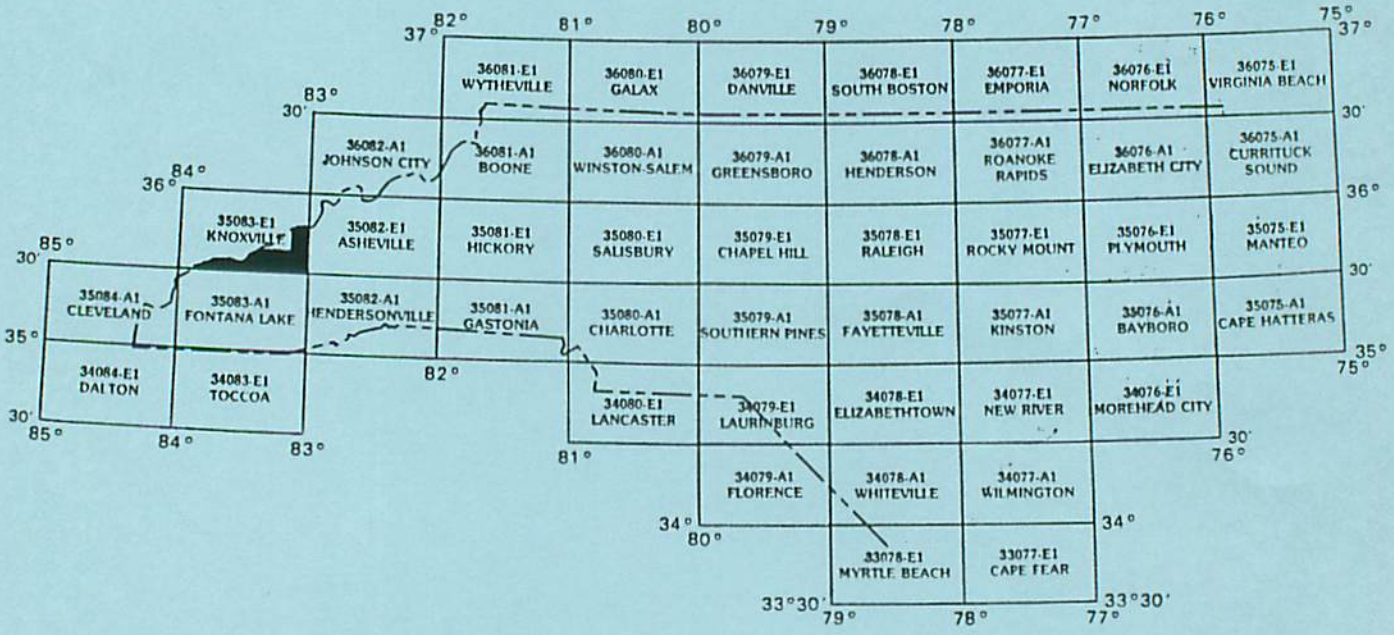
Listing of Concentrations of Variables of Stream Sediment, Stream Water, and Groundwater for the Knoxville 30 x 60 - Minute Quadrangle -NURE Database

by
Robert H. Carpenter and Jeffrey C. Reid



NORTH CAROLINA GEOLOGICAL SURVEY
OPEN-FILE REPORT 93-4

State of North Carolina
James B. Hunt, Jr., Governor

Department of Environment, Health and Natural Resources
Jonathan B. Howes, Secretary
Division of Land Resources
Charles H. Gardner,
Director and State Geologist

July, 1993

GEOLOGICAL SURVEY SECTION

The Geological Survey Section examines, surveys and maps the geology, mineral resources, and topography of the State to encourage the wise conservation and use of these resources by industry, commerce, agriculture and government agencies for the general welfare of the citizens of North Carolina.

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Jeffrey C. Reid
Chief Geologist

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INTRODUCTION

This report is a compilation of geochemical data for stream sediment and groundwater for the Knoxville 30 x 60 - minute quadrangle (Figure 1). Maps and tables were prepared from statewide data obtained by the Savannah River Laboratory under sponsorship of the U.S. Dept. of Energy in its National Uranium Resources Evaluation (NURE) program (Sargent and others, 1982). Sampling and analysis were performed during the period 1976 - 1980.

Because of the large size of the database, the North Carolina Geological Survey is presenting the database in both statewide and 30 x 60 - minute quadrangle formats. Statewide formats currently available include atlases of stream sediment and hydrogeochemical data which contain maps showing quartile distribution of concentrations of variables (Reid, 1991; Reid, 1993). Reid and Carpenter (1993a, 1993b) present listings of concentrations of variables which equal or exceed the 90th percentile (and pH and conductivity below the 10th percentile) for stream sediment and groundwater-stream water.

This open-file report is part of a series of reports that present sample-location maps and listings of analyses of all variables in all of the 30 x 60 - minute quadrangles that comprise the state of North Carolina. Subsequent reports will review the NURE data for individual 30 x 60 - minute quadrangles. These reviews will contain the following: 1) maps showing concentrations of all the variables in up to eight class intervals; 2) geologic review of the quadrangle and discussion of relationship of geochemical variables to rock units and structural features; 3) review of mineral resources and discussion of relationship of geochemical variables to mineral occurrences; and 4) discussion of outliers that may relate to anthropogenic contamination.

In this report, site-location maps use state boundaries, county boundaries and 7-1/2 - minute quadrangle boundaries as references to site-locations. The North Carolina Index to Topographic and Other Map Coverage, prepared by the U.S. Geological Survey, is a useful reference document. The List of Publications of the North Carolina Geological Survey indicates areas within the state for which some geologic and geophysical maps, and reports, are available.

Listings in this report are in the same basic format as those presented in microfiche by Sargent

and others (1982). Column 1 lists the laboratory numbers applied to each analyzed sample. Column 2 lists site identification codes. The first two characters are the codes for the county name. The next three digits are sample numbers. They are listed sequentially for each county in the order they were collected. The next two columns list the latitude and longitude of the sampling sites in decimal degree format. The remaining columns are data columns and analyses are given in parts per million (stream sediment) and parts per billion (groundwater). In these columns, a minus (-) sign indicates that a value is below the detection limit. If background is high, and an accurate estimate of minimum detection limit could not be made, a period (.) indicates that the element was not detected and that the detection limit is unusually high. Missing data are denoted by the letter "M". For gold, analyses are listed only for those samples in which gold was detected. For arsenic, a value of 0 is assigned for samples in which arsenic was analyzed, but not detected.

For stream sediment, two listings are presented. The first listing is for elements analyzed by neutron activation as well as field measurements for pH and conductivity of stream water. Variables included in this listing are pH, conductivity, uranium (U), thorium (Th), hafnium (Hf), cerium (Ce), iron (Fe), manganese (Mn), sodium (Na), scandium (Sc), titanium (Ti), vanadium (V), aluminum (Al), dysprosium (Dy), europium (Eu), lanthanum (La), samarium (Sm), ytterbium (Yb), and lutetium (Lu). The second listing is for supplemental elements analyzed by a variety of techniques. These include extractable uranium (Ux), silver (Ag), arsenic (As), barium (Ba), beryllium (Be), calcium (Ca), cobalt (Co), chromium (Cr), copper (Cu), potassium (K), lithium (Li), magnesium (Mg), molybdenum (Mo), niobium (Nb), nickel (Ni), phosphorous (P), lead (Pb), selenium (Se), tin (Sn), strontium (Sr), tungsten (W), yttrium (Y), and zinc (Zn). Stream sediment analyses are for the minus 100 mesh fraction (< 149 microns) unless otherwise noted.

Groundwater, normally samples of water from wells, was also analyzed by neutron activation. Field measurements were made of pH and conductivity. Variables included in listings of groundwater analyses include pH, conductivity, uranium (U), bromine (Br), chlorine (Cl), fluorine (F), magnesium (Mg), manganese (Mn), sodium (Na), vanadium (V), uranium/conductivity, aluminum (Al), and dysprosium (Dy). Stream water was also analyzed for these variables at 295 sites in North Carolina. Listings for stream water are included for areas in which these sites are located.

Although the data was acquired with considerable attention to quality control, some errors exist. These include uncertainties of sample locations due to the use of county road maps as base maps for field use and digitizing sampling sites. Malfunction of field equipment used in measurement of pH and conductivity has also been recognized in some areas. Some of the analyses are also in error. Some of these errors are apparent when concentrations show systematic "breaks" at county boundaries. This suggests that conditions of analysis for different batches of samples were not uniform. In general, analyses of stream sediment by neutron activation are more reliable than analyses of sediment by other supplemental methods.

For a number of counties, supplemental analyses were not made. Thus elements of interest for mineral exploration and environmental geochemistry are lacking for large areas.

REFERENCES

Reid, Jeffrey C., 1991 (revised 1993), A geochemical atlas of North Carolina: North Carolina Geological Survey, Bulletin 93, text plus 45 plates.

Reid, Jeffrey C., 1993, A hydrogeochemical atlas of North Carolina: North Carolina Geological Survey, Bulletin 94, text plus 26 plates.

Reid, Jeffrey C., and Carpenter, Robert H.,1993a, Listings of concentrations (stream sediments) of variables which equal or exceed the 90th percentile, and pH and conductivity below the 10th percentile in the North Carolina portion of the NURE database: North Carolina Geological Survey, Open-File Report 93-1, introductory text plus 178 pages of data.

Reid, Jeffrey C., and Carpenter, Robert H., 1993b, Listing of concentrations (groundwater and stream water) of variables which equal or exceed the 90th percentile, and pH and conductivity below the 10th percentile in the North Carolina portion of the NURE data base: North Carolina Geological Survey, Open-File Report 93-2, introductory text plus 162 pages of data.

Sargent, K.A., Cook, J.R., and Fay, W.M., 1982, Data report: North and South Carolina, National Uranium Resource Evaluation Program, Hydrochemical and stream sediment reconnaissance: E.I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, S.C., under contract to the U.S. Dept of Energy, contract DE-AC09-76SR000001 (DPST-81-146-22; GBJX-102), 45 p. plus microfiche.

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Listing of Groundwater Analyses - Cleveland 30 x 60 - minute quadrangle 7

[Note: There are no supplemental analyses for the Knoxville 30 x 60 minute quadrangles.]

COUNTY CODES

Code	County
HY	Haywood
JA	Jackson
SW	Swain

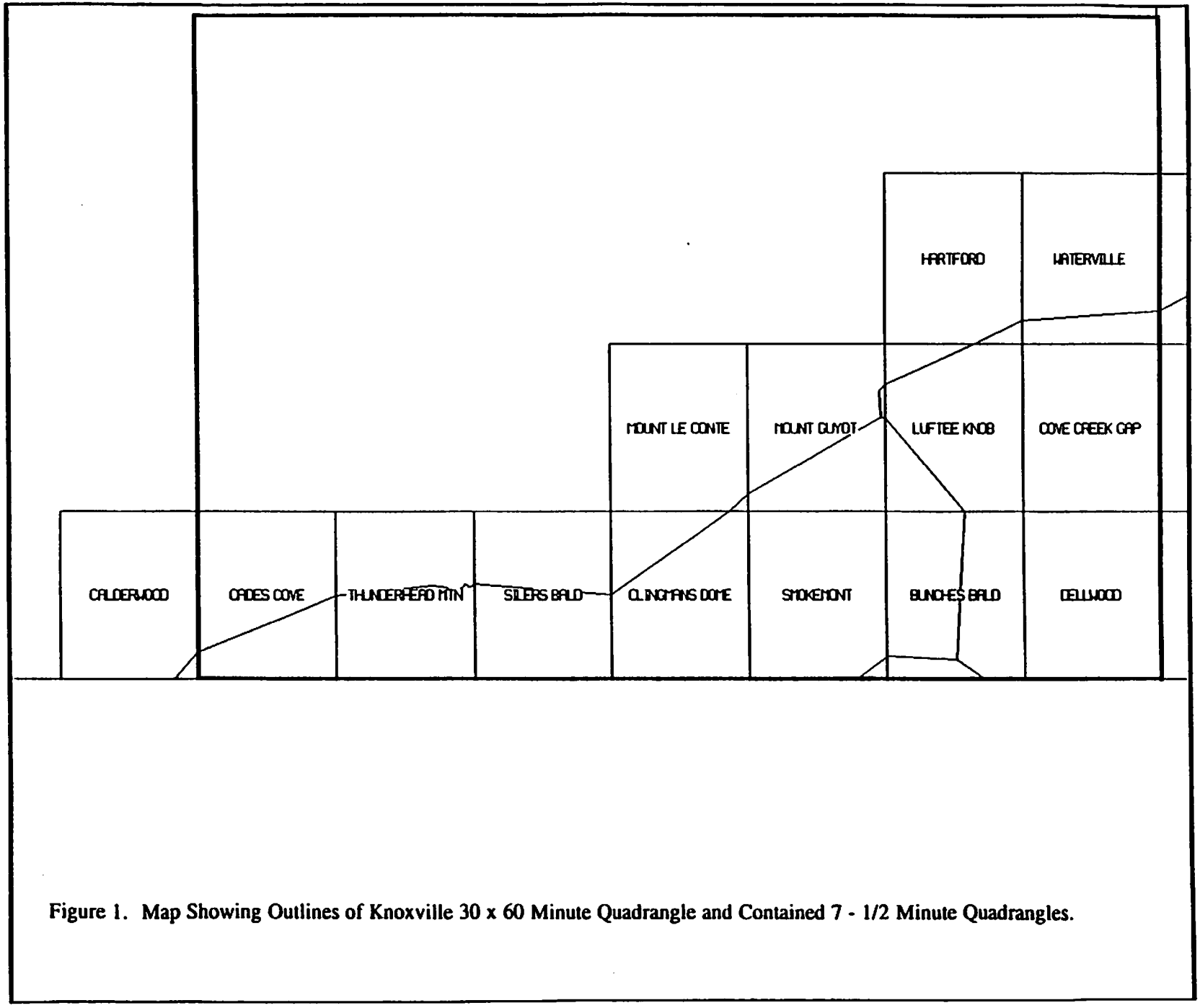


Figure 1. Map Showing Outlines of Knoxville 30 x 60 Minute Quadrangle and Contained 7 - 1/2 Minute Quadrangles.

Figure 2. Stream Sediment Sites - Knoxville 30 x 60 Minute Quadrangle

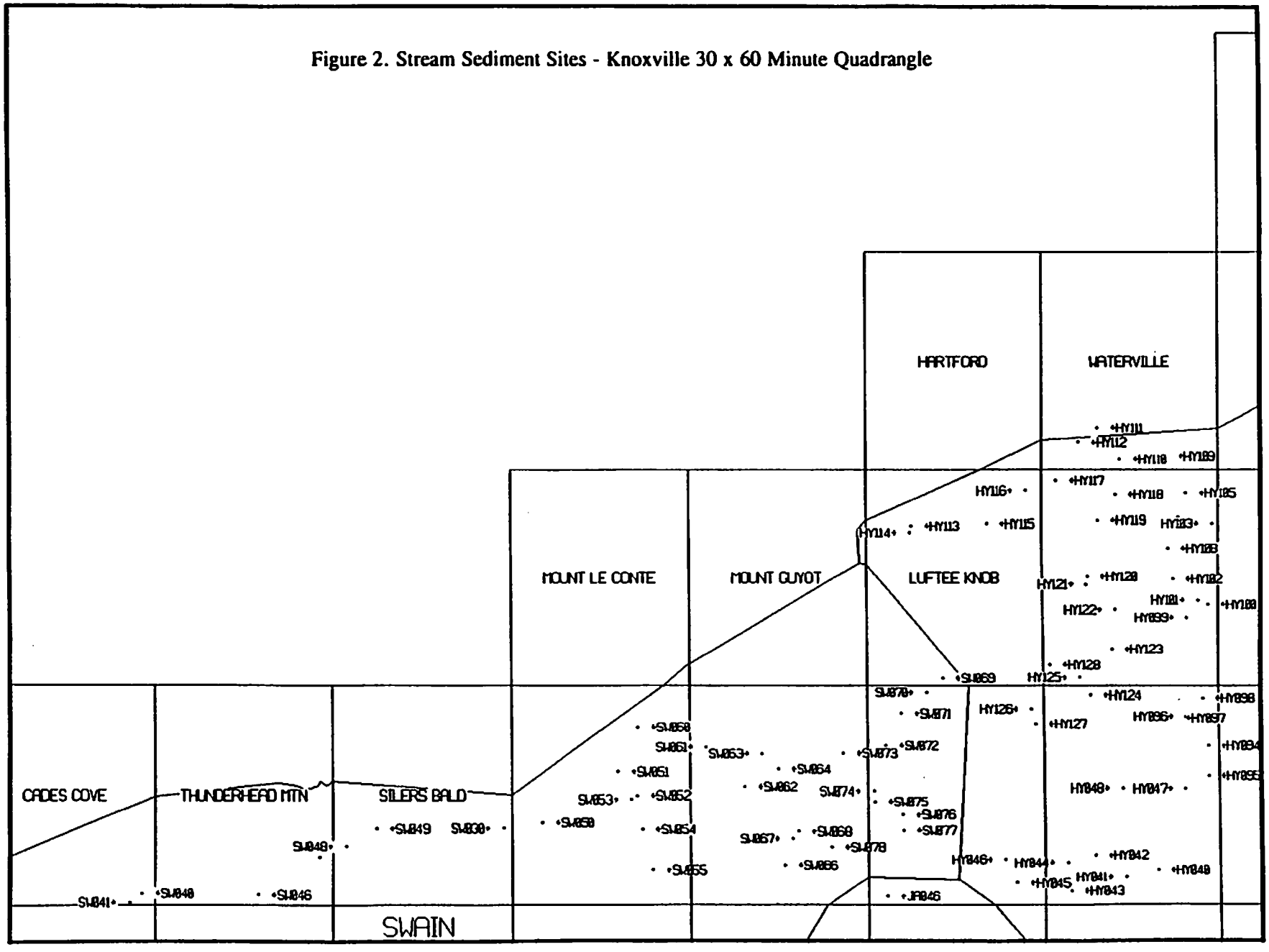
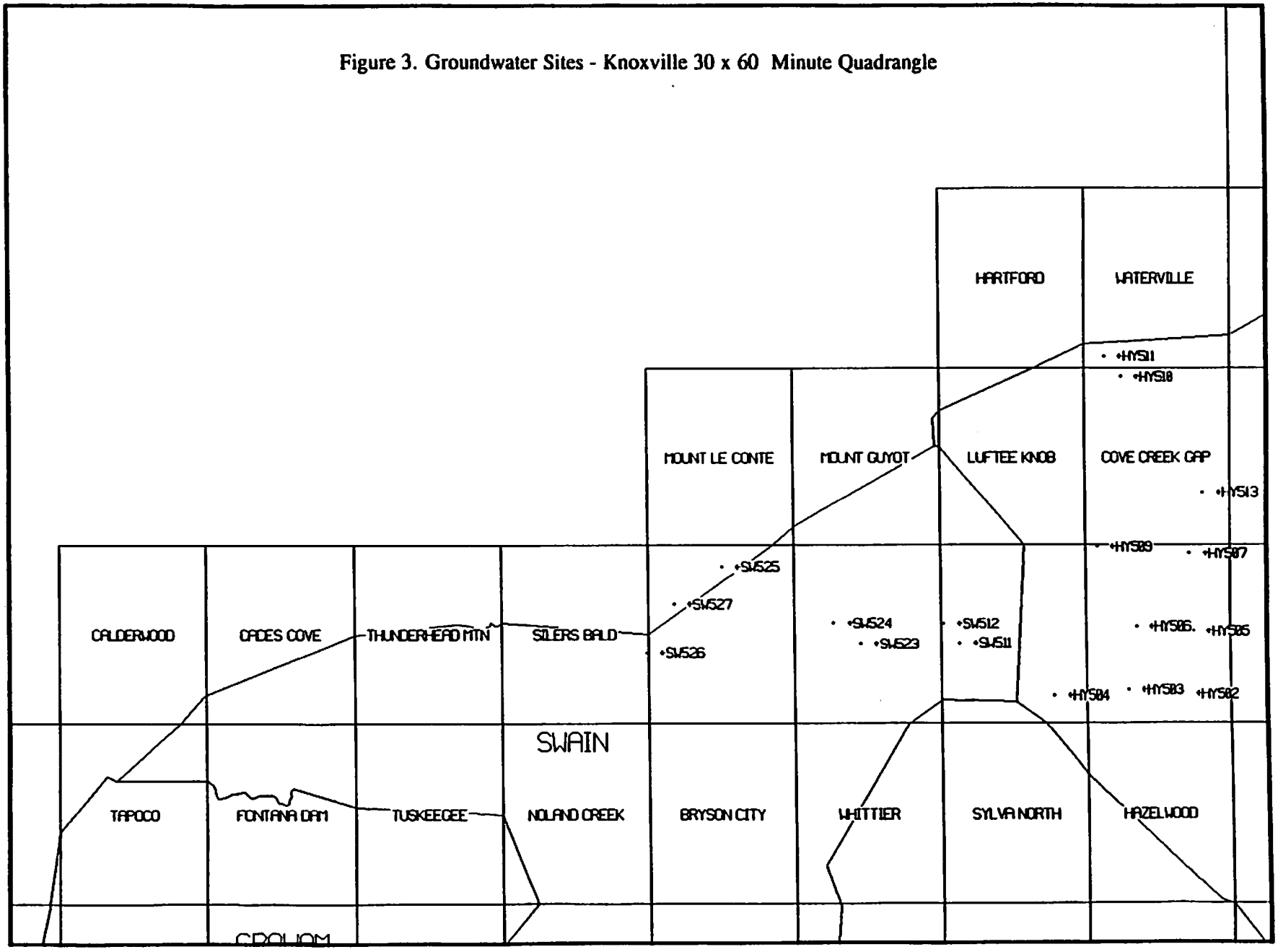


Figure 3. Groundwater Sites - Knoxville 30 x 60 Minute Quadrangle



KNOXVILLE 100K SHEET - STREAM SEDIMENT

Lab #	County ID	Lat	Long	pH	Cond um/cm	U ppm	Th ppm	Hf ppm	Al ppm	Ce ppm	Fe ppm	Mn ppm	Na ppm	Sc ppm	Ti ppm	V ppm	Dy ppm	Eu ppm	La ppm	Sm ppm	Yb ppm	Lu ppm	Au ppm
3009	HY040	35.5198	83.0449	7.2	18	4.1	M	M	77500	M	M	1110	10500	M	6500	80	14.4	M	11	M	M	M	
3010	HY041	35.5160	83.0678	7.1	17	24.7	104	29	55000	794	39200	840	5700	10.1	9300	40	35.7	5.1	424	38	M	0.9	
3011	HY042	35.5283	83.0894	7.1	16	7.8	28	33	64400	222	27100	720	9700	14.4	5400	50	8.1	-1.7	108	17	4.8	0.8	
3012	HY043	35.5079	83.1069	6.8	10	16.1	63	30	77000	488	39500	1980	14200	17.7	M	M	25.6	4.6	239	34	7.3	1.7	
3013	HY044	35.5242	83.1096	6.9	19	2.4	13	17	66900	123	32400	520	8000	10.5	3100	40	M	3.0	M	M	M	-0.3	
3014	HY045	35.5125	83.1451	6.7	51	3.5	26	103	75000	446	51600	700	7700	44.2	3800	70	11.0	9.3	180	32	M	1.4	
3015	HY046	35.5261	83.1534	7.0	5	6.9	26	15	53900	188	24700	910	8100	8.3	7500	40	11.8	-1.1	93	16	M	0.4	
3016	HY047	35.5664	83.0247	7.2	23	2.8	30	19	68600	271	67400	690	8900	26.8	5500	70	10.3	4.4	116	20	3.7	1.2	
3017	HY048	35.5668	83.0696	7.3	20	2.6	10	13	63700	111	27900	690	11500	12.1	4900	60	9.0	3.7	56	5	M	0.5	
3057	HY094	35.5908	83.0077	7.0	21	10.6	43	20	65500	290	46400	1280	10400	11.0	11000	100	18.5	-1.0	153	27	12.3	-0.4	
3058	HY095	35.5737	83.0080	7.0	32	7.0	-4	23	64900	97	47800	680	14200	7.1	5100	80	9.4	M	76	13	M	M	
3059	HY096	35.6076	83.0235	7.3	20	3.7	19	9	44600	179	27000	500	7100	4.2	6200	30	5.7	-1.6	61	12	M	0.7	
3060	HY097	35.6067	83.0327	7.2	20	6.5	17	7	66700	214	32800	850	9800	8.3	9500	50	10.3	M	122	18	M	1.1	
3061	HY098	35.6181	83.0114	7.2	22	24.0	82	42	63900	561	54800	1990	9900	11.5	22100	110	38.2	15.8	317	63	13.1	2.0	
3062	HY099	35.6645	83.0222	7.2	24	4.3	10	17	41800	53	17100	620	7500	4.5	8600	40	7.8	M	35	5	M	0.4	
3063	HY100	35.6721	83.0072	7.2	62	3.1	6	4	61000	83	24100	630	10200	5.2	6700	40	M	2.2	27	6	M	0.5	
3064	HY101	35.6745	83.0143	6.9	37	1.6	7	4	57200	65	23600	670	8300	5.8	5700	80	4.6	M	36	6	M	0.6	
3065	HY102	35.6867	83.0320	6.8	29	3.5	9	2	81100	109	38500	1870	14000	6.9	10100	90	6.2	2.4	48	8	3.6	M	
3066	HY103	35.7188	83.0045	7.1	24	4.0	10	3	76900	65	31900	1160	18500	7.6	8200	80	2.8	M	45	8	M	0.8	
3067	HY104	35.7224	83.0281	6.9	22	10.4	65	16	70600	208	41400	2550	16900	7.8	27700	100	10.1	1.5	116	15	9.0	0.9	
3068	HY105	35.7367	83.0228	6.9	18	5.2	23	3	76800	77	34100	1310	19000	5.9	11700	60	4.2	-1.6	51	8	M	0.4	
3071	HY108	35.7045	83.0355	7.8	49	9.9	24	35	53400	112	36100	710	5700	4.1	13900	50	15.3	-1.2	77	11	7.7	1.0	
3072	HY109	35.7580	83.0371	7.0	15	8.1	13	11	72100	54	24300	750	8900	5.4	7100	50	M	-1.0	42	5	9.0	0.9	
3073	HY110	35.7564	83.0698	7.4	18	5.8	-2	12	63000	-20	13000	500	17000	3.0	4100	20	4.4	-1.0	34	7	1.4	0.5	
3074	HY111	35.7745	83.0856	7.2	11	8.0	13	19	59300	77	10100	570	17500	4.5	5900	30	6.8	-1.9	28	7	5.2	1.9	
3075	HY112	35.7661	83.0992	7.2	15	4.8	18	11	54600	103	19800	480	17100	4.9	7000	30	9.2	-1.0	47	10	7.7	1.4	
3076	HY113	35.7173	83.2178	7.0	18	7.8	39	8	72200	206	21200	890	25300	5.6	8500	50	17.6	12.1	101	18	8.0	1.9	
3077	HY114	35.7134	83.2192	6.6	18	5.5	22	8	66800	188	28800	690	21000	5.0	8000	40	15.7	2.8	80	16	3.4	0.9	
3078	HY115	35.7185	83.1642	6.7	18	4.6	19	4	63700	125	26600	540	20000	4.3	8900	50	11.5	5.5	64	12	5.1	0.6	
3079	HY116	35.7380	83.1365	6.7	14	5.3	13	6	63500	155	28700	530	24000	4.1	6500	50	13.2	2.9	64	9	5.3	1.0	
3080	HY117	35.7439	83.1150	6.7	8	5.4	16	6	64700	127	32600	550	21600	5.7	6800	50	8.6	-1.0	61	12	3.5	1.0	
3081	HY118	35.7358	83.0730	6.9	12	5.7	7	19	51200	38	26900	750	8500	4.3	8600	50	5.8	-1.0	36	5	3.8	0.5	0.089
3082	HY119	35.7208	83.0854	7.0	14	2.9	5	6	56400	-20	34100	910	12100	6.8	12800	60	5.8	-1.0	27	4	4.6	1.1	
3083	HY120	35.6881	83.0928	7.1	17	3.6	11	11	48700	-20	28700	880	5200	5.8	12200	40	6.0	-1.0	26	7	6.3	0.6	

KNOXVILLE 100K SHEET - STREAM SEDIMENT

Lab #	County ID	Lat	Long	pH	Cond um/cm	U ppm	Th ppm	Hf ppm	Al ppm	Ce ppm	Fe ppm	Mn ppm	Na ppm	Sc ppm	Ti ppm	V ppm	Dy ppm	Eu ppm	La ppm	Sm ppm	Yb ppm	Lu ppm	Au ppm
3084	HY121	35.6836	83.0939	6.9	15	5.4	-4	13	58300	37	47100	1020	4900	7.6	12800	70	3.3	-1.6	42	6	M	1.3	
3085	HY122	35.6689	83.0735	6.9	11	5.2	17	14	51600	100	33600	900	7100	6.3	7800	50	6.1	2.8	57	9	4.5	0.6	
3086	HY123	35.6461	83.0760	6.8	10	4.3	11	10	48500	52	22800	720	7200	4.4	6500	40	3.1	6.4	34	6	4.4	-0.2	
3087	HY124	35.6198	83.0916	7.2	11	10.3	33	23	46300	204	45100	1200	9700	7.0	12600	30	17.3	2.4	141	26	8.3	0.8	
3088	HY125	35.6299	83.0994	7.1	18	4.6	-3	17	45200	-20	22600	720	2900	5.2	8800	40	9.0	6.6	31	5	7.1	-0.2	
3089	HY126	35.6119	83.1340	6.9	10	4.1	-3	7	58600	63	24200	820	6700	5.7	6100	50	5.0	3.7	33	7	3.2	0.9	
3090	HY127	35.6033	83.1310	6.9	12	4.9	19	10	54600	113	29900	1200	7100	7.7	8900	40	11.5	3.1	54	10	8.6	1.7	
3091	HY128	35.6372	83.1207	7.1	17	4.1	6	8	56800	-20	40200	1060	3000	6.6	9300	60	4.6	-1.0	20	4	5.4	0.7	
3237	JA046	35.5050	83.2367	7.1	20	5.4	14	31	45100	117	28100	710	4700	6.8	7900	50	M	-1.0	55	6	3.2	0.7	
5790	SW030	35.5440	83.5062	6.3	11	4.7	5	57	127900	42	22200	2220	41900	5.1	22000	120	13.8	-1.0	18	3	4.1	0.9	
5800	SW040	35.5066	83.7589	6.9	12	5.0	7	59	41300	47	19400	640	14400	4.4	7400	40	5.5	-1.0	20	3	4.5	0.7	
5801	SW041	35.5015	83.7675	6.9	12	4.7	9	64	35600	43	24900	620	7700	6.8	6300	30	M	2.5	22	3	5.0	0.6	0.103
5806	SW046	35.5058	83.6777	6.8	12	6.0	9	91	37300	39	34900	6650	28200	8.3	41100	70	M	1.8	19	2	7.7	1.3	
5807	SW047	35.5275	83.6344	6.6	10	3.8	5	51	35100	23	17100	620	11000	6.1	6400	30	M	-1.0	10	3	3.4	0.5	
5808	SW048	35.5336	83.6160	6.5	11	3.1	3	34	35000	25	17700	690	11400	4.4	7200	20	M	-1.0	10	2	1.8	0.4	
5809	SW049	35.5435	83.5947	6.3	11	4.0	9	71	98300	49	26900	2450	31600	6.4	20400	70	M	2.1	21	2	6.8	1.1	
5810	SW050	35.5472	83.4787	7.4	M	4.3	9	39	65100	55	38700	830	16100	8.4	7300	60	4.4	-1.0	23	4	2.4	0.7	
5811	SW051	35.5759	83.4252	8.2	M	2.6	6	19	52500	65	36000	730	6600	8.4	7000	70	4.2	-1.0	28	6	1.8	0.4	
5812	SW052	35.5625	83.4119	7.9	M	3.6	8	36	157300	67	36300	2400	17700	10.3	22800	160	16.9	1.8	29	6	4.6	0.8	
5813	SW053	35.5602	83.4158	7.4	1	3.7	11	35	60800	54	29400	940	9500	8.4	7400	60	4.8	1.7	27	5	4.6	0.7	
5814	SW054	35.5432	83.4085	7.1	M	3.3	13	62	41100	85	45000	1010	6400	14.1	9000	30	M	3.2	53	8	6.8	1.0	
5815	SW055	35.5202	83.4012	7.2	M	2.8	8	28	27700	39	19400	490	3800	6.5	4000	20	M	-1.0	23	2	3.8	0.5	
5817	SW060	35.6015	83.4113	8.0	33	5.1	11	49	54100	113	33400	1890	8400	6.9	9000	40	7.5	-1.0	44	8	7.9	1.1	
5818	SW061	35.5901	83.3635	7.8	9	2.5	2	34	28900	24	17800	540	3600	5.5	5200	30	M	0.6	10	3	5.9	0.4	
5819	SW062	35.5675	83.3365	7.1	10	4.6	4	125	38700	39	40100	630	4200	12.5	5300	30	4.3	-1.0	28	3	9.4	1.7	
5820	SW063	35.5863	83.3243	7.2	12	3.4	10	18	63100	74	47300	1650	10800	11.3	6400	50	M	2.6	36	4	8.0	0.8	
5821	SW064	35.5775	83.3126	7.1	11	2.6	5	23	39600	32	18600	520	3800	5.7	4100	30	M	-1.0	17	2	M	0.3	
5823	SW066	35.5228	83.3083	7.5	10	3.3	10	42	33100	28	17100	440	2800	6.3	3900	30	4.2	1.1	17	3	2.8	0.6	
5824	SW067	35.5380	83.3028	7.2	8	2.4	8	48	32500	47	27600	350	1900	10.3	2900	30	3.5	3.8	30	5	5.0	0.5	
5825	SW068	35.5421	83.2984	7.0	9	3.8	10	56	70200	209	45800	820	4600	18.8	5900	60	M	6.4	95	12	5.9	0.7	
5826	SW069	35.6295	83.1966	6.6	4	4.5	8	35	84400	86	33500	2680	8500	10.9	19000	190	31.9	1.4	36	6	6.7	0.8	
5827	SW070	35.6214	83.2082	7.0	12	3.5	15	45	55900	82	27900	660	7800	8.8	5900	50	M	3.3	42	5	M	0.8	
5828	SW071	35.6093	83.2262	7.2	10	2.9	5	34	149700	48	12700	1570	16700	5.3	9000	70	M	1.0	23	3	1.7	0.3	
5829	SW072	35.5910	83.2372	7.1	13	3.6	12	77	71800	289	42100	1110	10800	22.5	7900	60	17.4	7.8	120	24	2.9	0.8	0.080

KNOXVILLE 100K SHEET - STREAM SEDIMENT

Lab #	County ID	Lat	Long	pH	Cond um/cm	U ppm	Th ppm	Hf ppm	Al ppm	Ce ppm	Fe ppm	Mn ppm	Na ppm	Sc ppm	Ti ppm	V ppm	Dy ppm	Eu ppm	La ppm	Sm ppm	Yb ppm	Lu ppm	Au ppm
5830	SW073	35.5866	83.2668	7.0	11	4.9	16	37	188900	132	34200	2670	25100	9.5	20900	160	M	3.0	51	10	6.8	0.7	
5831	SW074	35.5650	83.2457	7.1	11	4.1	13	59	M	125	30200	680	6200	10.4	M	M	M	1.8	50	9	5.4	0.9	
5832	SW075	35.5591	83.2452	7.2	13	7.0	20	38	51400	167	33500	810	5000	9.1	10000	50	M	-1.8	77	11	7.1	0.8	
5833	SW076	35.5517	83.2255	7.2	12	3.7	10	26	M	88	22900	650	4900	7.1	M	20	M	2.4	38	8	3.0	0.6	
5834	SW077	35.5428	83.2252	7.2	12	5.1	37	50	50900	277	63400	M	6600	19.6	M	40	M	6.7	135	19	8.0	1.4	
5835	SW078	35.5332	83.2752	7.2	11	4.1	13	29	48600	68	26600	470	1900	7.0	6200	M	M	-1.3	33	5	3.4	0.5	

KNOXVILLE 100K SHEET - GROUNDWATER

Lab #	County ID	Lat	Long	pH	Cond um/cm	U ppb	Br ppb	Cl ppb	F ppb	Mg ppb	Mn ppb	Na ppb	V ppb	U/cond x 1000	Al ppb	Dy ppb
2732	HY511	35.7586	83.1074	6.6	30	-0.002	38	8900	37	.	31	2410	-0.1	0.0	64	-0.001
2731	HY510	35.7442	83.0930	6.8	135	-0.002	62	20700	.	.	51	5900	-0.1	0.0	48	-0.001
2734	HY513	35.6625	83.0226	6.4	20	-0.002	58	11200	.	.	30	2380	-0.1	0.0	188	-0.001
2730	HY509	35.6239	83.1145	7.0	20	-0.002	52	8100	16	.	29	2710	0.2	0.0	70	0.050
2728	HY507	35.6191	83.0339	7.6	90	0.070	47	10100	187	.	42	7440	-0.1	0.7	76	-0.001
5116	SW525	35.6102	83.4369	6.8	18	-0.002	.	3200	.	.	.	590	-0.1	-0.1	12	-0.001
5118	SW527	35.5839	83.4778	5.2	16	-0.002	.	M	.	M	.	M	-0.1	-0.1	24	-0.001
5115	SW524	35.5703	83.3412	6.9	20	-0.002	.	6700	51	.	14	2270	-0.1	0.0	21	0.100
5103	SW512	35.5698	83.2472	6.7	19	0.023	.	6900	38	.	.	1690	0.2	1.2	29	-0.001
2727	HY506	35.5676	83.0811	6.6	10	-0.002	47	9000	28	.	22	2020	0.6	-0.1	78	-0.001
2726	HY505	35.5645	83.0314	6.7	50	0.004	38	8100	191	.	28	6900	2.6	0.0	72	-0.001
5102	SW511	35.5562	83.2338	6.4	31	-0.002	7	2100	.	.	2	680	-0.1	0.0	5	-0.001
5114	SW523	35.5557	83.3186	7.3	37	0.015	.	2900	44	.	6	1400	-0.1	0.4	13	-0.001
5117	SW526	35.5496	83.5014	6.1	20	-0.002	28	6600	.	.	26	1260	-0.1	0.0	69	-0.001
2724	HY503	35.5233	83.0886	5.9	70	0.017	63	16000	64	.	27	6620	0.9	0.2	70	-0.001
2723	HY502	35.5204	83.0412	6.7	20	-0.002	39	9500	41	.	21	2300	-0.1	0.0	57	-0.001
2725	HY504	35.5194	83.1535	6.6	10	-0.002	48	8800	39	.	30	1600	-0.1	-0.1	69	-0.001