

Table 4. Changes in mean nitrate levels and standard deviations in soil beneath the loafing area.

Depth (in)	With drain tile				No drain tile			
	Dec 94		Sept 96		Dec 94		Sept 96	
	NO ₃ -N	SD	NO ₃ -N	SD	NO ₃ -N	SD	NO ₃ -N	SD
3	11.7	11.2	5.2	5.6	38.7	23.3	5.1	3.3
6	16.0	20.8	7.0	13.6	38.3	19.4	2.3	2.1
12	27.5	45.8	14.5	27.8	32.7	23.8	9.6	14.3
18	22.3	46.9	25.2	36.8	29.1	22.8	16.4	22.0
24	30.6	60.0	30.8	43.1	45.2	24.3	19.1	25.7
36	31.2	57.3	45.1	44.1	67.8	37.5	28.2	21.1
48	22.7	29.8	59.8	52.5	68.5	42.0	38.9	27.2
60	10.4	15.1	61.5	51.6	58.7	55.0	46.3	31.6
72	7.6	8.5	50.2	37.1	61.9	68.2	37.9	36.9

Table 5. Changes in mean ammonium levels and standard deviations in soil beneath the loafing area.

Depth (in)	With drain tile				No drain tile			
	Dec 94		Sept 96		Dec 94		Sept 96	
	NH ₃ -N	SD	NH ₃ -N	SD	NH ₃ -N	SD	NH ₃ -N	SD
3	2.6	0.8	15.7	14.3	2.9	1.2	5.8	4.0
6	2.3	0.8	12.6	16.5	2.4	0.9	11.8	6.3
12	1.7	0.6	4.7	4.7	2.0	2.0	8.5	11.4
18	1.1	0.5	2.5	2.6	1.9	0.8	12.3	18.7
24	1.8	1.1	1.5	0.7	1.1	0.4	10.2	17.5
36	2.3	2.0	1.1	0.6	1.1	0.6	7.5	16.0
48	1.7	0.9	0.9	0.6	1.5	0.8	1.8	1.0
60	1.3	0.7	1.0	0.6	1.6	1.0	0.9	1.0
72	1.1	0.9	1.2	0.4	1.2	0.6	0.9	0.3

Three rainfall runoff events captured by the monitoring equipment is illustrated in Figure 10. Table 3 gives the average phosphorus and nitrate concentrations in the tile and

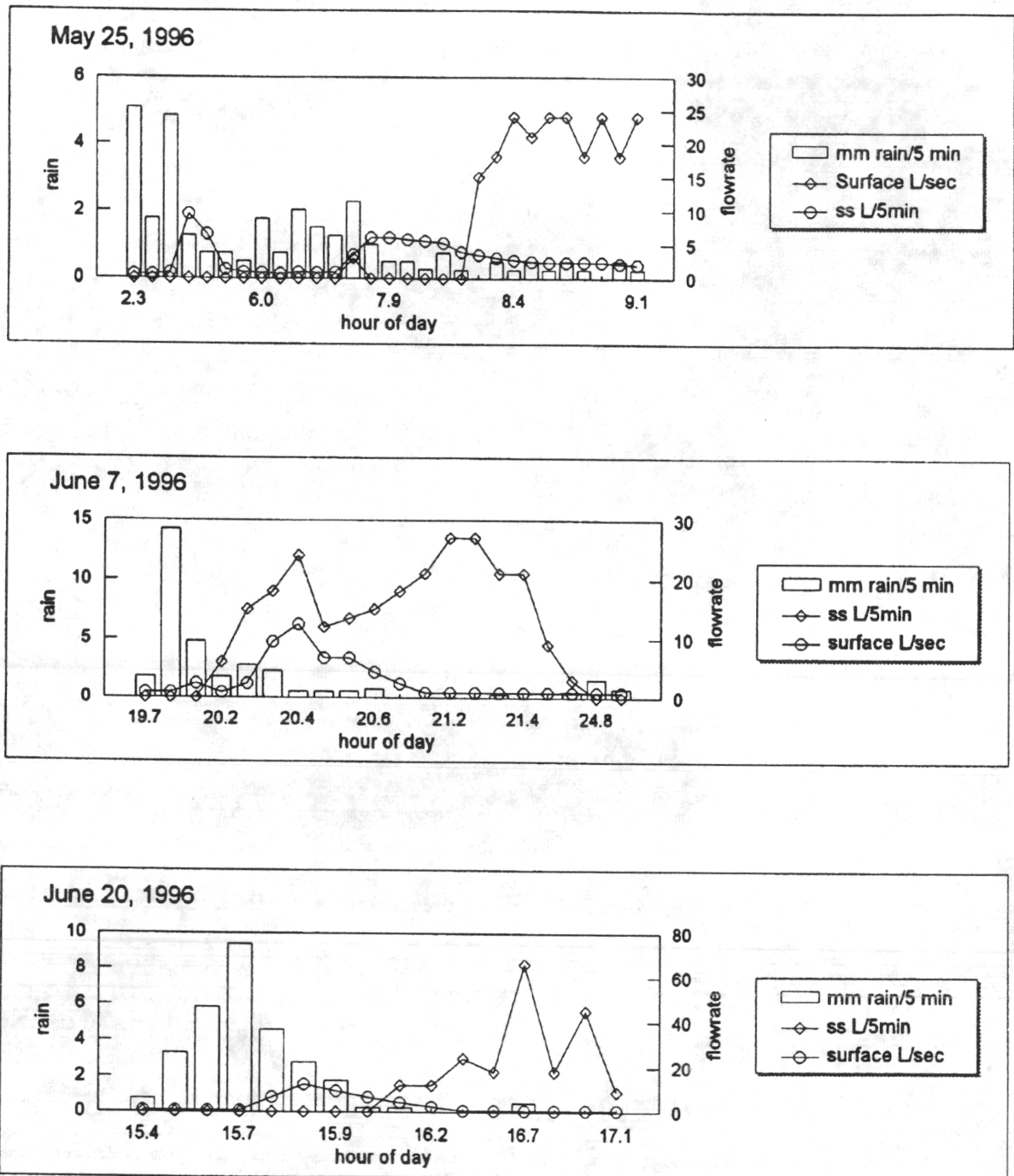


Figure 10. Rainfall events and corresponding subsurface and surface discharges.