

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998

[mg/L, milligrams per liter; µg/L, micrograms per liter; <, less than detection limit indicated; --, data not collected. Numbers in parentheses () are U.S. Geological Survey Water Data Storage and Retrieval System parameter codes]

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05420680, Wapsipinicon River near Tripoli, IA (site 1, fig. 1)													
10-09-96	1043	regular	170	48	13	13	2.7	23	24	0.20	3.4	17	77
11-06-96	1058	blank	0	.13	.01	.60	<.10	<.10	<.10	<.10	<.01	<3.0	<1.0
11-06-96	1118	regular	180	51	13	14	2.9	25	27	.10	7.0	29	61
12-04-96	1011	do.	200	59	13	9.8	2.2	28	30	.20	11	13	38
01-08-97	1103	do.	170	51	11	8.8	3.1	24	25	.20	9.8	31	34
01-08-97	1108	replicate	170	50	11	8.7	3.0	24	25	.20	9.6	24	33
02-05-97	1105	regular	200	60	13	14	2.1	27	27	.20	12	52	130
03-17-97	1305	do.	100	29	6.7	4.5	4.4	12	14	.10	7.7	44	85
04-09-97	0858	do.	160	49	10	5.9	2.2	21	21	.19	9.1	10	23
05-05-97	1044	do.	160	46	10	5.7	2.5	23	19	.19	8.3	10	6.4
06-04-97	0934	blank	0	.07	.02	.28	<.10	<.10	<.10	<.10	.17	<3.0	<1.0
06-04-97	0954	regular	150	43	10	6.2	1.3	23	21	.22	3.1	20	14
06-22-97	1130	do.	190	56	12	6.9	2.2	22	17	.20	9.8	22	27
07-09-97	0824	do.	180	53	13	8.2	1.7	23	22	.20	8.8	6.1	44
08-05-97	0819	do.	210	63	13	9.9	2.2	22	22	.23	13	<3.0	11
09-04-97	0944	do.	170	50	11	8.5	3.1	20	20	.20	12	11	11
10-09-97	1208	blank	0	.11	.02	.26	<.10	<.10	<.10	<.10	<.01	41	<1.0
10-09-97	1228	regular	190	55	13	9.5	2.5	22	22	.27	8.8	18	26
11-06-97	1249	do.	200	57	13	9.2	1.6	22	24	.20	11	23	35
12-03-97	1249	do.	190	55	13	11	1.8	24	25	.18	9.6	57	51
01-07-98	1247	do.	180	51	12	19	1.8	37	24	.17	8.3	40	54
02-19-98	1351	do.	110	32	7.3	4.9	8.9	16	11	.12	6.9	130	62
03-13-98	1223	do.	210	62	13	8.3	1.8	24	23	.19	9.8	31	25
04-02-98	1443	do.	140	41	9.0	5.5	3.5	19	15	.17	9.9	39	18

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05420680, Wapsipinicon River near Tripoli, IA (site 1, fig. 1)—Continued													
05-06-98	1249	regular	190	56	13	7.9	1.4	22	21	0.15	4.2	28	16
05-19-98	0940	do.	190	55	12	7.2	1.6	22	19	.23	6.8	<10	8.3
05-19-98	0945	replicate	190	56	12	7.3	1.6	22	20	.23	6.9	<10	8.1
05-27-98	1335	regular	210	62	13	7.2	1.9	23	17	.19	11	11	7.3
06-03-98	1450	do.	200	58	13	7.7	1.6	22	18	.21	12	<10	8.7
06-20-98	1030	do.	110	34	7.1	4.0	3.0	11	9.2	.17	8.8	25	7.7
07-08-98	1315	do.	180	53	12	6.7	1.9	17	16	.18	13	11	25
08-05-98	1231	do.	170	51	12	9.1	2.2	17	22	.19	7.1	<10	17
09-02-98	1308	do.	160	48	11	7.4	3.7	17	18	.21	12	29	14
05420720, East Fork Wapsipinicon River near Tripoli, IA (site a, fig. 1)													
05-19-98	1405	regular	210	63	14	16	1.6	32	27	.23	7.0	<10	10
05420900, Little Wapsipinicon River at Littleton, IA (site b, fig. 1)													
05-20-98	0947	regular	230	66	17	7.0	1.4	23	28	.23	5.2	<10	7.6
05421700, Buffalo Creek near Stone City, IA (site c, fig. 1)													
05-21-98	1523	regular	260	75	18	6.2	1.3	18	28	.17	5.4	<10	6.3
05421870, Mud Creek near Donahue, IA (site d, fig. 1)													
05-21-98	1023	regular	310	72	31	9.2	1.0	21	32	.24	11	<10	44
05422000, Wapsipinicon River near DeWitt, IA (site 2, fig. 1)													
10-15-96	1120	regular	150	30	19	10	2.0	19	28	.20	.03	35	5.0
11-13-96	0946	do.	240	65	18	9.9	2.3	22	33	.20	8.7	7.0	11
12-09-96	0924	do.	240	67	18	9.3	2.0	26	34	.20	9.2	5.0	10
01-13-97	1025	do.	230	64	16	8.7	3.8	23	27	.20	10	16	9.0
02-11-97	1017	do.	220	60	17	9.1	3.1	20	29	.20	11	16	27
03-20-97	0920	regular	100	30	7.3	3.7	5.2	10	13	.10	6.9	50	5.0
04-07-97	1335	do.	190	54	13	6.3	2.6	18	24	.18	7.7	6.1	6.1
05-06-97	0937	do.	200	56	14	6.7	2.6	23	25	.20	6.1	3.8	2.2
06-02-97	1304	do.	180	45	16	7.5	1.3	20	27	.16	.68	4.9	2.7

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Manganese (µg/L as Mn) (01056)
05422000, Wapsipinicon River near DeWitt, IA (site 2, fig. 1)—Continued													
06-02-97	1309	replicate	180	45	17	7.6	1.3	20	27	0.16	0.62	9.3	2.5
06-17-97	0935	regular	160	36	18	9.5	1.7	20	26	.18	.66	4.0	<1.0
06-26-97	0933	do.	160	44	12	4.8	3.5	15	16	.23	9.4	5.0	<1.0
07-07-97	1306	do.	220	62	15	6.9	2.1	19	22	.19	9.9	<3.0	1.4
08-06-97	1540	do.	120	28	13	8.8	14	19	23	.18	.25	12	1.5
09-03-97	1210	do.	170	40	17	9.2	3.2	18	25	.18	2.0	3.1	2.3
10-09-97	0907	do.	150	32	17	10	2.4	21	27	.22	.87	12	5.8
11-06-97	0915	do.	230	65	16	8.9	2.0	24	28	.20	10	8.4	8.4
12-04-97	0900	do.	230	64	17	9.8	1.9	24	30	.18	7.8	<10	9.0
01-08-98	0823	blank	0	.17	.01	.50	<.10	<.10	<.10	<.10	.18	<10	<4.0
01-08-98	0843	regular	250	67	20	10	2.3	26	32	.19	10	<10	15
02-20-98	0842	do.	230	63	19	9.0	2.7	23	29	.16	8.7	16	10
03-12-98	0850	do.	230	64	17	7.7	1.5	23	27	.18	9.0	<10	9.1
04-02-98	0900	do.	140	38	11	4.2	4.8	13	16	.20	10	20	15
05-06-98	0925	do.	220	61	17	7.9	1.4	21	26	.21	4.0	<10	4.9
06-03-98	0915	do.	200	56	14	5.5	2.8	17	18	.22	10	<10	<4.0
06-17-98	1300	do.	190	53	14	5.3	3.2	15	<.10	.21	11	<10	<4.0
07-09-98	0855	do.	170	50	12	5.3	3.1	12	13	.19	13	<10	6.6
08-06-98	0900	do.	160	34	18	9.2	1.9	18	26	.16	3.0	11	6.4
09-02-98	0915	do.	170	49	12	6.1	3.8	13	17	.17	11	<10	<4.0
05449200, East Branch Iowa River at Belmond, IA (site e, fig. 1)													
05-20-98	0856	regular	340	86	29	7.3	1.6	25	40	.32	16	<10	25
05449500, Iowa River near Rowan, IA (site 3, fig. 1)													
10-08-96	1010	regular	310	76	29	11	2.3	23	54	.30	12	5.0	69
10-08-96	1015	replicate	310	76	30	12	2.3	23	54	.28	12	5.4	69
11-05-96	0935	regular	370	97	31	8.1	1.8	19	41	.30	22	6.0	57

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05449500, Iowa River near Rowan, IA (site 3, fig. 1)													
12-03-96	0928	regular	380	100	32	7.2	1.7	19	34	0.40	23	3.0	32
01-09-97	0950	do.	350	93	28	8.0	2.6	20	36	.40	21	11	67
02-04-97	1015	do.	260	68	21	7.3	3.9	16	34	.30	16	18	81
03-11-97	0950	do.	110	32	7.8	2.1	6.7	5.8	7.5	.18	9.0	50	238
03-18-97	0856	do.	150	43	11	3.0	5.2	9.1	15	.20	12	31	86
03-25-97	0908	do.	180	49	13	3.0	4.6	10	17	.30	14	22	31
04-03-97	0847	do.	290	80	22	5.0	2.6	15	33	.30	19	11	66
04-09-97	0854	do.	320	86	25	5.6	2.1	17	31	.32	19	10	30
04-15-97	0925	do.	330	88	26	6.4	1.8	17	35	.33	18	6.0	55
04-22-97	0944	do.	350	92	29	6.6	1.9	19	37	.32	18	9.6	70
04-29-97	0913	do.	340	89	29	7.5	1.9	19	38	.32	15	14	72
05-03-97	1046	do.	340	93	27	5.1	1.7	18	25	.30	20	4.0	20
05-13-97	0951	do.	330	88	27	5.7	1.5	18	29	.31	17	8.9	24
05-20-97	0853	do.	340	89	28	6.0	1.5	17	29	.32	15	6.7	40
05-28-97	0933	do.	330	86	27	6.4	1.4	19	32	.33	17	6.2	30
06-04-97	0921	do.	330	87	28	6.7	1.4	20	35	.30	14	7.1	46
06-10-97	0919	do.	330	85	28	7.0	1.6	20	38	.31	16	4.8	44
06-17-97	0858	do.	330	85	29	8.2	1.8	21	40	.31	19	3.5	39
06-23-97	1156	do.	150	40	11	2.2	2.5	7.3	8.0	.22	13	25	11
07-01-97	0905	do.	310	83	25	4.9	1.7	17	21	.34	23	23	13
07-15-97	0850	do.	330	87	28	6.6	1.9	17	35	.31	22	3.9	8.7
07-29-97	0900	do.	320	86	26	6.5	1.9	17	28	.37	25	<3.0	22
08-11-97	1200	do.	270	60	28	12	2.0	24	51	.24	11	<3.0	47
08-26-97	0837	do.	300	74	28	10	2.5	19	54	.25	16	20	172
09-11-97	1005	do.	340	86	29	9.7	2.8	18	61	.26	23	14	202

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05449500, Iowa River near Rowan, IA (site 3, fig. 1)—Continued													
09-25-97	0852	regular	330	87	28	14	2.9	28	61	0.25	21	3.3	109
10-08-97	0948	do.	360	91	33	15	3.3	28	62	.22	23	5.4	261
10-20-97	1134	do.	350	90	31	10	2.9	22	53	.25	21	<3.0	198
11-05-97	0857	do.	320	79	29	14	2.9	27	56	.28	16	40	113
11-17-97	1134	do.	350	91	31	15	2.7	34	63	.20	17	36	105
12-02-97	0908	do.	320	81	28	11	2.5	21	56	.26	14	24	104
01-06-98	0919	do.	330	86	29	12	2.5	23	55	.29	15	15	167
02-18-98	0924	do.	130	37	10	4.2	8.8	12	12	.18	12	48	164
03-12-98	0926	do.	370	98	30	10	2.3	23	45	.30	22	<10	128
03-31-98	0922	do.	320	86	25	5.7	2.2	20	31	.35	20	<10	30
05-05-98	0922	do.	330	84	28	7.5	1.7	22	36	.35	15	12	52
05-20-98	1223	do.	340	88	29	7.8	1.8	22	36	.34	18	<10	53
05-20-98	1228	replicate	340	88	29	7.8	1.8	22	36	.32	18	<10	54
06-02-98	0904	regular	350	91	29	7.1	1.7	22	34	.36	21	<10	21
06-13-98	0928	do.	340	90	27	5.8	1.5	22	27	.39	21	<10	7.8
06-23-98	0848	do.	190	52	14	2.9	3.2	10	11	.24	19	<10	43
07-07-98	0900	do.	310	84	25	6.9	1.9	17	27	.37	24	<10	46
07-07-98	0905	replicate	290	79	24	6.3	1.9	17	27	.37	23	<10	37
08-04-98	0903	regular	300	74	28	8.2	2.5	16	54	.26	17	<10	56
09-01-98	0944	do.	360	95	31	8.9	3.3	19	46	.28	26	<10	49
05449600, Wheeler Creek near Rowan, IA (site f, fig. 1)													
09-10-98	1030	regular	390	99	34	7.0	2.4	16	66	.27	24	<10	68
05451210, South Fork Iowa River northeast of New Providence, IA (site 4, fig. 1)													
10-07-96	1215	regular	250	56	26	11	3.6	21	27	.30	4.5	24	73
11-04-96	1210	do.	350	92	30	7.3	1.6	22	26	.40	18	11	25
12-02-96	1155	do.	380	100	31	7.1	1.7	22	25	.40	21	5.0	14

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05451210, South Fork Iowa River northeast of New Providence, IA (site 4, fig. 1)—Continued													
01-06-97	1133	regular	160	45	12	4.1	7.6	13	12	0.30	11	48	25
02-03-97	1108	do.	170	46	14	5.1	6.0	12	15	.20	10	41	21
03-10-97	1155	do.	200	56	14	4.5	5.6	12	13	.24	13	26	89
03-10-97	1200	replicate	190	54	14	4.1	5.5	12	13	.24	13	25	83
04-10-97	0904	regular	350	94	28	5.9	1.2	22	25	.34	16	5.0	13
04-10-97	0909	do.	350	94	28	5.5	1.2	22	25	.37	16	3.4	12
05-15-97	1157	do.	370	100	30	5.9	1.0	22	24	.33	15	7.2	17
05-22-97	0930	do.	320	80	30	6.3	.99	22	22	.36	4.1	17	17
06-05-97	0818	do.	310	78	28	5.4	1.0	23	21	.34	7.3	7.9	16
06-21-97	1302	do.	150	42	11	2.3	4.2	7.1	6.9	.20	11	12	15
07-10-97	0824	do.	340	91	27	5.1	1.5	18	19	.36	22	<3.0	5.6
08-04-97	1017	do.	260	61	27	7.1	2.0	20	27	.32	11	4.4	23
09-10-97	0830	do.	260	59	27	8.7	2.6	15	24	.33	13	4.8	48
10-07-97	1054	do.	290	68	30	9.7	3.2	15	21	.37	9.9	11	192
11-04-97	1120	do.	270	61	28	10	2.9	20	29	.32	2.8	43	83
12-01-97	1128	do.	290	71	28	12	4.4	22	30	.32	3.4	79	75
01-05-98	1154	do.	310	77	28	10	2.1	21	30	.34	5.9	41	49
02-17-98	1058	do.	180	50	14	5.2	7.4	16	12	.22	12	42	87
03-11-98	0936	do.	360	94	30	7.5	1.6	22	26	.29	15	<10	49
03-30-98	1113	do.	340	90	27	7.9	1.9	24	26	.34	17	<10	9.0
03-30-98	1118	replicate	330	88	27	7.7	1.9	25	26	.34	17	<10	10
04-01-98	1033	regular	340	91	27	8.0	1.6	27	26	.35	18	<10	9.6
05-04-98	1120	do.	340	85	30	6.9	1.2	23	25	.37	10	45	13
05-22-98	0656	do.	320	81	29	6.4	1.2	22	23	.33	11	<10	18
05-29-98	1246	do.	250	69	20	3.8	3.0	15	14	.30	16	<10	13

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (μg/L as Fe) (01046)	Maganese (μg/L as Mn) (01056)
05451210, South Fork Iowa River northeast of New Providence, IA (site 4, fig. 1)—Continued													
06-01-98	1318	regular	360	97	28	5.2	1.5	21	20	0.41	22	<10	5.7
06-12-98	1155	do.	290	80	22	5.0	2.3	18	16	.31	19	<10	13
07-06-98	1213	do.	290	79	22	4.6	1.9	13	14	.40	22	<10	8.9
08-03-98	1046	do.	310	74	30	7.0	2.1	16	24	.38	13	<10	20
08-31-98	1102	do.	340	85	30	7.4	2.4	19	25	.37	21	<10	23
05452020, Salt Creek at Belle Plaine, IA (site g, fig. 1)													
05-18-98	0925	regular	280	74	23	7.7	.86	13	35	.25	10	<10	45
05453100, Iowa River at Marengo, IA (site 5, fig. 1)													
10-16-96	0939	regular	190	34	25	15	3.1	22	51	.20	.31	18	15
11-14-96	0925	do.	350	93	28	9.4	1.8	19	39	.30	17	<3.0	68
12-10-96	0935	do.	330	87	27	8.8	1.8	19	37	.30	17	<3.0	12
01-14-97	1200	do.	300	79	25	9.6	4.8	19	37	.30	16	8.0	23
02-13-97	0949	do.	270	70	23	11	3.5	18	37	.20	14	11	40
03-19-97	0955	do.	210	57	16	5.2	5.0	12	20	.20	13	13	11
04-10-97	1557	do.	310	83	24	7.5	2.3	19	32	.31	15	5.0	10
05-06-97	0914	do.	290	76	24	6.6	2.1	18	26	.29	15	9.5	4.7
06-05-97	1402	do.	270	67	24	7.6	1.3	17	31	.28	9.2	<3.0	3.2
06-24-97	1000	do.	170	47	14	4.1	4.1	9.5	14	.23	14	3.2	1.7
07-10-97	1343	do.	300	81	24	6.5	1.9	16	24	.28	19	<3.0	3.6
08-05-97	1334	do.	300	81	24	9.8	2.2	17	35	.27	16	<3.0	3.8
09-08-97	1043	do.	220	46	25	15	2.9	21	47	.23	3.3	4.3	9.6
10-08-97	0937	do.	200	37	27	15	2.8	22	55	.23	.10	10	9.8
10-08-97	0942	replicate	200	36	26	14	2.7	22	55	.23	.07	8.6	6.6
11-05-97	0936	regular	280	72	25	10	2.0	17	39	.26	12	3.9	29
12-03-97	0930	do.	270	69	24	13	2.3	23	42	.24	6.7	11	29
01-07-98	0846	do.	240	60	21	9.9	2.4	19	32	.25	9.5	22	20

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05453100, Iowa River at Marengo, IA (site 5, fig. 1)—Continued													
02-19-98	0856	blank	1	0.27	0.02	0.68	<0.10	<0.10	0.27	<0.10	<0.10	<10	<4.0
02-19-98	0916	regular	200	50	17	7.1	3.6	15	23	.20	10	14	12
03-11-98	0855	do.	270	70	23	9.4	1.8	19	37	.22	13	16	43
04-02-98	1355	do.	180	49	15	5.2	4.3	11	21	.22	13	14	28
05-08-98	0843	do.	260	68	22	7.7	1.6	16	29	.31	10	<10	6.9
06-05-98	0900	do.	290	76	25	7.2	1.2	17	26	.31	16	<10	<4.0
06-13-98	0946	do.	170	46	14	4.5	3.2	9.8	16	.28	12	71	<4.0
06-26-98	0922	do.	180	49	14	4.0	3.9	8.7	12	.22	15	<10	4.9
07-07-98	0920	do.	230	62	18	4.8	3.2	11	16	.31	13	10	25
08-07-98	0900	do.	240	60	21	9.1	2.9	14	32	.23	14	<10	<4.0
09-04-98	0850	do.	310	82	26	10	2.8	17	40	.28	17	<10	32
09-04-98	0855	replicate	310	81	26	10	2.9	17	40	.27	17	<10	31
05455100, Old Man's Creek near Iowa City, IA (site 6, fig. 1)													
10-07-96	0948	regular	190	47	18	18	3.8	23	34	.20	7.2	100	1,400
11-12-96	0956	do.	230	56	21	23	5.1	34	36	.30	11	32	910
12-02-96	0945	do.	260	62	25	34	4.9	50	42	.20	7.2	31	560
01-06-97	0938	do.	220	57	20	29	4.9	47	36	.20	7.1	52	450
02-04-97	0919	do.	84	22	7.1	13	16	26	11	.20	8.4	110	160
03-10-97	1025	do.	87	23	7.1	6.3	8.0	16	13	.18	9.0	67	181
04-08-97	1337	do.	200	50	19	15	3.4	28	30	.22	7.2	26	302
05-01-97	0914	do.	190	47	17	11	6.2	23	28	.19	8.3	16	366
05-08-97	0903	do.	160	43	14	8.2	4.1	18	22	.20	9.4	13	344
05-27-97	0947	do.	140	37	12	8.6	4.9	18	17	.22	9.7	13	666
06-03-97	1246	do.	200	50	19	8.8	1.1	18	23	.21	11	<3.0	50
07-08-97	1210	do.	230	56	21	12	1.5	20	25	.23	13	23	79

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05455100, Old Man's Creek near Iowa City, IA (site 6, fig. 1)—Continued													
08-07-97	1425	regular	200	50	18	14	3.7	21	28	0.23	7.2	64	557
09-02-97	1545	do.	160	41	14	16	5.7	19	27	.27	11	3.6	529
10-07-97	1330	blank	--	.14	<.01	.35	<.10	<.10	<.10	<.10	<.01	3.7	<1.0
10-07-97	1350	regular	230	58	21	22	4.8	28	31	.26	7.8	44	1,560
11-04-97	1243	do.	240	58	22	13	2.7	25	28	.23	14	82	144
11-04-97	1248	replicate	230	57	22	13	2.6	25	29	.23	14	51	140
12-02-97	1223	regular	220	53	21	17	2.9	28	31	.20	7.0	28	202
01-06-98	1240	do.	200	49	19	13	3.2	29	25	.22	11	24	224
02-18-98	1235	do.	210	52	20	12	1.5	24	27	.18	10	<10	93
03-10-98	1310	do.	190	47	18	12	1.8	23	25	.19	11	<10	141
03-31-98	1245	do.	110	29	8.9	6.5	5.9	11	12	.19	10	64	482
05-05-98	1343	do.	220	52	21	9.8	1.2	18	24	.24	11	<10	67
05-18-98	0825	do.	220	54	21	9.7	1.1	18	23	.24	12	<10	38
05-18-98	0830	replicate	230	55	21	10	1.1	18	22	.27	13	<10	37
06-02-98	1325	regular	230	56	22	9.8	1.0	19	22	.26	13	<10	33
06-10-98	0826	do.	210	52	20	13	2.7	23	21	.25	12	<10	21
06-30-98	1239	do.	160	40	13	6.6	4.4	12	15	.23	12	<10	59
07-10-98	0745	do.	230	56	22	12	1.7	18	24	.24	16	<10	80
07-10-98	0750	replicate	230	56	22	12	1.7	17	24	.25	17	<10	78
08-05-98	0810	regular	210	49	20	13	1.9	21	27	.25	19	<10	249
09-01-98	1300	do.	220	55	21	12	3.2	17	25	.22	17	<10	124
05455500, English River near Kalona, IA (site h, fig. 1)													
05-18-98	1430	regular	190	49	17	8.8	1.4	13	25	.23	12	<10	28
05456510, Turtle Creek at Austin, MN (site j, fig. 1)													
05-19-98	0901	regular	340	89	29	6.7	1.9	18	43	.30	13	25	87

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05457950, Little Cedar River near Floyd, IA (site l, fig. 1)													
05-18-98	1346	regular	240	68	16	6.6	1.2	22	23	0.24	5.8	11	11
05458870, Maynes Creek near Kesley, IA (site m, fig. 1)													
05-21-98	1221	regular	310	81	27	5.8	1.3	18	34	.27	12	<10	13
09-09-98	0957	do.	330	86	28	6.2	1.8	14	40	.25	15	<10	13
05459300, Winnebago River near Fertile, IA (site o, fig. 1)													
05-19-98	1308	regular	330	88	28	8.1	2.2	24	41	.35	18	<10	12
05461390, Flood Creek near Powersville, IA (site 7, fig. 1)													
10-23-96	1107	regular	200	59	12	3.5	1.8	8.0	22	.10	9.3	7.0	14
12-11-96	1150	do.	230	70	13	4.2	1.4	13	20	.10	9.6	<3.0	6.0
01-14-97	0950	do.	240	73	14	4.3	1.6	14	21	.10	10	<3.0	5.0
02-19-97	1050	do.	190	57	11	3.2	2.4	9.7	18	.10	7.2	5.0	12
03-18-97	1018	do.	83	24	5.6	2.1	4.3	9.3	5.8	.20	6.0	21	10
04-09-97	1426	blank	--	.10	<.010	.25	<.10	<.10	<.10	<.10	<.01	<3.0	<1.0
04-09-97	1446	regular	250	72	17	5.7	1.5	19	16	.20	9.4	<3.0	7.1
05-03-97	1053	do.	250	70	17	5.6	1.9	21	14	.20	9.9	<3.0	4.3
06-04-97	1310	do.	240	70	15	5.0	1.7	16	17	.17	9.1	<3.0	3.8
07-09-97	1151	do.	250	75	16	5.1	1.6	16	16	.15	11	18	5.7
08-04-97	1613	do.	260	82	14	5.0	1.9	14	16	.15	13	23	5.3
09-04-97	1248	do.	230	73	13	4.5	1.7	12	18	.12	8.6	<3.0	8.8
10-09-97	0823	do.	220	69	12	3.9	2.1	11	19	.16	12	5.8	11
11-06-97	0855	do.	240	73	13	4.5	1.8	12	20	.19	12	11	8.9
12-03-97	0852	do.	220	67	13	4.3	1.7	11	21	.13	8.8	<3.0	7.7
01-07-98	0902	do.	220	64	13	4.6	1.5	11	22	.17	8.0	<10	6.9
02-19-98	0948	do.	130	37	10	4.0	9.6	15	7.8	.16	7.2	35	23
03-13-98	0850	do.	250	76	14	5.2	2.2	16	18	.15	10	<10	6.9
04-02-98	0843	do.	230	64	16	5.8	1.9	21	13	.23	10	<10	<4.0
05-06-98	0838	do.	250	74	16	5.8	1.6	19	17	.13	9.4	<10	5.5

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05461390, Flood Creek near Powersville, IA (site 7, fig. 1)—Continued													
05-18-98	1004	regular	240	72	15	5.1	1.9	17	18	0.18	9.6	<10	<4.0
06-03-98	0906	do.	260	75	18	5.7	1.3	18	15	.21	11	<10	<4.0
07-08-98	0848	do.	250	74	16	5.8	1.6	16	15	.16	12	<10	6.9
08-05-98	0837	do.	220	68	12	4.2	2.1	12	16	.15	11	<10	6.8
09-02-98	0842	do.	240	76	13	5.0	1.9	14	18	.14	12	<10	<4.0
09-02-98	0847	replicate	230	72	13	4.9	1.9	14	18	.14	11	<10	<4.0
05462770, Beaver Creek near Parkersburg, IA (site p, fig. 1)													
05-21-98	0848	regular	310	79	27	10	2.3	24	27	.24	11	<10	13
05463510, Black Hawk Creek at Waterloo, IA (site q, fig. 1)													
05-20-98	1253	regular	260	69	21	8.4	.85	22	26	.27	9.5	<10	6.9
05464020, Cedar River at Gilbertville, IA (site 8, fig. 1)													
10-15-96	1120	regular	220	51	22	17	3.2	31	44	.20	.96	17	4.0
11-12-96	1103	do.	280	73	24	15	3.0	28	40	.30	9.9	8.0	16
12-12-96	1340	do.	270	70	22	12	2.1	29	38	.20	12	5.0	7.0
01-15-97	0855	do.	290	78	24	16	4.2	33	41	.30	14	7.0	9.0
02-10-97	1015	do.	260	69	22	17	3.1	29	39	.20	13	10	21
05464220, Wolf Creek near Dysart, IA (site 9, fig. 1)													
10-10-96	1047	regular	270	68	24	11	1.8	18	60	.30	5.6	12	150
11-07-96	1018	do.	260	68	21	8.9	2.2	19	31	.20	11	5.0	36
12-05-96	0959	do.	290	78	24	9.6	1.1	21	33	.30	12	<3.0	45
01-13-97	1205	do.	280	75	23	12	2.1	24	39	.30	13	<3.0	30
02-06-97	0923	do.	180	49	15	6.0	4.6	12	23	.20	9.7	20	25
03-12-97	1035	do.	220	58	18	6.3	4.1	15	29	.21	11	5.9	30
03-17-97	0945	do.	230	61	19	7.9	2.4	16	33	.20	11	3.0	42
03-24-97	1026	do.	260	69	21	8.0	1.5	16	38	.27	11	<3.0	46
04-02-97	1026	do.	260	68	22	7.9	1.1	17	37	.20	8.0	<3.0	50
04-08-97	1030	do.	270	71	23	7.7	1.3	19	30	.25	10	<3.0	37

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05464220, Wolf Creek near Dysart, IA (site 9, fig. 1)—Continued													
04-14-97	1235	regular	240	62	21	7.5	1.1	18	30	0.26	7.5	5.5	34
04-21-97	1028	do.	260	66	23	7.7	.93	18	33	.24	7.2	5.6	29
04-28-97	1026	do.	270	71	24	8.6	1.0	18	36	.25	5.1	11	36
05-05-97	1015	do.	280	73	23	6.5	1.0	18	24	.23	12	<3.0	9.8
05-12-97	1022	do.	260	68	22	6.9	.70	18	26	.24	8.8	<3.0	8.7
05-19-97	1033	do.	270	71	23	7.2	.75	17	27	.24	6.9	<3.0	9.6
05-27-97	0936	do.	260	66	22	7.5	1.1	17	26	.24	7.7	<3.0	12
06-03-97	1116	do.	270	70	23	7.1	.66	17	28	.24	7.8	<3.0	8.0
06-09-97	0946	do.	280	73	24	6.7	.82	17	26	.25	9.8	<3.0	6.5
06-16-97	0943	do.	220	57	19	6.2	1.7	14	23	.23	9.0	3.0	4.3
06-24-97	0951	do.	240	62	20	5.6	2.0	15	19	.25	15	<3.0	2.2
06-30-97	1022	do.	240	62	21	6.2	.98	17	23	.23	12	<3.0	3.7
07-14-97	0944	do.	250	66	22	6.8	1.2	15	27	.24	12	<3.0	4.6
07-28-97	0928	do.	280	73	23	7.8	1.2	16	38	.29	14	<3.0	13
07-28-97	0933	replicate	280	74	24	7.9	1.2	16	38	.28	14	<3.0	13
08-12-97	0916	regular	240	59	22	15	1.7	23	46	.22	7.7	5.0	68
08-25-97	1000	do.	200	54	16	8.4	4.2	16	29	.22	11	3.9	49
09-09-97	0945	do.	230	62	19	8.7	3.0	17	37	.23	12	3.4	51
09-24-97	0940	do.	250	67	20	9.3	3.9	19	32	.21	11	3.1	56
10-10-97	0938	do.	240	62	20	7.6	4.4	19	23	.27	14	5.5	18
10-10-97	0943	replicate	230	61	19	7.4	4.3	19	23	.27	14	5.2	16
10-21-97	0854	regular	280	75	24	8.1	1.0	19	29	.22	14	<3.0	13
11-07-97	0919	do.	280	74	23	8.3	.86	19	32	.26	12	35	35
11-18-97	0857	do.	290	80	23	8.5	.82	20	33	.20	11	6.5	59
12-04-97	0919	do.	280	72	24	12	1.2	25	29	.23	11	<3.0	27

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05464220, Wolf Creek near Dysart, IA (site 9, fig. 1)—Continued													
01-08-98	0910	regular	280	72	24	8.7	0.97	19	28	0.26	11	34	25
02-20-98	0941	do.	270	70	23	7.1	1.4	19	23	.24	12	<10	9.2
03-18-98	0918	do.	260	68	22	6.9	1.0	18	26	.21	11	<10	19
04-01-98	0945	do.	170	45	14	4.5	4.0	13	14	.20	13	23	62
05-07-98	0919	do.	270	69	23	7.6	.63	17	25	.31	8.3	<10	9.3
05-18-98	1327	do.	270	72	23	7.2	.60	16	27	.26	9.9	<10	6.3
06-04-98	0933	do.	270	69	23	6.9	.76	17	22	.27	12	<10	<4.0
06-10-98	1215	do.	210	55	18	5.1	2.1	13	15	.26	12	<10	<4.0
06-12-98	1238	do.	68	19	5.1	1.9	4.9	3.8	4.5	.24	8.5	17	<4.0
06-22-98	1415	do.	120	32	9.5	3.3	3.9	7.2	8.8	.19	11	<10	<4.0
07-09-98	0924	do.	250	65	21	8.8	1.5	16	20	.26	14	<10	5.5
08-06-98	0855	do.	200	52	17	6.3	4.3	12	20	.23	13	<10	<4.0
09-03-98	0956	do.	290	74	25	8.8	1.4	17	40	.28	13	<10	29
05464935, Cedar River at Nichols, IA (site 10a, fig. 1)													
10-29-96	1030	regular	200	47	19	29	3.5	40	47	.20	.24	8.0	3.0
11-13-96	1013	do.	300	81	23	28	3.1	38	48	.30	11	8.0	8.0
12-05-96	1030	do.	300	82	24	23	2.9	39	43	.30	13	4.0	4.0
01-22-97	0950	do.	300	79	24	32	4.2	45	47	.20	14	12	12
01-22-97	0955	replicate	290	77	24	32	3.7	46	48	.30	14	10	12
02-03-97	0938	regular	260	71	21	42	4.5	61	47	.30	12	20	15
03-13-97	0950	do.	170	48	13	11	5.5	20	23	.18	9.5	22	3.2
04-07-97	0921	do.	230	64	17	11	3.1	23	31	.22	11	<3.0	3.2
05-07-97	0933	do.	240	67	18	11	2.6	24	28	.23	7.3	<3.0	1.1
06-02-97	0838	do.	230	56	22	15	2.0	29	34	.20	2.8	4.6	<1.0
06-17-97	1418	do.	170	33	21	21	2.4	35	38	.21	.19	3.8	<1.0
07-07-97	0902	do.	250	69	20	14	2.4	28	29	.24	13	<3.0	<1.0

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05464935, Cedar River at Nichols, IA (site 10a, fig. 1)—Continued													
08-06-97	1110	regular	240	64	20	18	2.7	31	36	0.23	11	8.8	8.3
09-03-97	0834	do.	160	31	19	23	3.0	35	37	.21	.04	<3.0	<1.0
10-09-97	1232	do.	160	31	21	35	3.1	53	52	.25	.06	5.5	1.3
11-06-97	1302	do.	260	71	21	26	2.5	42	45	.26	9.4	31	6.1
12-04-97	1230	do.	260	67	21	28	2.5	46	46	.25	4.8	11	5.4
01-08-98	1233	do.	260	70	22	24	2.4	42	42	.24	8.7	<10	6.8
02-20-98	1156	do.	250	67	20	21	3.1	38	38	.24	8.8	<10	7.3
03-12-98	1200	do.	260	70	21	18	2.0	35	35	.21	11	<10	6.9
04-03-98	0851	do.	190	51	14	7.8	3.7	20	22	.22	11	20	<4.0
05-07-98	0827	do.	270	71	21	15	1.6	28	33	.20	5.8	<10	<4.0
06-04-98	0900	do.	260	71	21	13	1.9	27	29	.26	11	<10	<4.0
07-06-98	0847	do.	210	57	16	6.4	2.7	15	18	.25	15	<10	<4.0
08-04-98	1300	do.	180	36	21	21	2.4	32	41	.22	2.8	<10	<4.0
09-03-98	0840	do.	240	63	21	18	2.8	28	36	.26	9.5	<10	<4.0
05465000, Cedar River near Conesville, IA (site 10b, fig. 1)													
10-10-96	1015	regular	160	29	22	41	3.2	57	59	.30	.11	14	3.0
10-10-96	1020	replicate	160	29	22	41	3.5	56	59	.30	.35	15	3.0
10-29-96	0855	regular	200	47	19	32	3.7	43	49	.23	.35	11	3.3
05465310, Long Creek near Columbus Junction, IA (site r, fig. 1)													
05-20-98	1442	regular	260	60	26	10	1.2	17	29	.25	7.2	34	24
05465500, Iowa River at Wapello, IA (site 11, fig. 1)													
10-08-96	1155	regular	150	29	20	34	3.1	46	54	.20	.13	9.0	3.0
11-06-96	1038	do.	250	63	22	24	3.3	35	46	.30	6.2	6.0	3.0
12-03-96	1040	do.	300	79	25	22	3.1	36	45	.30	12	4.0	4.0
01-07-97	1115	do.	310	83	24	23	2.7	37	44	.30	13	5.0	7.0
02-05-97	1030	do.	220	60	18	25	6.0	39	37	.20	12	26	13
03-11-97	1220	do.	160	44	12	10	6.2	18	23	.17	9.6	21	5.9

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05465500, Iowa River at Wapello, IA (site 11, fig. 1)—Continued													
03-11-97	1225	replicate	160	44	12	10	6.2	18	22	0.17	9.5	19	5.7
03-20-97	0918	regular	150	42	11	6.5	5.1	14	18	.20	9.1	21	9.0
03-27-97	0941	do.	170	47	12	6.9	4.2	15	20	.20	10	12	4.0
03-31-97	0936	do.	170	48	13	7.1	4.0	15	21	.20	10	9.0	<1.0
04-10-97	0922	do.	240	66	19	12	3.0	23	32	.23	11	4.3	3.2
04-16-97	0931	do.	260	69	20	13	2.7	27	34	.26	11	4.0	<1.0
04-23-97	0945	do.	260	68	21	13	2.5	27	36	.25	5.0	4.8	1.7
04-30-97	0956	do.	200	46	21	15	2.5	27	38	.23	.76	4.4	1.7
05-07-97	0920	do.	240	66	19	11	2.7	23	29	.24	7.2	<3.0	<1.0
05-14-97	0955	do.	270	72	21	11	2.2	23	30	.24	8.5	<3.0	1.5
05-21-97	1028	do.	230	60	19	11	2.2	19	29	.25	6.0	<3.0	<1.0
05-29-97	1029	blank	1	.18	.029	.43	<.10	<.10	<.10	<.10	.03	<3.0	<1.0
05-29-97	1049	regular	220	56	20	12	2.1	23	30	.24	5.3	<3.0	1.6
06-05-97	0940	do.	210	49	22	13	1.9	27	33	.24	2.0	6.0	<1.0
06-12-97	0906	do.	200	43	22	15	2.0	27	34	.21	2.5	<3.0	1.3
06-19-97	0908	do.	200	47	21	15	2.4	26	33	.24	1.7	<3.0	<1.0
06-25-97	0955	do.	220	54	20	12	2.3	23	33	.24	6.0	<3.0	<1.0
07-02-97	0912	do.	200	54	16	7.9	3.3	17	20	.24	13	5.8	1.3
07-16-97	0941	do.	240	60	22	14	2.4	25	33	.27	9.7	<3.0	<1.0
07-31-97	0927	do.	230	56	21	17	2.5	29	35	.29	10	<3.0	<1.0
08-13-97	0918	do.	190	44	21	20	2.5	33	39	.23	3.9	<3.0	2.4
08-28-97	0919	do.	180	37	21	25	2.9	36	42	.24	1.6	<3.0	<1.0
09-05-97	0906	do.	150	34	16	22	3.0	32	34	.20	1.8	3.2	<1.0
09-23-97	0936	do.	160	33	19	26	3.0	40	44	.21	.66	<3.0	<1.0
10-06-97	1050	do.	150	27	20	33	3.1	50	47	.21	.06	4.5	3.3

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05465500, Iowa River at Wapello, IA (site 11, fig. 1)—Continued													
10-22-97	0951	regular	250	64	21	19	3.5	34	38	0.21	9.3	12	2.0
11-03-97	0953	do.	260	68	21	20	3.1	34	40	.26	9.6	5.1	<1.0
11-19-97	0935	do.	270	68	23	26	2.8	40	45	.19	7.7	<3.0	13
12-01-97	0928	do.	250	65	22	25	2.8	37	47	.21	4.9	40	9.0
01-05-98	0938	do.	230	59	21	26	3.2	44	39	.25	7.9	48	7.3
02-17-98	0936	do.	230	60	20	17	3.0	28	35	.17	9.3	68	7.4
03-09-98	1000	do.	220	59	18	11	2.5	23	28	.23	10	<10	14
03-30-98	0905	do.	250	66	21	11	1.9	23	29	.24	10	<10	<4.0
04-04-98	1020	do.	170	47	14	7.3	3.4	19	22	.19	11	<10	6.1
05-04-98	0909	do.	260	68	22	11	1.7	23	32	.27	8.5	<10	<4.0
05-27-98	1148	do.	230	55	22	13	2.0	22	29	.22	5.0	<10	<4.0
06-01-98	0913	do.	240	63	20	10	2.1	20	25	.26	11	<10	<4.0
06-19-98	1002	do.	200	53	16	7.6	3.2	16	20	.20	12	<10	<4.0
07-02-98	1049	do.	200	55	16	7.3	3.7	15	18	.28	15	<10	<4.0
08-03-98	0925	regular	210	52	21	13	2.9	20	25	.25	6.1	<10	<4.0
08-31-98	0940	do.	220	58	19	14	3.7	21	31	.21	11	<10	<4.0
05469980, South Skunk River near Story City, IA (site s, fig. 1)													
05-21-98	0743	regular	360	92	31	8.7	1.5	27	29	.40	16	<10	15
05471120, East Branch Indian Creek near Iowa Center, IA (site t, fig. 1)													
05-21-98	1137	regular	320	83	27	7.4	1.4	25	21	.32	14	<10	11
05473060, Crooked Creek at Coppock, IA (site u, fig. 1)													
05-19-98	0946	regular	250	60	24	13	1.6	21	32	.29	11	<10	26
05473400, Cedar Creek near Oakland Mills, IA (site v, fig. 1)													
05-19-98	1449	regular	220	57	20	13	2.2	17	49	.28	9.1	<10	25
05473550, Big Creek near Lowell, IA (site w, fig. 1)													
05-20-98	0838	regular	250	62	24	23	2.4	31	45	.34	1.7	<10	19

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05474000, Skunk River at Augusta, IA (site 12, fig. 1)													
10-09-96	0940	regular	140	24	19	19	3.8	29	46	0.30	0.05	10	24
11-07-96	0909	do.	290	75	24	15	4.5	26	38	.40	13	5.0	21
12-04-96	0933	do.	370	99	30	12	2.4	27	39	.40	19	<3.0	4.0
01-08-97	0930	do.	360	96	29	14	2.0	28	45	.40	17	3.0	16
02-06-97	0857	do.	160	43	13	13	9.1	25	33	.20	10	66	47
03-12-97	0930	do.	220	60	18	11	5.6	18	39	.22	13	5.3	1.7
04-08-97	0840	do.	300	79	24	12	2.8	22	48	.30	11	3.3	2.2
05-13-97	1110	do.	250	66	20	8.9	2.7	17	35	.29	13	<3.0	<1.0
05-28-97	1205	do.	150	39	13	6.7	4.1	12	22	.27	8.9	12	1.2
06-03-97	0814	do.	260	65	22	9.3	1.9	19	34	.28	13	<3.0	<1.0
06-26-97	1515	do.	210	56	18	5.9	3.0	15	18	.32	16	<3.0	<1.0
07-08-97	0804	do.	280	76	23	7.8	2.4	18	25	.31	19	<3.0	<1.0
08-07-97	0930	do.	210	50	21	10	2.8	18	33	.29	9.6	16	<1.0
09-02-97	1050	do.	200	47	19	17	4.9	22	45	.29	5.6	<3.0	13
10-07-97	0903	do.	200	45	21	18	4.7	25	51	.29	1.0	5.9	59
11-04-97	0822	do.	200	52	18	10	4.1	19	34	.26	12	3.5	1.4
12-02-97	0835	do.	230	59	21	15	4.3	24	46	.26	10	18	9.9
01-06-98	0830	do.	150	37	13	8.6	4.3	19	30	.26	9.2	15	24
02-18-98	0835	do.	180	47	16	11	3.0	21	39	.22	9.5	<10	<4.0
03-10-98	0840	do.	120	31	10	6.1	3.5	13	22	.22	8.0	36	34
03-31-98	0824	do.	130	36	11	5.2	3.2	9.7	17	.22	9.4	48	<4.0
05-05-98	0830	do.	230	60	20	8.7	2.3	16	35	.27	12	<10	<4.0
05-26-98	1200	do.	150	41	12	5.9	4.2	10	19	.25	12	11	<4.0
06-02-98	0820	do.	230	60	20	8.3	2.3	16	25	.30	14	<10	<4.0
06-18-98	1044	do.	170	44	14	5.7	4.3	11	<.10	.27	15	<10	<4.0

Table 13. Major ion concentrations in samples from selected surface-water sampling sites, October 1996 through September 1998—Continued

Date (month-day- year)	Time (24-hour)	Type of sample	Hardness (mg/L as CaCO ₃) (00900)	Calcium (mg/L as Ca) (00915)	Magne- sium (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium (mg/L as K) (00935)	Chloride (mg/L as Cl) (00940)	Sulfate (mg/L as SO ₄) (00945)	Fluoride (mg/L as F) (00950)	Silica (mg/L as SiO ₂) (00955)	Iron (µg/L as Fe) (01046)	Maganese (µg/L as Mn) (01056)
05474000, Skunk River at Augusta, IA (site 12, fig. 1)—Continued													
07-08-98	0930	regular	170	46	14	5.5	3.6	9.2	14	0.27	15	<10	<4.0
08-04-98	0810	do.	280	73	25	11	2.2	15	39	.31	17	<10	<4.0
09-01-98	0815	do.	100	28	8.0	5.1	5.8	6.7	17	.22	9.8	<10	<4.0