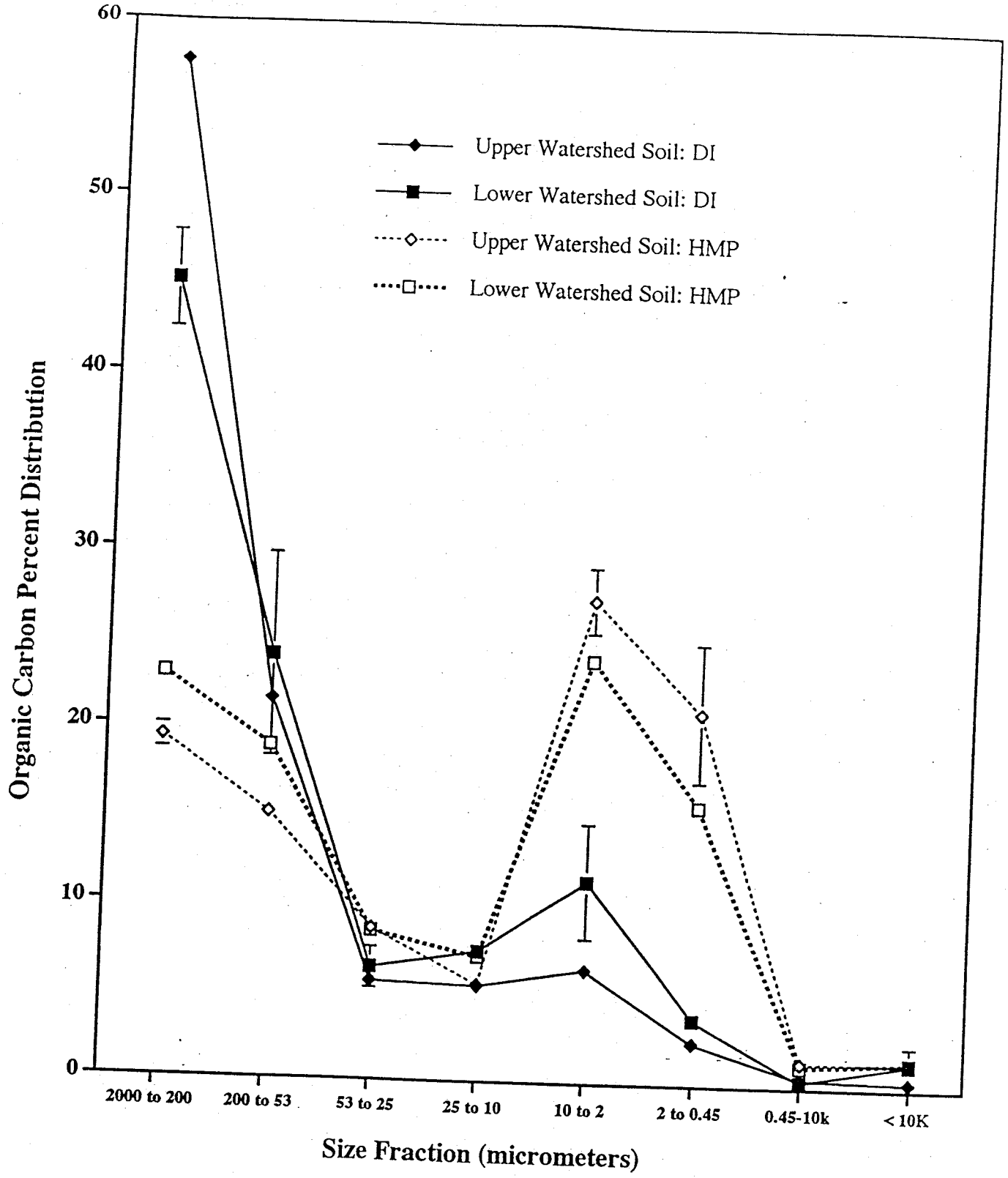

Figure 20. Soil aggregate chemical stability: Influence of hexametaphosphate on the percent organic carbon inventory of the upper and lower watershed soils.

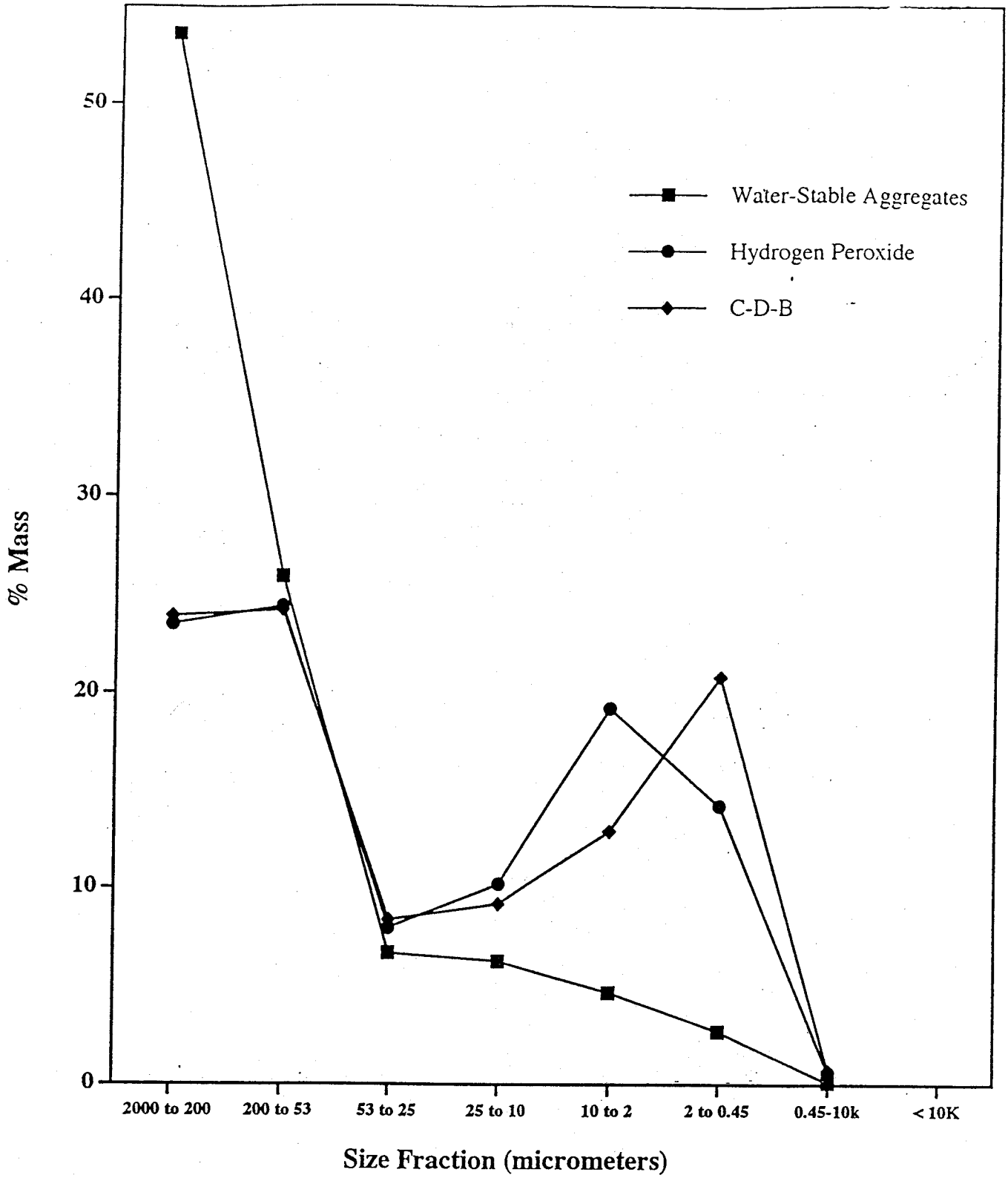

Figure 21. Soil aggregate stability due to organic matter and iron oxides: Influence of hydrogen peroxide and citrate-dithionite-bicarbonate on the mass distributions of the upper watershed soil.

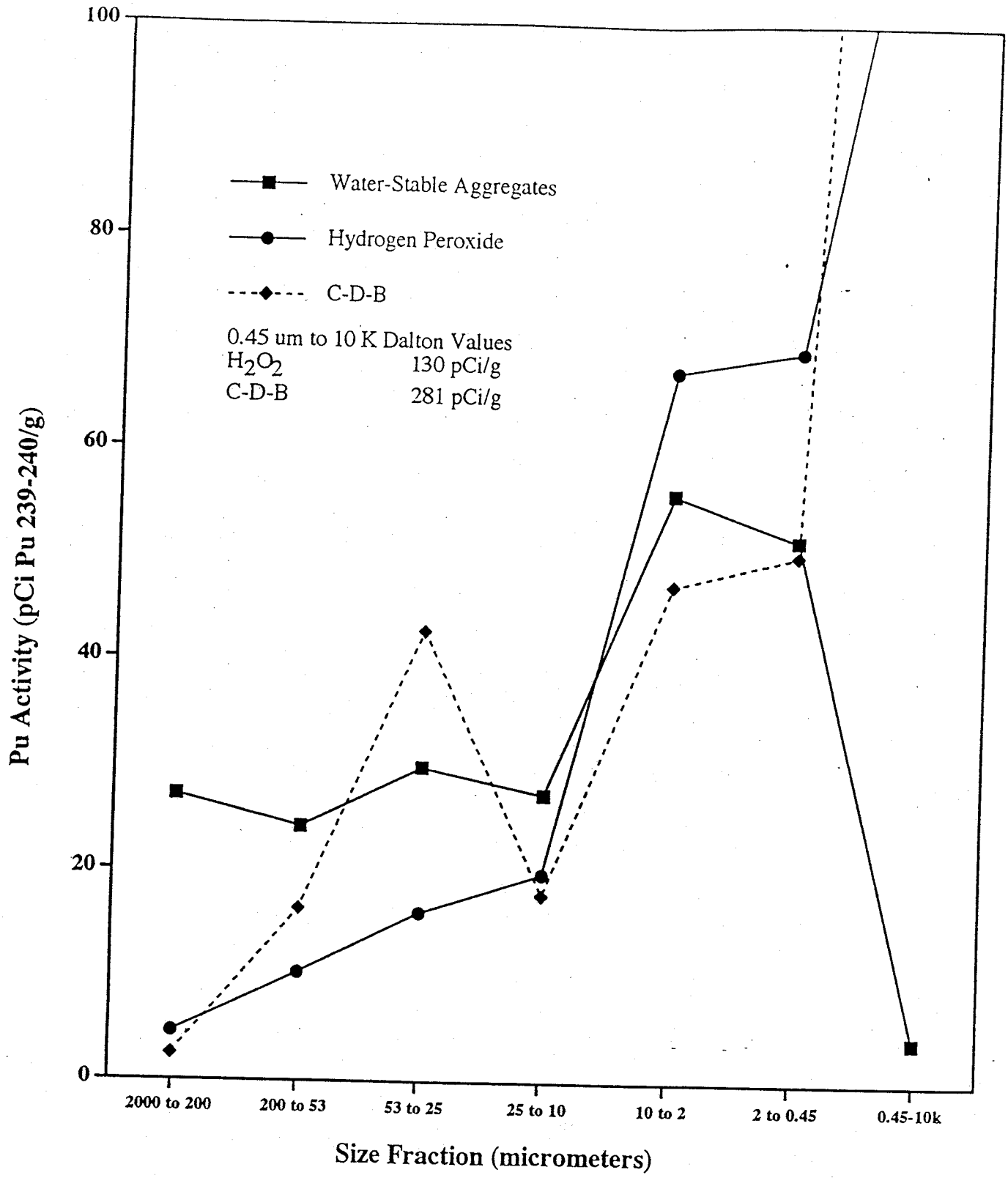

Figure 22. Soil aggregate stability due to organic matter and iron oxides: Influence of hydrogen peroxide and citrate-dithionite-bicarbonate on the Pu 239/240 activities (pCi Pu/g) of the upper watershed soil.