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K/UR-128

NATIONAL URANIUM RESOURCE EVALUATION PROGRAM

**HYDROGEOCHEMICAL AND STREAM SEDIMENT
RECONNAISSANCE BASIC DATA FOR
HUTCHINSON NTMS QUADRANGLE, KANSAS**

Uranium Resource Evaluation Project

July 27, 1979

**UNION
CARBIDE**

**OAK RIDGE GASEOUS DIFFUSION PLANT
OAK RIDGE, TENNESSEE**

*prepared for the U.S. DEPARTMENT OF ENERGY under
U.S. GOVERNMENT Contract W-7405 eng 26*

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Uranium Resource Evaluation Project

Union Carbide Corporation, Nuclear Division
Oak Ridge Gaseous Diffusion Plant
Oak Ridge, Tennessee

Prepared for the U. S. Department of Energy
under U. S. Government Contract W-7405 eng 26

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HYDROGEOCHEMICAL AND STREAM SEDIMENT
RECONNAISSANCE BASIC DATA FOR
HUTCHINSON NTMS QUADRANGLE, KANSAS

INTRODUCTION

The National Uranium Resource Evaluation (NURE) Program was established by the U. S. Atomic Energy Commission, now the U. S. Department of Energy (DOE), in the spring of 1973 to assess uranium resources and to identify favorable areas for detailed uranium exploration throughout the United States. The principal objectives of the NURE Program are: (1) to provide a comprehensive in-depth assessment of the nation's uranium resources for national energy planning, and (2) to identify areas favorable for uranium resources. A NURE Program report covering uranium resource assessment in 116 National Topographic Map Series (NTMS) 1° x 2° quadrangles, which contain 100% of the currently estimated uranium resources, is targeted for 1980. The complete resource assessment of the 272 highest-priority quadrangles is scheduled for completion in 1983, and the first comprehensive assessment report of the entire United States is scheduled for completion in 1985. This program, which is being administered by DOE, is expected to increase the activity of commercial exploration for uranium in the United States.

The NURE Program consists of five parts:

1. Hydrogeochemical and Stream Sediment Reconnaissance (HSSR) Program,
2. Aerial Radiometric and Magnetic Survey,
3. Surface Geologic Investigations,
4. Drilling for Geologic Information, and
5. Geophysical Technology Development.

The objective of the HSSR Program is to provide information to be used in accomplishing the overall NURE Program objectives. This is accomplished by a reconnaissance of surface water, groundwater, stream sediment, and lake sediment. The survey is being conducted by three Government-owned laboratories. Union Carbide Corporation, Nuclear Division (UCC-ND), under contract with DOE, is conducting its survey in 154 NTMS 1° x 2° quadrangles which cover approximately 2,500,000 km² (1,000,000 mi²) of the Central United States (see Figure 1). This area includes most of the states of Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Minnesota, Wisconsin, Michigan, Indiana, Illinois, and Iowa, as well as parts of Arkansas, Missouri, New Mexico, and Ohio. Described herein is a portion of the work done by UCC-ND in the Hutchinson NTMS Quadrangle, Kansas.

Figure 1

INDEX MAP SHOWING THE ORGDP AREA OF RESPONSIBILITY
FOR THE HSSR SURVEY, THE HUTCHINSON QUADRANGLE
AND QUADRANGLES FOR WHICH BASIC DATA REPORTS
HAVE BEEN OPEN FILED

GEOLOGY

LOCATION AND GEOLOGIC SETTING

The Hutchinson Quadrangle includes a surface area of approximately 19,355 km² (7,476 mi²) between lat. 38° and 39° N. and long. 96° and 98° W. It lies primarily in the Central Lowland Province, with the northwestern fourth of the area being in the Great Plains Province. The survey area, outlined on the generalized geologic map of Kansas shown in Figure 2, includes all or parts of Butler, Chase, Dickinson, Ellsworth, Geary, Greenwood, Harvey, Lincoln, Lyon, Marion, McPherson, Morris, Ottawa, Reno, Rice, Saline, and Wabaunsee Counties. A generalized geologic map of the survey area, along with a stratigraphic column listing geologic codes used in this report, is shown in Figure 3 and Plate 7.

Deposits of Upper Pennsylvanian, Permian, Lower Cretaceous, Pliocene, and Pleistocene ages crop out in the quadrangle. The Pennsylvanian and Permian rocks strike uniformly in a north-northeasterly direction and dip gently 3 to 7 m/km (15 to 35 ft/mi) to the west-northwest. Pennsylvanian age rocks crop out on the eastern border, attaining an aggregate thickness of 610 m (2,000 ft) in the subsurface. Rocks of Permian age crop out over the eastern half of the area, except where covered by Pleistocene to Recent sediments and reach an aggregate thickness of 600 m (1,970 ft). In the western part of this area, Lower Cretaceous and probably Pliocene rocks overlie the Permian rocks. Lower Cretaceous rocks dip towards the north and reach thicknesses of 55 m (180 ft). Rocks assigned to the Delmore Formation, correlated in part with the Pliocene Ogallala Formation, are up to 23 m (75 ft) thick in McPherson County (Williams and Lohman, 1949). Loess, dune sand, and older stream terraces are found in the western one-third of the area; alluvium is found associated with the major rivers in the area (Arkansas, Smoky Hill, Saline, Solomon, Cottonwood, and Neosho), and glacial drift occurs in the northeastern corner of this area.

LITHOLOGY AND ENVIRONMENTS OF DEPOSITION

Up to 915 m (3,000 ft) of Pennsylvanian and older Paleozoic rocks underlie the survey area. These rocks formed in marine to supratidal environments and consist of shales, carbonates, sandstones, and coals which culminate in the cyclical repetition of beds found in the 49 formations of the Pennsylvanian in Kansas. The oldest unit exposed in the survey area is the Shawnee Group which occurs in the extreme southeastern section. The 100-m (325 ft)-thick Shawnee Group is represented by nearshore shallow to deeper offshore marine units, which show cyclic variation. These cycles typically start with a nearshore shale containing plant fragments and sandstone lenses followed upwards by a transgressive marine lime unit containing fusulinids, corals, bryozoans, brachiopods and mollusks; by a fissile black, conodont-bearing radioactive shale; and finally by a regressive lime unit containing marine fauna, oolites, and cross-bedding.

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- QUATERNARY
- TERTIARY
- CRETACEOUS
- PERMIAN
- PENNSYLVANIAN
- MISSISSIPPIAN

Figure 2

GENERALIZED GEOLOGIC MAP OF KANSAS
(AFTER KING, ET AL, 1974)

STRATIGRAPHIC COLUMN FOR THE HUTCHINSON QUADRANGLE

ERA	SYSTEM	SERIES	GEOLOGIC MAP CODE	GEOLOGIC MEMBER	MAXIMUM THICKNESS METERS FEET	
CENOZOIC	QUATERNARY	HOLOCENE	QAL	FLUVIATILE SEDIMENT (ALLUVIUM)	50	165
		PLEISTOCENE	QSD	DUNE SAND	12	40
			QPLO	LOESS	12	40
			QPG	GLACIAL DRIFT	9	30
	TERTIARY	PLIOCENE	TPO	OGALLALA/DELMORE	25	90
PALEOZOIC	CRETACEOUS		KGDD	DAKOTA	60	200
			KCDK	KIOWA, CHEYENNE	60	200
	PERMIAN	CIMARRONIAN	PCN	NIPPEWALLA	65	220
			PGS	SUMNER	305	1,000
		GEARYAN	PGC	CHASE	95	310
			PGA	COUNCIL GROVE, ADMIRE	135	440
	PENNSYLVANIAN	VIRGILIAN	PVW	WABAUNSEE	160	530
			PVS	SHAWNEE	100	325

SOURCE OF GEOLOGY:

- BERENDSEN, P., KANSAS GEOLOGICAL SURVEY, LAWRENCE, KANSAS: PERSONAL COMMUNICATION DECEMBER 26, 1978.
- KANSAS GEOLOGICAL SURVEY, GEOLOGIC MAP OF KANSAS: MAP M-1, 1964.

LEGEND FOR FIGURE 3

Figure 3

GENERALIZED GEOLOGIC MAP OF THE HUTCHINSON QUADRANGLE

The Wabaunsee Group consists of up to 160 m (530 ft) of shales with thin persistent limestones and randomly occurring channel sandstones and conglomerates. The depositional environment of the 12 formations making up this group is generally more shallow and closer to shore than in the underlying Shawnee Group, as indicated by the presence of algal deposits, coal beds, and abundant oolites.

The Admire, Council Grove, and Chase Groups of Lower Permian age consist of about 230 m (750 ft) of laterally persistent alternating shales and limestones with sandstone lenses deposited in a shallow marine environment. The rocks comprising the Admire Group are 40 m (130 ft) thick, and consist predominantly of gray shales with thin limestones similar to those in the Wabaunsee Group. The formations of the Council Grove Group, which are 95 m (310 ft) thick, contain more variegated and red shales than the underlying units. The limestones contain more cherts, and coals are rare. There is a larger proportion of limestones in the Council Grove Group than in the Admire or Wabaunsee Groups. The rocks in the overlying Chase Group, 95 m (310 ft) thick, are generally more shaly than those in the Council Grove, but the chert-bearing limestones which do occur tend to be more massive than those of the Council Grove. The lower limestone units form the major scarps of the Flint Hills, an area of higher topographic relief, extending from Washington to Cowley County in eastern Kansas.

The 305-m (1,000 ft)-thick Lower Permian Sumner Group consists chiefly of gray and red shales containing thick beds of salt, anhydrite, gypsum, and carbonates. The basal Wellington Formation, comprised mainly of gray shale, contains the Hutchinson Salt Member which ranges up to >150 m (500 ft) in thickness in the subsurface near Hutchinson. This salt is being mined commercially at several places in Kansas. Overlying the Wellington Formation is the Ninnescah Shale made up mainly of silt, red shale, some gray shale, argillaceous limestone, and dolomite. Both the Wellington Formation and the Ninnescah Shale contain localized concentrations of copper sulfides and pyrite. The Nippewalla Group, 285 m (930 ft) thick, overlying the Sumner Group, contains red beds believed to have been formed by a succession of shallow restricted seas and flood-plain environment (Swineford, 1955).

The Lower Cretaceous Cheyenne Sandstone, Kiowa Formation, and Dakota Formation unconformably overlie the Permian. The clean fine-grained Cheyenne Sandstone, 15 to 30 m (50 to 100 ft) thick, is thought to have been formed by the moving strand line of a northward advancing Cretaceous Sea. The overlapping gray marine Kiowa Shale reaches a thickness of 30 m (100 ft). The overlying Dakota Formation is up to 60 m (200 ft) thick, and is composed of more than 50% claystone, mudstone, and siltstone, and lesser amounts of cross-stratified sandstone (Keene and Bayne, 1977; Franks, et al, 1959). These lenses are considered to be marine and nonmarine bars and dunes associated with a regressing shoreline. Small remnants of the Delmore Formation of probably Pliocene age occur in and near McPherson County. This unit

consists of western and locally derived, stream-laid sand and gravel which may in part be equivalent to Ogallala age rocks (Frye, Leonard, and Swineford, 1956).

Alluvium reaches a thickness of 29 m (95 ft) in valleys, while older terrace deposits are up to 21 m (70 ft) in depth. Dune sands and loess rarely form deposits thicker than 12 m (40 ft), although collectively they form 20 m (65 ft) deposits in Harvey County.

STRUCTURE

Two major structures traverse the central portion of the area. The Nemaha Uplift, a north-northeasterly trending structural high which may have originated in Precambrian time, remained tectonically active until at least Early Pennsylvanian. The Nemaha Uplift has a granitic core; however, several areas underlain by Precambrian metasediments occur on the uplift as well as away from it. The terrain to the east is underlain by similar granitic rocks, which have been dated at 1.45 to 1.7 billion years old (Bickford, et al, In Press). To the west of the Nemaha Uplift is the Midcontinent Gravity Anomaly which is an aborted rift underlain by basalt and dated at 1.1 billion years old (King and Zietz, 1971). The Salina and Sedgwick Basins are to the west of the Nemaha Uplift. Except for the basalts close to the uplift, no information is available as to the nature of the crystalline basement rocks in the basins. Precambrian arkoses, sandstones, and shales of the Rice Formation (Scott, 1966) underlie the Paleozoic rocks in much of this area.

Tectonic activity involving the basins as well as the uplift is demonstrated by the presence of several erosional unconformities in the Upper Cambrian through Mississippian carbonate and clastic sequence. Pre-Pennsylvanian rocks are uplifted and in places truncated on the slopes of the uplifts. The last major movement along the Nemaha Uplift occurred in the early Pennsylvanian, in places having all of the older sediments removed from the top of the uplift. Several hundred feet of displacement along faults can be demonstrated. Activity along the Nemaha and Central Kansas Uplifts has produced smaller anticlines and synclines in the surrounding areas that have been responsible for the formation of oil and gas deposits (Gott and Hill, 1953). Minor tectonic activity associated with the uplift continued until the present.

Precambrian through Early Pennsylvanian movement along the northwesterly-trending Central Kansas Uplift, which originates in the southwestern part of the area, trapped sediments between it and the Nemaha Uplift in the Salina and Sedgwick Basins. Deposition occurred relatively undisturbed in the Forest City Basin east of the Nemaha Uplift. Continued tectonic activity involving the Central Kansas Uplift and the Salina Basin is thought to have effected the depositional patterns of sediments in Cretaceous time, since these sediments become thicker to the north.

HYDROLOGY

Alluvial deposits associated with the major rivers (Arkansas, Smoky Hill, Saline, Solomon, Cottonwood, and Neosho) form the main aquifers, and provide most of the industrial groundwater in the area. Three aquifer systems associated with the major rivers can be recognized. The aquifers in the alluvium of the Arkansas River generally contain between 1,000 to 3,000 ppm dissolved solids consisting of bicarbonate, sulfate, and chloride. Those in the alluvium of the Smoky Hill, Saline, and Solomon Rivers contain generally more than 1,000 ppm dissolved solids consisting of sulfate, chloride, and bicarbonate. In both systems, chloride and sulfate contributions are derived from the dissolution of salt and gypsum in the Permian and Cretaceous units nearby. Oil brine contamination undoubtedly is also a contributing factor. Aquifers associated with the Cottonwood and Neosho Rivers generally contain less than 800 ppm dissolved solids, mainly carbonate and bicarbonate. Older terrace deposits, dune sands, and glacial drift are generally above the water table and do not form aquifers, although they frequently aid in recharging underlying rocks. Rocks of Cretaceous age do not generally provide much water in this area. Small supplies for domestic and stock use are available from the Dakota Formation where it occurs below the water table.

Weathered and sandy zones in the Harper Sandstone, Ninnescah Shale, and Wellington Formation provide the general source of groundwater for the western half of this area. Water from these units is used for domestic and stock supplies, and tends to be hard and highly mineralized. Some farmers and ranchers use Harper well water for their stock only, and import water for personal use. Farther east, groundwater supply comes from a variety of shallow Permian limestones, generally less than 45 m (150 ft) deep. Water quality within these units varies and is not easily characterized. Carbonate and bicarbonate ions are the most common constituents, but sulfates and iron are sometimes at undesirable levels. These rocks include the Barneston and Wreford limestones of the Chase Group; the Beattie, Grenola, Red Eagle, and Foraker limestones of the Council Grove Group; and the Aspinwall limestone of the Admire Group. Many thin limestones provide water locally in the areas where Pennsylvanian rocks form the surface units.

URANIUM OCCURRENCES

No known commercial concentrations of radioactive minerals have been identified or recovered in the area. However, anomalous radioactivity is known to exist in two locations. Examination of logs in eastern Butler and northern Greenwood Counties in the southeastern part of the area shows high radioactivity associated with several units of the Cherokee, Marmaton, Pleasanton, and Kansas City Groups of Middle and Upper Pennsylvanian ages. Shale beds within these units give rise to most of the anomalies, but more detailed work needs to be done to decide whether the associated channel sandstones are also radioactive.

Cross-stratification in the sandstones of the Lower Cretaceous Dakota Formation indicates that sediment transport was from the northeast to the southwest. Channels can be recognized in surface outcrops. One small channel just east of Kanopolis Reservoir was drilled by the Kansas Geological Survey and the center of the channel contained slightly anomalous radioactive materials. Some exploration of the Dakota Formation by commercial companies has been conducted during the past 3 years.

The uranium potential of Lower Paleozoic and basement rocks is unknown. However, the Precambrian Rice Formation, which is a feldspathic sandstone derived from and resting on the Precambrian basement, may be worth exploring as a potential trap for uranium leached from igneous rocks. This unit is located through the western part of the area and exceeds 490 m (1,600 ft) in thickness in some areas (Scott, 1966). Groundwater available for sampling in this area will yield little information about the potential of pre-Pennsylvanian sediments and basement rocks because wells do not generally penetrate through the Paleozoic units.

SAMPLE COLLECTION

CHRONOLOGY OF THE SURVEY

Sampling in the Hutchinson Quadrangle began in October 1978 and was completed in December 1978. Laboratory analysis, as well as compilation and verification of all field and laboratory data, was completed in July 1979. The final field and laboratory data base used to illustrate the statistical and areal distribution of uranium and possible uranium-related parameters was completed in July 1979.

FIELD PROCEDURES

Field sampling of stream sediments and well waters was performed under contract with UCC-ND, by personnel of the Environmental Systems Corporation of Knoxville, Tennessee. Training and technical supervision for all sampling was provided by the URE Project staff.

A total of 592 groundwater and 616 stream sediment samples were collected within the boundaries of the Hutchinson Quadrangle. Spring water and well water samples are combined and reported as groundwater. Plates 1 and 4 are overlays at a scale of 1:250,000 showing sample locations for groundwater and stream sediment sites, respectively. Drainage basins are drawn in on Plate 4 to indicate the area represented by the stream sediment samples.

Detailed information regarding techniques in sample collection, recording site data, field equipment, and field measurements may be found in the following reports: "Hydrogeochemical and Stream Sediment

Reconnaissance Procedures for the Uranium Resource Evaluation Project" (Arendt, et al, In Press); "Procedures Manual for Groundwater Reconnaissance Sampling" (Uranium Resource Evaluation Project, March 1978); and "Procedures Manual for Stream Sediment Reconnaissance Sampling" (Uranium Resource Evaluation Project, May 1978). Field observations were recorded on the field form shown in Table C-2 and are included in the microfiche in Appendix C.

CONTAMINATION

Precautions were taken to avoid the possibility of collecting contaminated samples. Wells which were affected by any chlorination, water-softening, or filtering devices were not sampled if a sample could not be taken before the water passed through such devices. Any well that had not been pumped recently was allowed to run long enough to flush the system. The fact that it had no recent use was noted on the field form. Since the possibility for contamination is high in dug wells, these are noted on the field form. Any wells that the samplers felt were possibly contaminated were noted as such on the field forms.

Sediment samples were collected upstream from road crossings, except where this was not feasible. Visible signs of contamination, or the presence of cultivated areas upstream from a sample, were noted on the field form.

The Hutchinson Quadrangle is mainly an agricultural area, and wheat and grain sorghum are the major crops. Much of the area is fertilized in the fall and spring with a nitrogen-phosphate mixture in the form of 18-46-0 and also with large amounts of anhydrous ammonia. Oil fields are present in the southern part of the study area and may be a possible source of contamination.

Domestic and agricultural trash is present in many streams, and many first- and second-order streams have stock ponds that may hinder sediment movement from the upper portion of the basins.

CHEMICAL ANALYSIS

All samples collected in the field geology program were returned to the URE Project laboratory in Oak Ridge, Tennessee for preparation and analysis. The elements determined and the analytical techniques used along with the appropriate detection limits are given in Table 1. These detection limits are considered the best average during normal operation; however, some variables have values reported below these limits. All water samples were received in 250-ml polyethylene bottles and were filtered through 0.45- μ m cellulose acetate paper. Stream sediment samples were dried overnight at 85°C and sieved to collect the <150- μ m fraction. Part of the sediment sample was dissolved in 10 ml of 1:1 nitric-hydrofluoric acid. The analytical procedures which were used have been described by Cagle (1977) and Arendt, et al (In Press). All observed data from all samples are included in the microfiche in Appendix C.

Table 1

DETECTION LIMITS OF VARIABLES DETERMINED IN WATER AND SEDIMENT SAMPLES

Variable	Method	Detection Limits	
		Sediment (ppm)	Water (ppb)
U-FL	Fluorometry	0.25	0.2
U-MS	Mass Spectrometry-Isotope Dilution	--	0.02
U-NT	Neutron Activation-Delayed Neutron Count	0.02	--
As	Atomic Absorption	0.1	0.5
Se	Atomic Absorption	0.1	0.2
Ag	Plasma Source Emission Spectrometry	2	2
Al	Plasma Source Emission Spectrometry	0.05(a)	10
B	Plasma Source Emission Spectrometry	10	8
Ba	Plasma Source Emission Spectrometry	2	2
Be	Plasma Source Emission Spectrometry	1	1
Ca	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Ce	Plasma Source Emission Spectrometry	10	30
Co	Plasma Source Emission Spectrometry	4	2
Cr	Plasma Source Emission Spectrometry	1	4
Cu	Plasma Source Emission Spectrometry	2	2
Fe	Plasma Source Emission Spectrometry	0.05(a)	10
K	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Li	Plasma Source Emission Spectrometry	1	4
Mg	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Mn	Plasma Source Emission Spectrometry	4	2
Mo	Plasma Source Emission Spectrometry	4	4
Na	Plasma Source Emission Spectrometry	0.05(a)	0.1(b)
Nb	Plasma Source Emission Spectrometry	4	--
Ni	Plasma Source Emission Spectrometry	2	4
P	Plasma Source Emission Spectrometry	5	40
Sc	Plasma Source Emission Spectrometry	1	1
Si	Plasma Source Emission Spectrometry	--	0.1(b)
Sr	Plasma Source Emission Spectrometry	1	2
Th	Plasma Source Emission Spectrometry	2	--
Ti	Plasma Source Emission Spectrometry	10	2
V	Plasma Source Emission Spectrometry	2	4
Y	Plasma Source Emission Spectrometry	1	1
Zn	Plasma Source Emission Spectrometry	2	4
Zr	Plasma Source Emission Spectrometry	2	2
SO ₄	Spectrophotometry	--	5(b)
Cl	Spectrophotometry	--	10(b)

(a) Detection limits expressed in percent.

(b) Detection limits expressed in ppm.

QUALITY CONTROL

MEASUREMENTS CONTROL

The procedures used to analyze URE Project reconnaissance samples require that calibration standards, check samples, and blanks be run along with normal samples to ensure the validity of the reported results. A measurements control program provides information concerning precision and reliability of these measurements. Control samples of two water batches and two sediment batches are submitted anonymously along with routine samples on a daily basis. A statistical summary of results reported on control samples, which were analyzed along with the samples included in this survey, is given in Table 2. Results of uranium analysis of water and sediment control samples obtained from the Ames Laboratory as part of the Multilaboratory Analytical Quality Control for the HSSR Program are reported by D'Silva, et al (1979).

PRINCIPAL COMPONENT ERROR ANALYSIS

A principal component analysis of data from well water and stream sediment samples was used to produce an ordered list of samples using the eigenvalue statistics as described by Kane, et al (1977), where the most extreme samples were listed first. Additional unusual samples were identified if single-element measurements were outside a three standard deviation confidence interval around the mean. The laboratory and field data from the unusual samples identified by this procedure were reviewed. Five well water samples (203440, 203942, 208621, 208994, and 209199) and four stream sediment samples (203753, 208626, 208802, and 208838) which appeared to be the most unusual were submitted for reanalysis. The original results were compared to the results from reanalysis. Of the more than 130 individual analyses that were compared, the only results which were considered to be in error in the original analysis and thus require corrections were one value each for sulfate and chloride in a groundwater sample. This low error rate for the unusual samples indicates a high level of reliability for the laboratory measurements.

GEOCHEMICAL RESULTS

A statistical summary of all geochemical variables determined and the correlation matrix of selected variables for groundwater and stream sediment samples collected in the Hutchinson Quadrangle are presented in Appendixes A and B, respectively. Areal distribution maps; log frequency, log probability, and percentile plots; and tabular data

Table 2

SUMMARY OF THE MEASUREMENTS CONTROL OBTAINED WITH SAMPLES FROM THE HUTCHINSON QUADRANGLE

Measurements Control Results for Water								Measurements Control Results for Stream Sediments							
Batch L-3				Batch H-3				Batch R-2				Batch S-2			
Element	Method	No. of Samples	Mean (ppb)	Standard Deviation (ppb)	Coefficient of Variation	No. of Samples	Mean (ppb)	Standard Deviation (ppb)	Coefficient of Variation	Element	Method	No. of Samples	Mean (ppm)	Standard Deviation (ppm)	Coefficient of Variation
U	FL(a)	25	0.61	0.150	0.24	22	10.35	1.379	0.13	U	FL	30	3.51	0.557	0.16
As	AA(b)	27	3.9	0.82	0.21	22	0.6	0.38	0.67	U	NT(d)	30	5.23	0.168	0.03
Se	AA	26	1.1	0.27	0.23	21	0.6	0.21	0.35	As	AA	27	6.0	1.04	0.17
Al	PS(c)	27	91	11.6	0.13	21	352	26.6	0.08	Se	AA	27	0.7	0.46	0.70
B	PS	28	2,276	107.2	0.05	21	64	3.9	0.06	Al	PS	31	4.13	0.393	0.10
Ba	PS	26	136	3.1	0.02	20	30	0.9	0.03	Ba	PS	30	336	19.3	0.06
Ca	PS	28	10.2	0.53	0.05	21	93.8	3.08	0.03	Be	PS	31	2	0.9	0.38
Co	PS	27	16	6.0	0.36	20	89	6.1	0.07	Ca	PS	28	0.24	0.017	0.07
Cr	PS	28	101	8.7	0.09	21	20	3.3	0.16	Ce	PS	22	80.59	9.006	0.11
Cu	PS	28	66	19.3	0.29	21	198	17.7	0.09	Co	PS	31	20	4.2	0.21
Fe	PS	27	107	7.7	0.07	21	971	42.8	0.04	Cr	PS	31	41	3.9	0.09
Li	PS	28	18	1.7	0.09	20	100	10.7	0.11	Cu	PS	30	14	1.5	0.10
Mg	PS	28	9.7	0.49	0.05	20	67	3.13	0.05	Fe	PS	30	2.40	0.157	0.07
Mn	PS	28	20	1.1	0.06	21	98	4.5	0.05	K	PS	31	1.11	0.115	0.10
Mo	PS	28	43	4.3	0.10	21	9	4.5	0.45	Li	PS	31	33	3.4	0.10
Na	PS	27	2.0	0.23	0.11	20	47.3	4.65	0.10	Mg	PS	30	0.38	0.024	0.06
Ni	PS	27	201	7.4	0.04	20	38	3.1	0.08	Mn	PS	30	998	61.1	0.06
P	PS	29	114	14.0	0.12	19	495	27.9	0.06	Mo	PS	31	4	1.5	0.35
Sc	PS	27	63	2.1	0.03	21	11	0.7	0.06	Na	PS	31	0.26	0.028	0.11
Sr	PS	28	5.21	1.371	0.26	20	44.50	2.212	0.05	Nb	PS	31	8	1.5	0.17
Ti	PS	28	100	4.8	0.05	21	39	2.0	0.05	Ni	PS	30	28	2.0	0.07
Y	PS	25	9	1.8	0.19	21	44	2.3	0.05	P	PS	30	454	27.2	0.06
Z	PS	28	9	0.5	0.05	20	46	1.7	0.04	Sc	PS	30	8	0.6	0.07
Zn	PS	28	497	28.7	0.06	21	81	30.2	0.37	Sr	PS	30	53.80	3.010	0.06
										Th	PS	31	7	1.9	0.25
										Ti	PS	30	2,578	199	0.08
										V	PS	30	79	4.4	0.05
										Y	PS	30	19	1.1	0.06
										Zn	PS	29	73	6.3	0.09
										Zr	PS	30	113	5.6	0.05
												31	113	5.9	0.05

(a) Fluorometric analyses.
 (b) Atomic absorption.
 (c) Plasma source emission spectroscopy.
 (d) Neutron activation, delayed neutron count.

listings for selected variables are also included. All field and laboratory data for groundwater and stream sediment samples may be found in the microfiche in Appendix C. A generalized geologic map of the survey area is shown at the 1:250,000 scale in Plate 7 and at the 1:1,000,000 scale in Figure 3. Details of all sampling, analytical, and statistical procedures are discussed in Report K/UR-100 (Arendt, et al, In Press).

For discussion purposes, the 15th and 85th percentile concentrations are contoured on the areal distribution plots for all elements in Appendixes A and B, to indicate areas of low and high concentrations, respectively. This represents values of approximately one standard deviation below and above the mean for a normally distributed population. For more careful evaluation of the data presented, concentration levels considered to be anomalous should be determined separately for each geologic unit within the quadrangle.

GEOCHEMICAL DISTRIBUTIONS IN GROUNDWATER

The sample site locations for groundwater samples collected in the Hutchinson Quadrangle are shown on Plate 1 at the 1:250,000 scale. Symbol plots for uranium and specific conductance are presented at this same scale on Plates 2 and 3 and at the 1:1,000,000 scale in Figures A-1b and A-2b, respectively. A map of the major producing horizons sampled and the samples noted as having hydrogen sulfide odor at the time of sampling is presented in Figure 4. The number of groundwater samples collected from each of the major producing units are presented in Table 3.

Observed data for the variables uranium, specific conductance, arsenic, chloride, potassium, manganese, molybdenum, selenium, vanadium, pH, and total alkalinity are listed in Table A-3. The figures in Appendix A present log frequency, lognormal probability, percentile and areal symbol plots for these variables plus uranium/specific conductance, uranium/boron, and uranium/sulfate.

Uranium

Figure A-1b and Plate 2 indicate that groundwaters with uranium concentrations of greater than 6.63 ppb (85th percentile) tend to occur in the western half of the Hutchinson Quadrangle. The percentile plot (Figure A-1a) indicates that the Permian Nippewalla Formation, Cretaceous Kiowa and Cheyenne Formations, and Quaternary deposits have the highest background ranges. The area to the west of 97° 25' W. contains several large clusters of sampled wells with high uranium values. These wells produce primarily from the Nippewalla, Kiowa-Cheyenne, and Quaternary deposits. It seems likely that the waters produced from the Quaternary deposits are influenced by the underlying formation, and in some cases the deposits themselves are derived from the local bedrock units. Isolated high uranium values are scattered throughout the rest of the quadrangle.

Figure 4
PRODUCING HORIZON MAP FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Table 3

DISTRIBUTION OF SAMPLES BY GEOLOGIC UNIT FROM THE HUTCHINSON QUADRANGLE

<u>Geologic Unit</u>	<u>Geologic Unit Code</u>	<u>No. of Groundwater Samples</u>	<u>No. of Sediment Samples</u>
Alluvium	QAL	63	40
Dune Sand	QSD	0	2
Loess	QPLO	40	61
Glacial Drift	QPG	0	4
Ogallala, Delmore	TPO	8	5
Dakota	KGDD	13	13
Kiowa, Cheyenne	KCDK	38	33
Nippewalla	PCN	33	5
Sumner	PGS	127	124
Chase	PGC	153	170
Council Grove, Admire	PGP	77	95
Wabaunsee	PVW	39	46
Shawnee	PVS	<u>1</u>	<u>2</u>
Total		592	608

Waters with uranium concentrations less than 0.93 ppb (15th percentile) are scattered throughout the quadrangle. A comparison of Figures 4 and A-1b indicate that many of these waters are produced from the Pennsylvanian units and the Sumner Group. The percentile plot indicates relatively low uranium background ranges for waters produced from the Pennsylvanian and Permian units, with the exception of the Nippewalla Group, and from the Dakota and Delmore Formations. The percentile range for the Dakota Formation does show a maximum value that is approximately an order of magnitude higher than the 85th percentile values. This is also true for the Kiowa-Cheyenne Formation and Quaternary alluvium.

The correlation matrix (Table A-2) indicates a significant positive correlation coefficient of >0.15 for both Pearson and Spearman correlations between uranium and chloride, lithium, magnesium, sodium, vanadium, and total alkalinity.

Specific Conductance

Figure A-2b and the percentile plot (Figure A-2a) indicate that most of the groundwaters with specific conductances higher than 2,581 $\mu\text{mhos/cm}$ (85th percentile) are produced from the Sumner and Nippewalla Groups. This reflects the presence of salt and evaporite deposits in those units. The Kiowa and Cheyenne Formations also show a relatively high background range of specific conductance values. The main clustering of high specific conductance values occurs within the Sumner Group producing horizon belt (Figure 4) in the west central area of the quadrangle. Another cluster of high values occurs in McPherson County in the west with the waters coming from the Nippewalla Group. Oil field activity in this area may also contribute to the high specific conductances.

Specific conductances of less than 572 $\mu\text{mhos/cm}$ (15th percentile) appear to cluster in the area to the west of the band of high values in the Sumner Group. Many of these waters are also produced from the Sumner Group or from loess that overlies that group. Other producing horizons that produce waters with low specific conductance values in this area are the Dakota and Delmore Formations and the alluvium overlying them. The percentile plot indicates that the Delmore Formation has the lowest and smallest background range of specific conductance values. The Permian Chase Group also has a relatively low background range of values.

The correlation matrix (Table A-2) shows positive correlation coefficients of greater than 0.40 for both Pearson and Spearman correlations between specific conductance and boron, calcium, chloride, potassium, lithium, magnesium, sodium, strontium, and sulfate. The association implies that evaporites or brines are present.

Related Variables

The most promising area for potential uranium mineralization, as shown by the data, appears to be in the western part of the quadrangle in Saline and McPherson Counties. Uranium/specific conductance values (Figure B-3b) above 6.15 (85th percentile) tend to occur in clusters almost coincident with the clusters of high uranium values in this area. Also, uranium/boron and uranium/sulfate values above the 85th percentile tend to match high uranium values, which indicates the uranium concentrations in this area to be truly anomalous rather than simply high due to water from evaporites or oil field brines. The waters primarily have neutral to slightly acidic pH and total alkalinities between 414 and 250 ppm (85th and 15th percentiles, respectively).

A trend of high uranium values occurs in McPherson and Saline Counties along the Smoky Hill River. Groundwaters within this trend also tend to have high values for chloride, potassium, manganese, molybdenum, and selenium. To the south are four large clusters of high uranium values which together with the Smoky Hill River Trend form a ring around the southwestern part of the quadrangle. Both arsenic and vanadium are high in groundwaters produced from this area and there are associated high values for chloride, molybdenum, and some selenium. The continental nature of the Nippewalla Group and the Cretaceous formations together with the presence of the pathfinder elements arsenic, molybdenum, selenium, and vanadium seem to indicate a possibility for a sandstone-type occurrence. As mentioned in the section on Uranium Occurrences, the Kansas Geological Survey drilled a small channel deposit in the Kiowa Shale at Kanopolis Reservoir on the western border of the quadrangle in Ellsworth County. The Smoky Hill River Trend described earlier includes that channel and indicates potential for mineralization further downstream. Gott and Hill (1953) report the presence of radioactivity equivalent to 0.5% uranium in oil brine precipitates in Harvey, McPherson, Reno, and Saline Counties. Thus, there is also potential for a deposit similar to that at Cement, Oklahoma [(Olmsted (1975); Shelton and Al-Shaieb (1976))].

Summary of Groundwater Data

The southwestern corner of the quadrangle appears to offer some potential for uranium mineralization. Five large clusters of groundwaters with high uranium values occur here, including one trend that follows the Smoky Hill River downstream from Kanopolis Reservoir where slightly anomalous radioactivity was identified by the Kansas Geological Survey. Wells in the southwestern corner produce waters from the Permian Nippewalla Group and the overlying Kiowa Shale. They also often contain high concentrations of arsenic, molybdenum, selenium and vanadium which are known to associate with uranium in sandstone deposits.

GEOCHEMICAL DISTRIBUTIONS IN STREAM SEDIMENTS

The sample site locations for stream sediments collected in the Hutchinson Quadrangle are shown on Plate 4 at the 1:250,000 scale. The symbol plot for the hot-acid-soluble uranium as determined by fluorometric analysis (U-FL) and thorium is presented at this scale in Plates 5 and 6, respectively, and at the 1:1,000,000 scale in Figures B-1b and B-4b, respectively. The stream sediment data subset used to generate Tables B-1 and B-2 and the figures in Appendix B includes all stream sediment samples collected from basins in the Hutchinson Quadrangle that average approximately 25 km² (10 mi²). The number of stream sediment samples (608) in this subset which were collected from each of the major stratigraphic units of the survey area are presented in Table 3. Samples which were collected from basins larger than 50 km² (Phase G) were not included. Results from all stream sediment samples collected from the Hutchinson Quadrangle are included in Table B-3 and in the microfiche in Appendix C.

Observed data for the variables hot-acid-soluble uranium (U-FL), total uranium as determined by neutron activation (U-NT), thorium, copper, niobium, phosphorus, selenium, titanium, vanadium, yttrium, and zirconium are listed in Table B-3. The figures in Appendix B represent log frequency, lognormal probability, percentile, and areal symbol plots for these same variables plus U-FL/U-NT, thorium/U-NT, arsenic, cerium, manganese, and zinc.

Uranium

The areal distribution maps for both U-FL and U-NT (Figures B-1b and B-2b, respectively) do not indicate any obvious pattern for these variables. A large proportion of high U-FL values appears to occur in the northern part of the quadrangle, especially in the northeast. Most of these sediments are apparently derived from Permian carbonates and shales which do not appear to be likely host rocks for uranium mineralization. Glacial deposits may account for many of the high uranium values in the north.

U-NT values greater than 3.6 ppm (85th percentile) seem to occur in the western part of the quadrangles in Dickinson, Harvey, McPherson, Reno, and Saline Counties. Many of these sediments are derived from loess and alluvium, but some are derived from Cretaceous units. A second group of high U-NT values trends northeastward from Butler County to Lyon County, the sediments being derived from the Chase, Council Grove, and Admire Groups.

The percentile plots for U-FL and U-NT (Figures B-1a and B-2a, respectively) show that both variables are evenly distributed throughout the stratigraphic column. Maximum values of 3.9 and 8.3 ppm for U-FL and U-NT, respectively, do not indicate any potential mineralization.

High U-FL/U-NT values (Figure B-3b) tend to occur in the northeast and north central portions of the quadrangle. These values tend to coincide with high U-FL values in most cases. The percentile plot (Figure B-3a) indicates a fairly even distribution of U-FL/U-NT throughout the geologic section.

The correlation matrix (Table B-2) shows a positive correlation coefficient of greater than 0.2 for both Pearson and Spearman correlations between U-FL and U-NT, potassium, titanium, vanadium, yttrium, zinc, zirconium, and U-FL/U-NT, and between U-NT and U-FL, U-FL/U-NT, barium, cerium, niobium, titanium, yttrium, and zirconium. There are negative correlation coefficients of less than -0.2 between U-NT and calcium, lithium, magnesium, strontium, and U-FL/U-NT.

Thorium

Thorium, like U-FL and U-NT, is rather evenly distributed throughout the quadrangle geologically and geographically (Figures B-4a and B-4b). Most sediments with thorium concentrations greater than 9 ppm (85th percentile) seem to occur in the northern part of the quadrangle particularly in Chase, Lyon, Morris, and Wabaunsee Counties. The Chase, Admire, and Council Grove Groups crop out in this area. It seems likely that Quaternary deposits may be responsible for many of the high thorium values rather than the limestones and shales of the outcropping rocks. Two groups of sediments having thorium concentrations greater than 9 ppm occur in northern Dickinson County. These groups occur amid groups of sediments with high U-FL and U-NT but are not necessarily coincident with them. These sediments are derived primarily from Quaternary deposits and the Sumner Group.

The correlation matrix (Table B-2) indicates significant positive correlation coefficients of >0.2 for both Pearson and Spearman correlations between thorium and U-NT, cerium, titanium, vanadium, yttrium, and zirconium and a significant negative correlation between thorium and manganese. The association appears to support a placer-type occurrence for thorium which might be expected if thorium were derived primarily from Quaternary deposits.

Related Variables

High values for U-FL, U-NT, and thorium are widely distributed both geologically and geographically throughout the Hutchinson Quadrangle. Evaluation of the correlation matrix (Table B-2) indicates that variables related to uranium in this area suggests heavy or resistate mineral assemblages. There are three areas which warrant discussion of the potential for mineralization on the basis of areal distribution of concentrations above the 85th percentile for U-FL, U-NT, and thorium. The first is located in the northeastern corner of the quadrangle in Chase, Lyon, Morris, and Wabaunsee Counties; the second is in the north central area in Dickinson and Geary Counties; and the third occurs in the western part of the quadrangle west of $97^{\circ} 20' W$.

In the first area in the northeast, the sediments are derived from the Permian carbonates, shales, and evaporites of the Chase, Admire, and Council Grove Groups. These are quiet water marine to nearshore deposits with little continental input. There are a few dark to black shales, but most are red, green, and gray (Zeller, 1968). High values of U-FL and thorium occur in sediments in this area along with some high U-NT concentrations. These are associated with high values of thorium/U-NT, arsenic cerium, manganese, niobium, phosphorus, selenium, titanium, yttrium, and zirconium to some extent.

In Dickinson and Geary Counties, sediments with high U-FL, U-NT, and thorium appear to have been derived from Quaternary deposits with input from the Chase and Sumner Groups. The sediments in this area also contain high thorium/U-NT, phosphorus, selenium, titanium, vanadium, and yttrium and sometimes niobium, zinc, and zirconium.

In the western area, the situation is more complex due to the presence of several outcropping units and several types of Quaternary deposits. An occasional relationship between uranium and copper and relationships between U-NT and niobium, titanium, and zirconium are observed. There appear to be several modes of occurrence of uranium that the statistical treatments used cannot resolve at the scale used.

None of the three areas discussed earlier appear particularly favorable for potential mineralization. Many of the high U-FL, U-NT, and thorium concentrations are associated with Quaternary deposits and the associated elements suggest placer-type occurrences. The glacial deposits are more widespread than is evident on the geologic map and probably influence more samples than is obvious on the distribution plots. The influence of these deposits would explain the even distribution of uranium and thorium throughout the quadrangle despite the large variation in bed rock type. The red bed Sumner and Nippewalla Groups in the west central area are of similar lithology to units in Oklahoma and Texas that have established uranium deposits in them (e.g., the Lawton Quadrangle, Uranium Resource Evaluation Project, December, 1978). The Cretaceous Kiowa Shale and Cheyenne Sandstone have been shown to be favorable units for potential mineralization in the Manhattan Quadrangle (Uranium Resource Evaluation Project, July 1979) to the north and at the Kanopolis Reservoir at the western border of this study area. In spite of this favorability in other areas and several high uranium and thorium values, the stream sediment data do not strongly suggest favorability for uranium occurrences in the Nippewalla and Sumner Groups and the Kiowa and Cheyenne Formations in the Hutchinson Quadrangle.

Summary of Stream Sediment Data

The stream sediment data indicate that most of the uranium and thorium occurs as placer-type concentrations associated with Quaternary deposits. There are three areas that show groups of high uranium and

thorium concentrations in the stream sediments; one in the northeast in Chase, Lyon, Morris, and Wabaunsee Counties; one in Dickinson and Geary Counties; and the third in the large region west of $97^{\circ} 20' W.$ where uranium appears associated with copper. None of these areas show strong potential for uranium mineralization.

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APPENDIX A
GROUNDWATER

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APPENDIX A

GROUNDWATER

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Table A-1

STATISTICAL SUMMARY FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

NO. SAMPLES ANALYZED		COEFFICIENT OF										LN TRANSFORMATION			
BELOW		DETECTION LIMIT	MINIMUM VALUE	MAXIMUM VALUE	MEAN	MEDIAN	MODE	STANDARD DEVIATION	VARIATION	MEAN	S. D.	ROBUST			
ELEMENT	VALUES											MEAN	S. D.		
U	559	33	<0.20	<0.20	280.00	5.35	2.60	2.10	15.282	2.857	1.03	0.98	0.90	1.28	
SP	592			131	10491	1352	909	636	1174.7	0.9	6.94	0.73	6.94	0.71	
U/SP	592			0.02	244.76	5.75	2.67	0.13	18.459	3.211	0.82	1.34	0.86	1.36	
U/B	591			0.02	5714.29	58.36	31.71	1.88	240.797	4.126	3.07	1.68	3.20	1.57	
U/SO	591			0.05	5957.45	37.00	33.47	2.77	272.033	3.127	3.20	1.86	3.29	1.84	
AG	149	442	<2	<2	7	2	<2	<2	1.0	0.4	0.94	0.32			
AL	62	529	<10	<10	81	23	<10	<10	14.1	0.6	2.99	0.52			
AS	252	340	<0.5	<0.5	26.7	1.5	<0.5	<0.5	2.26	1.47	0.03	0.76			
B	591			8	12135	270	83	45	752.2	2.8	4.68	1.15	4.61	1.15	
BA	591			2	1113	110	75	6	126.6	1.1	4.08	1.24	4.12	1.26	
BE	5	596	<1	<1	<1	<1	<1	<1	0.0	0.0	0.0				
CA	591			9.7	579.8	145.4	94.2	76.2	129.37	0.89	4.67	0.76	4.66	0.76	
CO	149	442	<2	<2	12	2	<2	<2	1.3	0.5	0.95	0.34			
CR	100	491	<4	<4	13	5	<4	<4	2.1	0.4	1.71	0.32			
CU	111	480	<2	<2	74	6	<2	<2	9.8	1.5	1.42	0.77			
FE	198	393	<10	<10	35	15	<10	<10	4.5	0.3	2.68	0.27			
K	590	1	<0.1	<0.1	144.2	3.2	1.8	1.1	8.43	2.66	0.62	0.89	0.60	0.86	
LI	591			2	1126	38	22	15	59.1	1.5	3.22	0.86	3.20	0.85	
MG	591			2.3	405.3	48.6	34.0	22.3	47.16	0.97	3.54	0.82	3.54	0.86	
MN	244	347	<2	<2	853	37	<2	<2	114.6	3.1	2.12	1.41			
MO	151	440	<4	<4	157	9	<4	<4	16.6	1.8	1.89	0.62			
NA	591			3.2	627.5	50.5	39.7	15.5	66.40	1.10	3.69	0.90	3.68	0.88	
NI	85	506	<4	<4	493	11	<4	<4	52.9	4.5	1.74	0.63			
P	43	548	<40	<40	819	200	<40	<40	183.4	0.9	4.99	0.76			
SC	42	549	<1	<1	2	1	<1	<1	0.3	0.3	0.07	0.21			
SE	514	78	<0.2	<0.2	13.1	0.5	0.3	0.3	0.77	1.63	-0.95	0.51	-1.10	0.54	
SI	591			0.1	25.8	7.7	7.0	5.7	3.17	0.41	1.97	0.41	1.97	0.37	
SR	591			66	36930	3469	1163	428	4577.1	1.4	7.32	1.28	7.30	1.21	
TI	128	463	<2	<2	13	5	<2	<2	2.6	0.5	1.53	0.54			
V	131	450	<4	<4	51	8	<4	<4	5.9	0.7	1.97	0.50			
Y	139	452	<1	<1	2	1	<1	<1	0.1	0.1	0.01	0.10			
ZN	377	214	<4	<4	2507	121	6	<4	256.8	2.1	3.32	1.68			
ZR	106	435	<2	<2	7	2	<2	<2	1.1	0.4	0.97	0.33			
T-AK	592			40	622	330	336	397	91.5	0.3	5.75	0.37	5.79	0.35	
M-AK	592			38	628	331	338	322	91.4	0.3	5.75	0.36	5.79	0.35	
P-AK	589			0	0	0	0	0	0.0	0.0					
CL	464	127	<10	<10	1802	95	30	<10	175.8	1.8	3.89	1.06	3.38	1.38	
NA/C	591			0.06	48.16	2.16	1.23	0.68	3.275	1.516	0.29	0.93	0.27	0.87	
PH	592			2.0	8.2	6.7	6.5	7.0	0.89	0.13					
SD4	586	5	<5	<5	2644	288	77	34	468.2	1.6	4.58	1.47	4.54	1.52	

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NOTE: Refer to Table 1, Page 23 and Table C-1, Page C-4 for concentration units and symbol definitions.

Table A-2

CORRELATION MATRIX FOR GROUNDWATER
OF THE HUTCHINSON QUADRANGLE

L-U								
L-U	1.00 (539)							
		LTAK						
LTAK	0.35*** 0.30*** (559)	1.00 (592)						
		L-SE						
L-SE	0.20*** 0.14*** (488)	0.10** 0.02 (514)	1.00 (514)					
		L-MN						
L-MN	-0.06 -0.09 (220)	-0.17*** -0.18*** (244)	0.06 0.06 (204)	1.00 (244)				
		L-ZN						
L-ZN	-0.11** -0.09* (352)	-0.19*** -0.20*** (377)	-0.03 0.04 (336)	0.11 0.12 (188)	1.00 (377)			
		PH						
PH	0.01 -0.04 (559)	-0.11*** -0.14*** (592)	0.09** 0.01 (514)	0.06 0.03 (244)	-0.04 0.07 (377)	1.00 (592)		
		L-AS						
L-AS	0.01 0.09 (248)	-0.28*** -0.19*** (252)	0.12* 0.15** (222)	0.04 0.09 (82)	-0.04 -0.02 (157)	0.09 -0.06 (252)	1.00 (252)	
		L-V						
L-V	0.22** 0.27*** (129)	-0.06 -0.10 (131)	0.20** 0.20** (110)	0.25 0.23 (23)	0.04 0.10 (84)	-0.04 -0.18** (131)	0.56*** 0.56*** (102)	1.00 (131)
		L-SI						
L-SI	0.14*** 0.15*** (558)	0.06 0.03 (591)	0.03 0.01 (513)	-0.18*** -0.19*** (244)	-0.06 -0.03 (377)	-0.07 -0.12*** (591)	0.38*** 0.46*** (251)	0.43*** 0.46*** (131)
		L-NA						
L-NA	0.23*** 0.24*** (558)	0.07* 0.07 (591)	0.06 0.05 (513)	0.17*** 0.15** (244)	-0.06 -0.06 (377)	0.07* 0.04 (591)	0.21*** 0.21*** (251)	0.16* 0.12 (131)
		L-CL						
L-CL	0.19*** 0.20*** (442)	-0.07 -0.06 (464)	0.07 0.04 (397)	0.16** 0.10 (215)	0.03 0.02 (298)	0.08* 0.03 (464)	0.17** 0.19*** (203)	0.15 0.18** (105)
		L-K						
L-K	0.14*** 0.17*** (557)	-0.05 -0.06 (590)	0.15*** 0.07* (512)	0.07 0.12* (244)	0.02 0.04 (376)	-0.01 -0.09** (590)	0.17*** 0.17*** (251)	0.22** 0.18** (131)
		L-MG						
L-MG	0.21*** 0.19*** (550)	0.24*** 0.18*** (591)	0.08* 0.01 (513)	0.09 0.17*** (244)	-0.17*** -0.18*** (377)	-0.04 -0.03 (691)	-0.21*** -0.21*** (251)	-0.32*** -0.30*** (131)
		L-SK						
L-SK	0.10** 0.13*** (558)	0.12*** 0.05 (591)	0.16*** 0.14*** (513)	0.05 0.15** (244)	-0.15*** -0.14*** (377)	0.01 -0.01 (591)	-0.06 -0.12* (251)	-0.15* -0.16* (131)
		L-CA						
L-CA	0.14*** 0.16*** (558)	0.04 -0.07 (591)	0.13*** 0.11** (513)	0.13** 0.23*** (244)	-0.06 0.00 (377)	0.05 -0.06 (591)	0.07 0.08 (251)	0.04 0.09 (131)
		LSD4						
LSD4	0.12*** 0.13*** (554)	0.01 -0.00 (586)	0.10** 0.06 (508)	0.08 0.19*** (244)	-0.08 -0.07 (374)	0.00 -0.04 (586)	-0.08 -0.10 (250)	-0.10 -0.11 (129)
		L-B						
L-B	0.08* 0.16*** (558)	-0.00 0.01 (591)	0.09** 0.08* (513)	0.17*** 0.21*** (244)	-0.07 -0.11** (377)	0.04 0.04 (591)	0.09 0.04 (251)	-0.02 0.03 (131)
		L-LI						
L-LI	0.20*** 0.24*** (558)	0.04 0.01 (591)	0.13*** 0.10** (513)	0.13** 0.22*** (244)	-0.08 -0.10** (377)	0.02 -0.03 (591)	0.16*** 0.16** (251)	0.19** 0.20** (131)
		L-SP						
L-SP	0.14*** 0.20*** (559)	0.18*** 0.16*** (592)	0.03 0.03 (514)	0.02 0.10 (244)	-0.17*** -0.20*** (377)	0.06 0.06 (592)	0.05 0.02 (252)	-0.13 0.00 (131)

L-S1										
1.00 (591)										
L-NA										
-0.00**	1.00 (591)									
-0.04	1.00 (591)									
L-CL										
-0.02	0.68***									
0.01	0.65***	1.00								
(464)	(464)	(464)								
L-K										
-0.00	0.44***	0.42***								
0.01	0.47***	0.41***	1.00							
(590)	(590)	(464)	(590)							
L-MG										
-0.40***	0.53***	0.40***	0.37***							
-0.39***	0.50***	0.37***	0.39***	1.00						
(591)	(591)	(464)	(590)	(591)						
L-SR										
-0.30***	0.39***	0.31***	0.31***	0.76***						
-0.39***	0.37***	0.29***	0.33***	0.72***	1.00					
(591)	(591)	(464)	(590)	(591)	(591)					
L-CA										
-0.21***	0.44***	0.47***	0.45***	0.69***	0.71***					
-0.10***	0.47***	0.49***	0.47***	0.61***	0.65***	1.00				
(591)	(591)	(464)	(590)	(591)	(591)	(591)				
LS04										
-0.28***	0.54***	0.37***	0.49***	0.73***	0.75***	0.70***				
-0.30***	0.55***	0.37***	0.53***	0.71***	0.73***	0.70***	1.00			
(586)	(586)	(462)	(585)	(586)	(586)	(586)	(586)			
L-B										
-0.34***	0.62***	0.36***	0.50***	0.73***	0.73***	0.68***	0.78***			
-0.27***	0.61***	0.36***	0.54***	0.72***	0.74***	0.64***	0.78***	1.00		
(591)	(591)	(464)	(590)	(591)	(591)	(591)	(586)	(591)		
L-LI										
-0.10**	0.68***	0.49***	0.52***	0.75***	0.67***	0.70***	0.73***	0.82***		
-0.05	0.67***	0.47***	0.60***	0.73***	0.64***	0.64***	0.71***	0.82***	1.00	
(591)	(591)	(464)	(590)	(591)	(591)	(591)	(586)	(591)	(591)	
L-SP										
-0.21***	0.57***	0.42***	0.38***	0.66***	0.55***	0.68***	0.59***	0.60***	0.60***	
-0.15***	0.61***	0.50***	0.41***	0.66***	0.54***	0.66***	0.62***	0.62***	0.62***	1.00
(591)	(591)	(464)	(590)	(591)	(591)	(591)	(586)	(591)	(591)	(592)

Figure A-1a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR URANIUM (PPB)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-1b

GEOCHEMICAL DISTRIBUTION OF URANIUM (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-2a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SPECIFIC CONDUCTANCE ($\mu\text{MHOS}/\text{CM}$)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-2b

GEOCHEMICAL DISTRIBUTION OF SPECIFIC CONDUCTANCE (μMHOS/CM) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-3a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR 1,000·URANIUM/SPECIFIC CONDUCTANCE IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-3b

GEOCHEMICAL DISTRIBUTION OF 1,000-URANIUM/SPECIFIC CONDUCTANCE IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-4a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR 1,000·URANIUM/BORON
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-4b

GEOCHEMICAL DISTRIBUTION OF 1,000-URANIUM/BORON IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-5a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR 1,000·URANIUM/SULFATE
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-6a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR ARSENIC (PPB)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-6b

GEOCHEMICAL DISTRIBUTION OF ARSENIC (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-7a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR CHLORIDE (PPM)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-8a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR POTASSIUM (PPM)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-8b

GEOCHEMICAL DISTRIBUTION OF POTASSIUM (PPM) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-9a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR MANGANESE (PPB)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-9b

GEOCHEMICAL DISTRIBUTION OF MANGANESE (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-10a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR MOLYBDENUM (PPB)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

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Figure A-10b

GEOCHEMICAL DISTRIBUTION OF MOLYBDENUM (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-11a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SODIUM (PPM)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-11b

GEOCHEMICAL DISTRIBUTION OF SODIUM (PPM) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-12a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SELENIUM (PPB)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-12b

GEOCHEMICAL DISTRIBUTION OF SELENIUM (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-13a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR VANADIUM (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-13b

GEOCHEMICAL DISTRIBUTION OF VANADIUM (PPB) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-14a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR pH
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

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Figure A-14b
GEOCHEMICAL DISTRIBUTION OF pH IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-15a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR TOTAL ALKALINITY (PPM)
IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Figure A-15b

GEOCHEMICAL DISTRIBUTION OF TOTAL ALKALINITY (PPM) IN GROUNDWATER OF THE HUTCHINSON QUADRANGLE

Table A-3

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER													
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG L TY REP	U (PPB)	SP UMHQS/CM	AS (PPB)	CL (PPM)	K (PPM)	AN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH T-AK (PPM)
203428	20-38.249	-97.783	-3-03-	4.0	2300	6.3	100	2.7	4	<4	<0.2	<4	7.0 200
203429	20-38.204	-97.772	-3-03-	7.6	3400	1.3	250	2.1	2	<4	0.3	6	6.9 450
203432	20-38.155	-97.776	-3-03-	3.2	950	6.8	80	2.0	<2	<4	0.6	9	7.8 270
203435	20-38.228	-97.830	-3-03-	8.4	1500	3.8	130	1.9	2	<4	<0.2	5	7.4 250
203436	20-38.209	-97.849	-3-03-	7.2	1600	2.4	82	3.9	<2	<4	0.2	5	7.8 290
203437	20-38.171	-97.849	-3-03-	<0.20	1100	0.6	33	2.6	<2	<4	0.6	<4	7.5 380
203438	20-38.247	-97.882	-3-03-	2.6	3500	3.5	110	4.2	18	<4	<0.2	<4	6.8 130
203440	20-38.204	-97.892	-3-03-	280.	1400	1.0	100	1.1	<2	<4	<0.2	7	7.2 330
203616	20-38.406	-96.270	-3-03-	6.2	1000	0.6	39	0.7	<2	<4	0.4	<4	6.8 400
203618	20-38.384	-96.351	-3-03-	22.	1000	<0.5	44	0.8	17	<4	0.9	<4	6.9 400
203619	20-38.421	-96.353	-3-03-	1.1	950	0.8	90	0.5	<2	<4	0.8	4	7.5 310
203620	20-38.492	-96.330	-3-03-	3.1	970	<0.5	49	3.8	<2	4	0.8	<4	7.5 320
203627	20-38.463	-96.405	-3-03-	2.4	740	<0.5	<10	1.3	<2	<4	0.3	<4	6.9 320
203628	20-38.419	-96.390	-3-03-	4.4	790	1.8	11	0.7	<2	<4	0.3	10	6.7 380
203630	20-38.436	-96.449	-3-03-	<0.20	3400	<0.5	18	2.9	14	<4	0.3	<4	6.8 270
203636	20-38.394	-96.433	-3-03-	1.7	2500	<0.5	340	0.8	<2	<4	0.5	<4	6.8 380
203638	20-38.363	-96.450	-3-03-	1.8	840	<0.5	54	1.0	<2	<4	0.3	<4	7.0 310
203643	20-38.347	-96.344	-3-03-	2.4	620	<0.5	10	0.4	<2	<4	0.3	<4	7.1 320
203698	20-38.479	-96.956	-3-03-	3.1	760	1.1	30	2.8	<2	<4	0.2	<4	6.7 370
203700	20-38.491	-96.932	-3-03-	2.5	630	1.1	16	1.5	<2	<4	0.6	<4	6.8 340
203701	20-38.436	-96.924	-3-03-	3.9	750	0.7	32	0.9	<2	<4	0.3	<4	7.0 400
203702	20-38.375	-96.932	-3-03-	0.23	920	<0.5	55	1.3	14	4	1.1	<4	7.1 350
203703	20-38.370	-96.851	-3-03-	1.9	590	0.7	11	1.3	<2	<4	0.6	4	7.1 360
203705	20-38.435	-96.866	-3-03-	2.8	670	<0.5	20	1.1	<2	6	0.5	<4	7.0 320
203710	20-38.465	-96.861	-3-03-	<0.20	2500	<0.5	58	2.8	32	<4	0.5	<4	7.3 170
203713	20-38.461	-96.806	-3-03-	2.2	650	<0.5	<10	0.9	<2	<4	0.8	<4	7.0 330
203732	20-38.386	-96.502	-3-03-	2.4	620	0.5	<10	1.3	<2	<4	0.4	<4	6.5 340
203733	20-38.400	-96.584	-3-03-	3.5	980	<0.5	31	1.9	<2	<4	0.8	<4	6.6 450
203734	20-38.387	-96.603	-3-03-	12.	1200	6.4	35	1.8	11	6	0.7	14	6.7 490
203735	20-38.410	-96.615	-3-03-	2.5	540	0.5	<10	1.1	10	5	0.5	<4	7.2 300
203738	20-38.459	-96.555	-3-03-	8.3	690	<0.5	10	0.8	<2	<4	0.9	<4	7.0 330
203739	20-38.435	-96.549	-3-03-	5.8	630	0.5	<10	1.9	<2	<4	0.4	<4	7.0 350
203741	20-38.353	-96.672	-3-03-	2.7	1400	0.5	110	0.8	4	<4	0.7	<4	7.1 360
203742	20-38.320	-96.730	-3-03-	1.4	800	<0.5	<10	1.3	9	<4	0.6	<4	6.8 300
203743	20-38.312	-96.737	-3-03-	1.4	830	0.5	12	1.2	2	<4	0.4	<4	6.7 310
203744	20-38.311	-96.700	-3-03-	1.7	2900	<0.5	190	3.6	3	<4	0.7	<4	6.8 260
203745	20-38.383	-96.666	-3-03-	2.2	580	1.0	<10	0.4	<2	5	0.7	<4	6.7 340
203747	20-38.406	-96.730	-3-03-	2.1	600	0.5	10	0.4	<2	<4	0.7	4	6.8 330
203748	20-38.425	-96.655	-3-03-	4.9	880	<0.5	12	5.4	2	<4	0.8	<4	6.9 460
203752	20-38.476	-96.685	-3-03-	4.8	810	1.8	26	3.8	<2	<4	0.5	<4	6.8 370
203754	20-38.412	-96.048	-3-03-	1.2	1600	<0.5	200	1.8	<2	5	0.3	<4	7.3 310
203755	20-38.395	-96.040	-3-03-	4.7	1000	0.7	44	1.1	3	<4	0.4	<4	6.9 460
203756	20-38.405	-96.100	-3-03-	8.7	710	1.8	<10	0.9	<2	5	0.3	11	6.8 420
203771	20-38.093	-96.049	-3-03-	1.3	760	<0.5	72	2.0	<2	<4	0.2	<4	7.5 350
203775	20-38.020	-96.149	-3-03-	0.97	600	<0.5	15	0.2	2	<4	<0.2	<4	7.4 360
203781	20-38.094	-96.213	-3-03-	0.96	680	<0.5	25	0.6	<2	<4	0.3	4	7.7 320
203782	20-38.052	-96.197	-3-03-	1.3	580	<0.5	<10	<0.1	<2	<4	0.8	<4	5.9 340
203785	20-38.028	-96.229	-3-03-	2.8	2000	<0.5	96	3.4	7	5	0.5	<4	6.9 340
203786	20-38.050	-96.157	-3-03-	0.59	2700	<0.5	470	2.4	170	<4	0.3	<4	7.7 340
203869	20-38.142	-96.582	-3-03-	2.1	580	0.5	<10	0.5	<2	<4	0.3	<4	7.3 250
203874	20-38.252	-96.620	-3-03-	<0.20	4300	<0.5	<10	6.5	210	<4	0.2	<4	8.1 80
203876	20-38.340	-96.539	-3-03-	3.0	1300	<0.5	39	1.9	8	<4	0.4	<4	7.2 320
203877	20-38.109	-96.542	-3-03-	3.4	1200	0.5	39	6.4	<2	<4	0.3	<4	6.5 470
203881	20-38.050	-96.601	-3-03-	2.1	550	<0.5	<10	0.5	<2	<4	0.2	<4	6.9 360
203883	20-38.033	-96.269	-3-03-	<0.20	770	<0.5	<10	0.7	12	<4	0.2	<4	6.8 320

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER															
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	L TY REP	U (PPB)	SP UMHOS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
203886	20-38.035	-	96.342	-3-03-	2.9	650	0.5	10	0.5	<2	7	0.3	<4	7.2	390
203890	20-38.191	-	96.407	-3-03-	1.3	430	<0.5	<10	1.0	<2	<4	0.4	<4	7.1	270
203894	20-38.211	-	96.322	-3-03-	0.75	1300	<0.5	48	11.	5	<4	0.3	<4	7.1	130
203895	20-38.232	-	96.175	-3-03-	5.6	1300	0.5	100	7.8	<2	<4	0.3	<4	7.0	400
203897	20-38.187	-	96.195	-3-03-	1.2	1300	<0.5	31	2.2	<2	<4	0.5	<4	7.1	310
203903	20-38.245	-	96.275	-3-03-	3.5	3800	<0.5	<10	4.2	5	<4	0.4	<4	6.8	300
203905	20-38.172	-	96.217	-3-03-	0.57	4500	<0.5	1100	1.3	410	<4	0.2	<4	6.8	80
203906	20-38.188	-	96.276	-3-03-	1.1	970	<0.5	40	1.5	<2	<4	0.4	<4	6.9	400
203907	20-38.144	-	96.268	-3-03-	2.3	1300	<0.5	130	1.1	510	<4	0.3	<4	7.0	400
203939	20-38.377	-	97.962	-3-03-	2.1	1900	1.2	220	1.6	<2	<4	0.4	6	7.3	250
203940	20-38.420	-	97.960	-3-03-	5.3	2600	<0.5	60	2.1	<2	<4	0.2	<4	7.0	370
203941	20-38.472	-	97.962	-3-03-	<0.20	270	<0.5	15	0.9	<2	<4	0.3	<4	7.2	100
203942	20-38.402	-	97.614	-3-03-	100.	4600	<0.5	550	11.	6	<4	0.5	<4	7.1	370
203943	20-38.426	-	97.613	-3-03-	14.	1800	0.8	150	0.9	<2	4	0.3	5	7.1	370
203944	20-38.448	-	97.569	-3-03-	16.	6700	<0.5	240	2.5	5	<4	0.2	<4	6.5	370
203946	20-38.394	-	97.539	-3-03-	0.89	760	7.4	99	3.1	<2	7	0.3	<4	7.5	96
203947	20-38.334	-	97.205	-3-03-	3.9	3000	0.5	15	2.6	57	4	0.3	<4	6.9	320
203949	20-38.274	-	97.191	-3-03-	3.8	3200	3.5					0.9		6.9	300
203951	20-38.289	-	97.170	-3-03-	0.93	2800	<0.5	<10	3.2	3	<4	0.4	<4	6.7	370
203953	20-38.328	-	97.148	-3-03-	2.1	2900	<0.5	<10	2.7	5	<4	0.5	<4	6.7	290
203954	20-38.388	-	97.170	-3-03-	<0.20	2900	<0.5	<10	2.8	17	<4	0.4	<4	6.9	290
203957	20-38.423	-	97.168	-3-03-	0.43	1300	0.7	29	1.6	<2	<4	0.6	<4	7.0	310
203960	20-38.463	-	97.161	-3-03-	1.0	2800	0.6	<10	1.7	18	<4	0.9	<4	6.9	290
203961	20-38.494	-	97.196	-3-03-	1.1	3700	<0.5	<10	2.2	18	5	0.4	<4	6.9	280
203964	20-38.429	-	97.228	-3-03-	3.9	1700	<0.5	55	1.4	<2	10	0.6	<4	7.0	370
203965	20-38.393	-	97.225	-3-03-	4.1	5100	<0.5	32	8.1	16	<4	0.5	<4	6.8	320
203967	20-38.360	-	97.029	-3-03-	4.0	970	2.9	11	1.1	<2	<4	0.3	10	6.7	430
203968	20-38.387	-	97.038	-3-03-	5.2	1300	0.6	39	1.4	<2	<4	0.4	<4	2.0	400
203972	20-38.433	-	97.041	-3-03-	3.9	650	0.7	22	0.5	<2	<4	0.3	<4	7.1	320
203973	20-38.473	-	97.041	-3-03-	1.2	3000	<0.5	45	1.2	18	<4	0.3	4	6.9	270
203974	20-38.290	-	97.023	-3-03-	4.1	970	<0.5	12	1.1	<2	5	0.2	<4	7.0	330
203977	20-38.294	-	97.114	-3-03-	12.	2300	0.8	160	1.7	7	<4	0.4	<4	6.9	280
203979	20-38.348	-	97.110	-3-03-	8.2	740	0.6	11	1.0	<2	<4	0.4	5	7.1	340
203981	20-38.391	-	97.078	-3-03-	5.3	690	0.8	20	0.4	<2	<4	0.5	<4	7.1	320
203982	20-38.423	-	97.093	-3-03-	3.1	680	<0.5	15	0.4	<2	<4	0.2	<4	7.1	260
203986	20-38.465	-	97.099	-3-03-	18.	2200	0.5	88	1.6	2	7	0.7	<4	6.8	400
203987	20-38.232	-	96.983	-3-03-	2.0	1000	<0.5	33	0.5	<2	4	0.5	6	6.6	370
203988	20-38.230	-	96.924	-3-03-	1.8	650	<0.5	14	0.4	<2	5	0.3	<4	6.9	260
203989	20-38.144	-	96.950	-3-03-	3.1	1200	0.5	45	1.6	2	<4	0.5	4	6.9	350
203992	20-38.147	-	96.839	-3-03-	3.8	3100	<0.5	27	1.8	2	<4	0.4	<4	6.9	260
203994	20-38.161	-	96.795	-3-03-	2.2	1300	4.3	27	1.2	<2	<4	0.4	<4	7.1	290
203995	20-38.195	-	96.811	-3-03-	0.64	3300	<0.5	<10	1.9	6	<4	0.4	<4	7.1	210
203997	20-38.242	-	96.807	-3-03-	1.5	580	<0.5	<10	0.7	<2	5	0.3	7	7.0	350
205939	20-38.857	-	97.738	-3-03-	7.7	1900	1.0	48	3.3	780	8	0.4	<4	6.5	310
205940	20-38.205	-	96.992	-3-03-	2.6	2600	<0.5	67	0.9	<2	<4	0.5	5	6.6	380
205941	20-38.147	-	96.913	-3-03-	1.2	650	0.6	10	0.7	<2	<4	0.4	<4	7.1	360
205943	20-38.116	-	96.892	-3-03-	3.6	620	0.5	<10	0.7	<2	<4	0.5	4	7.0	400
205944	20-38.078	-	96.887	-3-03-	2.3	1000	0.6	45	0.7	<2	<4	0.5	<4	6.9	430
205945	20-38.023	-	96.896	-3-03-	1.8	650	<0.5	12	0.8	<2	<4	0.3	4	7.3	300
205950	20-38.191	-	96.935	-3-03-	2.1	710	<0.5	<10	0.7	4	7	0.4	<4	7.1	330
205956	20-38.390	-	96.236	-3-03-	6.9	2000	1.6	35	1.0	<2	6	0.4	<4	6.7	520
205957	20-38.438	-	96.207	-3-03-	7.1	820	0.9	<10	0.2	170	<4	0.5	9	7.0	390
205958	20-38.470	-	96.215	-3-03-	1.8	1100	<0.5	35	0.9	<2	<4	0.5	<4	7.1	310
205961	20-38.478	-	96.162	-3-03-	10.	1900	<0.5	<10	0.3	<2	6	0.5	<4	7.3	340
205963	20-38.440	-	96.160	-3-03-	<0.20	320	<0.5	20	1.0	18	4	0.8	<4	7.3	130

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDCWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE GROUNDWATER															
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPB)	SP UMHQS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)	
205965	20-38.391	- 96.163	-3-03-	2.4	1800	0.7	170	0.7	<2	8	0.5	<4	6.9	400	
205968	20-38.336	- 96.224	-3-03-	3.8	720	1.1	<10	0.3	<2	4	0.5	<4	6.7	360	
205969	20-38.301	- 96.182	-3-03-	<0.2	430	<0.5	12	5.1	<2	<4	0.2	5	7.0	260	
205973	20-38.333	- 96.151	-3-03-	2.1	1700	<0.5	46	1.8	13	<4	0.4	<4	7.1	200	
205977	20-38.289	- 96.093	-3-03-	3.2	1700	0.5	64	2.2	2	4	0.5	<4	7.7	340	
205981	20-38.434	- 96.105	-3-03-	0.21	290	<0.5	19	0.3	<2	<4	0.3	<4	6.2	90	
205982	20-38.478	- 96.087	-3-03-	7.7	3100	<0.5	12	2.4	<2	<4	0.4	<4	6.9	430	
205983	20-38.468	- 96.041	-3-03-	3.4	4400	<0.5	37	2.6	3	<4	0.4	<4	6.9	260	
208300	20-38.996	- 96.344	-3-03-	1.5	640	<0.5	<10	1.2	<2	<4	0.6	<4	6.5	310	
208303	20-38.925	- 96.352	-3-03-	1.7	480	<0.5	<10	2.5	<2	5	0.4	<4	7.3	250	
208306	20-38.816	- 96.336	-3-03-	1.6	830	1.4	14	2.0	15	<4	0.6	8	6.9	400	
208310	20-38.771	- 96.278	-3-03-	2.5	960	<0.5	<10	1.6	<2	4	0.3	<4	7.2	400	
208311	20-38.764	- 96.329	-3-03-	3.4	930	0.6	20	1.9	<2	<4	0.6	6	7.5	400	
208313	20-38.917	- 96.458	-3-03-	2.3	970	<0.5	39	2.1	10	<4	0.4	<4	6.5	330	
208320	20-38.948	- 96.405	-3-03-	2.3	640	0.6	<10	1.8	<2	<4	0.4	<4	7.0	290	
208323	20-38.989	- 96.390	-3-03-	1.9	950	<0.5	<10	1.7	<2	<4	0.3	<4	6.9	310	
208325	20-38.980	- 96.435	-3-03-	1.9	680	<0.5	14	1.0	<2	4	0.3	<4	6.8	290	
208327	20-38.996	- 96.283	-3-03-	1.5	2800	2.7	210	2.6	3	17	0.3	<4	6.8	370	
208328	20-38.854	- 96.459	-3-03-	2.5	850	<0.5	27	0.6	<2	<4	0.3	<4	7.1	400	
208329	20-38.856	- 96.408	-3-03-	3.2	1800	0.5	140	1.9	<2	<4	0.3	4	6.9	450	
208330	20-38.811	- 96.410	-3-03-	5.4	2400	0.6	48	3.3	2	4	0.5	<4	7.1	350	
208331	20-38.810	- 96.426	-3-03-	1.3	610	0.5	<10	1.1	2	<4	0.3	<4	7.1	350	
208335	20-38.765	- 96.460	-3-03-	2.9	700	<0.5	<10	0.9	<2	<4	0.3	<4	7.1	300	
208338	20-38.870	- 96.424	-3-03-	3.7	600	0.5	<10	1.1	<2	<4	0.3	<4	7.1	290	
208339	20-38.841	- 96.350	-3-03-	2.7	1300	0.8	<10	1.3	<2	4	0.3	9	7.1	300	
208342	20-38.763	- 96.389	-3-03-	2.0	630	<0.5	14	1.0	<2	<4	0.5	4	6.9	320	
208343	20-38.798	- 96.276	-3-03-	2.1	860	<0.5	12	4.2	<2	<4	0.8	<4	6.9	370	
208344	20-38.877	- 96.353	-3-03-	2.5	550	<0.5	<10	1.2	<2	<4	0.5	7	7.4	330	
208349	20-38.897	- 96.274	-3-03-	2.0	1100	0.7	29	3.0	<2	4	0.3	4	7.0	410	
208351	20-38.918	- 96.277	-3-03-	1.8	1900	<0.5	67	1.6	2	<4	0.3	<4	7.0	410	
208354	20-38.812	- 96.502	-3-03-	0.46	720	<0.5	16	2.3	<2	<4	0.2	<4	7.0	400	
208355	20-38.810	- 96.536	-3-03-	3.4	760	<0.5	31	0.9	<2	<4	0.2	4	6.9	350	
208356	20-38.830	- 96.559	-3-03-	3.5	690	<0.5	11	1.1	4	<4	0.4	<4	7.1	420	
208357	20-38.837	- 96.594	-3-03-	2.6	870	<0.5	61	2.4	<2	<4	0.3	<4	7.0	520	
208359	20-38.769	- 96.619	-3-03-	8.0	3300	<0.5	35	5.8	6	<4	0.3	<4	7.0	300	
208361	20-38.754	- 96.550	-3-03-	3.4	640	0.5	<10	1.6	<2	<4	0.3	<4	7.2	480	
208363	20-38.768	- 96.512	-3-03-	4.2	640	<0.5	<10	1.5	<2	<4	0.3	<4	7.1	450	
208364	20-38.834	- 96.502	-3-03-	2.0	590	<0.5	14	0.9	<2	<4	0.2	5	6.7	390	
208365	20-38.881	- 96.519	-3-03-	11.	2800	<0.5	18	5.0	5	17	<0.2	<4	6.9	310	
208366	20-38.927	- 96.504	-3-03-	2.5	910	<0.5	14	2.3	<2	<4	0.2	<4	7.0	430	
208368	20-38.969	- 96.525	-3-03-	5.5	890	<0.5	21	2.4	<2	<4	0.4	6	7.0	500	
208370	20-38.976	- 96.567	-3-03-	1.6	670	<0.5	<10	1.2	10	<4	0.2	<4	7.0	410	
208374	20-38.938	- 96.597	-3-03-	3.1	680	<0.5	<10	1.2	<2	5	0.2	<4	7.6	400	
208375	20-38.916	- 96.567	-3-03-	2.8	900	<0.5	13	7.8	<2	<4	0.3	<4	7.1	390	
208376	20-38.896	- 96.554	-3-03-	3.8	740	0.9	13	2.1	<2	16	0.7	<4	7.1	490	
208377	20-38.886	- 96.613	-3-03-	4.7	880	0.8	28	3.9	<2	<4	0.3	<4	7.2	430	
208378	20-38.797	- 96.624	-3-03-	3.7	740	0.5	28	9.8	<2	<4	0.4	<4	7.0	370	
208384	20-38.990	- 96.960	-3-03-	12.	700	<0.5	14	1.6	<2	<4	0.3	<4	4.5	470	
208385	20-38.993	- 96.923	-3-03-	3.2	580	<0.5	<10	2.6	<2	<4	0.4	<4	4.4	440	
208388	20-38.929	- 96.963	-3-03-	0.76	830	<0.5	10	1.8	<2	7	0.4	<4	4.0	430	
208389	20-38.900	- 96.966	-3-03-	2.1	680	<0.5	15	1.7	<2	<4	0.2	<4	3.9	420	
208392	20-38.930	- 96.887	-3-03-	3.2	760	<0.5	<10	1.7	<2	7	0.2	<4	4.0	390	
208393	20-38.900	- 96.904	-3-03-	2.4	640	<0.5	<10	1.6	<2	<4	0.2	<4	3.9	450	
208395	20-38.924	- 96.841	-3-03-	2.7	620	<0.5	<10	6.3	<2	<4	0.4	<4	4.5	430	
208399	20-38.975	- 96.814	-3-03-	2.7	550	0.5	<10	1.8	<2	<4	0.3	<4	4.4	330	

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER														
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	L TY REP	U (PPB)	SP UMHUS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH T-AK (PPM)
208402	20-38.919	-	96.774	-3-03-	1.7	680	<0.5	<10	1.1	4	<4	0.3	<4	4.4 380
208403	20-38.894	-	96.785	-3-03-	2.7	880	<0.5	25	1.1	<2	<4	0.4	<4	4.5 380
208404	20-38.890	-	96.828	-3-03-	2.0	700	<0.5	20	1.1	<2	9	0.8	<4	4.7 350
208405	20-38.843	-	96.849	-3-03-	2.1	540	<0.5	<10	0.5	<2	<4	0.2	6	4.5 370
208406	20-38.854	-	96.811	-3-03-	2.5	590	<0.5	<10	1.1	<2	<4	0.2	<4	4.2 370
208411	20-38.809	-	96.835	-3-03-	2.4	690	0.7	<10	0.4	<2	<4	0.4	6	4.1 520
208412	20-38.800	-	96.800	-3-03-	3.3	570	1.1	<10	0.9	<2	<4	0.2	10	4.1 380
208413	20-38.764	-	96.796	-3-03-	4.0	860	1.6	24	1.1	<2	<4	0.3	7	4.2 450
208416	20-38.772	-	96.870	-3-03-	2.7	620	0.5	<10	0.5	<2	6	0.3	<4	4.3 350
208417	20-38.768	-	96.895	-3-03-	2.2	690	0.5	19	1.3	<2	8	0.3	<4	4.2 370
208418	20-38.757	-	96.952	-3-03-	1.3	870	<0.5	<10	0.9	<2	<4	0.3	<4	4.3 380
208424	20-38.852	-	96.983	-3-03-	7.1	600	0.5	<10	1.1	<2	6	0.4	<4	4.1 400
208432	20-38.841	-	96.927	-3-03-	5.6	3900	<0.5	250	3.7	7	<4	0.2	<4	4.6 250
208433	20-38.792	-	96.944	-3-03-	2.1	1100	<0.5	45	3.8	<2	<4	<0.2	<4	5.1 440
208435	20-38.576	-	96.523	-3-03-	3.1	1100	<0.5	28	1.4	5	<4	0.2	<4	3.9 400
208437	20-38.614	-	96.520	-3-03-	2.1	880	<0.5	13	0.9	<2	<4	<0.2	<4	3.6 440
208438	20-38.603	-	96.616	-3-03-	2.8	520	<0.5	<10	0.8	<2	<4	<0.2	<4	3.5 370
208441	20-38.581	-	96.606	-3-03-	<0.20	2600	<0.5	<10	5.5	4	<4	0.2	<4	3.3 350
208444	20-38.564	-	96.567	-3-03-	1.5	1500	<0.5	<10	2.6	3	<4	<0.2	<4	3.8 300
208447	20-38.536	-	96.555	-3-03-	2.6	620	0.5	10	2.1	<2	10	0.8	<4	4.3 400
208448	20-38.528	-	96.510	-3-03-	<0.20	760	<0.5	11	2.1	<2	<4	0.4	<4	4.2 340
208449	20-38.595	-	96.670	-3-03-	0.28	670	<0.5	19	2.0	<2	<4	0.3	<4	4.2 390
208450	20-38.580	-	96.683	-3-03-	26.	4300	<0.5	19	5.7	9	160	1.2	<4	7.5 330
208451	20-38.848	-	96.096	-3-03-	2.2	590	<0.5	21	0.8	<2	<4	0.9	<4	6.7 290
208452	20-38.814	-	96.094	-3-03-	4.3	1000	<0.5	34	1.5	<2	<4	0.6	<4	6.7 330
208455	20-38.760	-	96.105	-3-03-	3.9	1200	<0.5	73	1.1	<2	<4	0.6	<4	7.2 340
208458	20-38.783	-	96.022	-3-03-	2.4	1500	<0.5	210	16.	<2	<4	0.5	<4	7.1 490
208459	20-38.769	-	96.035	-3-03-	3.5	1400	0.5	13	2.6	<2	<4	0.5	<4	7.0 310
208464	20-38.833	-	96.021	-3-03-	7.3	2500	2.8	290	16.	37	<4	1.4	<4	7.1 460
208468	20-38.867	-	96.152	-3-03-	2.0	790	<0.5	12	1.6	6	<4	0.9	<4	7.1 300
208471	20-38.863	-	96.200	-3-03-	0.93	1600	<0.5	20	4.1	3	<4	0.7	<4	6.9 280
208473	20-38.886	-	96.077	-3-03-	2.3	580	0.6	10	1.7	<2	6	0.5	<4	6.9 330
208474	20-38.918	-	96.084	-3-03-	3.0	970	<0.5	72	0.4	<2	<4	0.8	<4	6.7 400
208475	20-38.991	-	96.113	-3-03-	2.2	460	<0.5	<10	1.1	<2	<4	0.7	<4	7.4 290
208477	20-38.956	-	96.028	-3-03-	2.0	2200	1.3	67	17.	300	<4	0.7	<4	7.1 360
208482	20-38.950	-	96.041	-3-03-	2.6	660	0.5	14	1.8	5	<4	0.5	<4	7.4 300
208484	20-38.885	-	96.054	-3-03-	2.3	680	<0.5	<10	0.6	<2	<4	0.3	<4	7.8 300
208485	20-38.803	-	96.206	-3-03-	1.8	700	0.5	10	0.5	<2	<4	0.3	5	7.0 370
208486	20-38.798	-	96.138	-3-03-	1.7	1200	0.5	<10	1.4	<2	<4	0.3	<4	7.1 310
208487	20-38.774	-	96.150	-3-03-	1.9	970	<0.5	22	0.6	<2	<4	0.5	<4	7.0 370
208488	20-38.888	-	96.205	-3-03-	1.7	2300	<0.5	12	1.7	<2	<4	<0.2	<4	6.8 280
208490	20-38.922	-	96.221	-3-23-	1.9	600	<0.5	<10	1.1	<2	<4	0.4	<4	7.0 320
208494	20-38.983	-	96.205	-3-03-	1.1	560	<0.5	<10	1.9	<2	<4	0.3	4	6.7 330
208496	20-38.981	-	96.175	-3-03-	1.8	700	<0.5	16	1.2	<2	<4	0.3	<4	6.8 320
208497	20-38.917	-	96.131	-3-03-	2.2	600	<0.5	<10	0.7	<2	<4	0.5	<4	6.9 310
208498	20-38.655	-	96.545	-3-03-	1.1	2000	<0.5	67	3.6	3	<4	0.4	<4	6.8 260
208500	20-38.655	-	96.607	-3-03-	2.5	960	0.6	49	0.8	<2	<4	0.4	8	6.9 360
208502	20-38.700	-	96.540	-3-03-	1.2	690	<0.5	<10	0.7	<2	<4	0.6	<4	6.9 310
208505	20-38.708	-	96.617	-3-03-	2.8	550	0.5	<10	0.9	<2	<4	0.5	<4	7.1 340
208506	20-38.709	-	96.496	-3-03-	3.7	680	<0.5	<10	1.4	<2	<4	0.3	<4	7.1 330
208507	20-38.655	-	96.512	-3-03-	3.0	640	<0.5	<10	0.7	<2	<4	0.4	<4	7.0 380
208508	20-38.653	-	96.670	-3-03-	4.4	500	<0.5	<10	1.3	<2	<4	1.0	<4	6.8 300
208510	20-38.709	-	96.685	-3-03-	1.9	840	<0.5	43	1.6	7	<4	0.6	<4	7.5 240
208513	20-38.728	-	96.741	-3-03-	1.5	490	0.6	<10	0.9	<2	7	0.5	<4	7.1 310
208514	20-38.653	-	96.744	-3-03-	1.3	520	<0.5	<10	0.8	<2	<4	0.6	7	7.1 330

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER														
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	U L TY REP	SP (PPB)	AS UMHQS/CM	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
208515	20-38.695	- 97.033	-3-03-	2.4	660	<0.5	22	1.2	2	5	0.4	<4	7.0	310
208516	20-38.704	- 97.075	-3-03-	0.84	2300	<0.5	29	2.0	10	<4	0.3	<4	6.7	260
208517	20-38.662	- 97.079	-3-03-	1.6	970	<0.5	76	0.5	<2	<4	0.3	<4	7.0	330
208518	20-38.668	- 97.041	-3-03-	1.8	1030	0.6	15	1.2	<2	<4	0.5	<4	7.0	310
208519	20-38.710	- 97.612	-3-03-	7.2	980	<0.5	38	2.9	2	<4	0.4	<4	6.8	470
208520	20-38.710	- 97.569	-3-03-	130.	3200	<0.5	160	15.	6	8	1.6	<4	6.6	620
208522	20-38.648	- 97.553	-3-03-	3.5	1700	<0.5	150	110.	<2	<4	0.7	<4	6.7	210
208525	20-38.647	- 96.422	-3-03-	2.6	2900	<0.5	30	2.3	4	7	0.5	<4	7.1	350
208530	20-38.617	- 96.441	-3-03-	0.21	340	1.9	<10	1.4	<2	<4	0.5	<4	6.7	180
208533	20-38.614	- 96.414	-3-03-	3.4	1000	0.5	29	3.2	7	<4	0.3	<4	7.0	330
208534	20-38.581	- 96.407	-3-03-	2.7	1700	<0.5	15	1.6	2	6	0.3	<4	7.0	260
208539	20-38.523	- 96.431	-3-03-	6.7	1800	<0.5	33	1.2	2	<4	0.3	<4	7.0	310
208540	20-38.536	- 96.415	-3-03-	<0.20	2300	<0.5	70	4.2	3	<4	0.3	<4	7.2	220
208543	20-38.508	- 96.340	-3-03-	2.6	590	<0.5	18	0.6	<2	<4	0.3	7	7.2	300
208544	20-38.580	- 96.334	-3-03-	1.6	730	<0.5	36	1.2	<2	<4	0.2	<4	6.8	300
208546	20-38.608	- 96.308	-3-03-	1.9	570	<0.5	<10	0.9	<2	5	0.2	<4	7.1	330
208547	20-38.610	- 96.259	-3-03-	4.5	3000	<0.5	<10	22.	3	7	0.2	<4	6.8	300
208548	20-38.566	- 96.296	-3-03-	0.46	3000	<0.5	<10	2.1	10	<4	<0.2	<4	6.6	300
208550	20-38.521	- 96.288	-3-03-	17.	920	0.7	19	0.8	190	<4	0.4	6	6.8	350
208552	20-38.725	- 96.261	-3-03-	2.1	830	<0.5	18	0.6	<2	<4	0.3	<4	7.0	350
208555	20-38.666	- 96.397	-3-03-	5.0	1600	<0.5	98	5.0	<2	<4	0.2	<4	7.2	440
208556	20-38.667	- 96.323	-3-03-	2.3	790	<0.5	<10	0.7	<2	<4	<0.2	<4	6.9	350
208557	20-38.667	- 96.291	-3-03-	2.4	1600	<0.5	35	2.8	2	11	0.3	<4	6.8	300
208559	20-38.710	- 96.350	-3-03-	2.2	670	<0.5	<10	1.0	<2	<4	<0.2	<4	6.8	330
208563	20-38.701	- 96.454	-3-03-	2.6	600	<0.5	<10	0.9	<2	<4	0.3	<4	7.6	330
208564	20-38.710	- 96.384	-3-03-	2.4	580	<0.5	10	0.7	<2	<4	0.2	<4	7.1	330
208568	20-38.894	- 96.697	-3-81-	2.7	530	0.8	<10	0.9	<2	<4	0.4	8	6.9	310
208569	20-38.909	- 96.736	-3-03-	2.1	590	<0.5	<10	0.8	<2	<4	0.3	6	7.0	340
208571	20-38.949	- 96.741	-3-03-	2.3	430	1.1	<10	1.6	<2	<4	0.3	<4	7.1	250
208576	20-38.956	- 96.693	-3-03-	1.9	590	<0.5	10	0.9	<2	<4	0.3	<4	6.9	340
208578	20-38.966	- 96.698	-3-03-	1.8	780	<0.5	15	1.8	5	<4	0.2	<4	7.1	280
208579	20-38.982	- 96.724	-3-03-	2.4	620	0.7	<10	2.3	<2	<4	0.3	<4	7.0	370
208580	20-38.705	- 97.399	-3-03-	4.4	2900	<0.5	150	2.1	3	<4	<0.2	<4	6.7	280
208584	20-38.699	- 97.446	-3-03-	0.66	6900	<0.5	790	4.3	270	<4	<0.2	<4	7.3	290
208589	20-38.657	- 97.395	-3-03-	5.6	3400	<0.5	58	3.6	12	<4	0.6	<4	6.8	380
208593	20-38.671	- 97.454	-3-03-	7.7	3600	<0.5	130	4.8	6	<4	11.	<4	6.8	280
208594	20-38.623	- 97.452	-3-03-	3.2	3200	<0.5	74	9.8	5	<4	0.3	<4	6.8	430
208598	20-38.507	- 96.166	-3-03-	0.36	1130	<0.5	31	1.2	<2	<4	0.3	<4	6.7	340
208603	20-38.504	- 96.212	-3-03-	0.69	1300	<0.5	140	2.1	<2	<4	0.3	<4	7.2	400
208604	20-38.713	- 96.155	-3-03-	6.5	940	<0.5	<10	0.9	<2	<4	0.3	<4	6.9	510
208605	20-38.652	- 96.187	-3-03-	3.5	1400	<0.5	70	1.0	13	<4	0.2	<4	7.2	400
208612	20-38.678	- 96.024	-3-03-	1.0	570	<0.5	<10	0.6	<2	5	0.3	4	6.7	360
208614	20-38.718	- 96.028	-3-03-	3.4	5100	<0.5	200	4.3	4	<4	0.3	<4	6.6	500
208620	20-38.522	- 96.034	-3-03-	2.0	1200	<0.5	39	2.7	850	4	0.3	<4	6.9	430
208621	20-38.520	- 96.087	-3-03-	7.9	2200	1.4	120	140.	<2	7	0.6	<4	7.4	600
208622	20-38.550	- 96.038	-3-03-	1.3	960	<0.5	37	0.3	10	<4	0.2	<4	7.8	300
208623	20-38.602	- 96.043	-3-03-	1.6	770	0.5	15	2.9	<2	<4	0.2	<4	7.0	370
208625	20-38.626	- 96.097	-3-03-	2.8	1000	<0.5	60	0.4	4	<4	0.4	<4	6.9	520
208627	20-38.575	- 96.235	-3-03-	6.1	1300	0.5	24	1.2	<2	<4	0.3	<4	7.0	370
208628	20-38.662	- 96.179	-3-03-	5.3	740	<0.5	11	0.5	<2	<4	0.6	<4	6.5	380
208629	20-38.617	- 96.229	-3-03-	1.8	620	<0.5	12	0.6	<2	<4	0.5	<4	6.9	370
208633	20-38.856	- 97.034	-3-03-	2.0	850	0.9	13	2.1	<2	<4	0.5	<4	6.8	430
208634	20-38.858	- 97.070	-3-03-	6.5	3700	<0.5	310	4.1	20	6	0.3	<4	6.7	350
208636	20-38.799	- 97.064	-3-03-	1.7	2300	0.7	34	2.7	2	<4	0.2	<4	6.7	320
208638	20-38.747	- 97.074	-3-03-	4.3	2200	<0.5	160	1.4	2	<4	0.3	<4	6.9	450

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LCNG	NUMBER L TY RE-3	U (PPB)	SP UMHOS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPE)	V (PPB)	PH	T-AK (PPM)
208639	20-38.768	- 97.033	-3-03-	37.	3800	<0.5	210	5.9	4	<4	0.2	<4	6.7	340
208641	20-38.798	- 97.030	-3-03-	3.6	2200	<0.5	41	2.6	3	<4	0.3	<4	6.9	370
208643	20-38.980	- 97.596	-3-03-	41.	2000	<0.5	200	3.1	4	4	0.4	<4	6.6	450
208646	20-38.900	- 97.532	-3-03-	3.0	960	<0.5	10	6.6	<2	5	0.4	<4	6.5	400
208643	20-38.952	- 97.608	-3-03-	<0.20	200	<0.5	<10	1.1	<2	<4	<0.2	<4	6.7	40
208653	20-38.980	- 97.736	-3-03-	3.9	1100	<0.5	88	3.9	3	<4	0.3	<4	6.7	380
208656	20-38.935	- 97.725	-3-03-	2.0	940	0.9	39	6.1	3	<4	0.4	<4	6.9	330
208658	20-38.898	- 97.669	-3-03-	0.38	680	<0.5	29	1.6	2	<4	<0.2	<4	7.2	310
208659	20-38.900	- 97.613	-3-03-	9.3	1000	0.8	30	9.0	<2	5	0.4	<4	6.7	530
208660	20-38.981	- 97.654	-3-03-	0.71	1300	<0.5	45	4.6	<2	<4	0.2	<4	6.4	470
208661	20-38.929	- 97.686	-3-03-	7.5	690	0.7	25	2.9	4	<4	0.3	<4	7.0	330
208666	20-38.800	- 97.557	-3-03-	14.	380	<0.5	14	2.1	4	<4	<0.2	<4	6.0	170
208673	20-38.653	- 96.971	-3-03-	4.3	1000	0.5	13	1.7	2	<4	<0.2	<4	7.3	350
208674	20-38.652	- 96.918	-3-03-	3.5	1100	<0.5	15	2.0	<2	4	0.3	<4	7.3	330
208677	20-38.713	- 96.894	-3-03-	<0.20	1600	<0.5	49	2.0	2	<4	<0.2	<4	7.3	290
208678	20-38.697	- 96.967	-3-03-	8.0	2300	<0.5	63	0.9	2	<4	<0.2	<4	7.4	390
208679	20-38.575	- 96.949	-3-03-	4.3	1500	<0.5	35	1.4	<2	9	<0.2	<4	7.6	320
208680	20-38.523	- 96.958	-3-03-	4.5	1200	0.8	50	3.1	<2	4	0.3	<4	7.3	380
208681	20-38.521	- 96.924	-3-03-	2.2	880	0.5	20	1.5	<2	4	<0.2	6	7.8	330
208682	20-38.569	- 96.929	-3-03-	3.3	1000	<0.5	17	1.4	<2	<4	<0.2	<4	7.6	330
208683	20-38.603	- 96.894	-3-03-	2.1	1000	<0.5	28	1.3	<2	<4	<0.2	<4	7.7	340
208686	20-38.768	- 96.730	-3-03-	1.5	710	0.6	<10	0.5	<2	<4	<0.2	7	7.2	320
208691	20-38.617	- 96.948	-3-03-	7.0	1100	0.6	<10	2.8	<2	<4	0.5	<4	6.9	350
208693	20-38.652	- 96.838	-3-03-	1.9	900	0.7	<10	1.0	<2	<4	0.2	8	7.2	360
208694	20-38.659	- 96.785	-3-03-	2.2	1000	0.6	10	1.0	<2	<4	<0.2	4	7.5	380
208695	20-38.696	- 96.778	-3-03-	1.8	910	<0.5	<10	0.6	<2	<4	0.3	<4	7.5	340
208696	20-38.702	- 96.834	-3-03-	3.2	980	<0.5	<10	4.4	<2	<4	0.2	<4	7.8	370
208698	20-38.790	- 96.722	-3-03-	1.1	1200	0.6	64	1.4	<2	<4	0.3	<4	6.9	370
208699	20-38.840	- 96.719	-3-03-	1.2	690	0.6	<10	1.3	<2	<4	0.3	<4	6.7	310
208700	20-38.846	- 96.678	-3-03-	2.0	910	<0.5	19	1.1	<2	<4	0.2	<4	7.3	300
208701	20-38.783	- 96.684	-3-03-	<0.20	4700	<0.5	43	5.5	25	<4	<0.2	<4	7.7	130
208725	20-38.533	- 97.152	-3-03-	1.4	1000	<0.5	19	0.8	<2	<4	0.3	<4	7.3	350
208726	20-38.532	- 97.205	-3-03-	1.4	5800	<0.5	100	7.5	8	<4	0.3	<4	8.2	340
208727	20-38.565	- 97.157	-3-03-	15.	3800	<0.5	140	9.1	57	13	0.3	<4	8.1	310
208730	20-38.610	- 97.214	-3-03-	4.6	2800	<0.5	130	8.6	3	7	<0.2	<4	6.8	350
208731	20-38.606	- 97.149	-3-03-	7.6	4300	<0.5	84	5.5	5	4	<0.2	<4	7.0	320
208732	20-38.667	- 97.148	-3-03-	2.9	3000	<0.5	110	2.5	3	<4	<0.2	<4	7.4	310
208733	20-38.692	- 97.145	-3-03-	5.5	3700	0.5	170	6.8	5	<4	0.6	<4	7.1	500
208734	20-38.681	- 97.223	-3-03-	4.7	4500	<0.5	140	4.0	6	9	0.4	<4	6.8	390
208739	20-38.525	- 96.728	-3-03-	3.5	580	<0.5	<10	0.3	<2	<4	0.6	<4	4.9	390
208745	20-38.547	- 96.735	-3-03-	1.2	3500	<0.5	29	7.4	41	<4	0.3	<4	4.6	250
208746	20-38.624	- 96.733	-3-03-	2.3	890	<0.5	56	0.9	<2	<4	0.2	<4	4.5	360
208749	20-38.901	- 97.093	-3-03-	5.0	1100	<0.5	41	3.2	<2	<4	0.3	<4	4.1	440
208751	20-38.901	- 97.030	-3-03-	3.6	720	1.3	<10	1.7	<2	<4	0.3	<4	4.1	440
208752	20-38.928	- 97.039	-3-03-	4.1	780	0.9	22	2.6	<2	<4	0.3	<4	3.7	480
208756	20-38.943	- 97.089	-3-03-	8.0	640	0.6	<10	4.1	<2	<4	0.3	5	3.9	400
208760	20-38.973	- 97.112	-3-03-	3.4	2000	<0.5	21	2.4	9	<4	<0.2	<4	4.0	380
208761	20-38.980	- 97.038	-3-03-	0.94	530	0.9	15	1.7	2	<4	0.2	5	4.3	280
208765	20-38.982	- 97.222	-3-03-	2.3	1200	1.1	72	1.9	<2	<4	0.5	5	5.1	400
208766	20-38.985	- 97.166	-3-03-	3.0	820	0.7	16	1.9	<2	<4	0.3	<4	5.1	440
208770	20-38.938	- 97.166	-3-03-	9.5	1600	1.5	190	3.3	3	6	<0.2	6	4.9	460
208772	20-38.934	- 97.198	-3-03-	3.9	1000	0.9	15	1.8	<2	<4	0.3	<4	5.2	410
208774	20-38.884	- 97.185	-3-03-	2.6	1000	<0.5	76	2.3	<2	<4	0.2	<4	4.7	420
208775	20-38.894	- 97.150	-3-03-	0.77	3100	0.7	74	4.0	9	<4	<0.2	<4	4.9	310
208779	20-38.834	- 97.203	-3-03-	3.0	1500	0.5	95	1.4	6	<4	0.3	<4	4.1	430

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER															
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	U L TY REP.	U (PPB)	SP UMHOS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
208782	20-38.851	- 97.169	-3-03-		4.0	1400	1.0	55	2.9	<2	<4	<0.2	<4	4.3	430
208784	20-38.798	- 97.202	-3-03-		1.4	3200	<0.5	87	3.5	25	10	0.2	<4	4.6	370
208786	20-38.783	- 97.161	-3-03-		3.1	1600	<0.5	52	2.1	2	<4	<0.2	<4	4.3	350
208788	20-38.754	- 97.138	-3-03-		2.3	1200	<0.5	33	2.1	<2	<4	0.2	<4	4.2	360
208789	20-38.753	- 97.184	-3-03-		2.9	2000	<0.5	100	2.9	4	<4	1.1	<4	4.2	440
208794	20-38.994	- 97.799	-3-03-		0.27	850	3.1	33	5.4	<2	<4	0.7	<4	4.1	370
208796	20-38.982	- 97.854	-3-03-		4.0	860	1.0	30	4.7	<2	<4	0.5	<4	3.7	330
208800	20-38.888	- 97.816	-3-03-		4.6	1000	0.7	23	3.8	15	4	0.3	<4	3.4	400
208805	20-38.854	- 97.801	-3-03-		8.7	2600	<0.5	240	2.7	2	<4	0.4	<4	3.7	270
208810	20-38.769	- 97.784	-3-03-		0.48	3600	<0.5	140	5.9	23	5	<0.2	<4	6.9	260
208815	20-38.616	- 97.023	-3-03-		0.56	10000	<0.5	1800	13.	22	<4	0.2	<4	6.4	430
208818	20-38.585	- 97.023	-3-03-		6.5	1400	0.5	57	0.9	2	<4	0.3	4	7.0	500
208819	20-38.535	- 97.030	-3-03-		3.2	810	<0.5	31	0.8	<2	<4	0.2	<4	7.1	450
208820	20-38.522	- 97.103	-3-03-		3.8	660	0.5	10	1.1	<2	<4	0.2	<4	7.1	410
208823	20-38.557	- 97.099	-3-03-		4.0	650	<0.5	<10	1.6	<2	7	0.3	<4	7.3	410
208824	20-38.623	- 97.073	-3-03-		1.5	910	<0.5	38	1.4	<2	<4	0.2	<4	7.1	430
208827	20-38.988	- 97.332	-3-03-		3.6	1700	1.0	13	2.4	2	<4	0.4	<4	6.7	500
208828	20-38.990	- 97.285	-3-03-		0.52	3200	2.9	11	2.8	27	<4	1.0	<4	6.7	420
208833	20-38.940	- 97.262	-3-03-		2.2	720	0.7	<10	1.1	<2	<4	<0.2	<4	7.1	440
208834	20-38.909	- 97.261	-3-03-		0.29	420	<0.5	<10	11.	<2	<4	0.3	<4	7.5	270
208835	20-38.905	- 97.316	-3-03-		0.53	280	<0.5	<10	1.3	3	<4	<0.2	<4	7.5	170
208837	20-38.918	- 97.333	-3-03-		0.29	510	<0.5	21	1.7	<2	4	<0.2	<4	7.2	160
208839	20-38.841	- 97.348	-3-03-		2.9	3300	<0.5	210	4.4	5	4	<0.2	<4	6.7	430
208840	20-38.797	- 97.312	-3-03-		2.0	2600	<0.5	55	2.6	4	<4	<0.2	<4	7.0	380
208841	20-38.770	- 97.313	-3-03-		2.1	2300	<0.5	67	4.9	3	11	<0.2	<4	7.0	210
208845	20-38.753	- 97.280	-3-03-		1.5	3100	<0.5	86	4.7	4	<4	<0.2	<4	7.0	350
208847	20-38.808	- 97.276	-3-03-		4.9	3200	<0.5	120	3.6	5	<4	0.3	<4	7.0	360
208850	20-38.833	- 97.278	-3-03-		1.4	1500	<0.5	46	1.9	2	5	0.2	<4	7.1	400
208855	20-38.975	- 97.391	-3-03-		1.3	1900	0.7	48	3.1	8	4	0.7	<4	6.7	250
208856	20-38.969	- 97.448	-3-03-		0.24	2700	0.6	41	2.8	82	<4	0.4	<4	6.8	310
208861	20-38.943	- 97.435	-3-03-		5.1	1700	<0.5	33	3.9	2	4	0.4	<4	6.8	310
208865	20-38.923	- 97.382	-3-03-		2.8	1130	0.6	48	2.7	<2	14	0.7	6	6.6	340
208867	20-38.884	- 97.410	-3-03-		12.	2200	2.0	340	7.4	<2	16	0.5	<4	7.1	440
208870	20-38.851	- 97.482	-3-03-		12.	2300	<0.5	63	3.0	3	<4	0.5	<4	7.0	370
208872	20-38.803	- 97.389	-3-03-		7.6	3100	<0.5	79	4.4	14	<4	1.1	<4	6.9	400
208873	20-38.862	- 97.390	-3-03-		1.6	2400	<0.5	230	2.8	2	<4	0.3	<4	7.0	350
208874	20-38.843	- 97.414	-3-03-		22.	2730	1.5	90	1.4	4	<4	1.6	<4	7.0	590
208875	20-38.873	- 97.373	-3-03-		4.6	1500	<0.5	140	6.6	2	4	0.5	<4	7.1	460
208879	20-38.750	- 97.473	-3-03-		<0.20	150	<0.5	<10	4.3	7	<4	0.4	<4	5.6	60
208880	20-38.768	- 97.444	-3-03-		<0.20	2800	<0.5	86	2.3	460	<4	0.5	<4	6.9	300
208882	20-38.769	- 97.401	-3-03-		6.0	3600	<0.5	140	4.2	5	<4	0.3	<4	6.8	430
208884	20-38.656	- 97.594	-3-03-		32.	130	0.5	82	13.	220	12	0.9	<4	6.9	430
208886	20-38.671	- 97.649	-3-03-		8.9	280	<0.5	320	3.6	9	<4	0.7	<4	7.1	180
208888	20-38.668	- 97.726	-3-03-		2.8	320	<0.5	160	3.8	240	4	0.8	<4	6.8	240
208891	20-38.708	- 97.727	-3-03-		6.5	860	<0.5	1800	4.4	13	<4	0.2	<4	6.9	220
208894	20-38.713	- 97.690	-3-03-		4.3	140	0.5	45	2.1	80	<4	0.4	<4	7.2	300
208896	20-38.621	- 97.618	-3-03-		12.	900	<0.5	17	11.	<2	18	4.0	<4	6.8	360
208898	20-38.568	- 97.595	-3-03-		<0.20	270	<0.5	<10	7.3	2	<4	0.3	<4	6.6	90
208900	20-38.508	- 97.608	-3-03-		14.	570	<0.5	13	0.1	9	<4	0.3	<4	6.8	340
208905	20-38.509	- 97.539	-3-03-		3.8	510	<0.5	17	0.5	<2	<4	0.3	<4	7.1	260
208906	20-38.599	- 97.568	-3-03-		3.8	150	0.6	86	1.4	<2	4	0.3	<4	7.4	240
208907	20-38.627	- 97.841	-3-01-		<0.20	170	<0.5	<10	0.7	<2	<4	0.3	<4	6.2	40
208909	20-38.528	- 97.831	-3-03-		10.	590	<0.5	<10	1.7	<2	<4	0.3	4	7.2	330
208912	20-38.525	- 97.795	-3-03-		17.	650	0.7	11	3.2	38	6	0.4	<4	7.1	340
208914	20-38.583	- 97.778	-3-03-		12.	930	0.7	17	2.2	<2	<4	0.3	<4	7.1	390

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPB)	SP UMHOS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
208915	20-38.565	-97.889	-3-03-	3.6	510	<0.5	13	2.5	<2	<4	<0.2	<4	6.6	200
208918	20-38.608	-97.953	-3-03-	32.	1100	0.5	220	2.2	<2	<4	0.5	<4	6.9	410
208919	20-38.551	-97.962	-3-03-	13.	160	0.6	240	3.4	2	<4	0.6	<4	6.6	350
208921	20-38.536	-97.951	-3-01-	<0.20	180	<0.5	72	1.0	<2	<4	<0.2	<4	6.7	82
208923	20-38.596	-97.902	-3-03-	15.	1000	<0.5	15	3.0	<2	<4	0.6	<4	6.9	430
208925	20-38.436	-97.273	-3-03-	1.2	410	<0.5	190	5.6	42	<4	0.3	<4	6.9	240
208927	20-38.478	-97.287	-3-03-	2.0	780	0.7	36	0.8	11	<4	0.4	<4	6.9	360
208928	20-38.430	-97.304	-3-03-	<0.20	450	<0.5	130	5.1	30	<4	0.3	<4	7.0	200
208930	20-38.378	-97.398	-3-03-	33.	140	1.0	85	3.0	<2	<4	0.3	<4	6.7	430
208931	20-38.558	-97.852	-3-03-	17.	610	0.6	15	6.3	2	<4	0.3	<4	6.9	340
208933	20-38.384	-97.313	-3-03-	14.	240	<0.5	230	2.5	110	<4	0.3	<4	6.4	350
208934	20-38.391	-97.274	-3-03-	1.7	290	0.6	90	4.3	12	<4	0.6	<4	6.6	360
208935	20-38.399	-97.427	-3-03-	0.95	390	1.3	<10	1.9	37	5	0.6	5	7.1	250
208936	20-38.436	-97.435	-3-03-	2.8	450	<0.5	<10	3.9	<2	<4	0.2	<4	7.1	190
208937	20-38.434	-97.400	-3-03-	3.1	1000	<0.5	54	2.9	<2	<4	0.3	<4	6.5	210
208938	20-38.465	-97.389	-3-03-	1.1	720	<0.5	57	2.1	<2	<4	0.2	<4	6.0	78
208942	20-38.488	-97.425	-3-03-	3.4	880	<0.5	92	3.1	<2	8	0.2	<4	6.9	260
208946	20-38.608	-97.653	-3-03-	11.	820	0.9	19	6.1	<2	18	1.2	5	6.8	400
208948	20-38.602	-97.715	-3-03-	76.	580	0.7	670	16.	49	72	13.	<4	7.0	530
208949	20-38.590	-97.721	-3-03-	9.0	410	1.0	310	6.3	4	26	1.1	<4	6.9	290
208950	20-38.566	-97.680	-3-03-	4.4	960	0.9	510	7.7	100	14	0.4	<4	7.1	240
208952	20-38.536	-97.658	-3-03-	1.5	360	0.8	1200	4.7	16	<4	0.5	<4	6.9	230
208957	20-38.623	-97.406	-3-03-	3.8	2900	<0.5	69	2.3	4	<4	0.3	<4	6.5	310
208961	20-38.582	-97.463	-3-03-	6.1	3200	<0.5	270	4.5	3	<4	0.3	<4	6.9	340
208962	20-38.552	-97.482	-3-03-	1.7	2800	<0.5	180	2.5	83	<4	0.3	<4	7.1	160
208970	20-38.524	-97.495	-3-03-	0.41	410	<0.5	16	0.9	<2	4	0.2	<4	6.7	130
208971	20-38.521	-97.461	-3-03-	4.5	1100	0.5	<10	4.7	5	<4	0.5	<4	7.1	430
208972	20-38.509	-97.386	-3-03-	9.1	5100	0.7	440	6.9	120	110	0.3	<4	6.8	260
208973	20-38.552	-97.385	-3-03-	7.9	740	<0.5	<10	1.1	<2	<4	0.2	<4	7.0	270
208975	20-38.567	-97.332	-3-03-	2.1	410	0.7	<10	0.7	<2	<4	0.3	4	7.2	190
208976	20-38.582	-97.274	-3-03-	<0.20	560	<0.5	<10	1.8	5	<4	0.2	<4	6.8	110
208985	20-38.515	-97.317	-3-03-	0.25	1300	<0.5	13	1.8	<2	<4	0.3	<4	7.1	310
208988	20-38.521	-97.278	-3-03-	5.3	1200	<0.5	88	0.4	<2	4	0.3	<4	6.9	380
208992	20-38.697	-97.323	-3-03-	2.5	4100	<0.5	160	8.7	6	<4	0.4	<4	6.9	320
208994	20-38.305	-97.790	-3-03-	5.6	4800	27.	150	5.6	11	<4	0.3	<4	7.3	80
208996	20-38.330	-97.778	-3-03-	6.7	1100	4.7	120	2.2	<2	<4	1.0	<4	7.3	250
208999	20-38.392	-97.789	-3-03-	6.1	820	5.4	88	2.4	<2	<4	0.8	11	7.4	280
209000	20-38.421	-97.782	-3-03-	2.6	1100	0.5	85	2.6	14	<4	0.3	4	7.6	240
209001	20-38.483	-97.775	-3-03-	1.4	3200	0.5	110	5.1	8	9	0.3	<4	7.4	180
209002	20-38.459	-97.831	-3-03-	4.2	1400	0.7	170	1.9	<2	<4	0.3	<4	7.4	420
209007	20-38.419	-97.841	-3-03-	7.6	2000	9.5	280	1.6	<2	<4	0.5	<4	7.6	320
209012	20-38.346	-97.850	-3-03-	13.	4600	0.5	380	5.1	39	8	0.3	<4	7.0	240
209013	20-38.304	-97.852	-3-03-	110.	4400	1.2	360	4.3	6	51	0.4	<4	7.4	160
209014	20-38.289	-97.899	-3-03-	1.3	1200	0.6	150	1.8	<2	<4	1.7	<4	7.0	330
209015	20-38.289	-97.944	-3-03-	9.0	2900	<0.5	210	5.5	<2	<4	0.3	<4	7.2	340
209016	20-38.335	-97.968	-3-03-	6.4	1400	1.6	150	1.5	<2	<4	0.4	8	7.2	340
209017	20-38.333	-97.893	-3-03-	3.5	910	<0.5	73	1.9	<2	<4	0.3	5	7.3	300
209018	20-38.419	-97.907	-3-03-	2.7	2200	<0.5	270	3.8	<2	<4	0.4	<4	7.2	240
209019	20-38.471	-97.907	-3-03-	<0.20	2200	<0.5	180	7.6	36	6	0.3	<4	7.3	340
209028	20-38.902	-97.855	-3-03-	3.3	730	<0.5	48	2.9	5	<4	0.4	<4	6.9	240
209029	20-38.916	-97.781	-3-03-	0.83	550	<0.5	28	3.4	740	4	0.3	<4	5.7	80
209030	20-38.795	-97.819	-3-03-	17.	2400	<0.5	240	63.	3	<4	0.4	<4	6.8	400
209031	20-38.857	-97.918	-3-03-	0.33	320	<0.5	12	1.5	5	<4	0.7	<4	7.0	130
209033	20-38.855	-97.944	-3-03-	4.9	1300	<0.5	150	19.	<2	<4	0.4	<4	7.2	200
209036	20-38.017	-97.317	-3-03-	5.6	840	2.6	47	1.3	<2	<4	0.5	9	7.0	430

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER																
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	TY L	REP	U (PPB)	SP UMHOS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
209037	20-38.029	-	97.269	-3-03-		4.2	1400	2.4	96	2.4	<2	<4	1.3	12	7.1	400
209038	20-38.073	-	97.262	-3-03-		11.	2000	1.3	130	1.5	2	<4	0.4	7	6.5	390
209039	20-38.121	-	97.265	-3-03-		12.	1700	<0.5	140	0.9	45	<4	0.7	<4	7.1	330
209040	20-38.147	-	97.264	-3-03-		0.33	2800	0.6	36	2.9	17	<4	0.3	<4	7.2	140
209041	20-38.208	-	97.263	-3-03-		2.4	1300	1.6	56	4.3	2	14	0.4	<4	7.6	200
209042	20-38.242	-	97.261	-3-03-		6.6	930	0.8	14	1.3	<2	4	0.7	<4	7.0	460
209043	20-38.231	-	97.316	-3-03-		2.8	930	1.6	68	2.7	<2	<4	0.4	<4	7.0	320
209045	20-38.204	-	97.317	-3-03-		15.	720	0.7	20	0.1	<2	<4	0.3	<4	7.2	240
209046	20-38.145	-	97.320	-3-03-		<0.20	2800	1.5	68	2.8	13	<4	0.3	<4	7.2	190
209049	20-38.071	-	97.334	-3-03-		<0.20	2900	<0.5	33	2.0	38	<4	0.4	<4	7.1	270
209051	20-38.110	-	97.389	-3-03-		2.8	820	1.1	38	1.5	<2	<4	0.5	5	7.0	310
209052	20-38.058	-	97.391	-3-03-		9.4	940	1.3	38	1.9	<2	4	0.4	14	7.0	320
209053	20-38.017	-	97.498	-3-03-		1.6	780	0.6	130	1.4	7	<4	0.3	5	7.0	220
209054	20-38.015	-	97.451	-3-03-		0.62	410	<0.5	10	1.4	22	<4	0.2	5	6.7	220
209055	20-38.004	-	97.389	-3-03-		2.8	610	1.4	22	2.8	<2	<4	0.3	5	6.8	260
209057	20-38.059	-	97.496	-3-03-		16.	1100	1.4	84	1.4	<2	6	0.3	10	6.8	280
209060	20-38.073	-	97.440	-3-03-		5.3	830	0.8	33	0.4	<2	<4	0.3	11	7.0	340
209064	20-38.115	-	97.468	-3-03-		3.6	640	1.5	34	1.3	3	<4	0.5	8	7.0	240
209065	20-38.117	-	97.435	-3-03-		6.2	1500	1.7	130	0.6	<2	<4	0.3	10	6.7	370
209067	20-38.110	-	97.318	-3-03-		<0.20	2100	<0.5	24	1.8	5	<4	0.3	<4	6.9	220
209072	20-38.200	-	96.730	-3-03-		1.7	540	<0.5	<10	0.8	<2	11	0.3	<4	7.1	310
209073	20-38.112	-	96.731	-3-03-		1.4	510	0.9	<10	0.3	<2	<4	0.3	4	7.0	310
209074	20-38.014	-	96.720	-3-03-		3.5	890	<0.5	73	2.2	<2	7	0.3	<4	7.1	340
209076	20-38.026	-	96.675	-3-03-		1.8	650	<0.5	35	1.8	<2	4	0.3	<4	7.0	340
209081	20-38.071	-	96.655	-3-03-		3.9	580	<0.5	38	0.5	<2	<4	0.3	5	7.1	350
209082	20-38.146	-	96.695	-3-03-		2.8	1300	<0.5	93	0.7	<2	7	0.3	<4	7.1	390
209083	20-38.170	-	96.729	-3-03-		4.2	560	<0.5	<10	0.6	2	<4	0.2	5	7.0	310
209085	20-38.234	-	96.565	-3-03-		1.4	620	<0.5	27	0.6	<2	<4	0.4	5	7.0	350
209088	20-38.188	-	96.567	-3-03-		8.3	860	<0.5	45	1.6	<2	<4	1.0	<4	6.9	360
209092	20-38.332	-	96.512	-3-03-		3.5	870	<0.5	18	0.7	<2	<4	<0.2	<4	7.0	340
209093	20-38.305	-	96.510	-3-03-		2.7	1200	0.6	<10	0.9	<2	<4	0.4	<4	6.8	300
209095	20-38.220	-	96.506	-3-03-		2.9	1600	<0.5	130	2.9	2	<4	0.2	<4	7.5	300
209099	20-38.842	-	97.542	-3-03-		1.3	1900	<0.5	96	3.2	<2	<4	0.2	<4	6.8	410
209100	20-38.744	-	97.667	-3-03-		1.6	870	<0.5	90	2.3	<2	<4	0.2	<4	7.0	300
209105	20-38.971	-	97.947	-3-03-		1.0	530	<0.5	24	3.1	<2	<4	<0.2	<4	6.5	220
209107	20-38.880	-	97.965	-3-03-		0.24	270	<0.5	15	2.1	2	<4	0.6	<4	7.1	120
209108	20-38.922	-	97.967	-3-03-		0.46	1300	<0.5	68	5.3	<2	7	0.4	<4	7.2	300
209110	20-38.986	-	97.908	-3-03-		9.7	1000	0.6	90	3.2	20	<4	0.3	<4	6.9	320
209112	20-38.464	-	97.665	-3-03-		4.1	670	5.3	21	1.9	<2	9	0.3	21	6.3	330
209113	20-38.480	-	97.705	-3-03-		3.8	710	4.3	71	2.9	<2	<4	0.6	12	6.6	270
209114	20-38.434	-	97.718	-3-03-		3.3	540	3.9	30	3.2	<2	<4	0.4	14	6.9	260
209115	20-38.430	-	97.647	-3-03-		9.0	880	6.2	30	4.6	<2	<4	0.5	28	6.5	340
209116	20-38.390	-	97.716	-3-03-		2.5	560	1.6	26	2.8	<2	<4	0.5	9	6.9	230
209172	20-38.797	-	97.444	-3-03-		3.3	1900	<0.5	99	1.9	2	<4	<0.2	<4	7.1	340
209173	20-38.887	-	97.483	-3-03-		11.	1400	<0.5	130	6.9	<2	5	<0.2	4	7.1	530
209174	20-38.924	-	97.483	-3-03-		1.8	3000	0.6	520	6.1	3	5	0.5	<4	7.1	600
209175	20-38.015	-	97.665	-3-03-		0.29	1900	<0.5	430	6.8	2	<4	0.3	7	6.0	150
209176	20-38.058	-	97.658	-3-03-		<0.20	160	<0.5	<10	1.5	<2	<4	<0.2	8	6.2	60
209177	20-38.116	-	97.664	-3-03-		<0.20	640	0.6	61	1.7	0.90	<4	0.3	<4	6.8	280
209178	20-38.107	-	97.610	-3-03-		<0.20	570	1.9	<10	2.0	<2	4	0.3	<4	7.0	360
209181	20-38.116	-	97.529	-3-03-		1.8	750	2.3	50	1.2	<2	<4	0.4	9	6.8	290
209182	20-38.073	-	97.530	-3-03-		1.1	610	1.6	30	1.1	<2	<4	0.3	9	7.0	290
209183	20-38.030	-	97.547	-3-03-		<0.20	380	<0.5	12	2.1	3	7	0.2	<4	6.4	130
209184	20-38.020	-	97.629	-3-03-		<0.20	530	<0.5	84	6.1	3	<4	<0.2	<4	6.7	110
209186	20-38.166	-	97.666	-3-03-		4.4	1300	0.7	130	3.9	<2	7	0.4	24	6.5	360

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER															
OR SAMPLE NUMBER	D. O. ST	E. LAT	SAMPLE LONG	NUMBER L TY REP	U (PPB)	SP UMHQS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
209187	20-38.192	-	97.665	-3-03-	0.85	560	10.	22	2.7	<2	13	<0.2	4	7.0	300
209188	20-38.241	-	97.666	-3-03-	3.5	580	0.9	38	2.1	<2	<4	<0.2	10	7.0	300
209189	20-38.243	-	97.707	-3-03-	1.5	810	4.2	87	3.1	<2	6	<0.2	<4	7.1	290
209191	20-38.198	-	97.717	-3-03-	<0.20	560	<0.5	11	3.8	60	4	<0.2	<4	7.0	340
209193	20-38.160	-	97.741	-3-03-	7.8	2500	0.9	320	4.7	<2	4	<0.2	8	6.9	370
209195	20-38.146	-	97.615	-3-03-	1.2	610	1.4	40	1.7	<2	4	<0.2	12	7.2	290
209196	20-38.148	-	97.556	-3-03-	1.7	530	2.2	31	1.8	<2	<4	<0.2	11	7.0	220
209197	20-38.187	-	97.555	-3-03-	3.8	1400	0.6	150	3.7	5	<4	<0.2	<4	6.7	160
209199	20-38.232	-	97.549	-3-03-	55.	3400	3.1	390	4.0	3	<4	0.3	10	6.8	480
209200	20-38.248	-	97.595	-3-03-	3.4	1200	0.9	150	2.2	<2	<4	<0.2	12	7.0	280
209201	20-38.217	-	97.603	-3-03-	1.3	760	0.8	65	1.4	2	<4	<0.2	5	7.1	320
209212	20-38.027	-	97.723	-3-03-	1.1	1200	<0.5	190	3.1	8	<4	<0.2	<4	5.9	180
209214	20-38.144	-	97.476	-3-03-	4.7	620	1.7	25	1.0	<2	<4	0.2	9	6.8	340
209216	20-38.146	-	97.391	-3-03-	2.6	680	0.5	25	1.4	<2	<4	<0.2	16	7.1	330
209217	20-38.173	-	97.432	-3-03-	4.9	750	1.7	31	1.2	<2	<4	<0.2	22	7.1	320
209218	20-38.205	-	97.389	-3-03-	0.60	530	10.	<10	1.4	15	<4	<0.2	<4	7.2	310
209219	20-38.235	-	97.391	-3-03-	1.1	610	<0.5	16	1.4	<2	<4	<0.2	<4	7.2	300
209220	20-38.204	-	97.439	-3-03-	14.	930	1.2	18	0.3	<2	<4	<0.2	14	7.0	510
209221	20-38.086	-	97.721	-3-03-	5.1	1200	1.6	90	1.1	<2	<4	<0.2	6	7.0	380
209226	20-38.235	-	97.428	-3-03-	3.8	610	1.8	25	0.6	<2	4	<0.2	11	6.5	310
209227	20-38.232	-	97.473	-3-03-	9.1	970	6.7	47	2.0	<2	4	<0.2	17	7.4	420
209228	20-38.202	-	97.478	-3-03-	5.4	980	3.6	77	0.9	<2	9	0.6	7	7.5	370
209231	20-38.161	-	97.191	-3-03-	3.0	3000	<0.5	25	4.2	12	<4	<0.2	<4	7.5	350
209234	20-38.151	-	97.169	-3-03-	0.49	2600	<0.5	33	2.6	4	<4	<0.2	<4	7.4	290
209241	20-38.203	-	97.212	-3-03-	4.3	3400	<0.5	81	5.3	7	<4	1.4	<4	7.5	320
209242	20-38.237	-	97.208	-3-03-	0.47	430	2.2	10	1.6	<2	<4	0.2	5	7.9	190
209243	20-38.467	-	97.479	-3-03-	1.7	600	<0.5	14	2.6	<2	<4	0.4	<4	6.9	300
209244	20-38.437	-	97.480	-3-03-	2.9	600	2.7	32	2.9	<2	<4	0.2	10	6.9	300
209245	20-38.404	-	97.481	-3-03-	6.4	140	5.7	140	9.0	<2	<4	0.4	51	6.7	260
209246	20-38.356	-	97.336	-3-03-	0.53	510	2.2	240	4.6	20	<4	0.5	<4	7.0	86
209254	20-38.325	-	97.261	-3-03-	2.9	950	0.6	<10	2.7	<2	<4	1.7	<4	6.9	430
209257	20-38.302	-	97.259	-3-03-	6.6	320	<0.5	42	2.5	5	4	0.5	<4	6.8	350
209258	20-38.288	-	97.300	-3-03-	0.49	230	<0.5	10	1.8	5	<4	0.5	<4	6.7	460
209261	20-38.340	-	97.425	-3-03-	1.6	450	2.3	<10	2.6	<2	6	0.4	<4	6.6	240
209263	20-38.333	-	97.397	-3-03-	0.48	920	0.6	87	2.1	<2	4	0.4	12	6.1	150
209264	20-38.335	-	97.496	-3-03-	8.5	190	1.7	370	1.4	<2	5	0.4	5	6.6	280
209265	20-38.300	-	97.426	-3-03-	0.60	480	2.6	21	1.3	<2	5	0.5	10	6.8	210
209266	20-38.285	-	97.389	-3-03-	0.28	540	1.1	47	5.2	7	<4	0.5	5	5.9	92
209270	20-38.287	-	97.482	-3-03-	9.8	560	5.2	<10	1.0	<2	<4	0.6	20	7.1	350
209272	20-38.347	-	97.705	-3-03-	2.9	1300	1.3	100	2.9	<2	<4	0.7	6	6.5	220
209273	20-38.348	-	97.687	-3-03-	2.0	480	2.8	18	1.6	<2	10	0.5	11	6.8	260
209279	20-38.289	-	97.720	-3-03-	2.8	700	1.3	77	2.5	<2	<4	0.7	7	7.0	270
209280	20-38.291	-	97.663	-3-03-	1.7	630	5.8	35	1.6	<2	7	0.5	25	6.9	300
209281	20-38.290	-	97.608	-3-03-	0.51	790	3.1	130	2.1	<2	<4	0.4	17	6.6	190
209282	20-38.287	-	97.572	-3-03-	14.	150	2.0	190	1.5	<2	<4	0.7	14	6.8	310
209283	20-38.333	-	97.570	-3-03-	5.8	890	2.5	75	2.3	<2	<4	0.9	15	6.9	300
209284	20-38.333	-	97.595	-3-03-	1.7	940	0.9	130	2.3	<2	<4	0.5	7	7.0	270
209286	20-38.362	-	96.963	-3-03-	0.88	630	0.5	14	1.2	5	<4	<0.2	<4	6.7	360
209287	20-38.362	-	96.910	-3-03-	0.51	1000	<0.5	91	0.7	<2	<4	0.4	<4	6.7	350
209289	20-38.291	-	96.970	-3-03-	1.6	510	0.5	<10	0.3	<2	<4	0.2	<4	6.9	290
209293	20-38.313	-	96.917	-3-03-	1.3	620	0.5	<10	1.1	<2	5	0.8	<4	7.2	370
209301	20-38.277	-	96.787	-3-03-	6.4	580	<0.5	<10	1.1	<2	<4	0.7	<4	6.1	350
209302	20-38.310	-	96.844	-3-03-	3.8	1300	<0.5	98	1.1	<2	4	0.7	<4	6.5	240
209303	20-38.333	-	96.834	-3-03-	1.7	180	<0.5	36	3.1	2	<4	0.2	<4	6.6	300
209304	20-38.355	-	96.800	-3-03-	2.8	1300	<0.5	24	1.9	<2	<4	0.2	<4	7.0	300

Table A-3, Continued

PARTIAL DATA LISTING FOR GROUNDWATER OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - GROUNDWATER																
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LUNG	TY L	REP	U (PPB)	SP UMHOS/CM	AS (PPB)	CL (PPM)	K (PPM)	MN (PPB)	MO (PPB)	SE (PPB)	V (PPB)	PH	T-AK (PPM)
209305	20-38.398	-96.802	-3-03-			3.2	280	<0.5	12	2.4	4	10	<0.2	<4	7.0	230
209307	20-38.413	-96.793	-3-03-			2.7	760	<0.5	26	1.0	<2	4	0.4	4	7.1	450
209311	20-38.392	-96.967	-3-03-			2.0	730	<0.5	<10	2.5	<2	<4	0.4	<4	6.8	390
209314	20-38.435	-96.977	-3-03-			2.5	190	<0.5	380	3.4	2	<4	0.2	<4	6.5	350
209315	20-38.233	-97.154	-3-03-			1.3	1200	<0.5	36	3.2	2	<4	<0.2	<4	7.6	380
209316	20-38.207	-97.164	-3-03-			3.8	860	0.7	28	1.4	<2	4	0.2	<4	7.7	380
209319	20-38.232	-97.012	-3-03-			2.0	710	<0.5	<10	1.2	<2	<4	0.2	6	6.3	370
209320	20-38.202	-97.020	-3-03-			1.6	2000	<0.5	380	2.6	<2	<4	0.4	<4	6.9	370
209322	20-38.157	-97.098	-3-03-			2.4	1900	<0.5	50	2.3	3	8	0.4	<4	6.9	340
209323	20-38.116	-97.097	-3-03-			5.1	800	0.5	60	0.9	4	10	0.4	<4	7.1	350
209324	20-38.084	-97.099	-3-03-			4.8	1100	0.6	<10	0.8	4	<4	0.6	<4	7.1	320
209325	20-38.033	-97.098	-3-03-			4.1	870	0.6	27	0.4	<2	<4	0.3	<4	7.1	390
209326	20-38.042	-97.011	-3-03-			0.32	3100	<0.5	110	1.6	14	5	0.2	<4	6.8	330
209327	20-38.072	-97.005	-3-03-			1.1	4100	<0.5	960	1.8	100	<4	0.3	<4	6.9	370
209328	20-38.111	-97.005	-3-03-			3.0	1300	<0.5	84	1.9	2	25	0.4	<4	7.2	370
209341	20-38.248	-97.109	-3-03-			2.3	910	<0.5	35	0.9	<2	4	0.4	<4	5.8	360
209342	20-38.190	-97.097	-3-03-			1.3	2500	<0.5	37	2.3	34	10	0.5	<4	6.7	330
209345	20-38.085	-96.867	-3-03-			1.5	790	0.5	60	0.4	3	<4	0.3	7	7.5	360
209346	20-38.044	-97.130	-3-03-			2.1	3100	<0.5	130	2.3	8	5	0.3	<4	7.1	250
209347	20-38.015	-97.151	-3-03-			3.4	1400	0.5	130	1.6	<2	<4	<0.2	<4	7.1	400
209349	20-38.013	-97.191	-3-03-			1.6	1000	1.3	19	1.7	14	5	0.7	<4	7.2	370
209352	20-38.065	-97.186	-3-03-			8.5	4600	<0.5	40	2.9	8	<4	0.4	<4	7.2	330
209353	20-38.117	-97.216	-3-03-			6.2	3600	<0.5	110	4.6	4	<4	0.4	<4	7.1	460
209355	20-38.117	-97.158	-3-03-			0.24	7700	<0.5	1100	48.	28	<4	0.3	<4	7.2	180
209356	20-38.014	-96.868	-3-03-			1.6	640	<0.5	21	0.4	43	<4	0.4	<4	7.5	400
209358	20-38.023	-96.775	-3-03-			0.33	1000	2.6	83	1.1	<2	13	0.5	<4	7.6	320
209361	20-38.145	-97.022	-3-03-			4.5	2800	<0.5	200	1.9	4	10	0.6	<4	6.6	350
209364	20-38.042	-96.978	-3-03-			3.3	900	0.7	22	0.6	<2	<4	0.6	4	6.5	460
209367	20-38.074	-96.946	-3-03-			1.3	730	0.7	13	0.5	<2	4	0.5	<4	7.2	330
209369	20-38.099	-96.968	-3-03-			2.5	1400	1.2	120	0.7	2	<4	0.2	<4	7.0	430
209370	20-38.071	-96.784	-3-03-			0.85	800	0.8	31	0.7	<2	<4	0.3	8	7.2	380
209372	20-38.108	-96.840	-3-03-			2.0	600	0.6	<10	0.4	<2	<4	0.5	7	7.2	380
209374	20-38.188	-96.155	-3-03-			<0.20	700	<0.5	75	0.4	67	<4	0.2	<4	5.7	70
209375	20-38.157	-96.148	-3-03-			1.4	720	<0.5	28	2.1	<2	5	0.2	<4	6.8	400
209378	20-38.152	-96.126	-3-03-			1.8	610	<0.5	11	0.5	<2	4	0.2	<4	6.7	270
209379	20-38.171	-96.030	-3-03-			3.6	1300	<0.5	54	7.6	7	<4	0.2	<4	7.0	420
209385	20-38.187	-96.030	-3-03-			2.5	630	<0.5	<10	0.8	<2	<4	0.4	<4	7.5	300
209387	20-38.228	-96.036	-3-03-			1.4	740	<0.5	10	1.0	<2	<4	0.2	<4	7.5	520
209388	20-38.230	-96.093	-3-03-			0.55	490	<0.5	32	0.7	<2	<4	0.5	<4	7.9	110
209389	20-38.079	-96.105	-3-03-			2.7	720	<0.5	26	0.5	<2	<4	0.4	<4	6.2	350
209392	20-38.011	-96.021	-3-03-			1.7	630	<0.5	<10	0.6	<2	<4	0.3	<4	7.6	320
209394	20-38.071	-96.055	-3-03-			1.5	580	<0.5	<10	0.7	<2	<4	0.2	<4	7.5	370

APPENDIX B
STREAM SEDIMENT

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APPENDIX B

STREAM SEDIMENT

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Table B-1

STATISTICAL SUMMARY FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

NO. SAMPLES ANALYZED		COEFFICIENT										LN TRANSFORMATION				
BELOW		MEASURABLE DETECTION		DETECTION	MINIMUM	MAXIMUM	MEAN	MEDIAN	MODE	STANDARD	OF	VARIATION	MEAN	S. D.	ROBUST	
ELEMENT	VALUES	LIMIT	LIMIT	VALUE	VALUE	DEVIATION									MEAN	S. D.
U-FL	608			1.19	3.90	2.47	2.42	2.32	0.407	0.165	0.89	0.17	0.89	0.17		
U-NT	607			2.10	8.30	3.30	3.30	3.21	0.422	0.128	1.19	0.11	1.18	0.05		
TH	606	2	<2	<2	13	6	7	7	1.8	0.3	1.89	0.30	1.90	0.27		
U/TU	607			0.38	1.09	0.75	0.74	0.74	0.123	0.163	-0.30	0.16	-0.30	0.17		
TH/U	607			0.33	3.94	2.09	2.12	2.43	0.567	0.271	0.69	0.31	0.71	0.28		
AG	0	608	<2	<2	<2		<2	<2								
AL	608			2.04	6.29	3.94	3.93	4.04	0.486	0.124	1.36	0.13	1.37	0.12		
AS	608			1.1	11.8	3.2	3.0	2.8	1.30	0.40	1.11	0.36	1.10	0.36		
B	426	182	<10	<10	49	15	12	15	5.2	0.3	2.69	0.30	2.48	0.44		
BA	608			260	878	489	490	502	74.8	0.2	6.18	0.15	6.18	0.14		
BE	608			1	3	1	2	2	0.5	0.2	0.56	0.30				
CA	608			0.20	12.65	1.69	1.06	0.37	1.682	0.994	0.13	0.87	0.11	0.63		
CE	608			36	163	74	73	76	12.5	0.2	4.29	0.16	4.29	0.15		
CO	608			5	42	12	11	10	4.1	0.3	2.45	0.29	2.44	0.31		
CR	608			15	572	34	34	34	22.8	0.7	3.51	0.23	3.51	0.15		
CU	608			6	305	16	14	14	18.7	1.1	2.71	0.35	2.68	0.23		
FE	608			1.09	4.05	1.89	1.83	1.91	0.403	0.213	0.62	0.20	0.61	0.21		
K	608			0.70	2.14	1.40	1.41	1.48	0.209	0.149	0.33	0.15	0.33	0.15		
LI	608			11	83	26	26	23	7.0	0.3	3.25	0.25	3.24	0.24		
MG	608			0.20	2.68	0.60	0.52	0.50	0.286	0.477	-0.60	0.39	-0.61	0.37		
MN	608			206	4517	635	518	336	420.8	0.7	6.32	0.48	6.29	0.47		
MO	62	546	<4	<4	8	4	<4	<4	1.1	0.2	1.55	0.21				
NA	608			0.26	0.91	0.56	0.56	0.56	0.113	0.202	-0.60	0.21	-0.60	0.20		
NB	608			6	44	14	14	13	3.3	0.2	2.65	0.19	2.64	0.17		
NI	608			7	336	16	16	16	13.6	0.8	2.74	0.29	2.74	0.27		
P	608			171	1931	350	331	321	115.7	0.3	5.82	0.25	5.81	0.24		
SC	608			3	13	5	6	6	1.1	0.2	1.75	0.18	1.75	0.17		
SE	603	5	<0.1	<0.1	3.7	0.6	0.6	0.6	0.33	0.52	-0.54	0.43	-0.54	0.39		
SR	608			72	623	161	140	105	67.6	0.4	5.01	0.35	4.99	0.35		
TI	608			1309	6683	2194	2194	2268	290.7	0.1	7.69	0.13	7.69	0.09		
V	608			29	107	56	56	53	9.3	0.2	4.02	0.16	4.02	0.16		
Y	608			8	21	14	14	14	1.7	0.1	2.65	0.12	2.65	0.11		
ZN	608			22	162	45	44	44	12.1	0.3	3.79	0.22	3.78	0.21		
ZR	608			47	150	80	80	79	9.1	0.1	4.38	0.11	4.38	0.11		

NOTE: Refer to Table 1, Page 23 and Table C-1, Page C-4 for concentration units and symbol definitions.

•

- NOTE: (1) Pearson correlation/Spearman correlation/(sample size).
If either element has a concentration below the laboratory detection limits, it is omitted from the pairwise computations.
- (2) Significance levels: *-10%, **-5%, ***-1%.

L-SH											
1.00											
(600)											
L-SE											
0.21***											
(600)											
L-K											
0.03	0.16***										
(608)	(603)										
L-NA											
-0.30***	-0.10**										
(608)	(603)										
L-HA											
-0.16***	0.03										
(600)	(603)										
L-TI											
-0.19***	-0.07*	0.19***	0.15***	0.43***							
(608)	(603)	(608)	(608)	(608)							
L-ZR											
-0.23***	-0.10**	0.22***	0.19***	0.38***	1.00						
(608)	(603)	(608)	(608)	(608)	(608)						
LUNT											
-0.27***	-0.01*	0.31***	0.38***	0.20***	0.72***						
(608)	(603)	(608)	(608)	(608)	(608)						
L-CE											
-0.25***	-0.36	0.28***	0.33***	0.20***	0.77***	1.00					
(608)	(603)	(608)	(608)	(608)	(608)	(608)					
L-MN											
-0.25***	-0.04	0.05	0.16***	0.33***	0.56***	0.48***					
(607)	(602)	(607)	(607)	(607)	(607)	(607)					
L-TN											
-0.15***	-0.11***	-0.06	0.03	0.26***	0.47***	0.50***	0.37***				
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)				
L-TN											
-0.10***	-0.11***	-0.12***	-0.02	0.26***	0.44***	0.43***	0.30***	1.00			
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)			
L-TN											
0.05	0.05	-0.25***	-0.26***	0.03	0.05	0.03	-0.02	0.44***			
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)			
L-TN											
0.06	0.02	-0.28***	-0.29***	-0.03	0.01	0.03	-0.07	0.42***	1.00		
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)		
L-TN											
-0.12***	0.02	0.15***	0.11***	0.07*	0.22***	0.34***	0.17***	0.21***	-0.31***		
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)		
L-TN											
-0.11***	0.03	0.18***	0.10***	0.11***	0.29***	0.35***	0.18***	0.26***	-0.24***	1.00	
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)	(608)	
L-TN											
-0.02	0.03	0.13***	0.05	-0.06	0.04	0.20***	-0.17***	0.09***	-0.34***	0.93***	
(607)	(605)	(607)	(607)	(607)	(607)	(607)	(607)	(607)	(607)	(607)	
L-TN											
-0.31	0.02	0.16***	0.04	-0.01	0.11***	0.20***	-0.15***	0.13***	-0.24***	0.92***	1.00
(608)	(605)	(607)	(607)	(607)	(607)	(607)	(607)	(607)	(607)	(607)	(607)
L-Y											
-0.21***	-0.04	0.28***	0.27***	0.33***	0.49***	0.76***	0.31***	0.64***	0.16***	0.35***	0.25***
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)	(608)	(608)
L-NB											
-0.22***	-0.06	0.21***	0.22***	0.33***	0.61***	0.75***	0.28***	0.63***	0.18***	0.36***	0.25***
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)	(608)	(608)
L-NB											
0.05	-0.11***	-0.07*	0.02	0.17***	0.37***	0.25***	0.31***	0.20***	-0.02	0.16***	0.06
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)	(608)	(608)
L-NB											
0.36	-0.16***	-0.13***	-0.01	0.21***	0.37***	0.24***	0.27***	0.23***	-0.03	0.17***	0.07*
(608)	(603)	(608)	(608)	(608)	(608)	(608)	(607)	(608)	(608)	(608)	(608)

Figure B-1a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SOLUBLE URANIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-1b

GEOCHEMICAL DISTRIBUTION OF SOLUBLE URANIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-2a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR URANIUM BY NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-2b

GEOCHEMICAL DISTRIBUTION OF URANIUM BY NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-3a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR URANIUM FLUOROMETRIC/
URANIUM NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-3b

GEOCHEMICAL DISTRIBUTION OF URANIUM FLUOROMETRIC/URANIUM NEUTRON ACTIVATION
 IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-4a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR THORIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

B-17

Figure B-4b

GEOCHEMICAL DISTRIBUTION OF THORIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-5a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR THORIUM/URANIUM NEUTRON ACTIVATION
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

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Figure B-5b

GEOCHEMICAL DISTRIBUTION OF THORIUM/URANIUM NEUTRON ACTIVATION IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-6a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR ARSENIC (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-6b

GEOCHEMICAL DISTRIBUTION OF ARSENIC (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-7a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR CERIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-7b

GEOCHEMICAL DISTRIBUTION OF CERIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-8a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR COPPER (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-8b

GEOCHEMICAL DISTRIBUTION OF COPPER (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-9a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR MANGANESE (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-9b

GEOCHEMICAL DISTRIBUTION OF MANGANESE (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-10a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR NIOBIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-10b

GEOCHEMICAL DISTRIBUTION OF NIOBIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-11a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR PHOSPHORUS (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-11b

GEOCHEMICAL DISTRIBUTION OF PHOSPHORUS (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-12a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR SELENIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-12b

GEOCHEMICAL DISTRIBUTION OF SELENIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-13a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR TITANIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-13b

GEOCHEMICAL DISTRIBUTION OF TITANIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-14a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR VANADIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-14b

GEOCHEMICAL DISTRIBUTION OF VANADIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-15a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR YTTRIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-16a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR ZINC (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-16a

GEOCHEMICAL DISTRIBUTION OF ZINC (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-17a

PROBABILITY, FREQUENCY, AND PERCENTILE PLOTS FOR ZIRCONIUM (PPM)
IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Figure B-17a

GEOCHEMICAL DISTRIBUTION OF ZIRCONIUM (PPM) IN STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

Table B-3

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE SEDIMENT														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)
203430	20-38.187	- 97.763	-3-15-	2.5	3.4	6	13	22	250	0.5	2500	49	15	99
203431	20-38.178	- 97.776	-3-12-	2.2	3.4	7	12	27	360	0.9	2600	51	16	100
203433	20-38.233	- 97.863	-3-12-	1.9	3.0	10	12	18	300	0.7	2100	49	15	81
203439	20-38.247	- 97.883	-3-12-	2.4	3.4	5	12	15	320	0.6	2200	41	13	92
203441	20-38.203	- 97.890	-3-15-	1.6	3.0	5	9	29	260	0.7	2300	36	12	75
203617	20-38.408	- 96.321	-3-15-	1.9	3.4	7	14	17	360	0.8	2300	57	16	84
203621	20-38.498	- 96.315	-3-12-	3.4	3.2	8	14	18	360	0.9	2200	55	14	80
203622	20-38.493	- 96.271	-3-15-	2.5	3.3	10	13	14	320	0.6	2600	58	16	94
203623	20-38.408	- 96.294	-3-15-	2.4	3.6	7	14	14	250	0.4	2400	57	16	88
203624	20-38.409	- 96.392	-3-12-	2.5	4.1	10	19	17	360	0.4	2800	85	19	95
203625	20-38.437	- 96.387	-3-12-	2.9	4.1	7	16	15	340	0.8	2400	64	16	85
203626	20-38.464	- 96.407	-3-15-	2.3	3.4	6	14	16	360	0.8	2200	53	14	81
203629	20-38.460	- 96.417	-3-15-	1.8	2.8	6	12	14	390	0.6	1900	47	13	66
203631	20-38.436	- 96.476	-3-15-	2.7	3.9	9	16	16	230	0.8	2600	71	17	96
203632	20-38.436	- 96.482	-3-15-	2.4	3.3	13	14	15	290	0.6	2400	56	15	84
203633	20-38.377	- 96.483	-3-12-	2.2	3.0	8	14	13	320	0.7	2400	62	15	83
203635	20-38.380	- 96.448	-3-15-	2.9	3.4	8	17	15	450	0.8	2500	62	16	85
203637	20-38.397	- 96.421	-3-15-	2.0	3.4	10	15	15	290	0.2	2400	62	16	86
203639	20-38.365	- 96.431	-3-12-	2.3	3.3	9	18	17	400	1.0	2600	71	16	89
203640	20-38.342	- 96.494	-3-15-	2.5	3.3	8	16	14	400	0.6	2600	59	16	93
203641	20-38.280	- 96.488	-3-15-	2.7	3.3	7	15	15	370	1.2	2200	57	14	78
203642	20-38.351	- 96.356	-3-12-	3.3	3.4	9	15	16	420	1.1	2300	56	17	84
203696	20-38.437	- 96.977	-3-15-	2.6	3.1	6	15	14	350	0.8	2300	58	14	82
203697	20-38.448	- 96.946	-3-12-	2.7	3.0	4	16	12	320	0.6	2200	62	15	80
203699	20-38.480	- 96.966	-3-15-	2.6	3.0	8	28	13	270	0.6	2200	57	14	81
203706	20-38.418	- 96.838	-3-12-	2.5	3.3	6	18	13	320	0.4	2300	54	16	85
203707	20-38.422	- 96.819	-3-15-	3.0	3.4	10	16	14	330	0.5	2400	62	17	93
203708	20-38.441	- 96.856	-3-15-	2.0	3.2	9	14	13	350	0.7	2100	57	14	77
203709	20-38.465	- 96.862	-3-15-	2.8	3.6	8	16	13	330	0.7	2400	66	17	92
203711	20-38.475	- 96.855	-3-12-	2.9	3.5	12	14	12	270	1.0	2300	59	15	89
203712	20-38.475	- 96.857	-3-15-	3.0	3.6	10	15	13	310	0.8	2300	60	15	86
203714	20-38.282	- 96.742	-3-12-	2.5	3.3	7	16	11	390	1.0	2200	60	14	76
203715	20-38.315	- 96.733	-3-12-	2.3	3.3	8	13	11	320	0.5	2200	52	13	77
203716	20-38.316	- 96.734	-3-15-	2.8	3.4	9	14	11	320	0.7	2300	53	14	83
203717	20-38.312	- 96.692	-3-15-	2.5	2.9	8	12	11	340	0.6	1900	46	13	73
203718	20-38.333	- 96.693	-3-15-	2.3	3.4	8	15	12	320	0.6	2200	55	13	79
203719	20-38.344	- 96.673	-3-15-	2.9	3.4	8	16	13	320	0.6	2400	67	16	87
203720	20-38.400	- 96.706	-3-15-	2.5	3.2	7	15	13	300	0.9	2200	52	14	79
203721	20-38.402	- 96.737	-3-15-	2.2	3.4	7	15	16	330	0.7	2300	60	16	90
203722	20-38.390	- 96.719	-3-15-	2.2	3.2	4	13	16	290	0.7	2000	47	13	80
203728	20-38.407	- 96.616	-3-15-	2.5	3.4	5	16	15	630	1.1	2200	52	14	89
203729	20-38.401	- 96.585	-3-15-	2.6	3.2	6	15	13	510	0.8	1700	50	13	68
203730	20-38.387	- 96.558	-3-12-	2.3	3.1	3	14	14	410	0.5	2200	51	14	88
203731	20-38.377	- 96.503	-3-15-	2.1	3.3	5	13	13	390	0.5	2200	53	14	85
203736	20-38.480	- 96.556	-3-15-	2.3	3.7	8	12	15	250	0.8	2200	50	13	85
203737	20-38.484	- 96.559	-3-15-	2.7	3.5	10	15	14	380	0.9	2200	60	15	85
203740	20-38.438	- 96.557	-3-15-	2.5	3.2	8	14	14	260	0.5	2300	60	14	87
203749	20-38.436	- 96.645	-3-15-	2.6	3.3	9	15	15	340	0.5	2500	62	17	99
203750	20-38.445	- 96.654	-3-15-	2.5	3.6	6	13	14	420	0.9	2100	45	14	89
203751	20-38.481	- 96.685	-3-15-	2.2	3.3	6	13	13	370	1.1	2100	55	14	81
203753	20-38.413	- 96.062	-3-15-	2.8	3.4	11	20	19	390	0.9	2700	110	15	95
203772	20-38.098	- 96.021	-3-12-	2.4	3.2	8	14	13	350	0.7	1800	55	13	76
203773	20-38.041	- 96.159	-3-15-	2.6	3.0	8	21	14	480	0.6	2200	79	17	91
203774	20-38.033	- 96.150	-3-15-	2.4	3.1	5	17	13	340	0.8	2500	74	15	100
203776	20-38.022	- 96.148	-3-15-	2.5	3.4	7	17	15	430	0.9	2400	78	18	99

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT																
OR SAMPLE NUMBER	D. O. E. ST	SAMPLE LAT	NUMBER LONG	TY L	REP	U (PPM)	U-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)
203777	20-38.016	-	96.144	-3-15-		3.0	3.5	8	22	14	470	0.7	2600	79	17	98
203778	20-38.010	-	96.166	-3-12-		3.3	3.6	8	19	14	700	0.7	2400	84	18	100
203779	20-38.070	-	96.204	-3-12-		2.5	3.0	5	18	12	350	0.8	2100	71	15	77
203780	20-38.083	-	96.212	-3-12-		2.8	3.1	7	19	10	370	0.7	2100	77	15	77
203783	20-38.001	-	96.211	-3-15-		2.8	3.1	6	16	10	360	0.8	1800	63	15	77
203784	20-38.000	-	96.213	-3-12-		2.1	2.9	7	16	11	390	0.6	1900	65	15	73
203867	20-38.135	-	96.524	-3-15-		3.2	3.7	5	16	33	310	0.4	2600	61	16	100
203868	20-38.143	-	96.521	-3-12-		2.8	3.7	6	14	23	270	0.5	2100	54	14	81
203870	20-38.131	-	96.593	-3-12-		2.7	3.4	5	14	21	240	0.4	2100	57	15	77
203871	20-38.129	-	96.589	-3-12-		2.6	3.6	5	17	15	360	0.6	1900	58	13	66
203872	20-38.272	-	96.567	-3-15-		2.1	3.6	8	12	16	290	0.4	2300	49	14	87
203873	20-38.259	-	96.604	-3-15-		2.7	3.8	5	16	15	300	0.4	2100	51	14	79
203875	20-38.252	-	96.622	-3-12-		2.6	3.7	4	12	12	270	0.6	2000	47	12	71
203878	20-38.095	-	96.542	-3-15-		2.9	3.7	8	15	18	310	0.6	2000	55	14	75
203879	20-38.093	-	96.541	-3-15-		2.4	3.4	9	13	18	300	0.5	1900	49	13	72
203880	20-38.079	-	96.527	-3-15-		2.3	3.4	10	14	16	270	0.2	2300	61	16	87
203882	20-38.032	-	96.601	-3-12-		2.8	3.9	9	18	16	210	0.5	2400	61	15	90
203884	20-38.092	-	96.292	-3-15-		2.3	3.5	8	18	17	480	0.4	2300	67	16	86
203885	20-38.104	-	96.297	-3-15-		2.4	3.0	8	14	16	370	0.4	2000	53	14	77
203887	20-38.033	-	96.359	-3-15-		2.4	3.4	9	14	17	260	0.5	2400	65	16	94
203889	20-38.034	-	96.363	-3-15-		2.1	3.3	7	13	17	290	0.4	2000	53	13	76
203891	20-38.188	-	96.402	-3-15-		2.2	3.1	8	14	20	310	0.5	1900	54	13	70
203892	20-38.192	-	96.395	-3-15-		2.3	3.0	7	14	15	270	0.6	2100	58	13	70
203893	20-38.196	-	96.322	-3-12-		2.3	3.5	6	13	15	340	0.5	2400	52	14	84
203896	20-38.188	-	96.187	-3-12-		2.3	3.4	6	11	13	350	0.5	2100	50	14	100
203898	20-38.173	-	96.197	-3-12-		2.5	3.2	7	13	14	320	0.4	2300	54	14	90
203899	20-38.133	-	96.215	-3-12-		2.5	3.3	4	16	14	430	0.5	2100	66	15	81
203900	20-38.128	-	96.280	-3-12-		1.7	2.6	5	15	22	540	0.8	1900	63	14	68
203901	20-38.172	-	96.276	-3-12-		2.1	3.0	5	16	13	380	0.5	2100	65	15	87
203902	20-38.216	-	96.307	-3-15-		2.2	3.2	7	16	13	450	0.6	2100	58	15	77
203904	20-38.224	-	96.267	-3-15-		2.3	3.0	4	20	14	460	0.5	2200	69	16	85
203950	20-38.278	-	97.189	-3-12-		2.0	3.2	7	13	14	460	0.5	2500	63	14	88
203952	20-38.321	-	97.170	-3-12-		2.2	3.0	8	16	15	560	0.5	2600	60	17	92
203955	20-38.390	-	97.179	-3-15-		2.7	3.2	8	20	17	480	0.5	2400	79	18	85
203956	20-38.383	-	97.188	-3-12-		2.6	3.6	6	16	18	360	0.5	2800	62	17	97
203958	20-38.432	-	97.170	-3-15-		2.9	3.4	7	14	14	340	0.8	2200	57	14	82
203959	20-38.465	-	97.163	-3-12-		2.5	2.9	5	15	13	330	0.8	2300	61	15	82
203962	20-38.478	-	97.234	-3-15-		2.4	3.0	8	16	16	320	0.7	2500	60	16	86
203963	20-38.479	-	97.218	-3-12-		2.3	3.4	6	41	14	360	0.6	2200	57	15	84
203966	20-38.379	-	97.207	-3-12-		2.3	3.0	5	16	21	380	0.7	2300	65	16	80
203969	20-38.392	-	97.039	-3-15-		2.0	3.1	8	11	13	230	0.5	2200	47	13	80
203970	20-38.410	-	97.039	-3-12-		2.3	3.1	8	15	13	410	0.5	2200	54	14	79
203971	20-38.420	-	97.042	-3-15-		2.3	3.1	4	13	12	270	0.8	2000	56	14	71
203975	20-38.291	-	97.008	-3-12-		1.8	3.1	6	12	17	280	0.9	2400	50	14	74
203976	20-38.259	-	97.044	-3-15-		2.2	3.0	6	13	15	330	0.5	2100	53	13	76
203978	20-38.334	-	97.116	-3-15-		2.3	2.9	5	16	13	390	0.5	2400	62	16	85
203980	20-38.318	-	97.077	-3-12-		2.2	3.0	7	14	13	290	1.0	2200	57	17	79
203983	20-38.450	-	97.064	-3-12-		3.0	3.8	5	16	13	290	0.6	2000	57	13	70
203984	20-38.458	-	97.076	-3-12-		2.1	3.1	7	16	15	350	0.6	2400	61	16	86
203985	20-38.465	-	97.089	-3-12-		2.4	3.4	6	12	14	280	0.6	2300	54	15	80
203990	20-38.139	-	96.857	-3-12-		2.2	2.9	6	12	14	280	0.4	2000	50	13	71
203993	20-38.138	-	96.781	-3-12-		2.6	2.7	4	17	13	470	0.6	2100	59	13	71
203996	20-38.196	-	96.816	-3-12-		2.8	3.5	9	14	16	310	0.5	2300	57	15	84
203998	20-38.406	-	96.271	-3-12-		2.0	3.1	9	14	14	380	0.5	2400	64	16	83
205946	20-38.187	-	96.984	-3-12-		2.8	2.8	9	14	16	290	0.6	1900	56	12	66

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT															
OR SAMPLE NUMBER	D. O. ST LAT	E. SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)	
205947	20-38.187	- 96.973	-3-12-	2.2	2.9	7	12	15	280	0.8	1900	47	12	67	
205948	20-38.186	- 96.936	-3-12-	2.6	3.1	3	15	13	300	0.7	2000	45	13	70	
205949	20-38.190	- 96.935	-3-15-	2.3	3.0	5	16	16	300	0.6	2200	53	13	76	
205951	20-38.143	- 96.879	-3-15-	2.3	3.2	3	16	13	420	0.7	2300	57	14	82	
205952	20-38.232	- 96.879	-3-15-	2.3	3.2	7	12	13	300	0.6	2000	46	12	72	
205953	20-38.231	- 96.897	-3-15-	2.7	3.2	9	14	15	330	0.4	2200	57	14	77	
205954	20-38.394	- 96.196	-3-12-	2.6	3.5	6	17	12	370	0.5	2100	61	14	80	
205955	20-38.388	- 96.227	-3-12-	2.9	3.2	7	23	15	780	0.8	2400	73	16	79	
205959	20-38.470	- 96.225	-3-15-	2.3	3.2	7	17	16	450	1.0	2300	58	14	75	
205960	20-38.479	- 96.182	-3-12-	2.5	3.5	8	13	16	240	0.6	2300	50	13	84	
205962	20-38.437	- 96.172	-3-12-	2.6	3.2	7	16	14	380	0.8	2400	69	16	82	
205964	20-38.440	- 96.160	-3-15-	3.0	3.7	6	22	14	390	0.7	2300	65	16	86	
205966	20-38.366	- 96.227	-3-15-	2.4	3.1	7	14	14	420	0.6	2100	57	13	74	
205967	20-38.346	- 96.213	-3-15-	2.8	3.0	10	16	14	290	0.5	2200	67	15	80	
205970	20-38.254	- 96.181	-3-12-	2.3	3.1	2	16	11	580	0.4	2200	65	15	83	
205971	20-38.260	- 96.177	-3-15-	2.4	3.4	6	16	15	430	0.5	2300	70	18	96	
205972	20-38.253	- 96.159	-3-12-	2.4	2.9	7	16	15	410	0.4	2300	64	14	87	
205974	20-38.332	- 96.108	-3-15-	2.2	3.3	8	16	14	370	0.5	2200	63	16	86	
205975	20-38.332	- 96.106	-3-15-	2.2	3.1	6	17	17	370	0.5	1900	66	16	77	
205976	20-38.258	- 96.089	-3-15-	1.6	3.1	4	14	12	320	0.5	1800	60	14	79	
205978	20-38.289	- 96.068	-3-15-	2.1	3.2	9	16	14	240	0.4	2100	70	15	81	
205979	20-38.331	- 96.006	-3-15-	2.3	3.5	4	15	12	330	0.4	2000	60	14	77	
205980	20-38.434	- 96.118	-3-15-	2.0	3.3	6	17	12	420	0.5	2000	65	16	81	
205984	20-38.463	- 96.060	-3-12-	1.9	2.9	4	15	13	470	0.3	1700	63	14	70	
205985	20-38.464	- 96.047	-3-15-	1.9	3.1	3	12	11	310	0.5	1600	52	12	74	
208301	20-38.998	- 96.317	-3-15-	2.8	3.1	6	17	16	410	0.6	1900	58	13	72	
208302	20-38.929	- 96.354	-3-15-	3.3	3.2	7	17	13	420	0.5	2000	62	14	77	
208304	20-38.917	- 96.350	-3-15-	3.1	3.0	6	17	14	420	0.7	1900	56	14	73	
208305	20-38.913	- 96.357	-3-12-	2.8	3.2	9	14	13	310	0.4	2000	53	14	81	
208307	20-38.769	- 96.295	-3-12-	2.5	3.4	6	17	13	360	1.1	2200	65	15	87	
208308	20-38.766	- 96.280	-3-12-	3.2	3.5	6	13	13	290	0.9	2100	52	14	82	
208309	20-38.761	- 96.278	-3-15-	3.6	3.4	8	17	15	340	0.7	2300	69	17	91	
208314	20-38.914	- 96.451	-3-12-	2.8	3.1	7	13	14	410	0.6	1800	49	13	69	
208315	20-38.912	- 96.451	-3-12-	2.7	3.3	7	12	11	410	0.7	1800	45	12	69	
208316	20-38.909	- 96.447	-3-12-	3.1	2.9	4	13	14	520	0.6	1700	48	12	66	
208317	20-38.935	- 96.424	-3-15-	2.4	3.3	5	14	11	380	0.6	2000	49	12	74	
208318	20-38.928	- 96.416	-3-15-	2.8	3.0	4	16	13	380	0.6	1900	55	13	70	
208319	20-38.943	- 96.414	-3-15-	2.3	4.0	11	16	14	330	0.5	2300	63	16	87	
208321	20-38.966	- 96.376	-3-15-	2.4	2.8	5	13	12	390	0.9	1700	51	12	67	
208322	20-38.985	- 96.381	-3-15-	2.6	3.3	8	18	15	410	0.8	2400	69	17	92	
208324	20-38.992	- 96.397	-3-15-	2.2	3.1	7	15	15	340	0.5	2100	59	14	80	
208326	20-38.992	- 96.307	-3-15-	2.5	3.1	8	18	12	440	0.7	2000	58	14	77	
208332	20-38.775	- 96.434	-3-12-	2.5	3.2	7	13	13	310	0.6	1900	53	13	71	
208333	20-38.783	- 96.436	-3-12-	2.3	3.2	8	12	14	370	0.7	2100	57	13	78	
208334	20-38.774	- 96.453	-3-12-	2.3	3.3	6	14	13	360	0.7	2100	52	13	83	
208336	20-38.798	- 96.469	-3-12-	3.4	3.9	8	15	13	740	0.8	2000	55	14	79	
208337	20-38.795	- 96.471	-3-15-	2.9	3.6	10	18	15	340	0.7	2200	65	16	82	
208340	20-38.755	- 96.471	-3-15-	2.1	3.3	8	14	12	360	0.7	2100	51	14	79	
208341	20-38.754	- 96.486	-3-15-	2.6	3.7	8	14	12	430	0.6	2300	58	16	90	
208345	20-38.889	- 96.274	-3-12-	1.9	3.6	5	14	13	300	0.2	1700	41	12	61	
208347	20-38.885	- 96.270	-3-12-	1.8	2.1	6	11	14	300	0.8	1400	37	10	53	
208350	20-38.904	- 96.267	-3-15-	3.0	2.9	6	16	13	360	0.3	2400	60	15	82	
208352	20-38.989	- 96.405	-3-15-	2.1	2.8	9	13	13	350	0.7	2000	54	14	68	
208358	20-38.799	- 96.623	-3-12-	2.6	3.0	6	15	14	440	0.6	1700	56	12	64	
208360	20-38.755	- 96.558	-3-15-	2.2	3.4	7	12	12	310	0.7	2100	50	13	83	

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
OR SAMPLE	D. O. E.	SAMPLE	NUMBER	U	U-NT	TH	CU	NB	P	SE	TI	V	Y	ZR
NUMBER	ST	LAT	LONG	L	TY	REP	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
208362	20-38.755	-	96.515	-3-12-	2.3	3.3	11	13	13	290	0.5	2200	56	15
208369	20-38.997	-	96.546	-3-15-	3.0	3.4	6	18	11	430	1.1	1400	54	10
208371	20-38.998	-	96.585	-3-15-	2.6	3.4	6	14	9	430	1.1	2000	58	14
208372	20-38.997	-	96.597	-3-12-	2.8	3.4	6	14	12	400	0.2	2300	59	16
208373	20-38.935	-	96.604	-3-12-	2.4	2.9	6	12	10	350	1.1	1900	49	12
208379	20-38.995	-	96.872	-3-12-	2.4	3.8	3	14	14	450	0.8	2500	52	13
208380	20-38.995	-	96.926	-3-12-	2.1	3.2	8	13	13	320	0.6	2200	51	14
208381	20-38.994	-	96.935	-3-12-	2.5	3.2	10	15	14	460	0.5	2300	60	15
208382	20-38.989	-	96.964	-3-12-	2.2	3.1	9	13	15	310	0.5	2300	54	14
208386	20-38.993	-	96.910	-3-15-	3.1	4.6	11	10	18	290	0.9	2900	54	15
208387	20-38.957	-	96.979	-3-12-	1.9	3.2	9	14	12	310	0.1	2200	61	16
208390	20-38.903	-	96.924	-3-12-	3.0	3.3	5	12	11	300	0.8	2100	49	13
208391	20-38.919	-	96.909	-3-12-	2.8	3.1	6	14	12	390	0.9	2200	62	16
208394	20-38.890	-	96.852	-3-12-	3.3	3.3	7	12	12	320	1.0	1800	51	14
208397	20-38.948	-	96.847	-3-15-	3.1	3.0	6	15	15	500	1.5	1800	56	13
208398	20-38.985	-	96.828	-3-15-	2.5	3.3	9	12	15	340	0.7	2100	54	14
208400	20-38.952	-	96.761	-3-15-	2.7	3.1	9	13	13	330	0.7	2200	56	14
208401	20-38.941	-	96.770	-3-15-	2.0	3.1	8	14	16	330	0.9	2000	61	13
208407	20-38.852	-	96.801	-3-15-	2.1	3.1	8	13	13	280	1.1	2000	60	13
208408	20-38.859	-	96.788	-3-12-	2.2	2.7	5	12	11	320	3.5	1900	49	13
208409	20-38.820	-	96.817	-3-12-	2.5	3.0	6	13	12	350	1.7	2000	62	14
208410	20-38.816	-	96.837	-3-15-	2.2	3.3	8	14	10	330	1.0	2100	62	15
208414	20-38.782	-	96.844	-3-15-	2.4	3.2	8	13	12	290	0.6	2200	58	15
208415	20-38.782	-	96.854	-3-12-	2.8	3.4	6	14	14	340	0.7	2200	59	15
208419	20-38.758	-	96.950	-3-12-	2.5	2.9	6	15	11	420	0.5	2000	55	12
208420	20-38.832	-	96.935	-3-12-	2.6	3.0	8	12	10	280	0.7	2100	50	12
208422	20-38.809	-	96.948	-3-12-	2.1	3.1	9	14	13	230	0.7	2300	65	15
208423	20-38.840	-	96.996	-3-15-	2.4	4.6	8	13	10	270	0.9	2100	55	14
208425	20-38.857	-	96.974	-3-15-	3.5	3.6	8	14	12	380	0.7	2300	60	16
208426	20-38.864	-	96.959	-3-12-	2.1	3.1	7	14	12	280	0.8	2200	59	14
208427	20-38.867	-	96.938	-3-12-	2.9	3.3	8	16	11	430	0.7	2000	65	14
208428	20-38.870	-	96.905	-3-12-	2.4	3.0	8	13	12	370	0.7	2000	49	13
208429	20-38.854	-	96.912	-3-12-	2.9	3.2	7	13	14	320	0.6	2100	56	13
208430	20-38.828	-	96.941	-3-15-	2.6	3.8	8	13	12	260	0.6	2200	56	15
208431	20-38.829	-	96.925	-3-12-	2.4	3.0	8	13	12	410	0.7	2000	53	13
208436	20-38.595	-	96.515	-3-12-	2.0	2.5	4	15	25	330	0.6	1800	44	12
208439	20-38.590	-	96.617	-3-15-	2.4	3.3	6	14	15	210	0.5	2100	55	13
208440	20-38.583	-	96.617	-3-15-	2.2	3.2	6	12	16	370	0.8	1900	49	13
208442	20-38.577	-	96.601	-3-15-	2.5	3.7	8	16	15	240	0.5	2400	62	15
208443	20-38.565	-	96.584	-3-15-	2.2	3.5	10	16	17	300	0.7	2300	68	16
208445	20-38.566	-	96.564	-3-15-	2.3	3.4	10	14	14	310	0.5	2100	54	14
208453	20-38.787	-	96.128	-3-12-	2.6	3.2	9	14	15	380	0.6	2100	59	15
208454	20-38.768	-	96.132	-3-12-	3.3	3.3	9	14	13	270	0.6	2100	53	14
208456	20-38.783	-	96.124	-3-12-	3.2	3.2	6	15	12	420	0.8	2100	56	14
208460	20-38.781	-	96.002	-3-12-	3.2	3.0	8	18	12	390	0.5	2300	77	17
208461	20-38.765	-	96.002	-3-12-	3.2	3.3	6	15	12	340	0.8	2200	65	15
208462	20-38.809	-	96.025	-3-15-	3.0	3.2	6	52	13	360	0.4	2100	57	15
208463	20-38.834	-	96.003	-3-12-	2.0	2.8	7	16	11	400	0.6	2000	60	14
208465	20-38.827	-	96.353	-3-12-	2.9	3.5	7	17	12	460	1.0	2100	71	15
208466	20-38.827	-	96.039	-3-12-	2.9	3.2	9	18	13	410	0.8	2200	66	13
208467	20-38.819	-	96.045	-3-12-	2.0	2.7	4	19	12	450	0.7	2100	58	13
208469	20-38.862	-	96.178	-3-12-	1.9	2.9	8	17	12	370	1.0	2100	60	14
208470	20-38.851	-	96.198	-3-12-	2.4	2.9	8	16	10	350	0.7	2100	58	14
208472	20-38.867	-	96.205	-3-15-	2.6	2.8	11	18	12	400	0.8	2200	60	14
208476	20-39.000	-	96.118	-3-12-	2.5	2.5	7	15	13	370	0.7	1800	55	13

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
OR SAMPLE	D. O. E.	SAMPLE	NUMBER	U	U-NT	TH	CU	NB	P	SE	TI	V	Y	ZR
NUMBER	ST	LAT	LONG	L	TY	REP	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
208478	20-38.965	-	96.021	-3-12-	2.6	2.9	7	19	13	430	0.7	2400	72	15
208480	20-38.947	-	96.012	-3-12-	2.9	3.3	8	15	17	480	0.8	2000	59	15
208481	20-38.951	-	96.041	-3-12-	3.3	3.7	8	31	13	300	0.7	2400	90	14
208483	20-38.928	-	96.059	-3-12-	2.4	2.9	7	17	12	400	0.6	2000	59	14
208489	20-38.892	-	96.205	-3-15-	2.5	2.8	8	17	13	350	0.6	2200	64	15
208491	20-38.908	-	96.192	-3-15-	2.1	2.6	9	14	13	340	0.7	1800	53	12
208492	20-38.937	-	96.195	-3-12-	2.8	3.0	7	16	11	390	0.7	2200	58	14
208493	20-38.959	-	96.249	-3-12-	2.8	3.0	7	16	11	390	0.8	1900	55	11
208495	20-38.996	-	96.206	-3-12-	2.3	3.0	8	15	12	390	0.7	2000	56	15
208499	20-38.635	-	96.555	-3-12-	2.3	3.4	10	14	14	340	0.7	2300	63	15
208501	20-38.671	-	96.583	-3-12-	3.4	3.3	8	15	13	310	0.6	2300	61	15
208503	20-38.717	-	96.582	-3-12-	2.8	3.2	8	15	13	330	0.5	2300	57	16
208509	20-38.742	-	96.651	-3-15-	2.8	3.3	5	13	11	230	0.5	2300	56	15
208511	20-38.725	-	96.692	-3-15-	3.4	3.6	8	12	11	260	0.7	2300	55	15
208512	20-38.739	-	96.723	-3-12-	2.7	3.2	9	14	12	350	0.8	2200	64	14
208521	20-38.691	-	97.555	-3-12-	2.1	3.1	5	12	11	290	0.7	2300	53	13
208523	20-38.667	-	96.450	-3-15-	3.1	3.4	8	16	13	270	0.6	2300	59	16
208524	20-38.667	-	96.452	-3-12-	2.4	3.3	7	12	11	230	0.6	2200	46	13
208526	20-38.629	-	96.434	-3-15-	2.7	3.3	8	13	13	290	0.4	2300	50	14
208527	20-38.612	-	96.487	-3-15-	2.4	3.1	6	16	12	230	0.4	2400	52	15
208528	20-38.596	-	96.493	-3-15-	2.7	3.1	8	16	14	290	0.3	2300	55	15
208529	20-38.600	-	96.436	-3-15-	3.1	3.0	5	14	11	210	0.4	2300	59	15
208531	20-38.586	-	96.410	-3-15-	2.5	3.3	6	15	13	310	0.8	2400	62	16
208532	20-38.630	-	96.376	-3-15-	2.6	3.5	6	14	15	270	0.9	2300	58	14
208535	20-38.537	-	96.390	-3-15-	2.7	3.2	7	14	14	280	0.6	2200	53	14
208536	20-38.533	-	96.410	-3-15-	2.8	3.2	7	15	11	340	0.9	2200	58	15
208537	20-38.525	-	96.440	-3-15-	3.0	3.1	6	12	13	270	0.6	2200	49	13
208538	20-38.515	-	96.443	-3-15-	3.1	3.3	6	14	11	320	0.8	2200	61	14
208541	20-38.517	-	96.335	-3-15-	2.3	3.2	9	15	13	300	0.6	2200	61	15
208545	20-38.567	-	96.334	-3-12-	2.8	3.3	5	16	13	400	0.8	2300	69	16
208549	20-38.532	-	96.312	-3-15-	2.9	3.9	9	13	15	330	0.6	2500	58	17
208551	20-38.702	-	96.259	-3-12-	3.3	3.4	12	15	44	300	0.8	2300	66	15
208553	20-38.682	-	96.287	-3-15-	2.7	3.2	7	12	30	319	0.7	2000	54	13
208558	20-38.699	-	96.356	-3-15-	2.8	3.5	8	11	19	260	0.1	2400	53	14
208560	20-38.725	-	96.350	-3-12-	2.7	3.3	7	13	19	310	0.2	2100	52	13
208561	20-38.719	-	96.343	-3-15-	2.8	3.3	7	14	19	340	0.3	2200	56	14
208562	20-38.687	-	96.362	-3-15-	3.0	3.1	7	14	12	300	0.6	1900	45	11
208567	20-38.706	-	96.492	-3-15-	1.8	3.3	7	13	14	380	0.8	2200	62	16
208570	20-38.931	-	96.738	-3-12-	1.8	3.0	5	12	11	390	1.8	1800	42	12
208573	20-38.935	-	96.721	-3-15-	1.8	3.6	8	11	15	260	0.8	2200	48	13
208574	20-38.937	-	96.682	-3-15-	2.1	3.1	7	12	14	310	1.8	1900	53	13
208575	20-38.946	-	96.683	-3-15-	2.3	3.2	7	15	16	380	0.7	2200	64	16
208577	20-38.965	-	96.695	-3-15-	3.4	3.4	9	14	15	320	1.1	2300	68	16
208581	20-38.723	-	97.416	-3-12-	3.1	3.2	8	14	15	450	1.1	2200	64	15
208582	20-38.730	-	97.438	-3-15-	2.7	3.3	6	12	13	360	1.1	2100	49	14
208583	20-38.700	-	97.446	-3-12-	2.6	2.9	8	13	12	260	0.6	2200	55	14
208585	20-38.696	-	97.431	-3-15-	2.1	2.8	7	13	13	230	0.4	1800	42	12
208586	20-38.683	-	97.402	-3-15-	3.0	3.2	4	13	14	240	0.6	2000	41	11
208588	20-38.652	-	97.387	-3-12-	3.4	3.3	4	14	14	290	0.6	2100	42	12
208590	20-38.646	-	97.410	-3-12-	1.8	2.8	5	14	17	300	0.5	2500	56	15
208591	20-38.638	-	97.450	-3-12-	1.6	2.7	5	18	14	270	0.5	2000	45	13
208592	20-38.749	-	97.484	-3-12-	2.0	3.2	6	13	16	320	0.5	2400	51	15
208595	20-38.725	-	96.155	-3-12-	2.8	3.3	7	15	13	380	0.6	2200	62	14
208597	20-38.703	-	96.150	-3-12-	2.5	3.3	9	13	13	330	0.7	2100	54	14
208599	20-38.522	-	96.135	-3-15-	2.4	3.2	6	17	15	400	0.5	2100	72	17

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
OR SAMPLE	D. O. E.	SAMPLE	NUMBER	U	U-NT	TH	CU	NB	P	SE	TI	V	Y	ZR
NUMBER	ST	LAT	LONG	L	TY	REP	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
208600	20-38.537	-96.140	-3-15-	2.4	3.4	7	17	12	370	0.5	1900	66	15	75
208601	20-38.551	-96.158	-3-15-	2.6	3.4	4	19	14	470	0.5	2300	68	16	90
208602	20-38.508	-96.206	-3-15-	2.7	3.7	5	16	14	510	0.5	2200	89	20	89
208606	20-38.541	-96.006	-3-15-	1.8	2.8	8	14	13	350	0.4	2000	59	15	80
208607	20-38.644	-96.117	-3-15-	2.1	2.7	4	18	16	530	0.5	2100	73	13	76
208608	20-38.645	-96.083	-3-12-	1.9	3.3	4	15	11	350	0.2	2000	58	14	75
208609	20-38.638	-96.060	-3-15-	2.2	3.1	7	18	12	370	0.3	2000	75	16	80
208610	20-38.696	-96.021	-3-12-	2.5	3.5	3	15	12	400	0.3	2200	64	15	91
208611	20-38.696	-96.025	-3-15-	2.1	3.6	6	16	14	400	0.9	2300	65	16	100
208613	20-38.700	-96.037	-3-15-	1.2	2.4	6	11	10	820	0.4	1500	41	11	68
208615	20-38.733	-96.063	-3-12-	2.2	3.6	7	17	15	420	0.6	2300	67	16	84
208616	20-38.726	-96.109	-3-12-	1.8	3.1	4	19	15	400	0.5	2200	65	14	76
208617	20-38.583	-96.079	-3-15-	1.8	3.2	6	17	13	450	0.4	2000	66	16	80
208618	20-38.566	-96.064	-3-15-	2.4	3.2	9	18	14	350	0.4	2100	76	16	80
208619	20-38.579	-96.216	-3-15-	2.3	2.8	6	15	16	370	0.2	2100	65	15	74
208626	20-38.574	-96.233	-3-12-	3.1	6.8	6	10	17	300	0.7	2900	49	15	100
208630	20-38.615	-96.228	-3-12-	2.1	3.0	7	9	12	210	0.5	2000	40	12	73
208631	20-38.612	-96.232	-3-15-	2.1	3.1	6	12	14	350	0.5	2100	61	12	73
208632	20-38.598	-96.235	-3-15-	1.6	3.1	6	12	15	300	0.6	2000	45	12	67
208635	20-38.814	-97.041	-3-15-	2.0	3.1	4	14	11	340	0.3	2200	53	13	79
208642	20-38.958	-97.539	-3-15-	2.2	3.1	10	11	16	280	0.5	2400	54	15	87
208644	20-38.999	-97.592	-3-12-	2.3	3.5	7	11	14	390	0.5	2400	54	14	84
208645	20-38.998	-97.611	-3-15-	2.3	3.3	6	11	12	310	0.6	2300	51	14	80
208647	20-38.904	-97.589	-3-15-	2.2	3.2	8	11	12	300	0.6	2300	50	14	79
208649	20-38.923	-97.610	-3-12-	3.2	3.3	7	10	11	280	0.5	2100	46	12	68
208650	20-38.954	-97.646	-3-12-	2.4	3.7	7	11	13	200	0.6	2600	43	12	81
208652	20-38.980	-97.740	-3-15-	2.3	3.0	7	11	12	330	0.5	2300	52	14	79
208654	20-38.980	-97.709	-3-15-	2.5	3.5	7	10	13	280	0.5	2200	45	13	77
208655	20-38.928	-97.731	-3-12-	2.3	3.2	7	12	12	220	0.5	2200	50	14	74
208657	20-38.904	-97.687	-3-15-	2.0	3.2	5	7	12	180	0.3	2500	37	10	67
208662	20-38.812	-97.700	-3-15-	2.8	3.4	8	15	15	410	0.5	2400	62	16	84
208663	20-38.838	-97.547	-3-12-	3.0	3.6	7	13	13	290	0.8	2200	52	14	78
208664	20-38.842	-97.507	-3-15-	1.9	3.2	7	15	16	510	0.5	2200	53	14	81
208665	20-38.842	-97.510	-3-15-	2.4	3.5	4	16	17	440	0.3	2300	70	19	86
208667	20-38.699	-96.944	-3-12-	2.2	3.4	8	14	17	420	0.6	2400	57	16	92
208668	20-38.722	-96.945	-3-15-	2.4	3.1	6	15	18	290	0.4	2300	59	16	85
208670	20-38.711	-96.978	-3-15-	1.9	3.1	6	15	17	210	0.5	2300	50	14	90
208671	20-38.697	-96.998	-3-12-	2.2	3.0	6	15	20	310	0.5	2300	54	14	87
208715	20-38.697	-97.152	-3-12-	1.9	2.8	6	16	13	400	1.0	2000	52	14	78
208716	20-38.708	-97.190	-3-12-	2.1	3.2	4	15	15	370	1.1	2300	54	14	88
208717	20-38.718	-97.167	-3-12-	2.3	2.9	8	14	16	330	0.7	2300	53	15	88
208718	20-38.741	-97.171	-3-15-	2.0	3.0	7	15	17	320	0.5	2400	56	16	91
208719	20-38.750	-97.170	-3-15-	2.1	3.7	9	13	17	230	0.8	2400	54	15	95
208721	20-38.652	-97.153	-3-12-	2.0	3.1	5	14	14	340	0.7	2100	55	14	84
208722	20-38.505	-97.247	-3-15-	2.2	3.3	8	12	17	230	0.5	2300	49	15	90
208723	20-38.653	-97.182	-3-15-	2.2	3.3	9	15	15	380	0.5	2400	59	16	92
208724	20-38.664	-97.149	-3-12-	2.3	2.9	5	14	14	370	0.5	2300	54	14	92
208729	20-38.614	-97.203	-3-12-	2.2	3.5	5	12	15	270	0.4	2500	45	11	82
208740	20-38.553	-96.739	-3-15-	2.3	3.2	7	15	14	310	0.7	2300	58	14	83
208741	20-38.552	-96.723	-3-15-	2.3	3.1	6	15	14	300	0.6	2300	63	14	80
208742	20-38.529	-96.715	-3-15-	2.1	3.0	5	14	11	440	0.5	2000	51	13	73
208743	20-38.502	-96.714	-3-15-	2.1	2.6	4	10	10	340	0.7	1300	34	10	54
208744	20-38.532	-96.732	-3-15-	2.3	3.3	9	13	12	280	0.7	2100	48	13	79
208747	20-38.899	-97.114	-3-12-	3.1	3.0	7	18	13	580	1.4	1800	58	15	71
208748	20-38.900	-97.124	-3-15-	3.1	3.1	6	15	11	420	1.0	2000	59	14	78

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)
208750	20-38.909	-97.094	-3-12-	2.8	3.0	5	16	13	370	0.9	2100	52	12	74
208754	20-38.940	-97.027	-3-12-	3.1	3.2	7	15	13	340	0.7	2300	62	14	83
208755	20-38.923	-97.065	-3-12-	3.1	3.5	10	14	14	390	0.8	2300	54	15	82
208757	20-38.948	-97.087	-3-12-	3.2	3.1	8	15	12	350	0.8	2200	63	14	81
208758	20-38.934	-97.112	-3-15-	3.3	3.3	10	17	15	420	0.6	2400	77	17	91
208759	20-38.951	-97.107	-3-15-	3.1	3.5	9	16	14	250	0.6	2500	61	17	92
208762	20-38.935	-97.034	-3-15-	2.2	3.1	7	13	12	290	0.6	2200	55	13	78
208763	20-38.939	-97.233	-3-15-	3.1	8.3	13	8	41	570	0.7	6700	75	21	150
208764	20-38.964	-97.231	-3-12-	2.5	3.3	8	14	15	340	1.0	2400	57	15	96
208767	20-38.947	-97.169	-3-15-	1.6	3.0	11	12	12	420	0.9	2100	49	13	79
208768	20-38.947	-97.166	-3-12-	2.4	3.0	11	20	14	600	1.8	2200	69	17	84
208771	20-38.931	-97.181	-3-15-	2.4	2.9	9	17	12	480	0.8	2200	64	15	84
208773	20-38.927	-97.233	-3-15-	2.2	3.5	8	13	12	600	0.6	2400	63	15	88
208776	20-38.895	-97.154	-3-12-	2.6	3.4	7	13	11	350	0.7	2300	55	13	84
208777	20-38.861	-97.202	-3-12-	2.7	3.2	7	15	11	360	0.9	2300	56	14	85
208778	20-38.871	-97.243	-3-12-	3.0	3.1	6	17	11	600	1.8	1900	56	13	71
208780	20-38.827	-97.194	-3-15-	2.3	3.1	6	13	15	320	0.4	2200	57	15	91
208781	20-38.853	-97.166	-3-15-	2.2	3.1	7	13	19	290	0.4	2500	54	15	100
208783	20-38.829	-97.178	-3-15-	2.1	3.0	5	12	13	320	0.6	2000	51	13	79
208785	20-38.798	-97.173	-3-12-	2.1	3.1	5	15	14	440	0.9	2200	58	15	80
208787	20-38.783	-97.162	-3-12-	2.1	3.0	7	18	16	660	0.9	2100	57	14	78
208790	20-38.750	-97.186	-3-15-	1.4	2.6	7	15	11	1900	0.4	1500	33	10	58
208791	20-38.755	-97.225	-3-15-	2.3	3.0	6	14	16	260	0.4	2400	61	16	86
208792	20-38.780	-97.211	-3-12-	2.5	3.7	9	13	15	330	0.3	2500	57	16	94
208793	20-38.993	-97.760	-3-15-	2.4	3.4	7	10	13	260	0.3	2100	47	13	78
208795	20-38.985	-97.848	-3-15-	2.5	3.2	7	19	15	530	0.8	2200	76	18	86
208797	20-38.965	-97.818	-3-15-	3.4	3.3	6	13	14	280	0.5	2200	56	14	82
208798	20-38.957	-97.793	-3-15-	3.1	3.2	8	13	13	310	0.6	2000	49	14	73
208799	20-38.954	-97.777	-3-15-	2.8	3.3	9	12	12	290	0.6	2100	54	14	80
208801	20-38.889	-97.815	-3-12-	3.1	3.1	5	12	12	750	0.6	2200	55	14	72
208802	20-38.886	-97.800	-3-12-	2.3	3.1	2	14	10	950	1.4	2100	60	15	70
208803	20-38.865	-97.754	-3-12-	2.5	4.7	5	14	24	410	0.6	2500	59	15	81
208804	20-38.856	-97.753	-3-12-	2.8	3.8	8	13	19	370	0.6	2200	57	15	84
208806	20-38.855	-97.857	-3-12-	2.8	3.2	4	15	13	680	0.7	2100	57	15	74
208808	20-38.802	-97.764	-3-15-	3.4	3.5	10	27	12	410	0.7	2200	58	15	87
208809	20-38.785	-97.774	-3-12-	2.5	3.3	8	11	12	240	0.5	2000	45	12	75
208811	20-38.735	-97.032	-3-15-	2.3	3.1	6	15	11	420	1.4	2100	59	15	80
208812	20-38.735	-97.030	-3-12-	2.0	3.4	8	13	13	380	0.8	2100	53	14	83
208813	20-38.667	-97.011	-3-15-	2.6	3.3	7	14	13	340	1.1	2300	58	15	88
208814	20-38.646	-97.020	-3-15-	2.1	3.2	4	15	11	340	0.7	2200	58	14	83
208821	20-38.508	-97.124	-3-15-	2.3	3.4	7	13	13	340	0.8	2200	54	15	85
208822	20-38.509	-97.123	-3-15-	3.0	3.2	8	14	11	370	1.3	2100	56	16	82
208825	20-38.972	-97.374	-3-15-	2.6	3.2	8	14	12	450	1.1	2200	60	14	86
208826	20-38.997	-97.374	-3-15-	2.5	3.4	6	13	12	400	0.8	2100	54	14	79
208830	20-38.990	-97.276	-3-15-	2.1	3.9	5	10	14	270	1.1	2600	44	12	85
208831	20-38.991	-97.276	-3-12-	3.0	3.2	9	16	19	390	0.3	2200	57	15	79
208832	20-38.973	-97.257	-3-12-	3.1	3.5	7	17	16	410	0.6	2200	56	13	75
208836	20-38.919	-97.338	-3-12-	2.9	3.8	3	11	20	630	1.0	2600	42	10	58
208838	20-38.855	-97.366	-3-15-	2.1	3.0	<2	18	12	710	0.8	2000	64	16	71
208842	20-38.762	-97.299	-3-12-	2.5	3.4	8	16	14	310	<0.1	2300	54	14	88
208843	20-38.759	-97.290	-3-12-	2.3	3.4	6	14	12	260	0.6	2100	43	12	75
208844	20-38.778	-97.298	-3-12-	3.3	3.0	9	16	12	340	0.2	2100	55	14	77
208846	20-38.801	-97.284	-3-15-	2.1	3.0	7	17	16	420	0.6	2000	51	13	73
208848	20-38.811	-97.288	-3-15-	2.2	3.4	7	16	17	390	0.8	2100	52	14	77
208849	20-38.821	-97.280	-3-15-	2.4	3.9	8	14	14	290	0.5	2200	52	14	81

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
GR SAMPLE	D. U. E.	SAMPLE	NUMBER		U	U-VT	TH	CU	NB	P	SE	TI	V	ZR
NUMBER	ST	LAT	LONG	L TY REP	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
208852	20-38.845	-97.272	-3-12-		2.3	3.1	6	16	13	400	0.6	2100	52	14
208853	20-38.856	-97.286	-3-15-		2.3	3.2	8	24	27	320	0.8	2100	57	15
208854	20-38.871	-97.273	-3-15-		3.2	3.1	9	21	24	580	0.7	2500	80	19
208857	20-38.969	-97.445	-3-12-		2.6	3.6	7	15	19	300	0.1	2300	53	15
208858	20-38.955	-97.445	-3-15-		2.8	3.4	7	28	19	410	0.9	2300	68	17
208860	20-38.959	-97.417	-3-15-		2.6	3.4	6	110	14	270	0.2	2100	47	13
208862	20-38.963	-97.455	-3-15-		3.3	3.3	6	160	18	870	0.6	2100	67	16
208863	20-38.978	-97.474	-3-15-		2.2	3.0	8	20	17	290	0.5	2200	58	14
208864	20-38.923	-97.378	-3-12-		3.0	3.3	5	15	17	370	0.4	2300	60	15
208866	20-38.891	-97.390	-3-12-		3.8	3.8	5	14	16	420	0.7	2000	59	13
208868	20-38.841	-97.414	-3-15-		2.7	3.1	9	16	14	520	0.6	2100	63	15
208869	20-38.843	-97.426	-3-15-		3.0	3.7	8	16	18	370	0.6	2300	73	18
208871	20-38.818	-97.426	-3-15-		3.9	3.7	5	13	13	300	0.2	1900	51	13
208876	20-38.916	-97.400	-3-12-		2.8	3.7	7	110	19	440	0.3	2400	67	15
208877	20-38.784	-97.480	-3-15-		2.1	3.1	7	90	15	350	0.6	2100	51	14
208878	20-38.767	-97.484	-3-15-		2.0	2.9	7	15	15	190	0.2	2000	43	12
208881	20-38.769	-97.416	-3-15-		2.4	3.1	4	14	14	280	0.3	2000	46	12
208883	20-38.633	-97.577	-3-15-		2.4	4.1	5	260	13	240	0.6	2100	41	13
208885	20-38.668	-97.629	-3-15-		2.7	3.5	7	31	13	380	0.6	2200	57	16
208887	20-38.666	-97.723	-3-12-		3.0	3.2	7	20	16	380	0.9	2200	57	16
208889	20-38.695	-97.744	-3-12-		2.6	3.2	8	15	14	460	0.2	2200	51	15
208893	20-38.720	-97.707	-3-12-		2.7	3.4	11	15	16	510	0.6	2500	67	17
208895	20-38.521	-97.708	-3-12-		2.6	4.2	9	11	16	350	0.6	2300	48	14
208897	20-38.623	-97.588	-3-12-		2.2	4.8	11	11	13	200	0.8	2200	34	11
208899	20-38.571	-97.604	-3-12-		2.5	3.9	6	73	14	250	0.2	2300	47	13
208901	20-38.507	-97.611	-3-12-		2.4	3.8	4	15	14	320	0.4	2200	60	15
208902	20-38.508	-97.592	-3-15-		2.2	3.6	2	14	15	330	0.5	2300	62	15
208903	20-38.509	-97.514	-3-12-		2.7	3.9	7	15	15	330	0.5	2300	65	15
208904	20-38.509	-97.516	-3-15-		2.4	3.3	6	13	16	270	0.8	2100	54	14
208908	20-38.536	-97.852	-3-15-		2.2	3.4	7	16	16	350	0.4	2300	66	16
208910	20-38.521	-97.826	-3-15-		2.3	3.9	9	11	15	360	0.4	2300	48	14
208911	20-38.510	-97.815	-3-15-		2.8	3.1	4	15	16	310	0.7	2300	65	16
208913	20-38.552	-97.776	-3-15-		2.4	3.1	4	12	13	390	0.3	2100	56	15
208916	20-38.580	-97.895	-3-15-		3.6	3.9	3	31	13	820	1.0	2100	94	13
208917	20-38.585	-97.963	-3-12-		2.3	3.3	4	12	12	270	0.5	2100	51	14
208920	20-38.550	-97.963	-3-12-		2.6	4.8	8	12	17	330	0.5	2900	54	15
208922	20-38.547	-97.886	-3-12-		2.3	3.6	7	12	16	420	0.4	2200	54	15
208924	20-38.596	-97.883	-3-15-		2.2	3.2	4	12	15	380	0.4	2200	54	14
208926	20-38.492	-97.281	-3-12-		2.2	3.0	8	66	14	280	0.8	1900	48	12
208932	20-38.596	-97.860	-3-15-		2.6	3.4	6	53	14	340	0.6	2100	54	13
208939	20-38.461	-97.381	-3-15-		2.1	3.8	6	9	14	220	0.3	2300	44	13
208940	20-38.487	-97.418	-3-12-		1.9	2.7	<2	8	12	280	0.4	2000	35	9
208941	20-38.487	-97.416	-3-12-		1.9	3.8	3	6	17	470	0.5	3200	41	9
208943	20-38.710	-97.664	-3-15-		2.6	3.6	7	12	16	350	0.4	2400	54	15
208945	20-38.710	-97.630	-3-12-		2.6	3.3	10	17	17	390	0.4	2500	71	18
208947	20-38.623	-97.635	-3-15-		2.6	3.4	10	15	18	380	0.6	2400	83	16
208951	20-38.563	-97.643	-3-12-		2.3	3.5	4	18	16	410	1.2	2500	79	13
208954	20-38.506	-97.684	-3-15-		2.1	3.6	8	13	14	350	1.1	2300	52	15
208955	20-38.623	-97.457	-3-12-		2.8	3.2	6	23	14	330	0.5	2200	52	15
208956	20-38.619	-97.437	-3-15-		2.3	3.2	6	14	15	260	0.7	2200	46	12
208958	20-38.597	-97.435	-3-15-		2.5	2.9	6	15	13	340	0.8	1900	50	12
208959	20-38.579	-97.445	-3-15-		1.7	2.8	5	12	13	270	0.6	1700	38	11
208960	20-38.585	-97.441	-3-15-		2.0	3.2	4	14	13	290	0.8	2100	51	14
208963	20-38.538	-97.484	-3-12-		2.2	3.4	5	11	14	300	3.7	2200	49	12
208964	20-38.521	-97.457	-3-12-		2.3	3.4	4	10	33	280	0.4	2300	44	10

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)
208977	20-38.510	-97.293	-3-12-	2.0	3.3	7	11	13	230	0.3	2200	49	15	80
208978	20-38.511	-97.278	-3-12-	1.9	3.3	6	10	13	230	0.4	2000	40	12	67
208979	20-38.503	-97.349	-3-15-	1.6	2.9	9	9	14	410	0.4	2000	41	13	69
208980	20-38.519	-97.336	-3-12-	1.8	3.0	5	9	21	220	0.3	2100	39	12	62
208982	20-38.523	-97.330	-3-15-	2.6	3.0	6	10	13	270	0.5	1900	43	14	69
208983	20-38.523	-97.325	-3-15-	3.9	5.5	8	11	23	300	0.3	3300	55	17	110
208984	20-38.519	-97.314	-3-15-	2.4	3.2	7	13	15	320	0.5	2300	56	16	78
208986	20-38.507	-97.305	-3-12-	1.7	3.0	4	9	12	230	0.4	2100	40	12	68
208987	20-38.501	-97.252	-3-15-	2.2	3.2	5	10	15	200	0.3	2300	44	15	78
208989	20-38.666	-97.308	-3-12-	1.6	2.4	5	7	8	170	0.4	1700	29	8	47
208990	20-38.672	-97.310	-3-15-	2.3	3.5	7	13	14	300	0.4	2200	51	14	77
208991	20-38.693	-97.307	-3-12-	2.0	3.0	3	11	12	280	0.3	2200	45	12	79
208993	20-38.285	-97.760	-3-15-	2.0	3.5	6	16	15	300	0.6	2400	61	16	89
208995	20-38.309	-97.778	-3-12-	2.5	3.3	9	16	16	290	0.5	2400	61	16	91
208997	20-38.346	-97.778	-3-15-	2.7	3.4	10	17	13	420	0.6	2300	65	16	85
209003	20-38.465	-97.861	-3-15-	2.1	3.3	6	22	14	350	0.4	1900	44	13	71
209004	20-38.459	-97.870	-3-12-	2.5	4.2	7	14	15	280	0.5	2300	43	13	81
209005	20-38.454	-97.870	-3-15-	2.5	3.6	6	16	16	320	0.7	2200	49	14	80
209006	20-38.441	-97.851	-3-15-	2.2	3.0	4	18	11	280	0.5	2000	41	10	65
209008	20-38.417	-97.814	-3-12-	2.7	3.2	2	20	13	350	0.5	2000	52	12	66
209009	20-38.392	-97.761	-3-15-	2.0	3.7	9	11	16	250	0.3	2400	49	15	91
209010	20-38.392	-97.755	-3-15-	2.4	3.6	8	28	16	320	0.3	2500	65	17	93
209011	20-38.488	-97.768	-3-12-	2.2	3.5	8	14	20	330	0.8	2000	69	17	87
209020	20-38.290	-97.916	-3-15-	2.8	3.2	8	17	15	430	0.5	2200	58	16	74
209021	20-38.334	-97.935	-3-15-	2.0	3.2	8	13	14	280	0.5	2100	47	14	78
209022	20-38.318	-97.983	-3-12-	1.9	3.3	5	12	13	300	0.5	1800	39	12	63
209023	20-38.363	-97.964	-3-15-	2.4	3.2	7	14	15	340	0.5	2200	52	15	81
209024	20-38.363	-97.946	-3-12-	2.5	3.7	7	16	15	340	0.6	2400	53	15	83
209025	20-38.407	-97.987	-3-15-	2.0	5.0	7	11	21	250	1.0	3500	48	15	89
209027	20-38.841	-97.861	-3-15-	2.6	3.3	7	11	13	310	0.5	2100	48	14	78
209032	20-38.864	-97.923	-3-12-	2.1	3.4	4	11	11	270	0.6	1900	43	12	67
209034	20-38.037	-97.354	-3-15-	2.3	2.9	8	15	15	320	0.6	2300	53	12	73
209035	20-38.003	-97.370	-3-15-	2.1	3.1	7	14	15	320	0.5	2200	43	13	73
209047	20-38.145	-97.319	-3-12-	2.0	3.6	6	16	14	680	0.7	2100	38	11	64
209048	20-38.130	-97.316	-3-12-	2.0	2.7	6	15	15	340	0.7	1900	41	14	73
209050	20-38.069	-97.333	-3-12-	2.1	3.0	7	17	14	370	1.5	2000	61	12	61
209056	20-38.013	-97.498	-3-15-	1.9	3.0	6	13	17	220	0.4	1900	50	12	64
209058	20-38.058	-97.445	-3-15-	1.8	2.8	7	14	20	370	0.6	2100	52	14	72
209059	20-38.058	-97.415	-3-12-	1.9	3.6	5	9	16	310	1.3	2300	35	12	57
209061	20-38.123	-97.482	-3-15-	2.4	3.0	11	15	17	320	0.7	2200	55	15	78
209063	20-38.123	-97.463	-3-15-	1.5	3.1	5	12	15	340	0.6	1800	44	11	61
209066	20-38.111	-97.317	-3-12-	2.3	3.3	5	14	19	500	0.7	2100	52	12	63
209068	20-38.200	-97.372	-3-12-	2.0	3.7	6	13	15	280	0.8	2100	51	13	66
209069	20-38.217	-96.979	-3-12-	2.0	3.3	7	16	15	280	0.4	1900	45	11	69
209070	20-38.129	-96.718	-3-12-	3.0	3.5	8	16	19	200	0.6	1900	53	12	66
209071	20-38.127	-96.711	-3-12-	2.4	3.4	8	15	16	260	0.5	2000	58	14	72
209075	20-38.015	-96.723	-3-15-	2.9	3.4	8	15	15	220	0.6	2100	53	13	73
209078	20-38.032	-96.675	-3-15-	2.8	3.7	8	15	15	270	0.5	2200	58	14	77
209079	20-38.053	-96.656	-3-15-	3.3	4.3	8	16	15	310	0.6	2300	63	15	81
209080	20-38.053	-96.666	-3-15-	2.6	3.8	6	16	14	280	0.6	2300	59	14	78
209084	20-38.168	-96.729	-3-12-	2.3	3.3	8	17	15	240	0.5	2100	56	12	76
209086	20-38.220	-96.569	-3-12-	2.1	3.2	7	18	16	340	0.6	2000	56	13	70
209087	20-38.207	-96.574	-3-15-	2.9	3.3	6	17	15	290	0.6	2300	59	14	78
209089	20-38.180	-96.570	-3-12-	2.3	3.0	6	15	16	320	0.5	1700	50	10	64
209090	20-38.373	-96.549	-3-12-	2.3	3.2	7	13	15	340	1.0	1900	44	12	67

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT														
OR SAMPLE NUMBER	D. O. E. ST LAT	SAMPLE LONG	NUMBER L TY REP	U (PPM)	U-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)
209091	20-38.369	-96.531	-3-12-	2.4	3.3	8	13	16	330	0.5	2000	52	13	69
209094	20-38.293	-96.522	-3-15-	2.1	3.1	7	14	13	270	0.5	2000	61	12	64
209096	20-38.221	-96.506	-3-15-	2.0	3.2	6	14	13	330	0.5	1800	48	12	68
209097	20-38.183	-96.549	-3-15-	2.2	3.1	5	16	15	370	0.5	1800	50	12	67
209098	20-38.175	-96.552	-3-15-	2.3	3.0	7	14	13	350	0.6	1900	50	12	69
209101	20-38.955	-97.946	-3-12-	2.5	3.4	6	13	14	360	0.6	2000	48	13	69
209103	20-38.959	-97.950	-3-12-	2.1	2.9	4	13	13	460	0.6	1900	49	12	64
209106	20-38.985	-97.990	-3-15-	2.5	3.2	6	13	16	280	0.6	2100	52	13	71
209109	20-38.986	-97.905	-3-15-	1.8	3.2	6	11	14	330	0.4	2000	46	12	67
209117	20-38.333	-97.584	-3-15-	2.5	3.4	8	12	15	170	0.5	2200	49	15	83
209118	20-38.261	-97.517	-3-12-	3.0	4.6	7	14	17	290	0.5	2300	51	15	77
209119	20-38.302	-97.566	-3-15-	2.1	3.2	6	12	14	240	1.2	2000	47	14	76
209120	20-38.334	-97.532	-3-12-	1.8	3.1	6	11	14	380	0.6	1900	52	13	68
209121	20-38.333	-97.599	-3-12-	2.1	3.4	5	31	17	260	0.5	2100	51	14	79
209122	20-38.386	-97.648	-3-12-	2.4	3.1	5	26	12	260	0.5	2000	50	14	76
209171	20-38.789	-97.446	-3-15-	2.6	3.7	7	13	13	330	0.7	2400	56	16	93
209179	20-38.117	-97.589	-3-15-	2.8	3.7	8	13	18	310	0.3	2500	58	15	86
209180	20-38.115	-97.586	-3-15-	2.3	3.5	9	15	16	370	0.4	2400	74	16	88
209185	20-38.000	-97.646	-3-12-	2.6	3.7	10	11	17	330	0.4	2200	46	15	79
209190	20-38.235	-97.739	-3-15-	1.8	3.5	7	10	14	340	0.5	2200	49	14	81
209192	20-38.163	-97.737	-3-15-	1.8	3.7	6	14	13	440	0.6	2200	56	15	75
209194	20-38.146	-97.704	-3-15-	2.9	4.2	5	16	18	320	0.1	2700	53	16	95
209202	20-38.204	-97.566	-3-15-	3.0	3.5	8	21	15	330	0.4	2300	51	15	86
209203	20-38.208	-97.515	-3-12-	3.2	3.8	7	15	16	290	0.4	2200	44	14	75
209204	20-38.207	-97.628	-3-15-	2.3	3.7	10	13	16	320	0.3	2300	52	15	87
209205	20-38.191	-97.629	-3-12-	2.9	3.3	10	16	15	410	0.3	2400	65	16	85
209206	20-38.160	-97.607	-3-15-	2.2	3.3	10	310	16	380	0.5	2400	83	17	85
209207	20-38.154	-97.534	-3-15-	2.4	3.5	6	140	12	320	0.2	2200	47	14	82
209208	20-38.127	-97.527	-3-12-	2.8	3.4	5	30	15	250	0.3	2200	49	14	86
209209	20-38.090	-97.555	-3-15-	2.6	3.4	3	60	13	230	0.5	2300	47	14	84
209210	20-38.056	-97.529	-3-15-	2.8	3.3	8	34	15	380	0.4	2200	50	14	81
209215	20-38.157	-97.463	-3-15-	2.5	3.5	6	15	13	310	0.6	2200	48	14	71
209222	20-38.098	-97.721	-3-12-	2.8	4.9	6	13	29	250	0.1	3900	34	15	95
209223	20-38.175	-97.399	-3-12-	2.2	3.2	9	14	14	280	0.4	2400	51	15	80
209224	20-38.180	-97.388	-3-12-	2.4	3.3	7	12	11	300	<0.1	2100	47	14	78
209225	20-38.242	-97.443	-3-12-	2.1	3.4	7	40	16	290	0.1	2500	42	16	79
209229	20-38.195	-97.461	-3-12-	3.2	3.4	7	45	15	260	0.2	2200	40	14	79
209230	20-38.216	-97.444	-3-12-	2.6	3.8	5	14	14	320	0.5	2300	33	13	70
209232	20-38.162	-97.189	-3-15-	1.6	2.9	6	14	12	380	0.6	1900	50	13	72
209233	20-38.161	-97.186	-3-15-	1.9	3.4	8	14	17	350	0.5	2300	60	15	86
209235	20-38.149	-97.177	-3-12-	2.7	3.0	8	15	13	330	0.6	2200	60	15	79
209237	20-38.147	-97.163	-3-12-	2.2	3.3	7	17	16	370	0.5	2400	65	17	87
209238	20-38.137	-97.155	-3-12-	2.5	3.2	6	15	16	370	0.5	2200	62	15	82
209239	20-38.143	-97.135	-3-15-	2.5	2.9	3	15	14	360	0.7	2200	57	13	79
209240	20-38.152	-97.131	-3-12-	2.3	3.5	9	12	17	260	0.6	2300	55	15	81
209247	20-38.333	-97.306	-3-12-	2.0	2.8	5	15	16	320	0.6	2000	54	11	65
209248	20-38.335	-97.307	-3-12-	2.5	3.3	5	12	14	310	0.8	2100	47	13	74
209249	20-38.322	-97.296	-3-15-	2.3	2.9	6	20	15	320	0.7	2100	54	11	76
209251	20-38.332	-97.289	-3-15-	2.4	3.0	6	15	15	320	0.6	2200	52	13	75
209252	20-38.319	-97.265	-3-15-	2.7	3.3	6	12	15	230	0.5	2400	51	13	83
209253	20-38.318	-97.268	-3-15-	2.9	3.5	9	29	26	300	0.6	2800	58	16	86
209255	20-38.315	-97.261	-3-12-	2.7	2.8	7	29	15	430	0.8	2300	66	16	84
209256	20-38.304	-97.257	-3-15-	2.6	2.8	2	17	12	390	0.7	2100	55	12	77
209259	20-38.291	-97.418	-3-12-	2.5	3.5	8	12	17	340	0.5	2500	47	15	83
209260	20-38.294	-97.427	-3-12-	2.8	3.9	6	12	17	280	0.4	2500	53	16	79

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT															
OR SAMPLE	D.	O.	E.	SAMPLE	NUMBER	U	U-NT	TH	CU	NB	P	SE	TI	V	ZR
NUMBER	ST	LAT	LONG	L	TY	REP	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)	(PPM)
209267	20-38.261	-	97.419	-3-12-			2.7	4.3	9	21	18	360	2.3	2900	56
209268	20-38.254	-	97.424	-3-15-			2.4	3.3	8	21	16	430	0.3	2500	55
209269	20-38.266	-	97.432	-3-15-			2.6	3.6	5	23	16	310	<0.1	2400	54
209271	20-38.377	-	97.692	-3-12-			3.2	3.4	8	24	16	380	0.6	2400	59
209274	20-38.313	-	97.646	-3-12-			3.0	3.4	9	13	15	280	0.2	2300	51
209275	20-38.348	-	97.646	-3-12-			2.5	3.2	8	21	14	250	0.3	2400	55
209276	20-38.282	-	97.668	-3-12-			2.6	3.3	5	15	16	330	0.2	2500	67
209277	20-38.262	-	97.641	-3-12-			2.3	3.2	5	18	13	470	0.2	2400	51
209278	20-38.250	-	97.741	-3-12-			3.0	3.7	5	13	14	360	0.2	2400	58
209288	20-38.333	-	96.974	-3-12-			2.1	3.1	5	15	15	310	0.6	1900	48
209290	20-38.284	-	96.979	-3-12-			2.3	3.2	6	14	15	300	0.4	2400	55
209291	20-38.278	-	96.961	-3-15-			2.4	3.4	5	13	15	230	0.4	2500	55
209292	20-38.310	-	96.930	-3-12-			2.0	3.4	7	13	17	230	0.4	2500	55
209294	20-38.309	-	96.917	-3-12-			2.2	3.6	7	12	15	260	0.5	2300	55
209295	20-38.275	-	96.898	-3-15-			1.9	3.1	7	11	15	300	0.4	2100	52
209296	20-38.263	-	96.934	-3-12-			1.9		6	10	11	270	1.0	1900	39
209297	20-38.276	-	96.855	-3-12-			2.2	3.4	5	11	14	250	0.5	2300	49
209299	20-38.278	-	96.798	-3-15-			2.2	3.7	6	11	15	210	0.5	2200	52
209300	20-38.288	-	96.767	-3-15-			2.3	3.2	5	12	15	320	0.4	2100	52
209306	20-38.409	-	96.793	-3-15-			2.7	3.5	7	14	16	290	0.6	2300	59
209308	20-38.414	-	96.785	-3-15-			2.0	3.7	3	14	13	400	0.6	2300	54
209309	20-38.412	-	96.765	-3-15-			2.0	3.7	9	15	16	240	0.2	2500	67
209310	20-38.378	-	96.995	-3-12-			2.3	3.1	7	12	12	400	0.4	1800	46
209312	20-38.407	-	96.976	-3-12-			2.1	3.0	6	14	16	310	0.5	1900	55
209313	20-38.408	-	96.989	-3-12-			2.7	3.4	8	14	13	280	0.6	2100	53
209318	20-38.166	-	97.118	-3-12-			2.9	4.0	11	15	18	310	0.9	2500	61
209321	20-38.202	-	97.021	-3-15-			2.5	3.2	10	14	13	240	0.4	2300	66
209330	20-38.191	-	97.041	-3-15-			2.3	3.4	9	15	14	300	0.2	2400	62
209331	20-38.181	-	97.064	-3-15-			2.7	3.4	9	14	13	320	0.2	2200	56
209332	20-38.172	-	97.100	-3-15-			2.3	3.2	7	21	13	350	1.0	2000	58
209333	20-38.159	-	97.093	-3-12-			2.9	3.2	7	16	23	370	0.8	2200	55
209334	20-38.159	-	97.075	-3-15-			2.3	3.2	6	16	15	350	0.3	2000	57
209335	20-38.162	-	97.064	-3-15-			2.3	3.2	9	15	14	290	0.8	2200	62
209336	20-38.045	-	97.074	-3-15-			2.0	3.6	9	15	16	320	0.3	2300	64
209337	20-38.030	-	97.061	-3-15-			2.3	3.7	8	13	14	240	0.2	2400	63
209338	20-38.013	-	97.050	-3-15-			2.0	3.5	7	15	14	350	<0.1	2300	64
209339	20-38.041	-	97.079	-3-12-			2.8	3.2	11	16	16	290	3.4	2400	66
209340	20-38.185	-	97.054	-3-12-			2.5	3.4	6	16	16	350	0.7	2000	53
209343	20-38.189	-	97.026	-3-15-			2.5	3.2	6	19	15	320	0.8	2200	60
209344	20-38.203	-	97.009	-3-15-			2.3	3.1	9	18	14	290	0.6	2200	60
209346	20-38.015	-	97.165	-3-12-			2.8	3.5	8	16	15	400	1.8	2200	53
209350	20-38.030	-	97.199	-3-12-			2.1	3.2	4	24	17	270	0.7	2200	47
209351	20-38.044	-	97.197	-3-12-			2.0	4.0	3	18	16	310	0.9	2500	48
209359	20-38.014	-	96.778	-3-15-			2.5	3.5	9	16	15	240	0.6	2600	69
209360	20-38.022	-	96.774	-3-12-			2.6	3.5	8	12	13	280	0.7	2200	54
209362	20-38.102	-	97.025	-3-15-			2.4	3.6	7	13	14	310	0.6	2300	60
209363	20-38.073	-	97.016	-3-12-			2.1	3.3	7	13	14	250	0.4	2300	55
209365	20-38.033	-	96.932	-3-12-			2.9	3.7	9	14	15	310	0.5	2300	61
209366	20-38.049	-	96.931	-3-15-			2.7	3.7	9	13	17	320	0.5	2300	59
209368	20-38.073	-	96.976	-3-12-			2.3	3.1	6	13	13	230	0.6	2100	52
209371	20-38.086	-	96.821	-3-12-			2.9	3.5	7	12	14	270	0.7	2200	55
209373	20-38.107	-	96.807	-3-12-			2.9	3.4	5	12	13	260	0.6	2200	58
209376	20-38.155	-	96.158	-3-15-			2.2	3.0	8	13	14	350	0.6	2000	57
209377	20-38.152	-	96.127	-3-15-			2.5	3.1	8	17	12	390	0.6	2200	73
209380	20-38.151	-	96.112	-3-15-			2.6	3.4	6	16	10	350	0.6	2300	73

Table B-3, Continued

PARTIAL DATA LISTING FOR STREAM SEDIMENT OF THE HUTCHINSON QUADRANGLE

HUTCHINSON QUADRANGLE - SEDIMENT																
OR SAMPLE NUMBER	D. ST	O. LAT	E. LONG	SAMPLE L TY REP	NUMBER	U (PPM)	J-NT (PPM)	TH (PPM)	CU (PPM)	NB (PPM)	P (PPM)	SE (PPM)	TI (PPM)	V (PPM)	Y (PPM)	ZR (PPM)
209381	20-38.129	-	96.089	-3-15-		2.8	3.3	6	15	11	400	0.6	2100	65	15	91
209382	20-38.129	-	96.039	-3-12-		2.3	3.2	7	16	11	440	0.7	2100	69	13	78
209383	20-38.163	-	96.063	-3-12-		2.4	3.1	5	17	13	370	1.0	2100	70	15	83
209384	20-38.159	-	96.072	-3-12-		2.3	3.1	6	16	12	350	0.6	2000	69	15	77
209386	20-38.199	-	96.001	-3-15-		2.7	3.2	9	15	12	330	0.6	2200	71	16	91
209390	20-38.104	-	96.113	-3-12-		2.4	3.1	4	17	12	470	0.7	2300	78	16	86
209391	20-38.103	-	96.113	-3-12-		2.6	3.5	6	20	12	510	0.6	2400	98	19	90
209393	20-38.003	-	96.043	-3-15-		2.3	3.1	6	13	9	220	0.5	2000	67	15	80
209396	20-38.003	-	96.013	-3-12-		2.3	2.9	5	13	9	360	0.6	1800	64	13	71
209397	20-38.058	-	96.034	-3-15-		2.0	2.9	6	15	12	420	0.6	1900	63	15	72
209398	20-38.069	-	96.067	-3-15-		2.3	3.1	8	18	27	390	0.7	2200	58	16	99

APPENDIX C
MICROFICHE OF FIELD AND LABORATORY DATA

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APPENDIX C

MICROFICHE OF FIELD AND LABORATORY DATA

LIST OF TABLES

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C-2	Oak Ridge Geochemical Sampling Form Showing Field Data Recorded on Microfiche	C-5
Microfiche		C-7

Table C-1

COMPUTER CODE LIST OF GEOCHEMICAL VARIABLES

Variable(a)	Code	Variable(a)	Code
Uranium Measured by Fluorometry(b)	U-FL	Thorium	TH
Uranium Measured by Mass Spectrometry(b)	U-MS	Titanium	TI
Uranium Measured by Neutron Activation	U-NT	Vanadium	V
Arsenic	AS	Yttrium	Y
Selenium	SE	Zinc	ZN
Silver	AG	Zirconium	ZR
Aluminum	AL	Sulfate (ppm)	SO, SO ₄
Boron	B	Chloride (ppm)	CL
Barium	BA	Conductivity from Lab (μmhos/cm)	CT-L
Beryllium	BE	Conductivity from Field (μmhos/cm)	CT-F
Calcium	CA	Dissolved Oxygen (ppm)	DO
Cerium	CE	Temperature (°C)	TP, TEMP
Cobalt	CO	pH	PH
Chromium	CR	pH Measured by Lo Ion Paper	PH-P
Copper	CU	Total Alkalinity (ppm)	T-AK
Iron	FE	M Alkalinity (ppm)	T-AK
Potassium	K	P Alkalinity (ppm)	P-AK, LIP
Lithium	LI	Carbonate (ppm)	CB
Magnesium	MG	$CB = \begin{cases} 0 & \text{if pH} \leq 8.3 \\ \frac{3.42 \times M-AK}{5.61 + 10^{(11-pH)}} & \text{if pH} > 8.3 \end{cases}$	
Manganese	MN		
Molybdenum	MO	Bicarbonate (ppm)	BC
Sodium	NA	$BC = \begin{cases} \frac{2.62 \times M-AK}{4.3 + 10^{(7-pH)}} & \text{if pH} \leq 8.3 \\ 0.61 \times M-AK - CB & \text{if pH} > 8.3 \end{cases}$	
Niobium	NB		
Nickel	NI		
Phosphorus	P	U-NT/U-FL	U/U, TUU
Lead	PB	U-FL/U-NT	U/TU
Platinum	PT	TH/U-NT	TH/U
Scandium	SC	1,000·U/SP	U/SP
Silicon	SI	1,000·U/B	U/B
Strontium	SR	1,000·U/SO	U/SO, USO

(a) If natural logarithm of variable is used, L or L- precedes the variable code.

(b) If method is not specified for waters, U-FL is used, except where value is below laboratory detection limit in which case U-MS is substituted if it is available.

Table C-2

OAK RIDGE GEOCHEMICAL SAMPLING FORM SHOWING FIELD DATA RECORDED ON MICROFICHE

OAK RIDGE GEOCHEMICAL SAMPLING FORM

<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> Card Number </div>		<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> Card Number </div>	
GENERAL SITE DATA			
Attach Identical Sample Number Here <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">2</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">3</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">4</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">5</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">6</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">7</div> </div>			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">8</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">9</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">10</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">11</div> </div> Site Number		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">12</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">13</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">14</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">15</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">16</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">17</div> </div> Map Code	
Sample Type			
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">18</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">19</div> </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">20</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">21</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">22</div> </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">M</div> Stream Sediment </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">H</div> Lake Sediment </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">S</div> Stream Water </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">W</div> Well Water </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">P</div> Spring Water </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">L</div> Lake Water </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div> Bog Water </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> Plant </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">F</div> Soil (Use Remarks) </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">G</div> Rock </div>	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Q</div> Other </div>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">R</div> Other </div>	
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Table C-2, Continued

OAK RIDGE GEOCHEMICAL SAMPLING FORM SHOWING FIELD DATA RECORDED ON MICROFICHE

STREAM OR LAKE SEDIMENT

Sample Condition

31
D
W

Dry
wet

Sample Treatment

32
N
S
Q

None
Sieved
Other

33	34
----	----

Number of Grabs

35	36
----	----

% Organic Material (Field Estimate)

GENERAL WATER SAMPLES

Water Sample Treatment

37
N
F
C
A
Q

None
Filterd Only
Acidified Only
Acidified and Filterd
Other

Depth of Visibility (m)

38	39	40
----	----	----

C = Clear

41	42	43	44	45
----	----	----	----	----

Conductivity
($\mu\text{mhos/cm}$)

46	47	48
----	----	----

Dissolved O_2 (ppm)

49	50	51
----	----	----

Temperature ($^{\circ}\text{C}$)

52	53	54
----	----	----

pH

55
P

pH by Lo-Ion Paper

56	57	58	59
----	----	----	----

Total Alkalinity (ppm)

60	61	62	63
----	----	----	----

P Alkalinity (ppm)

64	65	66	67
----	----	----	----

M Alkalinity (ppm)

68
C
M
A
Q

Clear
Murky
Algal
Other

69	70	71	72	73
----	----	----	----	----

Discharge (liters/min)

REMARKS (Card 4)

74	75	76	77
----	----	----	----

Identification of Producing Horizon (Geologic Unit Code)

Confidence of Producing Horizon Identification

78
H
R
S

High Degree
Probable
Possible

Source of Producing Horizon Identification

79
P
W
U
G
Q

Publication
Owner
User
Geologic Inference
Other

1
3

Card Number

WELL WATER

Type of Well

10
D
P
G
U
Q

Drilled
Drive Point
Dug
Unknown
Other

Power Classification

11
A
E
G
W
H
Q

Artesian Flow
Electric
Gasoline
Wind
Hand
Other

Casing

12
N
S
G
P
U
Q

None (Below Water Table)
Steel
Galvanized
Plastic
Unknown
Other

Pipe Composition

13
F
Z
C
P
U
Q

Steel
Galvanized
Copper
Plastic
Unknown
Other

Sample Location

22	23	24
----	----	----

Meters from Well Head
H = Holding Tank (Use Remarks)

Where Sample Taken With Respect To Pressure Tank

25
B
A
N
F

Before
After
No Pressure Tank
From Pressure Tank (Use Remarks)

Use of Well

26
M
H
S
I
A
X
Y
Z
N
Q

Municipal
Household
Stock
Irrigation
All of above
H and S
H and I
S and I
None
Other

Frequency of Pumping

27
C
F
I
R

Constant (hourly)
Frequent (daily)
Infrequent (weekly)
Rare (no recent use)

Depth to top of Producing Horizon

28	29	30	31
----	----	----	----

(Meters)

Confidence of Producing Depth

32
H
R
S

High
Probable
Possible

Source of Producing Depth Information

33
P
W
U
G
Q

Publication
Owner
User
Geologic Inference
Other

Total Well Depth

34	35	36	37
----	----	----	----

(Meters)

Confidence of Total Depth

38
H
R
S

High
Probable
Possible

Source of Total Depth Information

39
P
W
U
G
Q

Publications
Owner
User
Geologic Inference
Other

LAKE WATER

Type of Lake

55
N
M

Natural
Manmade

Lake Area

56	57	58	59
----	----	----	----

(sq km)

MICROFICHE OF FIELD AND LABORATORY DATA

CONTENTS

<u>Laboratory Data</u>	<u>Page</u>
Well Water (W)	1-33
Stream Sediment (M)	34-69
<u>Field Data</u>	
Page 1	71-269
Page 2	1-227

HUTCHINSON QUAD
BASIC DATA

07/07/79

PAGE 1

PLATE 1
HUTCHINSON QUADRANGLE
GROUNDWATER
SAMPLE LOCATION MAP

SCALE 1: 250000
592 SAMPLES PLOTTED

SYMBOL RANGES FOR PLOTTED VARIABLE (X)		
+	$0.0 \leq X <$	0.20
x	$0.20 \leq X <$	0.30
○	$0.30 \leq X <$	0.80
○	$0.80 \leq X <$	2.10
○	$2.10 \leq X <$	5.50
○	$5.50 \leq X <$	12.00
○	$12.00 \leq X <$	19.00
●	$19.00 \leq X <$	30.00
●	$30.00 \leq X <$	50.00
■	$50.00 \leq X <$	110.00
★	$X \geq$	110.00

PLATE 2
HUTCHINSON QUADRANGLE
SYMBOL PLOT
GROUNDWATER
URANIUM (PPB)
SCALE 1: 250000
592 SAMPLES PLOTTED

SYMBOL RANGES FOR
PLOTTED VARIABLE (X)

x	120 ≤ X <	280
.	280 ≤ X <	430
.	430 ≤ X <	530
o	530 ≤ X <	640
o	640 ≤ X <	790
o	790 ≤ X <	920
o	920 ≤ X <	1150
o	1150 ≤ X <	1400
o	1400 ≤ X <	1900
o	1900 ≤ X <	2700
o	2700 ≤ X <	3400
o	3400 ≤ X <	6600
■	6600 ≤ X <	9100
★	X ≥	9100

PLATE 3
HUTCHINSON QUADRANGLE
SYMBOL PLOT
GROUNDWATER
SPECIFIC CONDUCTANCE (UMHOS/CM)

SCALE 1: 250000
592 SAMPLES PLOTTED

LEGEND
 □ STREAM SEDIMENT

PLATE 4
 HUTCHINSON QUADRANGLE
 STREAM SEDIMENT SAMPLE
 LOCATION AND DRAINAGE
 BASIN MAP
 SCALE 1: 250000
 615 SAMPLES PLOTTED

SYMBOL RANGES FOR PLOTTED VARIABLE (X)		
+	$1.19 \leq X <$	1.47
x	$1.47 \leq X <$	1.71
.	$1.71 \leq X <$	1.86
o	$1.86 \leq X <$	1.98
O	$1.98 \leq X <$	2.07
⊙	$2.07 \leq X <$	2.23
⊗	$2.23 \leq X <$	2.34
⊙	$2.34 \leq X <$	2.51
⊗	$2.51 \leq X <$	2.67
⊙	$2.67 \leq X <$	2.88
⊗	$2.88 \leq X <$	3.05
●	$3.05 \leq X <$	3.19
●	$3.19 \leq X <$	3.36
■	$3.36 \leq X <$	3.61
★	$X \geq$	3.61

PLATE 5
 HUTCHINSON QUADRANGLE
 SYMBOL PLOT - STREAM
 SEDIMENT
 URANIUM FLUOROMETRIC (ppm)
 SCALE 1: 250000
 616 SAMPLES PLOTTED

SYMBOL RANGES FOR
PLOTTED VARIABLE (X)

+	$0 \leq X <$	2
x	$2 \leq X <$	3
○	$3 \leq X <$	4
○	$4 \leq X <$	5
○	$5 \leq X <$	7
○	$7 \leq X <$	8
○	$8 \leq X <$	10
●	$10 \leq X <$	12
●	$12 \leq X <$	14

PLATE 6
HUTCHINSON QUADRANGLE
SYMBOL PLOT
STREAM SEDIMENT
THORIUM (PPM)

SCALE 1: 250000
615 SAMPLES PLOTTED

STRATIGRAPHIC COLUMN FOR THE HUTCHINSON QUADRANGLE

ERA	SYSTEM	SERIES	GEOLOGIC MAP CODE	GEOLOGIC MEMBER	MAXIMUM THICKNESS	
						FEET
CENOZOIC	QUATERNARY	PLEISTOCENE	QAL	FLUVIATILE SEDIMENT (ALLUVIUM)	50	165
			QSD	DUNE SAND	12	40
			QPG	GLACIAL DRIFT	9	30
			QLO	LOESS	12	40
	TERTIARY	PLIOCENE	TPO	OGALLALA/DELMORE	25	90
PALEOZOIC	CRETACEOUS		KGDD	DAKOTA	60	200
			KCDK	KIOWA, CHEYENNE	60	200
	PERMIAN	CIMARRONIAN	PCN	NIPPEWALLA	65	220
			PGS	SUMNER	305	1,000
		GEARYAN	PGC	CHASE	95	310
			PGA	COUNCIL GROVE, ADMIRE	135	440
	PENNSYLVANIAN	VIRGILIAN	PVW	WABAUNSEE	160	530
			PVS	SHAWNEE	100	325

SOURCE OF GEOLOGY:
1. BERENDSEN, P., KANSAS GEOLOGICAL SURVEY, LAWRENCE, KANSAS: PERSONAL COMMUNICATION DECEMBER 26, 1978.
2. KANSAS GEOLOGICAL SURVEY, GEOLOGIC MAP OF KANSAS: MAP M-1, 1964.

LEGEND
COUNTY LINE
GEOLOGIC CONTACT

PLATE 7
GENERALIZED GEOLOGIC MAP
HUTCHINSON QUADRANGLE,
KANSAS