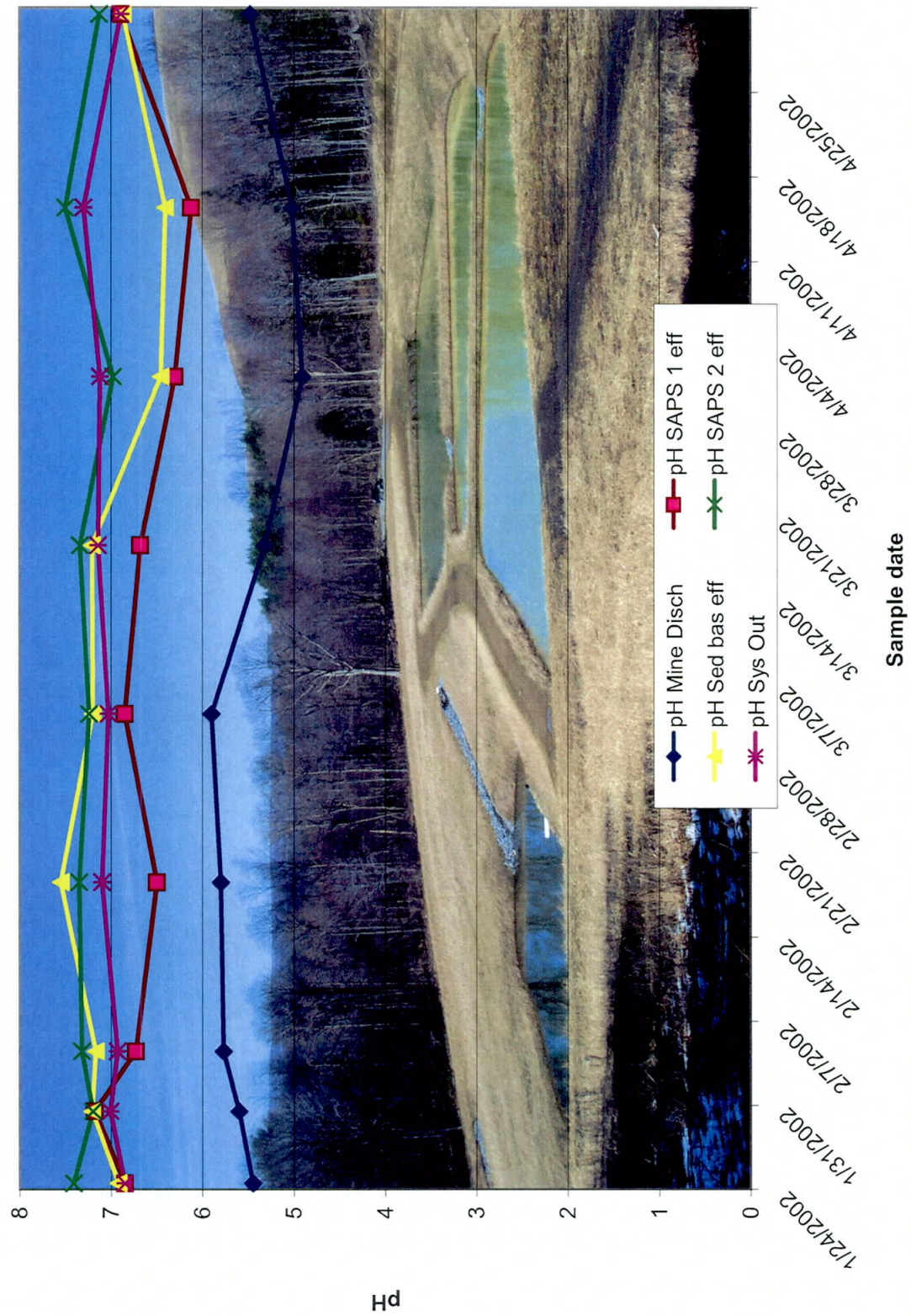
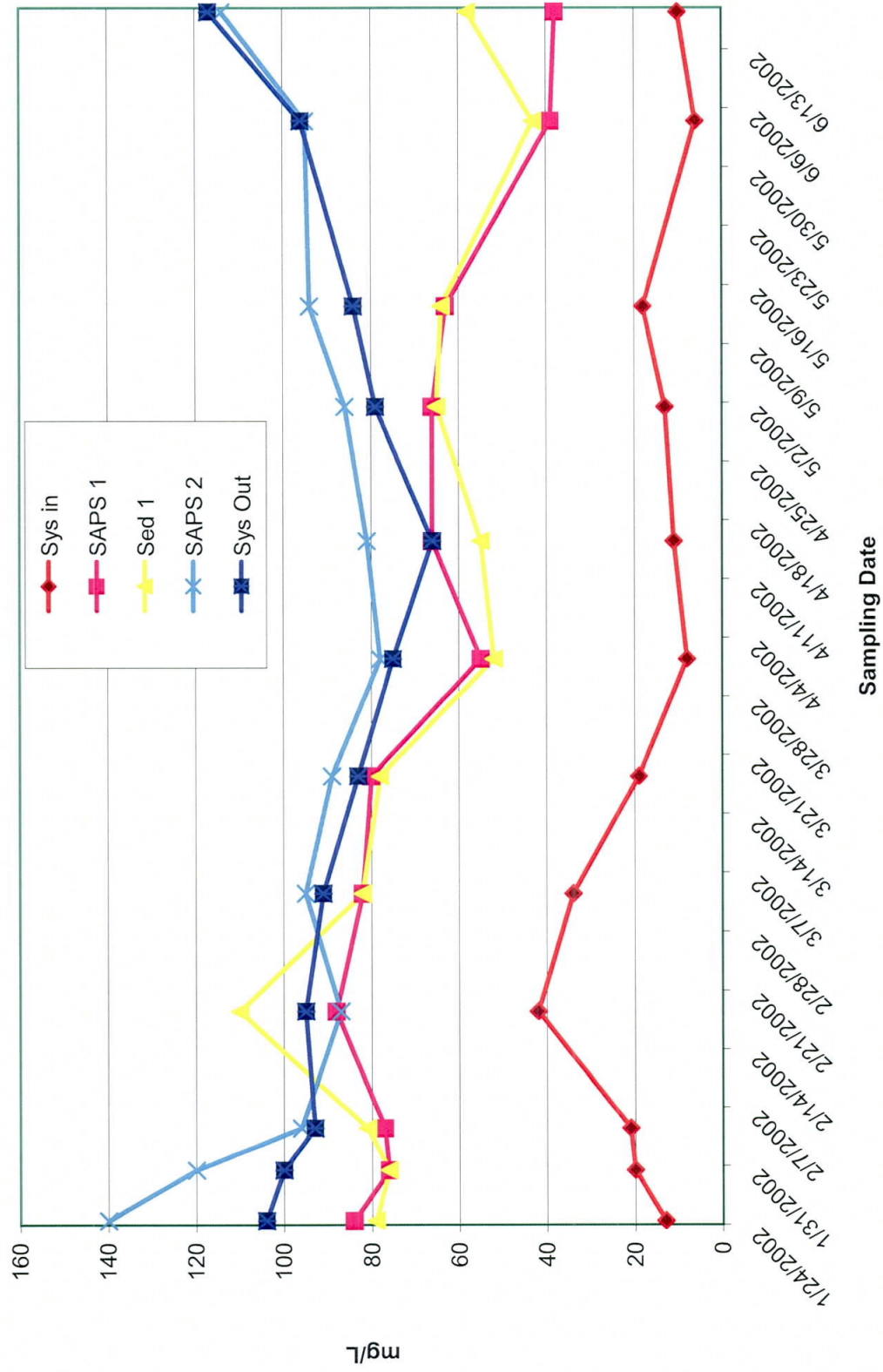


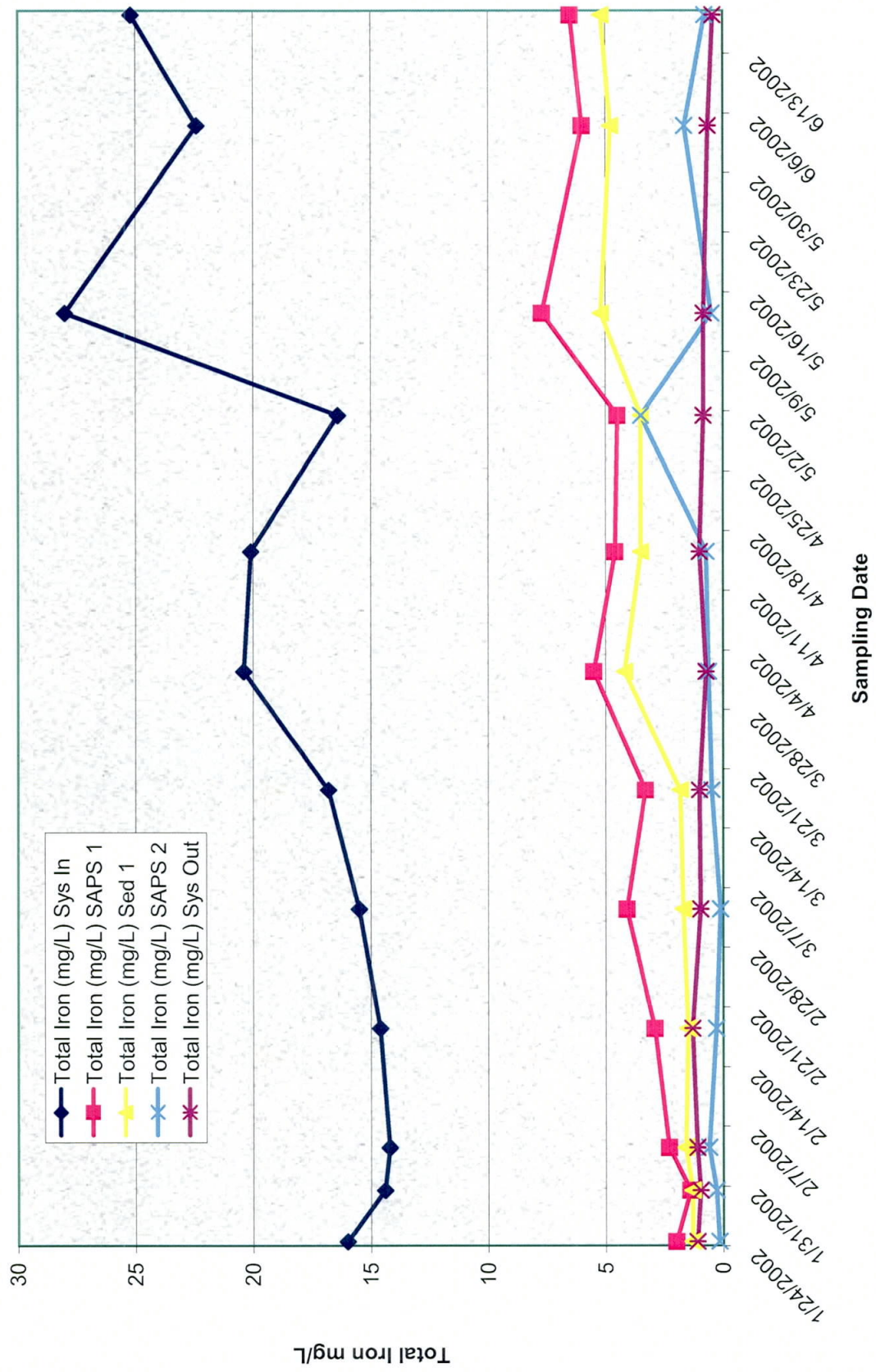
A Comparison of pH Across Phases of Treatment at LT-36 Elbon



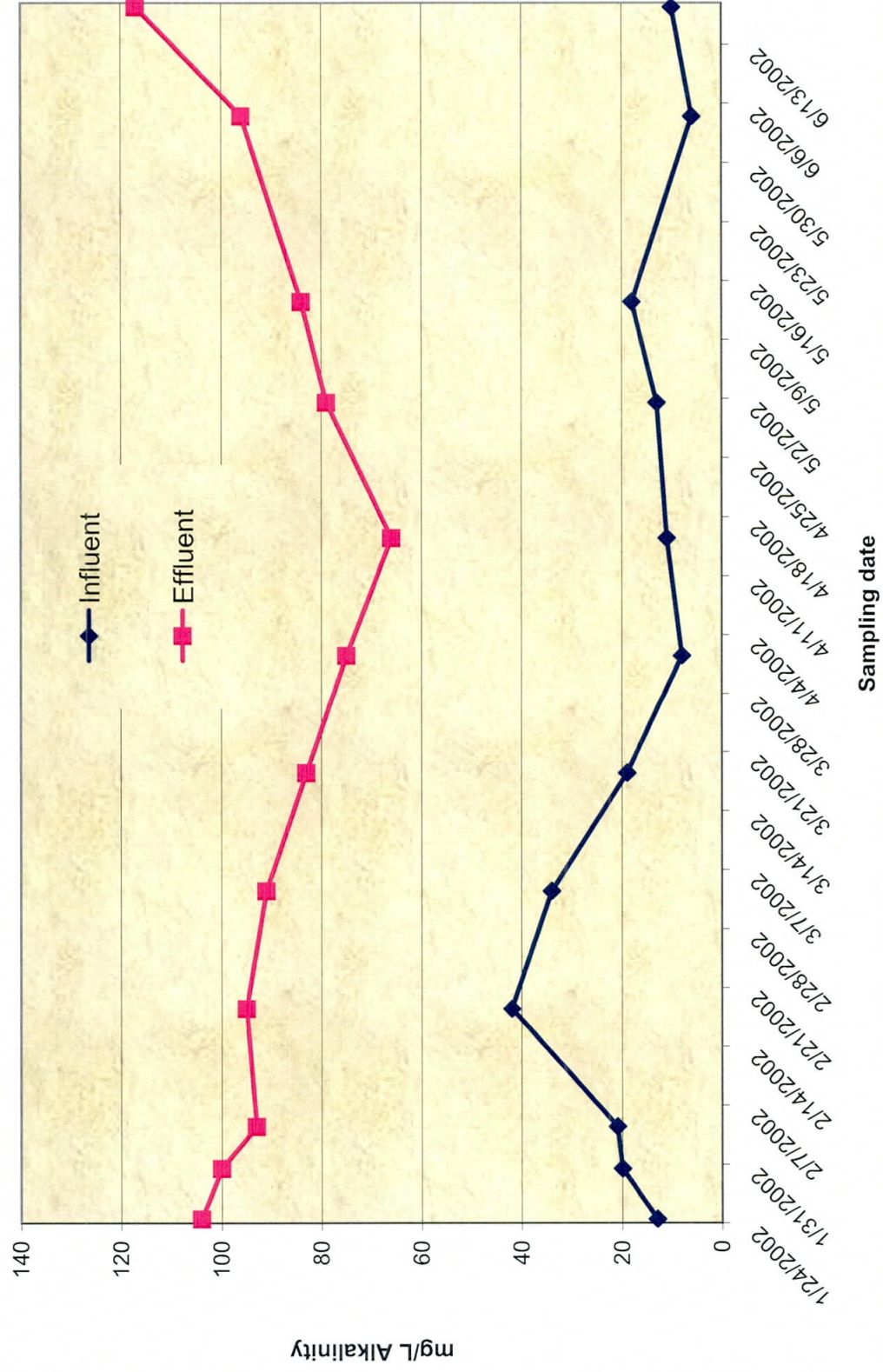
A Comparison of Alkalinity Across Components of the LT-36 Elbon Passive AMD Treatment System



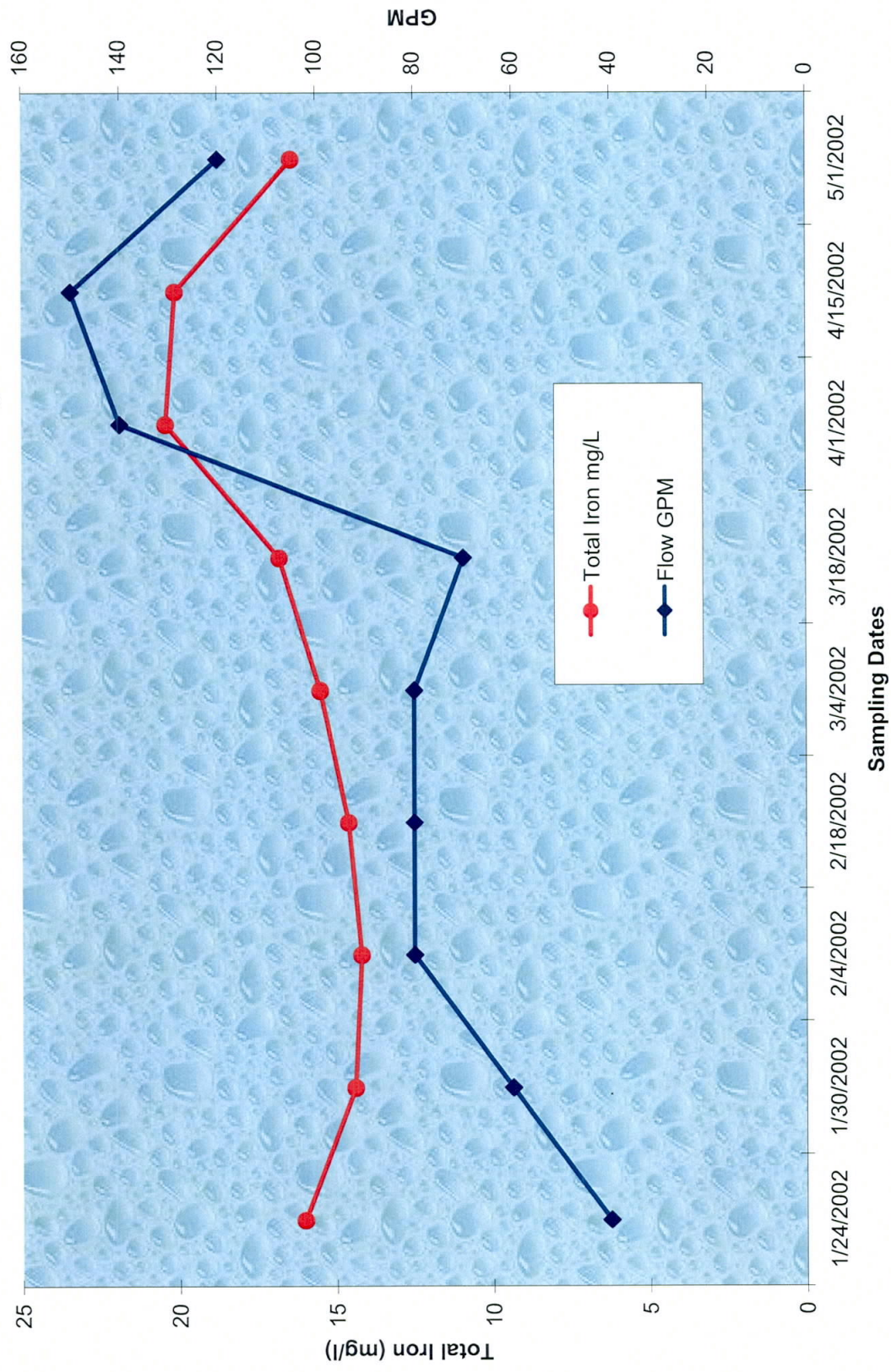
A Comparison of Total Iron Across the LT-36 Elbon AMD Treatment System



A Comparison of Alkalinity (mg/L) in System Influent and System Effluent for LT-36 Elbon



Change in Flow Volume vs Total Iron
at the LT-36 Elbon Mine Discharge



Total Iron in the LT-36 Elbon AMD Treatment System

	Total Iron (mg/L) Sys In	Total Iron (mg/L) SAPS 1	Total Iron (mg/L) Sed 1	Total Iron (mg/L) SAPS 2	Total Iron (mg/L) Sys Out
1/24/2002	16	2	1.3	0.18	1.1
1/30/2002	14.4	1.4	1.3	0.3	0.97
2/4/2002	14.2	2.3	1.6	0.6	1.1
2/18/2002	14.6	2.9	1.5	0.3	1.3
3/4/2002	15.5	4.1	1.7	0.12	0.96
3/18/2002	16.8	3.3	1.83	0.49	1
4/1/2002	20.4	5.5	4.2	0.63	0.72
4/15/2002	20.1	4.6	3.5	0.72	1
5/1/2002	16.4	4.5	3.5	3.5	0.84
5/13/2002	28	7.7	5.2	0.5	0.83
6/4/2002	22.4	6	4.8	1.65	0.65
6/17/2002	25.2	6.5	5.2	0.78	0.44

	pH In	pH Out		Total Iron (mg/L) In
1/24/2002	5.45	6.85	1/24/2002	16
1/30/2002	5.6	7.01	1/30/2002	14.4
2/4/2002	5.77	6.93	2/4/2002	14.2
2/18/2002	5.8	7.1	2/18/2002	14.6
3/4/2002	5.9	7.03	3/4/2002	15.5
3/18/2002	5.32	7.14	3/18/2002	16.8
4/1/2002	4.91	7.12	4/1/2002	20.4
4/15/2002	5.02	7.3	4/15/2002	20.1
5/1/2002	5.48	6.89	5/1/2002	16.4
5/13/2002	5.24	6.85	5/13/2002	28
6/4/2002	4.67	6.63	6/4/2002	22.4
6/17/2002	4.92	6.74	6/17/2002	25.2

	Sys in	SAPS 1	Sed 1	SAPS 2	Sys Out
1/24/2002	13	84	79	140	104
1/30/2002	20	76	76	120	100
2/4/2002	21	77	81	96	93
2/18/2002	42	88	110	87	95
3/4/2002	34	82	82	95	91
3/18/2002	19	80	78	89	83
4/1/2002	8	55	52	78	75
4/15/2002	11	66	55	81	66
5/1/2002	13	66	65	86	79
5/13/2002	18	63	64	94	84
6/4/2002	6	39	43	95	96
6/17/2002	10	38	58	114	117

	Total Iron (mg/L) Sys In	Total Iron (mg/L) SAPS 1	Total Iron (mg/L) Sed 1	Total Iron (mg/L) SAPS 2	Total Iron (mg/L) Sys Out
1/24/2002	16	2	1.3	0.18	1.1
1/30/2002	14.4	1.4	1.3	0.3	0.97
2/4/2002	14.2	2.3	1.6	0.6	1.1
2/18/2002	14.6	2.9	1.5	0.3	1.3
3/4/2002	15.5	4.1	1.7	0.12	0.96
3/18/2002	16.8	3.3	1.83	0.49	1
4/1/2002	20.4	5.5	4.2	0.63	0.72
4/15/2002	20.1	4.6	3.5	0.72	1

5/1/2002	16.4	4.5	3.5	3.5	0.84
5/13/2002	28	7.7	5.2	0.5	0.83
6/4/2002	22.4	6	4.8	1.65	0.65
6/17/2002	25.2	6.5	5.2	0.78	0.44

Total Iron (mg/L)	Aluminum In (mg/L)	Aluminum Out (mg/L)	Mn mg/L	Mn mg/L
1.1	6	0.1	4.6	1.4
0.97	6	0.2	4.4	1.6
1.1	5.2	0.1	4	1.6
1.3	5.6	<.1	4.2	1.7
0.96	6	0.3	4.5	1.2
1	6	0.1	5	1.02
0.72	6.9	<.1	5	1.3
1	6.1	0.2	6	2.5
0.84	7.9	<.1	6.8	2.1
0.83	8.8	1.1	6	1.5
0.65	13	<.1	10.6	5.6
0.44	13.3	<.1	10.4	3.9

LT - 36 Elbon, System Influent (Sample #1)

	pH	Alkalinity mg/L	Acidity mg/L	Conductivity umhos/cm	Total Iron mg/L	Ferrous Iron mg/L	Mn mg/L	Aluminum mg/L	Calcium mg/L	Mg mg/L	Hardness mg/L	Sulfate mg/L	Net Alkalinity mg/L	Flow GPM
1/24/2002	5.45	13	22	2050	16	8.65	4.6	6	236	58	828	1230	9	
1/30/2002	5.6	20	11	2030	14.4	6.7	4.4	6	255	125	1150	1200	9	
2/4/2002	5.77	21	22	1944	14.2	5.45	4	5.2	282	112.6	1169	1100	acid 1	
2/18/2002	5.8	42	35	2180	14.6	6.5	4.2	5.6	311	120	1270	1403	7	
3/4/2002	5.9	34	26	2110	15.5	4.85	4.5	6	300	107	1190	1016	8	
3/18/2002	5.32	19	25	2210	16.8	4.6	5	6	317	128	1319	1276	acid 6	
4/1/2002	4.91	8	49	2070	20.4	4.5	5	6.9	297	126	11260	1202	acid 41	
4/15/2002	5.02	11	43	2210	20.1	6.55	6	6.1	315	133	1334	1316	acid 32	
5/1/2002	5.48	13	69	2290	16.4	4.84	6.8	7.9	310	133	1321	1174	acid 56	
5/13/2002	5.24	18	90	2100	28	9.15	6	8.8	260	110	1102	1148	acid 72	
6/4/2002	4.67	6	108	2490	22.4	7.93	10.6	13	374	163	1604	1752	102	
6/17/2002	4.92	10	115	2510	25.2	10	10.4	13.3	300	144	1342	1604	105	

LT-36 Elbon, SAPS #1 Effluent (sample #2)

	pH	Alkalinity mg/L	Acidity mg/L	Conductivity umhos/cm	Total Iron mg/L	Ferrous Iron mg/L	Mn mg/L	Aluminum mg/L	Calcium mg/L	Mg mg/L	Hardness mg/L	Sulfate mg/L	Net Alkalinity mg/L	Flow GPM
1/24/2002	6.85	84	< 1	2130	2	1.01	2.5	0.2	266	58	903	1210	84	
1/30/2002	7.18	76	11	2000	1.4	0.41	2.2	0.2	290	125	1236	1170	65	
2/4/2002	6.73	77	< 1	1864	2.3	1.05	2.4	0.4	278	99.6	1104	1010	77	
2/18/2002	6.5	88	< 1	2200	2.9	1.41	2.5	0.6	334	122	1336	1330	88	
3/4/2002	6.85	82	< 1	2190	4.1	1.64	2.9	0.9	323	118	1229	972	82	
3/18/2002	6.68	80	< 1	2260	3.3	1.95	3.2	0.6	353	129	1412	1254	80	
4/1/2002	6.3	55	< 1	2090	5.5	2.45	3.8	0.9	318	125	1308	1188	55	
4/15/2002	6.12	66	< 1	2380	4.6	3.28	5.4	0.7	360	137	1459	1370	66	
5/1/2002	6.89	66	< 1	2350	4.5	1.96	5.2	1	344	133	1405	1216	66	
5/13/2002	5.78	63	< 1	2270	7.7	3.98	4.7	1.6	288	115	1193	1194	63	
6/4/2002	5.6	39	< 1	2570	6	3.96	7.6	1.9	400	167	1685	1638	39	
6/17/2002	6.06	38	< 1	2520	6.5	5.4	6.8	1.2	321	142	1387	1558	38	

LT-36 Elbon, Sediment Basin # 1 Effluent (sample #3)

	pH	Alkalinity mg/L	Acidity mg/L	Conductivity umhos/cm	Total Iron mg/L	Ferrous Iron mg/L	Mn mg/L	Aluminum mg/L	Calcium mg/L	Mg mg/L	Hardness mg/L	Sulfate mg/L	Net Alkalinity mg/L	Flow GPM
1/24/2002	6.92	79	< 1	2030	1.3	0.71	2.2	< .1	256	56	869	1140	79	
1/30/2002	7.21	76	11	1958	1.3	0.32	2.2	0.2	280	125	1213	1158	65	
2/4/2002	7.17	81	< 1	1850	1.6	0.41	2.2	0.3	292	103.2	1154	1060	81	
2/18/2002	7.55	110	< 1	2130	1.5	0.31	2.3	0.1	329	119	1311	1358	110	
3/4/2002	7.2	82	< 1	2180	1.7	0.32	2.7	0.4	338	119	1334	962	82	
3/18/2002	7.21	78	< 1	2240	1.83	0.4	2.8	0.1	348	127	1392	1188	78	
4/1/2002	6.46	52	< 1	2050	4.2	1.67	3.6	0.4	3316	123	1296	1148	52	
4/15/2002	6.41	55	< 1	2390	3.5	2.25	5.2	0.4	355	138	1454	1342	55	
5/1/2002	6.87	65	< 1	2370	3.5	1.68	5.4	0.5	318	137	1358	1134	65	
5/13/2002	6.08	64	< 1	2240	5.2	2.79	4.6	0.6	288	115	1193	1196	64	
6/4/2002	5.76	43	< 1	2580	4.8	2.85	7.5	0.7	403	166	1689	1596	43	
6/17/2002	6.04	58	< 1	2520	5.2	3.21	6.7	0.5	320	143	1387	1416	58	

LT-36 Elbon, SAPS #2 Effluent (sample # 4)

	pH	Alkalinity mg/L	Acidity mg/L	Conductivity umhos/cm	Total Iron mg/L	Ferrous Iron mg/L	Mn mg/L	Aluminum mg/L	Calcium mg/L	Mg mg/L	Hardness mg/L	Sulfate mg/L	Net Alkalinity mg/L	Flow GPM
1/24/2002	7.41	140	<1	2110	0.18	0.06	1.3	<1	272	57.4	915	1130	140	
1/30/2002	7.2	120	16	2110	0.3	0.04	1.3	<1	285	125	1226	1248	104	
2/4/2002	7.32	96	<1	1822	0.6	0.27	1.5	0.1	278	93.8	1080	1030	96	
2/18/2002	7.35	87	<1	2070	0.3	0.1	1.3	<1	303	105	1189	1277	87	
3/4/2002	7.24	95	<1	2240	0.12	0.03	0.77	<1	340	116	1327	964	95	
3/18/2004	7.34	89	<1	2250	0.49	0.03	0.95	<1	350	125	1388	1194	89	
4/1/2002	6.98	78	<1	2060	0.63	0.17	1.4	<1	317	120	1286	1138	78	
4/15/2002	7.5	81	<1	2400	0.72	0.22	2.5	<1	360	137	1462	1210	81	
5/1/2002	7.13	86	<1	2400	3.5	0.14	2	<1	365	137	1475	1242	86	
5/13/2002	6.8	94	<1	2300	0.5	0.32	1.5	<1	298	115	1218	1100	94	
6/4/2002	6.38	95	<1	2650	1.65	1.62	6.6	<1	428	162	1735	1604	95	
6/17/2002	6.39	114	<1	2390	0.78	0.67	4.6	<1	330	138	1392	1544	114	

LT-36 Elbon, System Effluent (sample #5)

	pH	Alkalinity mg/L	Acidity mg/L	Conductivity umhos/cm	Total Iron mg/L	Ferrous Iron mg/L	Mn mg/L	Aluminum mg/L	Calcium mg/L	Mg mg/L	Hardness mg/L	Sulfate mg/L	Alkalinity mg/L	Net Flow GPM
1/24/2002	6.85	104	<1	1980	1.1	0.87	1.4	0.1	256	56.6	872	1100	104	40
1/30/2002	7.01	100	19	1952	0.97	0.04	1.6	0.2	270	120	1168	1134	81	60
2/4/2002	6.93	93	<1	1849	1.1	0.15	1.6	0.1	294	98.8	1141	1040	93	80
2/18/2002	7.1	95	<1	2080	1.3	<0.3	1.7	<1	314	107	1225	1272	95	88
3/4/2002	7.03	91	<1	2200	0.96	0.03	1.2	0.3	335	114	1305	992	91	80
3/18/2002	7.14	83	<1	2180	1	0.18	1.02	0.1	340	120	1343	1254	83	70
4/1/2002	7.12	75	<1	2000	0.72	0.1	1.3	<1	310	117	1256	1110	75	140
4/15/2002	7.3	66	<1	2410	1	0.21	2.5	0.2	350	130	1408	1268	66	150
5/1/2002	6.89	79	<1	2360	0.84	0.01	2.1	<1	364	136	1468	1222	79	120
5/13/2002	6.85	84	<1	2300	0.83	0.27	1.5	1.1	292	113	1194	1192	84	O. W.
6/4/2002	6.63	96	<1	2620	0.65	0.17	5.6	<1	425	159	1714	1544	96	130
6/17/2002	6.74	117	<1	2430	0.44	0.12	3.9	<1	332	140	1405	1490	117	140
Mean	6.966	90.25	1.583333	2196.75	0.909167	0.179167	2.118333	0.175	323.5	117.6167	1291.583	1218.167	88.66667	90.833333

	pH	pH	GPM
1/24/2002	5.45	6.85	40
1/30/2002	5.6	7.01	60
2/4/2002	5.77	6.93	80
2/18/2002	5.8	7.1	80
3/4/2002	5.9	7.03	80
3/18/2002	5.32	7.14	70
4/1/2002	4.91	7.12	140
4/15/2002	5.02	7.3	150
5/1/2002	5.48	6.89	120

	Total Iron mg/L	Flow GPM
1/24/2002	16	40
1/30/2002	14.4	60
2/4/2002	14.2	80
2/18/2002	14.6	80
3/4/2002	15.5	80
3/18/2002	16.8	70
4/1/2002	20.4	140
4/15/2002	20.1	150
5/1/2002	16.4	120

	pH Mine Disch	pH SAPS 1 eff	pH Sed bas eff
1/24/2002	5.45	6.85	6.92
1/30/2002	5.6	7.18	7.21
2/4/2002	5.77	6.73	7.17
2/18/2002	5.8	6.5	7.55
3/4/2002	5.9	6.85	7.2
3/18/2002	5.32	6.68	7.21
4/1/2002	4.91	6.3	6.46
4/15/2002	5.02	6.12	6.41
5/1/2002	5.48	6.89	6.87

pH SAPS	pH Sys
2 eff	Out
7.41	6.85
7.2	7.01
7.32	6.93
7.35	7.1
7.24	7.03
7.34	7.14
6.98	7.12
7.5	7.3
7.13	6.89

	Influent	Effluent
1/24/2002	13	104
1/30/2002	20	100
2/4/2002	21	93
2/18/2002	42	95
3/4/2002	34	91
3/18/2002	19	83
4/1/2002	8	75
4/15/2002	11	66
5/1/2002	13	79
5/13/2002	18	84
6/4/2002	6	96
6/17/2002	10	117