UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

SEQUENTIAL EXTRACTION ANALYSES OF DRILL CORE SAMPLES, CENTRAL OKLAHOMA AQUIFER

By

E.L. Mosier,* C.S.E. Papp,* J.M. Motooka,* K.R. Kennedy,**

and G.O. Riddle*

Open-File Report 91-347

*U.S. Geological Survey, DFC, Box 25046, MS 973, Denver, CO 80225
**U.S. Geological Survey, DFC, Box 25046, MS 408, Denver, CO 80225

1991

CONTENTS

FIGURES

TABLES

ABSTRACT

A sequential dissolution technique was used to partition constituent elements from selected drill core samples of the Central Oklahoma aquifer into association with various forms in which they might exist. The procedure extracts elements into five fractions: soluble (0.25 *M* KCl), ligand exchangeable (0.1 *M* KH_2PO_4), acid extractable (4 *M* HCl), oxidative acid decomposable ($KClO_3$ + concentrated HCl), and strong mixed acid digestible (HF + HNO_3 + $HClO_4$). The mobility of metals was also assessed using a $NaHCO_3$ extraction technique followed by a sequential $NaHCO_3$ + NaOCl extraction. The $NaHCO_3$ extraction technique was used to mimic waters in the aquifer and the sequential $NaHCO_3$ + NaOCl was used to mimic the oxidizing nature of the ground water and to assess the importance of oxidation processes. The sequential analytical procedures used were designed to aid identifying sources of, and the processes responsible, for the mobilization into the ground water of potentially toxic naturally occurring trace substances including arsenic, chromium, selenium, and uranium.

Analytical results on 86 core samples are presented for 5 major elements (Al, Ca, Fe, Mg, and Na) and 8 minor or trace elements (As, Ba, Cr, Mn, Se, Sr, U, and V). The core samples were selected to represent typical as well as enriched rocks.

INTRODUCTION

Sequential dissolution studies of drill core samples from the Central Oklahoma aquifer are a part of the Central Oklahoma Aquifer investigation of the National Water Quality Assessment (NAWQA) Program of the U.S. Geological Survey. The NAWQA Program is intended to identify and explain major factors affecting water quality. As outlined by Hirsch and others (1988) the long term goals of the NAWQA Program are:

(1) Provide a nationally consistent description of current water-quality conditions for a large part of the Nation's surface- and ground-water resources;
(2) Define long-term trends (or lack of trends) in water quality; and,
(3) Identify, describe, and explain, as possible, the major factors that affect the observed water-quality conditions and trends.

The Central Oklahoma Aquifer study is one of three pilot ground-water projects of the NAWQA Program. The aquifer, located in central Oklahoma (Fig. 1), underlies about 3000 square miles and is used extensively for municipal, industrial, commercial and domestic water supplies. The aquifer was selected as a NAWQA pilot study because of its extensive use and known water-quality problems. At various localities in the aquifer, ground-water concentrations of potentially toxic naturally occurring trace substances (NOTS) such as arsenic (As), chromium (Cr), and selenium (Se), exceed the primary drinking-water standards of 50, 50, and 10 micrograms per liter (µg/L) respectively of the U.S. Environmental Protection Agency (1986). In addition, high concentrations of uranium (U) have been detected in water from some wells. A drinking-water standard for U has not yet been established by the U.S. Environmental Protection Agency. An assessment of the ground-water quality within the Central Oklahoma aquifer through 1987 is presented by Parkhurst and others (1989). Mosier and Bullock (1988) provide a review of the general geology and previously conducted geochemical studies in the vicinity of the Central Oklahoma aquifer.

To evaluate the sources of and processes responsible for mobilization of the NOTS materials, a cooperative effort between the U.S. Geological Survey's Water Resource Division and Geologic Division was initiated. The study of the NOTS in the western part of the study area was made in cooperation with the Association of Central Oklahoma Governments. Nine wells were drilled at various locations in the aquifer for the purpose of studying the natural rock-water interaction (Fig. 2). Analytical results for 549 rock samples collected from eight of the drill cores were presented by Mosier and others, 1990. Detailed studies of the water and associated rocks are in progress. The purpose of the sequential extraction study is to aid in identifying the sources of the NOTS in the aquifer rocks as well as providing insight into the processes by which the NOTS are being mobilized. Eighty-six

samples were selected for sequential extraction analyses from the cores of six of the test wells (1A, 2, 5, 6, 7, and 7A). The samples were selected to represent typical and enriched rocks from various lithologies. This report summarizes the analytical results for the two sequential extraction procedures.

SAMPLE PREPARATION

Core material was collected from eight of the cores and split. One half of the core was reserved for detailed description of lithology and sedimentology; the other half was sampled for chemical and petrographic analyses. The core material was sampled based on lithologic variations, e.g. sandstone, mudstone, siltstone, and conglomerate, and on visible diagenetic variations, e.g. color, redox spots, presence of carbonate, iron enrichment, etc. Each sample is a composite of chips from the core interval sampled. Core samples were crushed and then pulverized to less than 0.15 mm with ceramic plates.

ANALYTICAL PROCEDURES

Table 1 lists the 86 core samples used in this study, their depth interval, and a lithologic description. Sample identifiers allow correlation with those used in other publications resulting from the Central Oklahoma Aquifer study. Samples were selected for the sequential extraction study to represent a variety of lithologies containing typical and enriched concentrations of elements, particularly the NOTS.

5-Step Sequential Extraction Procedure

The 5-step sequential dissolution procedure used in this study was developed by Chao and Sanzolone (1989) specifically for the fractionation of soil selenium. We used the procedure without modification for the determination of 5 major elements (Al, Ca, Fe, Mg, and Na) and 8 minor or trace elements (As, Ba, Cr, Mn, Se, Sr, U, and V). In general, elements are more mobile in an oxidized form rather than in a reduced state, e.g., oxy-anions; therefore a scheme that identifies residences of Se would also be applicable for As, Cr, and U. The five steps extract metals from various samples as follows (Chao and Sanzolone, 1989):

Step 1. Soluble. The sediments were extracted at room temperature by continuous agitation for 30 minutes with 0.25 *M* potassium chloride solution. Potassium chloride (0.25 *M* KCl) will dissolve water soluble elements. Nonspecifically adsorbed anions are replaced by the chloride ion through anion exchange and mass action and cations are exchanged for the potassium ion.

Step 2. Ligand Exchangeable. Residues from step 1 were extracted at room temperature for 30 minutes by continuous agitation with 0.1 *M* potassium dihydrogen phosphate solution. Potassium dihydrogen phosphate (0.1 *M* KH_2PO_4) is effective in exchanging anions specifically adsorbed on clays and hydrated oxides of iron and manganese through ligand-exchange reaction and anion competition.

Step 3. Acid Extractable. Residues from step 2 were extracted for 45 minutes with hot 4 *M* hydrochloric acid. Hydrochloric acid (4 *M* HCl) will dissolve to varying degrees a variety of rock constituents including Fe, Mn, and Al oxides, amorphous materials, carbonates, and mono sulfides.

Step 4. Oxidative Acid Decomposable. Residues from step 3 were extracted at room temperature for 45 minutes with potassium chlorate and concentrated hydrochloric acid. A combination of potassium chlorate ($KClO_3$) and concentrated hydrochloric acid (HCl) makes a strong oxidizing reagent capable of dissolving sulfide minerals and oxidizing and dissolving reduced elemental and residual organic material.

Step 5. Mixed Acid Digestible. Residues from step 4 were digested with a hot mixed-acid solution until near dryness. Mixed-acid solution (HF + HNO_3 + $HClO_4$) is the strongest liquid chemical reagent capable of destroying the silicate lattice, thus dissolving elements imbedded within the silicate structure. These elements are considered to be highly resistant to changes in environmental conditions.

Bicarbonate Extraction

At certain locations in the study area, aquifer waters are characterized by high pH-high bicarbonate content (Parkhurst and others (1989). To mimic these waters, a 2-step bicarbonate extraction was designed.

Step 1. To approximate the same pH and bicarbonate concentration of the aquifer waters, a bicarbonate solution was made by combining 0.3 moles of Na_2CO_3 and 0.7 moles of $NaHCO_3$ per liter of water (pH=9). The bicarbonate extraction procedure is as follows:

1. Weigh 1.0 g of sample into a 50-mL polypropylene centrifuge tube.
2. Add 25 mL of the Bicarbonate Solution and shake on a mechanical shaker at room temperature for 30 min. and centrifuge.
3. Decant the centrifugate into a 100-mL Pyrex beaker, add 1 mL of concentrated HNO_3 to the solution and heat on a shaking hot plate at 95° C for 15 min.

4. Remove the beaker from the hot plate, and add 20 mL of concentrated HCl.
5. Transfer the solution to a 50 mL volumetric flask and take to volume with distilled H_2O.
6. Save for analysis.

Step 2. A sodium hypochlorite (NaOCl)/bicarbonate solution was made by combining 0.3 moles of Na_2CO_3 and 0.7 moles of $NaHCO_3$ per liter of 0.7 *M* NaOCl and adjusted to pH 9.

1. Wash the residue from Step 1 to remove residual salts by adding 25 mL of distilled H_2O to the polypropylene tube, mix on a vortexer, centrifuge, and discard wash.
2. Add 25 mL of the NaOCl/bicarbonate solution and heat in a boiling water bath for 1 hour, shaking occasionally.
3. Centrifuge and decant centrifugate into a 100-mL Pyrex beaker, add 20 mL concentrated HCl and heat on a shaking hot plate at 95° C for 15 minutes.
4. Transfer the solution to a 50 mL volumetric flask and take to volume with distilled H_2O.
5. Save for analysis.

In the bicarbonate extraction procedure, Step 1 was designed to simulate naturally occurring bicarbonate aquifer waters and to assess the mobility of metals by the relatively high pH and carbonate content of such waters. In step 2, sodium hypochlorite oxidation was added to mimic the natural oxidizing nature of the ground water and, thereby, to determine how important oxidative processes are in converting reduced species of NOTS to more soluble oxidized forms.

All analyses were performed at the U.S. Geological Survey laboratories in Lakewood, Colorado. Arsenic and Se were determined by hydride generation-atomic absorption spectroscopy by K.R. Kennedy. Uranium was measured using inductively coupled plasma-mass spectrometry by G.O. Riddle. The rest of the elements were determined by inductively coupled plasma-atomic emission spectrometry by J.M. Motooka.

Explanation of Data Tables

A listing of the samples selected for the sequential extraction study, the depth interval sampled and a lithologic description of each sample is given in Table 1. The sequential results are presented by element in Table 2. Column 1 in both tables contains the assigned sample identifier. The first number in the sample identifier is the drill hole number and the second number is the sample number. Insufficient sample was available for the bicarbonate extractions for samples 2-13, 5-32, 5-35, and 6-73. No NaOCl/bicarbonate extraction was made on the samples

from drill holes 7 and 7A. Columns 2 through 6 give the concentrations obtained in each of the 5 extraction steps and column 7 is a summation of those concentrations. The second group of columns show the percent of the total concentration extracted by each of the 5 steps. Concentrations resulting from the sequential bicarbonate-sodium hypochlorite/bicarbonate extraction procedure are shown in the last two columns.

Results

Because the 5-step sequential procedure used in this study was specifically developed for the fractionation of soil selenium (Chao and Sanzolone, 1989), its usefulness for other elements or for other sample medium may be questioned. To test the applicability of the 5-step sequential procedure for the determination of elements in sedimentary rock samples, a comparison of the total sequential concentration and the analytical results (Mosier and others, 1990) are graphically shown by XY plots in Figure 3. These plots show very close agreement between the two values for As, Ba, Ca, Fe, and V. Plots for Se and Mn also show consistent agreement for the higher concentration levels but indicate some scatter for values below 2 ppm Se and 200 ppm Mn. Selenium scatter below 2 ppm appears to be related to sample type and may be a homogeneity or matrix problem. Those samples that plot away from the one to one line tend to be mudstones and siltstones while those samples that plot nearer the line are generally sandstones and conglomerates. The plots for Al, Mg, Sr, and U show very consistent results but are biased to the analytical result side of the one to one line. This shift may result from the use of different analytical instruments in determining the elemental concentrations for the sequential extraction study and the ICP or DNAA values. Chromium and Na plots indicate a higher degree of scatter around the one to one line. In the case of Na, the scatter may be due to instrumentation calibration or drift. All the sequential total values plotting above the one to one line were determined by the same instrument but at a date considerably later than those values plotting below the line. Although the Cr plot shows some scatter, it is also somewhat biased to the right of the one to one line. In addition to the use of two instruments to determine the Cr values, the presence of chromite and the difficulties of dissolving chromite may have contributed to the Cr scatter and shift. In general, the 5-step sequential extraction technique is considered applicable for determining the fractionation in sedimentary rocks of the 13 elements reported.

The average percent extracted in each of the 5 steps for the 13 elements is shown in Table 3. With the exception of Cr, step-1, the soluble extraction step, was capable of extracting a portion of all the elements. Barium, Na, and Ca were readily extracted (20.5%, 19.6%, and 18.3% respectively) and appreciable Se

(5.62%), Mg (4.17%) and As (1.65%) were extracted. Only trace amounts of Al, Fe, Mn, U, and V were extracted. In step-2 (ligand exchangeable), significant Ca (6.90%), Mn (5.65%), As (5.13%), and U (4.72%) were extracted with lesser concentrations of Mg (2.74%), Na (2.33%), Ba (1.60%), Se (1.52%) and V (1.45%) being extracted. Only trace amounts of Al and Fe were extracted and no Cr was extracted. Steps 3, 4, and 5 are the extraction steps that digest rock forming minerals and, therefore, are the steps where the majority of the elements are extracted. It is unlikely that elements extracted in steps 3, 4, and 5 would be mobilized by aquifer waters.

With the exception of Mn and Cr, the high pH/bicarbonate solution was capable of extracting a portion of the metals from all or nearly all of the samples. Chromium was extracted from approximately ten percent of the samples but no Mn above the 18 parts per millon detection limit was extracted from any of the samples. The oxidative bicarbonate solution ($NaOCl/NaHCO_3$) was effective in extracting significant additional concentrations of Al, As, Ba, Se, U, and V. Generally higher concentrations of Se and V were obtained from the sequential oxidative bicarbonate extraction than from the bicarbonate extraction. Although trace amounts were detected, the oxidative bicarbonate extraction was not effective in extracting significant concentrations of Ca, Fe, Mg, and Sr. Chromium was extracted from a few samples by the oxidative bicarbonate extraction and generally at a higher value than obtained from the bicarbonate extraction. Manganese was not extracted by the oxidative bicarbonate extraction.

REFERENCES

Chao, T.T. and Sanzolone, R.F., 1989, Fractionation of soil selenium by sequential partial dissolution: Soil Sci. Soc. Am. J. 53:385-392.

Hirsch, R.M., Alley, W.M., and Wilber, W.G., 1988, Concepts for a National Water Quality Assessment Program: U.S. Geological Survey Circular 1021, 42 p.

Mosier, E.L. and Bullock J.H., 1988, Review of the general geology and solid-phase geochemistry studies in the vicinity of the Central Oklahoma aquifer: U.S. Geological Survey Circular 1019, 18p.

Mosier, E.L., Briggs, P.H., Crock, J.G., Kennedy, K.R., McKown, D.M., Vaughn, R.B., and Welsch, E.P., 1990, Analyses of subsurface Permian rock samples from the Central Oklahoma aquifer: U.S. Geological Survey Open-File Report 90-456, 65p.

Parkhurst, D.L., Christenson, S.C., and Schlottmann, J.L., 1989, Ground-water-quality assessment of the Central Oklahoma aquifer, Oklahoma--Analysis of available water-quality data through 1987: U.S Geological Survey Open-file Report 88-728, 80P.

U.S. Environmental Protection Agency, 1986, Maximum contaminant levels (subpart B of part 141, National interim primary drink-water regulations): U.S. Code of Federal Regulations, Title 40, Parts 100-149, revised as of July 1,1986, p. 374.

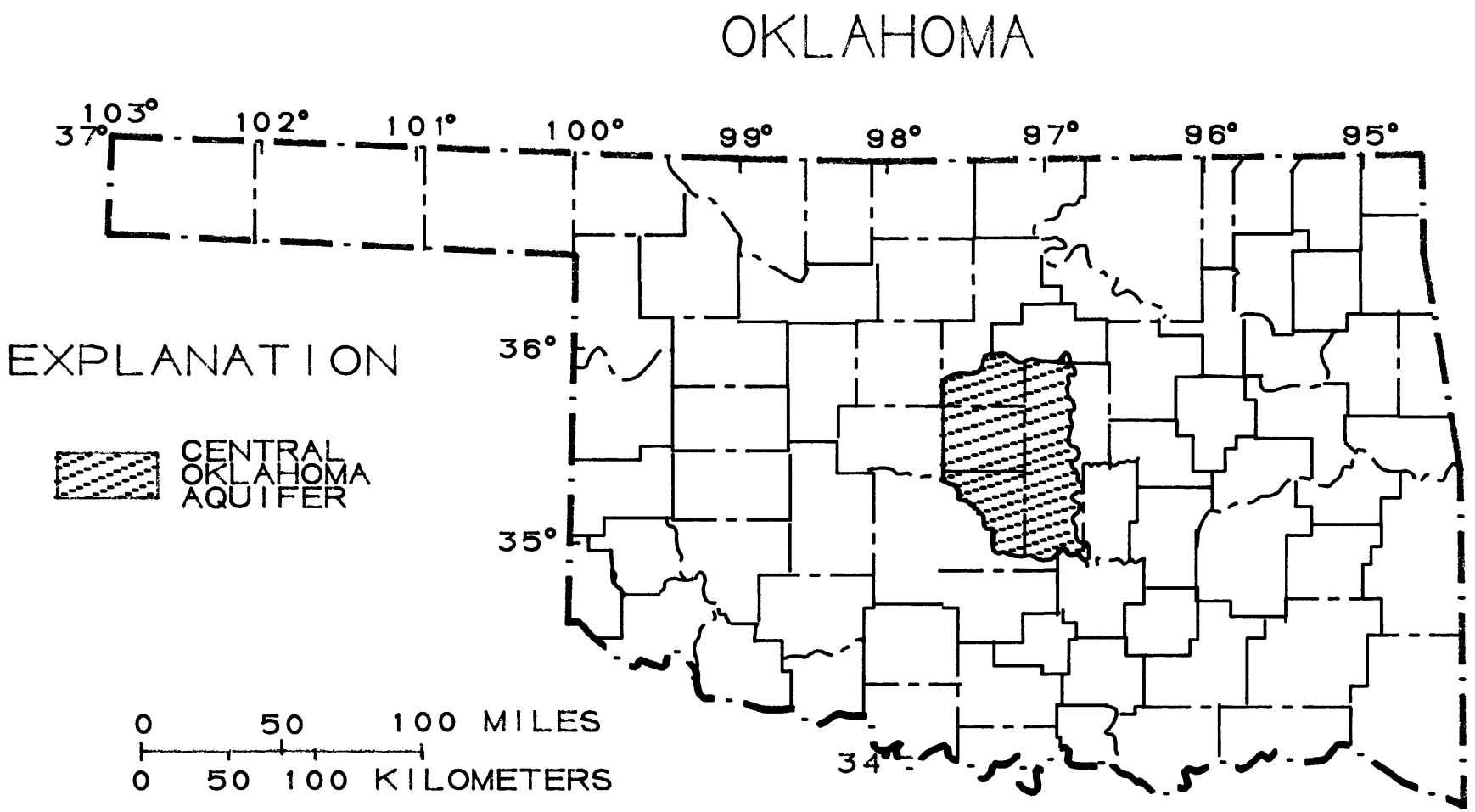


Figure 1. Location of the Central Oklahoma aquifer.

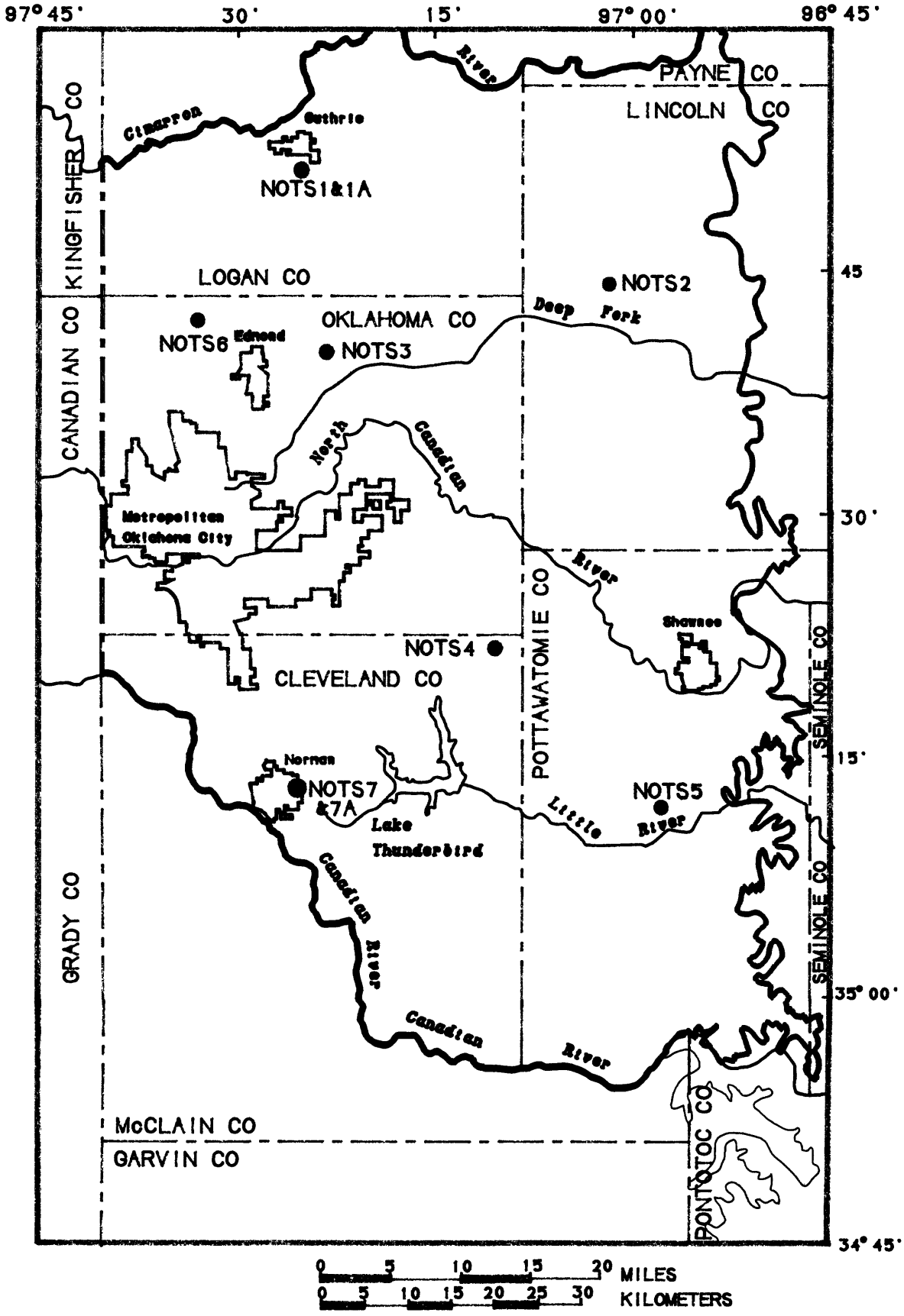


Figure 2. Geographic features of study area and drill hole locations for Naturally Occurring Trace Substances (NOTS) study.

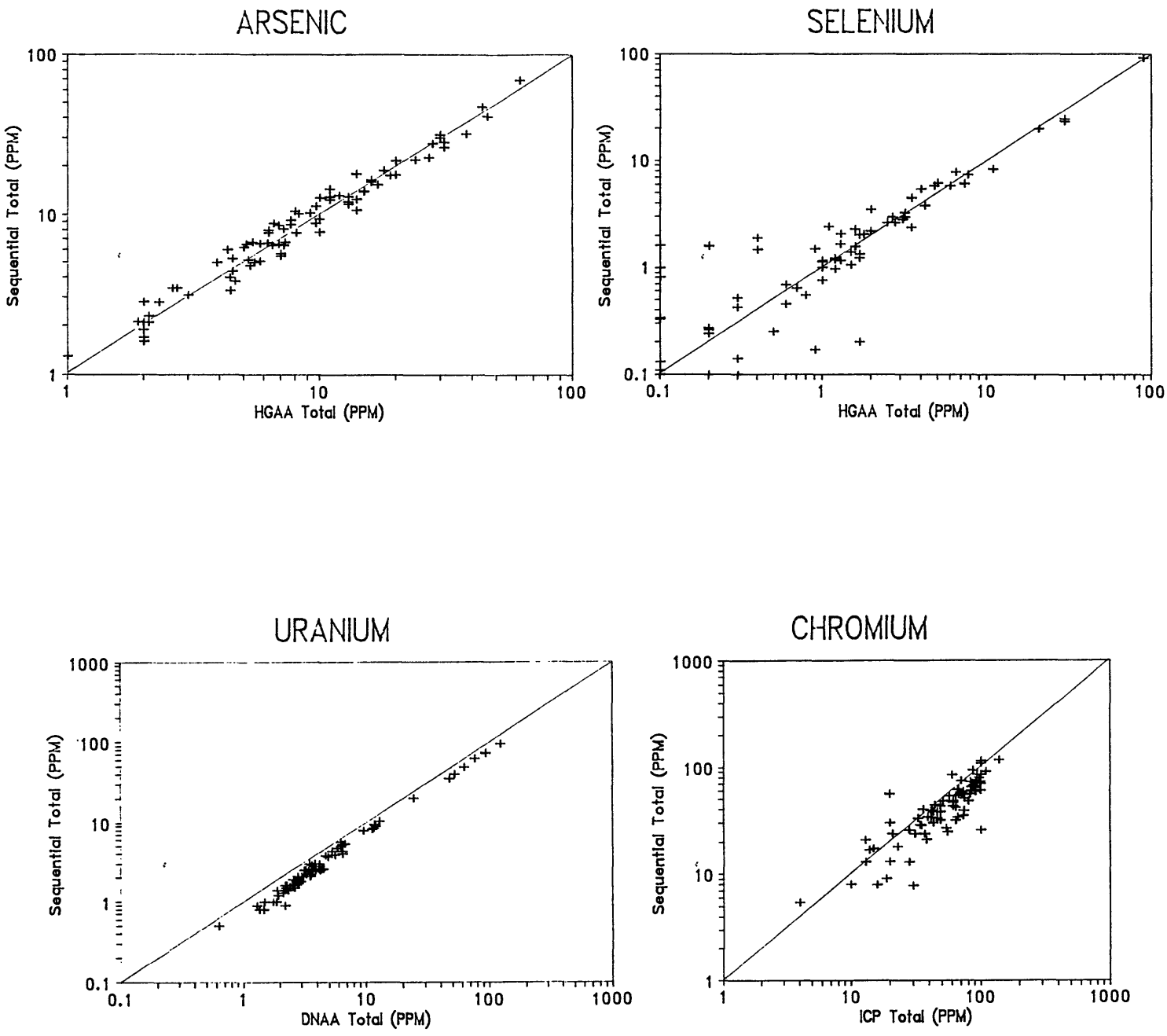
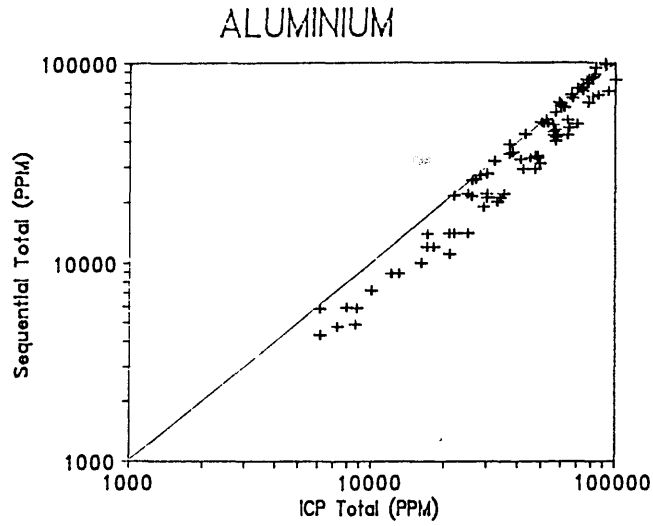
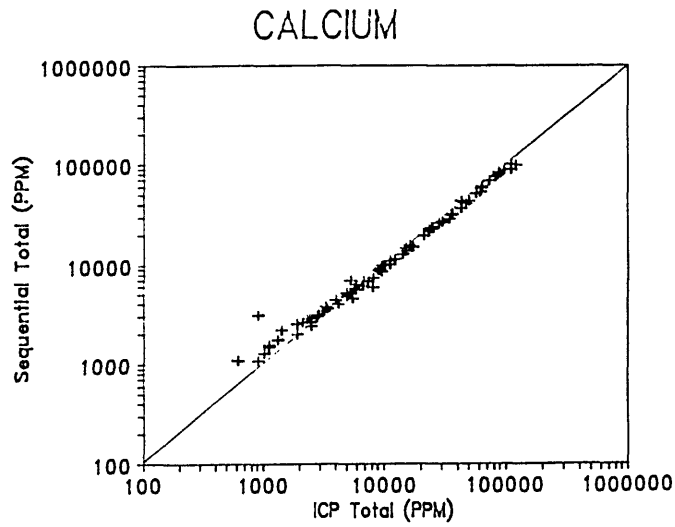
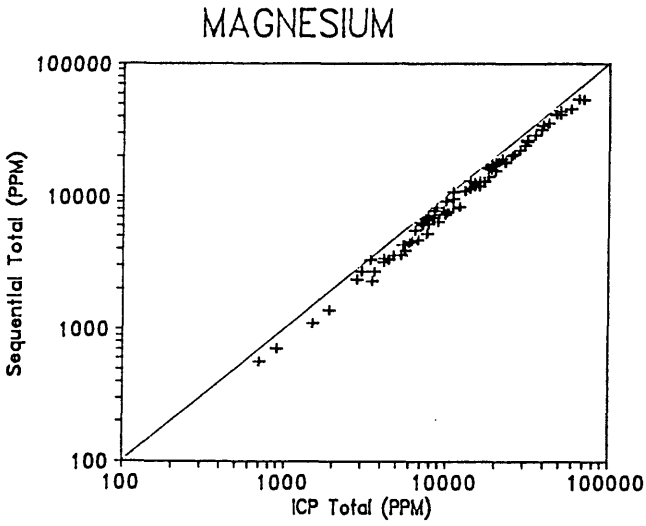


Figure 3. Plot of total sequential concentration versus reported concentration.







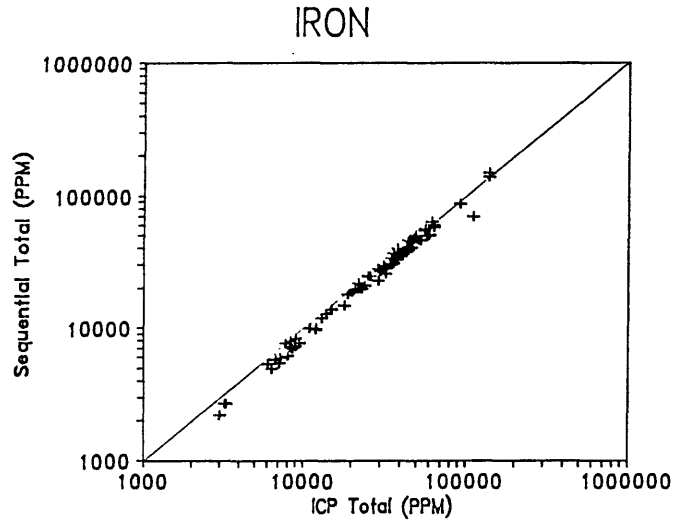


Figure 3. Continued.

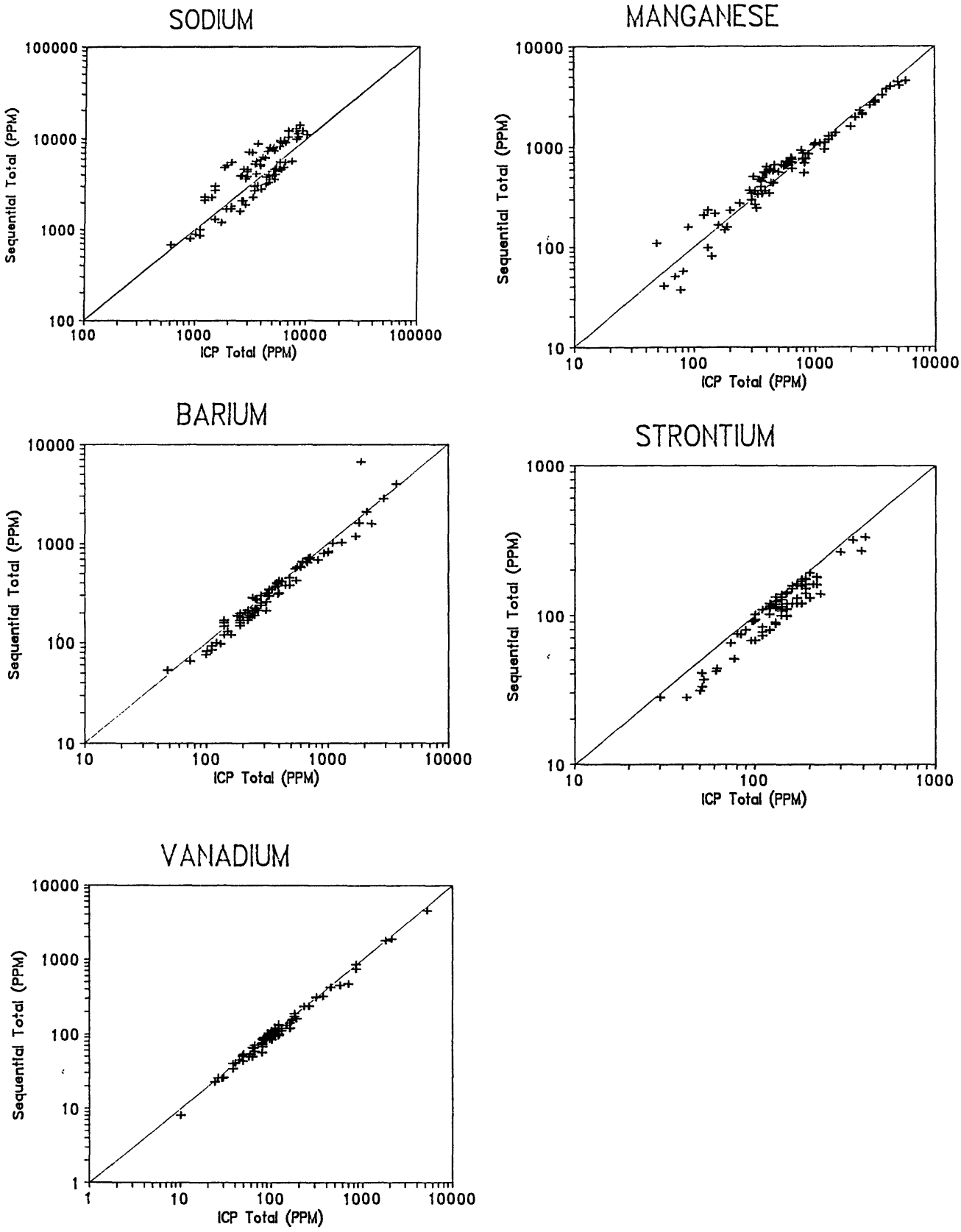


Figure 3. Continued.

Table 1. List of samples, their depth interval and lithologic description.

Sample	Depth Interval (feet)	Lithologic Description
1A-19	62.3	Friable, yellow-brown, fine-grained sandstone.
1A-31	100.6-102.1	Reddish brown and white laminated siltstone.
1A-55	183.9-184.0	Dark purplish red and clay-pebble and -cobble iron-rich conglomerate.
1A-61	195.6-196.1	Purple, red, and yellow-brown carbonate pebble conglomerate.
1A-63	202.1-203.4	Light green, red, purplish red and yellow-brown mud-pebble conglomerate.
1A-72	233.1-233.3	Dark purplish red, iron rich conglomerate.
1A-77	246.0-246.2	Blue-grey pattern on purple sandstone with carbonate cement.
1A-78	246.2-249.4	Red, fine-grained sandstone.
1A-79	249.4-249.6	Purple, light green, and red mudstone and sand-granule carbonate-cemented conglomerate.
1A-80	249.6-255.1	Red, fine-grained sandstone with mud-pebble conglomerate and rare purple iron nodules.
1A-81	255.1-259.2	Red mudstone and very fine-grained sandstone.
1A-82	259.2-268.0	Red, fine-grained sandstone.
2-10	58.8-59.7	Red, clay-rich sandstone.
2-13	71.4	White redox spot with dark center.
2-20	99.5-106.5	Red and white sandstone.
2-21	106.5-108.9	Carbonate-cemented conglomerate.
2-23	116.5-117.3	Carbonate-cemented conglomerate.
2-24	117.3-126.2	Red mudstone.
2-26	131.1	Black spot with rim of green in white sandstone.
2-31	148.1-153.2	Burrowed red mudstone.
2-37	182.6-183.2	Green carbonate-cemented conglomerate.
2-38	183.2-184.9	White and red mudstone.
2-55	252.6-253.6	White and red mudstone.
5-32	137.0-138.5	White sandstone with green clay.
5-35	149.7-151.6	White sandstone.
5-47	198.4-199.8	Pale red chert conglomerate with rare carbonate cement.
6-8	48.4-49.4	Red mudstone.
6-17	76.0-78.0	Carbonate cemented purple conglomerate.
6-69	357.5-362.5	Bioturbated red sandstone.
6-70	362.5-367.5	Bioturbated red sandstone.
6-71	367.5-376.5	Light yellow and purple sandstone with local carbonate nodules.
6-72	376.5-378.5	Orange-red iron-rich sandstone.
6-73	380.0-384.2	Bioturbated red and white sandstone.
6-77	402.0-410.5	Red and white siltstone.
6-78	404.6	Green mineral in sand lens.
6-79	410.5-414.4	Red carbonate-cemented sandstone.
6-86	440.7-441.4	Iron-rich conglomerate.
6-87	441.1-445.0	Red and white limonitic silts and mudstone.
6-88	445.0-450.0	Red and white sandstone with local carbonate cement.
6-89	450.0-460.0	Iron-rich siltstone and sandstone.
6-90	460.0-466.3	Red siltstone and sandstone.
6-91	466.3-474.5	Pale red and red sandstone.
6-92	474.5-479.0	Pink sandstone with carbonate cement.
6-93	479.0-485.0	Purple and red-mottled sandstone.
6-94	485.0-490.0	Pink sandstone.

Table 1. Continued.

Sample	Depth Interval (feet)	Lithologic Description
6-95	490.0-494.6	Pink sandstone.
6-96	495.0-496.8	Tight pale red carbonate-cemented sandstone.
6-97	496.8-501.5	Red clay-rich sandstone.
6-98	501.5-502.8	Green carbonate-cemented conglomerate.
6-99	502.8-506.0	Orange-red iron-rich mudstone.
6-105	538.6-539.0	Red paleosol with carbonate nodules.
6-108	558.3-560.7	Light green sandstone with carbonate.
6-109	560.7-566.5	Red mudstone.
6-112	571.6-571.9	Green silty mudstone.
7-8	60.0-61.5	Light green siltstone.
7-9	61.5-71.0	Red mudstone.
7-25	138.0-141.6	Red mudstone.
7-28	146.0-146.1	Red and green siltstone with vanadium mineral along bedding.
7-29	146.1-147.7	Reddish brown, very fine-grained sandstone.
7-30	147.7-148.0	Green, very fine-grained sandstone with vanadium mineral in redox spot.
7-31	149.0-160.0	Red siltstone and mudstone.
7-32	160.0-170.0	Red siltstone and mudstone.
7-33	170.0-179.9	Red siltstone and mudstone.
7-34	179.9-181.0	Green, very fine-grained sandstone.
7-35	181.0-185.2	Red and light green mudstone and siltstone.
7A-10	242.5-243.0	Red siltstone.
7A-12	243.3-247.8	Red siltstone and mudstone.
7A-14	250.2-250.3	Red, fine-grained sandstone with greenish yellow-brown clay.
7A-16	263.3-273.0	Friable, red and light red fine-grained sandstone.
7A-26	303.2-309.0	Red mudstone.
7A-31	329.0-331.0	Bioturbated red siltstone.
7A-32	331.0-332.2	White and light red fine-grained sandstone with yellow-brown staining.
7A-35	346.7-351.9	Red and white siltstone and very fine-grained sandstone.
7A-36	350.6-350.7	Red sandstone with burrows or root traces and yellow-brown staining.
7A-38	353.0-353.3	Light green clay-rich fine-grained sandstone.
7A-40	361.0-362.0	Red mudstone and very fine-grained sandstone with rare carbonate.
7A-44	370.5-376.0	Red and white fine-grained sandstone.
7A-45	376.0-376.9	Light green and purple red, clay-rich, fine-grained sandstone.
7A-46	381.0-381.1	Light green, purple, and light red, fine-grained sandstone.
7A-47	381.1-394.6	Red mudstone.
7A-51	404.0-406.1	Carbonate cemented mud and sand pebble conglomerate.
7A-55	425.0-431.1	Red mudstone and siltstone.
7A-58	445.5-453.5	Bioturbated red siltstone.
7A-73	543.0-547.9	Red iron-rich red siltstone.
7A-78	568.7-569.1	Mud-pebble conglomerate.
7A-79	571.0-572.0	Red iron rich mudstone.

Table 2. Sequential extraction analytical results. Exraction step 1; soluble, step 2; ligant exchangeable, step 3; acid extractable, step 4; oxidative acid decomposable, step 5; mixed acid digestible.

	Al Analytical Values in PPM						Percent Al Extracted					PPM	PPM
Sample	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
1A-19	26.0	30.0	570	210	5000	5836	0.45	0.51	9.8	3.6	85.7	10	9.4
1A-31	47.0	31.0	3300	270	43000	46648	0.10	0.07	7.1	0.6	92.2	20	9.4
1A-55	27.0	36.0	3300	360	30000	33723	0.08	0.11	9.8	1.1	89.0	15	5.6
1A-61	23.0	24.0	2700	210	19000	21957	0.10	0.11	12.3	1.0	86.5	15	6.2
1A-63	90.0	40.0	4800	490	38000	43420	0.21	0.09	11.1	1.1	87.5	18	9.7
1A-72	53.0	12.0	1700	190	12000	13955	0.38	0.09	12.2	1.4	86.0	17	<2.5
1A-77	38.0	11.0	970	86	9100	10205	0.37	0.11	9.5	0.8	89.2	18	13
1A-78	20.0	46.0	1400	390	24000	25856	0.08	0.18	5.4	1.5	92.8	11	7.0
1A-79	29.0	54.0	1900	210	17000	19193	0.15	0.28	9.9	1.1	88.6	19	12
1A-80	39.0	29.0	1400	73	20000	21541	0.18	0.13	6.5	0.3	92.8	17	13
1A-81	46.0	52.0	3400	1000	80000	84498	0.05	0.06	4.0	1.2	94.7	11	15
1A-82	40.0	22.0	1400	90	27000	28552	0.14	0.08	4.9	0.3	94.6	22	11
2-10	44.0	41.0	4700	1500	62000	68285	0.06	0.06	6.9	2.2	90.8	22	20
2-13	6.5	34.0	4100	530	40000	44671	0.01	0.08	9.2	1.2	89.5		
2-20	36.0	58.0	2300	1300	48000	51694	0.07	0.11	4.4	2.5	92.9	11	<2.5
2-21	30.0	50.0	3700	1100	44000	48880	0.06	0.10	7.6	2.3	90.0	12	19
2-23	10.0	26.0	1700	79	12000	13815	0.07	0.19	12.3	0.6	86.9	19	79
2-24	54.0	58.0	7100	3800	58000	69012	0.08	0.08	10.3	5.5	84.0	28	9.0
2-26	<5.0	58.0	2100	230	31000	33388	0.00	0.17	6.3	0.7	92.8	40	36
2-31	33.0	44.0	2300	310	43000	45687	0.07	0.10	5.0	0.7	94.1	16	9.9
2-37	<5.0	50.0	1700	97	12000	13847	0.00	0.36	12.3	0.7	86.7	16	19
2-38	<5.0	72.0	12000	1800	68000	81872	0.00	0.09	14.7	2.2	83.1	17	59
2-55	<5.0	73.0	2200	380	40000	42653	0.00	0.17	5.2	0.9	93.8	20	3.1
5-32	20.0	<5.0	2800	270	30000	33090	0.06	0.00	8.5	0.8	90.7		
5-35	58.0	22.0	1500	67	19000	20647	0.28	0.11	7.3	0.3	92.0		
5-47	26.0	5.3	1200	46	11000	12277	0.21	0.04	9.8	0.4	89.6	13	<2.5
6-8	460.0	480.0	3800	330	67000	72070	0.64	0.67	5.3	0.5	93.0	13	22
6-17	30.0	12.0	5500	400	28000	33942	0.09	0.04	16.2	1.2	82.5	17	8
6-69	46.0	80.0	7200	600	59000	66926	0.07	0.12	10.8	0.9	88.2	11	11
6-70	90.0	150.0	4000	330	47000	51570	0.17	0.29	7.8	0.6	91.1	13	7.3
6-71	38.0	110.0	560	94	13000	13802	0.28	0.80	4.1	0.7	94.2	10	12
6-72	130.0	100.0	7000	560	55000	62790	0.21	0.16	11.1	0.9	87.6	12	9.6
6-73	29.0	17.0	6100	390	35000	41536	0.07	0.04	14.7	0.9	84.3		
6-77	25.0	17.0	4100	270	38000	42412	0.06	0.04	9.7	0.6	89.6	18	14
6-78	29.0	51.0	4100	230	36000	40410	0.07	0.13	10.1	0.6	89.1	55	70
6-79	38.0	52.0	6600	390	22000	29080	0.13	0.18	22.7	1.3	75.7	12	28
6-86	24.0	80.0	2000	230	19000	21334	0.11	0.37	9.4	1.1	89.1	7	14
6-87	60.0	80.0	2000	220	30000	32360	0.19	0.25	6.2	0.7	92.7	8	7.3
6-88	16.0	15.0	1900	190	18000	20121	0.08	0.07	9.4	0.9	89.5	21	13
6-89	<5.0	<5.0	520	39	8200	8759	0.00	0.00	5.9	0.4	93.6	20	24
6-90	<5.0	11.0	360	18	3900	4289	0.00	0.26	8.4	0.4	90.9	21	17
6-91	<5.0	9.9	1200	450	5500	7160	0.00	0.14	16.8	6.3	76.8	25	10
6-92	<5.0	22.0	520	32	8200	8774	0.00	0.25	5.9	0.4	93.5	20	14
6-93	<5.0	15.0	300	31	5600	5946	0.00	0.25	5.0	0.5	94.2	19	25
6-94	<5.0	13.0	260	21	4500	4794	0.00	0.27	5.4	0.4	93.9	19	13
6-95	5.1	21.0	510	54	4300	4890	0.10	0.43	10.4	1.1	87.9	22	25

Table 2. Continued.

Sample	Al Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Al Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
6-96	34.0	38.0	350	130	5400	5952	0.57	0.64	5.9	2.2	90.7	11	12
6-97	22.0	44.0	730	54	11000	11850	0.19	0.37	6.2	0.5	92.8	16	46
6-98	28.0	53.0	1800	92	19000	20973	0.13	0.25	8.6	0.4	90.6	23	14
6-99	31.0	13.0	10000	1100	61000	72144	0.04	0.02	13.9	1.5	84.6	77	19
6-105	49.0	36.0	2200	150	29000	31435	0.16	0.11	7.0	0.5	92.3	21	15
6-108	35.0	51.0	1000	63	10000	11149	0.31	0.46	9.0	0.6	89.7	24	24
6-109	52.0	50.0	7600	4000	88000	99702	0.05	0.05	7.6	4.0	88.3	16	12
6-112	86.0	26.0	2500	170	40000	42782	0.20	0.06	5.8	0.4	93.5	31	14
7-8	25.0	93.0	3500	750	31000	35368	0.07	0.26	9.9	2.1	87.6	31	
7-9	16.0	58.0	12000	3000	63000	78074	0.02	0.07	15.4	3.8	80.7	19	
7-25	18.0	50.0	13000	3100	82000	98168	0.02	0.05	13.2	3.2	83.5	19	
7-28	11.0	140.0	5200	1200	50000	56551	0.02	0.25	9.2	2.1	88.4	30	
7-29	19.0	70.0	3600	1100	45000	49789	0.04	0.14	7.2	2.2	90.4	18	
7-30	13.0	95.0	5300	1200	54000	60608	0.02	0.16	8.7	2.0	89.1	26	
7-31	43.0	55.0	8700	2100	67000	77898	0.06	0.07	11.2	2.7	86.0	16	
7-32	43.0	55.0	7700	2400	64000	74198	0.06	0.07	10.4	3.2	86.3	18	
7-33	6.3	38.0	8800	2700	48000	59544	0.01	0.06	14.8	4.5	80.6	28	
7-34	7.4	37.0	3000	850	18000	21894	0.03	0.17	13.7	3.9	82.2	25	
7-35	7.4	31.0	8300	2800	51000	62138	0.01	0.05	13.4	4.5	82.1	24	
7A-10	9.6	53.0	7900	2500	56000	66463	0.01	0.08	11.9	3.8	84.3	23	
7A-12	13.0	41.0	11000	2400	50000	63454	0.02	0.06	17.3	3.8	78.8	25	
7A-14	11.0	61.0	2700	650	18000	21422	0.05	0.28	12.6	3.0	84.0	15	
7A-16	21.0	52.0	4200	790	22000	27063	0.08	0.19	15.5	2.9	81.3	22	
7A-26	15.0	34.0	13000	4400	67000	84449	0.02	0.04	15.4	5.2	79.3	36	
7A-31	16.0	28.0	7600	2000	78000	87644	0.02	0.03	8.7	2.3	89.0	25	
7A-32	16.0	55.0	2300	290	23000	25661	0.06	0.21	9.0	1.1	89.6	17	
7A-35	23.0	28.0	8800	950	40000	49801	0.05	0.06	17.7	1.9	80.3	18	
7A-36	17.0	25.0	9200	960	41000	51202	0.03	0.05	18.0	1.9	80.1	17	
7A-38	34.0	53.0	4400	510	27000	31997	0.11	0.17	13.8	1.6	84.4	11	
7A-40	16.0	33.0	6000	730	43000	49779	0.03	0.07	12.1	1.5	86.4	17	
7A-44	15.0	42.0	3200	520	35000	38777	0.04	0.11	8.3	1.3	90.3	14	
7A-45	22.0	42.0	8500	880	34000	43444	0.05	0.10	19.6	2.0	78.3	18	
7A-46	17.0	86.0	6800	740	27000	34643	0.05	0.25	19.6	2.1	77.9	25	
7A-47	20.0	55.0	12000	1800	68000	81875	0.02	0.07	14.7	2.2	83.1	21	
7A-51	15.0	38.0	3100	390	24000	27543	0.05	0.14	11.3	1.4	87.1	20	
7A-55	23.0	44.0	9100	1200	72000	82367	0.03	0.05	11.0	1.5	87.4	18	
7A-58	25.0	60.0	11000	1200	82000	94285	0.03	0.06	11.7	1.3	87.0	23	
7A-73	25.0	52.0	8900	940	65000	74917	0.03	0.07	11.9	1.3	86.8	24	
7A-78	18.0	42.0	8300	820	60000	69180	0.03	0.06	12.0	1.2	86.7	19	
7A-79	21.0	52.0	5100	630	64000	69803	0.03	0.07	7.3	0.9	91.7	14	
Analytical range for the extraction of Al.													
Maximum	460.0	480.0	13000	4400	88000	69.6	0.64	0.80	22.70	6.29	94.68	77.0	79.0
Minimum	<5.0	<5.0	260	18	3900	0.8	0.0	0.0	4.0	0.3	75.7	7.0	<2.5

Table 2. Continued.

Sample	As Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent As Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	0.4	2.0	19.0	5.4	4.7	31.5	1.3	6.3	60.3	17.1	14.9	0.70	0.33
1A-31	<0.1	0.1	1.2	0.1	5.3	6.7	0.0	1.5	17.9	1.5	79.1	0.07	0.28
1A-55	0.1	1.0	12.6	6.6	7.9	28.2	0.4	3.5	44.7	23.4	28.0	0.50	1.65
1A-61	0.1	1.0	8.1	1.6	4.7	15.5	0.6	6.5	52.3	10.3	30.3	0.55	2.00
1A-63	<0.1	0.7	6.5	1.7	8.6	17.5	0.0	4.0	37.1	9.7	49.1	0.28	1.60
1A-72	<0.1	0.8	8.2	4.4	9.3	22.7	0.0	3.5	36.1	19.4	41.0	0.37	1.20
1A-77	<0.1	0.2	6.4	1.8	4.1	12.5	0.0	1.6	51.2	14.4	32.8	0.16	0.50
1A-78	0.2	0.5	6.6	1.4	4.3	13.0	1.5	3.8	50.8	10.8	33.1	0.12	0.07
1A-79	<0.1	0.2	5.8	2.9	6.5	15.4	0.0	1.3	37.7	18.8	42.2	0.14	0.46
1A-80	<0.1	<0.1	2.0	0.2	4.2	6.4	0.0	0.0	31.3	3.1	65.6	0.07	0.25
1A-81	0.3	0.5	1.9	0.2	9.2	12.1	2.5	4.1	15.7	1.7	76.0	0.19	0.45
1A-82	<0.1	<0.1	0.9	<0.1	4.8	5.7	0.0	0.0	15.8	0.0	84.2	0.05	0.12
2-10	0.2	0.6	3.7	1.3	3.0	8.8	2.3	6.8	42.0	14.8	34.1	0.34	1.25
2-13	0.5	0.7	0.6	<0.1	2.0	3.8	13.2	18.4	15.8	0.0	52.6		
2-20	0.3	0.8	9.7	4.2	3.9	18.9	1.6	4.2	51.3	22.2	20.6	0.36	0.22
2-21	0.3	1.2	23.0	2.4	3.2	30.1	1.0	4.0	76.4	8.0	10.6	0.55	0.34
2-23	0.1	<0.1	0.8	<0.1	0.7	1.6	6.3	0.0	50.0	0.0	43.7	0.05	0.11
2-24	0.2	0.9	5.9	1.9	4.3	13.2	1.5	6.8	44.7	14.4	32.6	0.44	0.12
2-26	0.2	<0.1	0.2	<0.1	1.7	2.1	9.5	0.0	9.5	0.0	81.0	0.08	0.14
2-31	0.2	0.4	3.2	0.4	2.3	6.5	3.1	6.2	49.2	6.2	35.4	0.13	0.50
2-37	0.1	0.1	0.9	<0.1	1.0	2.1	4.8	4.8	42.9	0.0	47.6	<0.05	0.08
2-38	0.1	0.3	1.6	0.2	2.9	5.1	2.0	5.9	31.4	3.9	56.9	0.14	0.28
2-55	0.1	0.1	0.8	0.1	2.0	3.1	3.2	3.2	25.8	3.2	64.5	0.06	0.15
5-32	0.2	<0.1	0.1	<0.1	2.0	2.3	8.7	0.0	4.3	0.0	87.0		
5-35	0.1	<0.1	<0.1	<0.1	1.2	1.3	7.7	0.0	0.0	0.0	92.3		
5-47	0.1	<0.1	0.8	<0.1	1.0	1.9	5.3	0.0	42.1	0.0	52.6	0.05	0.10
6-8	0.4	0.8	12.0	1.3	7.5	22.0	1.8	3.6	54.5	5.9	34.1	0.55	2.10
6-17	0.1	0.2	2.8	0.3	2.1	5.5	1.8	3.6	50.9	5.5	38.2	0.10	0.48
6-69	<0.1	0.4	3.3	0.5	5.2	9.4	0.0	4.3	35.1	5.3	55.3	0.17	0.48
6-70	0.1	0.6	6.8	0.7	5.9	14.1	0.7	4.3	48.2	5.0	41.8	0.24	1.00
6-71	0.2	0.3	3.4	0.2	1.9	6.0	3.3	5.0	56.7	3.3	31.7	0.11	0.48
6-72	0.1	0.8	10.0	0.9	6.1	17.9	0.6	4.5	55.9	5.0	34.1	0.38	1.00
6-73	<0.1	0.3	5.7	0.3	4.4	10.7	0.0	2.8	53.3	2.8	41.1		
6-77	0.2	0.3	2.8	0.2	4.3	7.8	2.6	3.8	35.9	2.6	55.1	0.14	0.46
6-78	0.1	<0.1	0.2	<0.1	3.0	3.3	3.0	0.0	6.1	0.0	90.9	0.08	0.10
6-79	0.2	0.6	11.0	0.9	5.1	17.8	0.9	3.6	61.8	5.1	28.7	0.25	1.60
6-86	0.3	1.6	28.0	4.0	7.4	41.3	0.7	3.9	67.8	9.7	17.9	0.75	6.50
6-87	0.2	0.5	16.0	2.2	9.0	27.9	0.6	1.9	57.3	7.9	32.3	0.20	1.40
6-88	0.2	0.6	6.6	1.3	2.9	11.6	1.7	5.2	56.9	11.2	25.0	0.38	1.45
6-89	0.1	0.2	2.6	0.3	1.8	5.0	2.0	4.0	52.0	6.0	36.0	0.09	0.43
6-90	<0.1	<0.1	0.5	<0.1	1.1	1.6	0.0	0.0	31.3	0.0	68.8	0.05	0.17
6-91	0.2	0.5	3.5	0.7	1.5	6.4	3.1	7.8	54.7	10.9	23.4	0.22	0.55
6-92	0.1	0.1	2.0	0.2	2.0	4.4	2.3	2.3	45.5	4.5	45.5	0.10	0.24
6-93	0.2	0.2	16.5	5.9	9.2	32.0	0.6	0.6	51.6	18.4	28.7	0.07	0.24
6-94	0.1	0.1	15.2	4.4	6.6	26.4	0.4	0.4	57.6	16.7	25.0	0.06	0.16
6-95	0.1	0.2	2.2	0.7	1.6	4.8	2.1	4.2	45.8	14.6	33.3	0.11	0.28

Table 2. Continued.

Sample	As Analytical Values in PPM						Percent As Extracted					PPM	PPM
	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
6-96	0.2	0.2	0.9	0.2	1.4	2.8	7.1	5.7	31.7	5.7	49.8	<0.05	0.11
6-97	<0.1	<0.1	1.2	0.2	2.6	4.0	0.0	0.0	30.0	5.0	65.0	0.06	0.14
6-98	<0.1	<0.1	0.6	<0.1	0.2	0.8	0.0	0.0	75.0	0.0	25.0	0.06	0.10
6-99	<0.1	0.9	6.9	1.4	4.8	14.0	0.0	6.4	49.3	10.0	34.3	0.50	1.25
6-105	<0.1	0.2	2.9	0.2	4.4	7.7	0.0	2.6	37.7	2.6	57.1	0.18	0.55
6-108	<0.1	<0.1	0.2	<0.1	1.5	1.7	0.0	0.0	11.8	0.0	88.2	0.18	0.16
6-109	0.2	1.0	7.2	2.3	5.8	16.5	0.9	6.1	43.8	14.0	35.3	0.60	0.20
6-112	<0.1	<0.1	0.4	<0.1	4.8	5.2	0.0	0.0	7.7	0.0	92.3	0.08	0.13
7-8	0.1	0.2	0.3	<0.1	2.8	3.5	4.1	4.9	9.9	0.0	81.2	0.06	
7-9	<0.1	0.7	2.8	0.2	6.4	10.1	0.0	6.7	27.7	2.2	63.4	0.42	
7-25	<0.1	1.2	5.3	0.5	7.5	14.5	0.0	8.3	36.5	3.7	51.6	0.85	
7-28	0.1	0.2	0.4	<0.1	4.5	5.3	2.6	4.5	8.1	0.0	84.7	0.16	
7-29	<0.1	0.4	1.7	0.1	4.3	6.6	0.0	6.4	25.9	2.1	65.5	0.24	
7-30	1.1	2.2	3.3	0.2	5.6	12.4	8.9	17.8	26.7	1.4	45.3	1.60	
7-31	<0.1	0.7	3.4	0.3	5.8	10.3	0.0	7.2	33.2	3.0	56.6	0.50	
7-32	<0.1	0.6	2.5	0.3	5.3	8.7	0.0	6.7	28.9	3.2	61.2	0.39	
7-33	<0.1	0.5	2.0	0.2	4.0	6.7	0.0	7.5	30.0	2.4	60.1	0.29	
7-34	0.1	0.2	0.2	<0.1	1.7	2.1	5.2	7.1	7.1	0.0	80.6	0.05	
7-35	<0.1	0.7	2.4	0.3	4.6	8.0	0.0	8.3	30.0	4.1	57.6	0.41	
7A-10	<0.1	1.1	6.6	1.2	4.0	12.9	0.0	8.5	51.2	9.3	31.0	0.70	
7A-12	<0.1	1.4	6.9	0.8	3.9	13.0	0.0	10.8	53.2	6.0	30.0	0.85	
7A-14	0.1	3.8	34.0	6.1	3.2	47.2	0.3	8.0	72.0	12.9	6.8	2.10	
7A-16	<0.1	2.2	15.0	1.8	2.8	21.8	0.0	10.1	68.8	8.3	12.8	1.40	
7A-26	<0.1	0.7	1.9	0.3	3.4	6.3	0.0	10.9	30.4	4.3	54.4	0.35	
7A-31	<0.1	0.7	2.8	0.6	4.7	8.8	0.0	8.2	31.8	6.7	53.3	0.44	
7A-32	<0.1	0.3	1.2	<0.1	1.9	3.4	0.0	9.4	35.1	0.0	55.6	0.15	
7A-35	<0.1	0.8	4.3	0.2	2.8	8.1	0.0	10.2	52.8	2.6	34.4	0.49	
7A-36	0.1	8.1	54.0	3.6	3.8	69.6	0.2	11.6	77.6	5.2	5.5	4.90	
7A-38	<0.1	0.3	0.5	<0.1	2.1	2.8	0.0	8.9	16.1	0.0	75.0	0.10	
7A-40	0.3	1.5	10.0	0.7	3.6	16.1	2.1	9.3	62.2	4.1	22.4	1.00	
7A-44	0.2	0.6	4.9	0.3	3.2	9.2	2.6	6.9	53.1	2.7	34.7	0.37	
7A-45	<0.1	0.4	1.6	<0.1	3.0	5.0	0.0	8.0	32.0	0.0	60.0	0.21	
7A-46	0.1	0.3	3.6	0.2	2.5	6.7	1.5	4.2	53.8	3.1	37.4	0.16	
7A-47	<0.1	0.7	3.3	0.4	4.2	8.6	0.0	8.4	38.5	4.1	49.0	0.46	
7A-51	0.2	0.6	7.3	0.5	2.7	11.3	1.9	5.7	64.6	4.0	23.9	0.44	
7A-55	<0.1	1.7	11.0	1.1	4.2	18.0	0.0	9.4	61.1	6.1	23.3	1.00	
7A-58	<0.1	1.1	7.2	0.6	3.8	12.7	0.0	8.7	56.6	4.8	29.9	0.65	
7A-73	<0.1	0.4	5.1	0.3	4.7	10.5	0.0	4.2	48.6	2.5	44.8	0.22	
7A-78	<0.1	0.3	2.5	0.1	3.6	6.5	0.0	4.9	38.3	1.5	55.2	0.14	
7A-79	<0.1	0.5	3.7	0.2	3.3	7.7	0.0	6.0	48.2	2.7	43.0	0.18	
Analytical range for the extraction of As.													
Maximum	1.1	8.1	54.0	6.6	9.3	69.6	13.2	18.4	77.6	23.4	92.3	4.9	6.5
Minimum	<0.1	<0.1	<0.1	<0.1	0.2	0.8	0.0	0.0	0.0	0.0	5.5	0.0	0.1

Table 2. Continued.

	Ba Analytical Values in PPM						Percent Ba Extracted					PPM	PPM
Sample	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
1A-19	13	3.0	9.5	1.7	26	53	24.4	5.6	17.9	3.2	48.9	4	2.0
1A-31	47	4.4	12.0	0.6	150	214	22.0	2.1	5.6	0.3	70.1	12	4.1
1A-55	150	45.0	91.0	4.0	89	379	39.6	11.9	24.0	1.1	23.5	53	24.0
1A-61	52	16.0	35.0	1.4	68	172	30.2	9.3	20.3	0.8	39.4	14	7.5
1A-63	55	2.6	17.0	1.1	130	206	26.7	1.3	8.3	0.5	63.2	12	3.9
1A-72	110	38.0	110.0	4.4	49	311	35.3	12.2	35.3	1.4	15.7	41	23.0
1A-77	43	9.4	43.0	2.1	32	130	33.2	7.3	33.2	1.6	24.7	15	5.8
1A-78	68	10.0	630.0	77.0	240	1025	6.6	1.0	61.5	7.5	23.4	25	39.0
1A-79	140	21.0	1200.0	0.8	260	1622	8.6	1.3	74.0	0.0	16.0	23	64.0
1A-80	38	3.4	16.0	0.6	62	120	31.7	2.8	13.3	0.5	51.7	13	2.4
1A-81	80	6.4	45.0	4.0	240	375	21.3	1.7	12.0	1.1	63.9	31	8.8
1A-82	42	5.3	17.0	0.9	88	153	27.4	3.5	11.1	0.6	57.4	19	3.6
2-10	31	0.9	7.7	0.9	150	191	16.3	0.5	4.0	0.5	78.7	5	2.9
2-13	22	1.0	4.6	0.4	96	124	17.7	0.8	3.7	0.3	77.4		
2-20	61	6.4	12.0	3.8	130	213	28.6	3.0	5.6	1.8	61.0	29	4.0
2-21	62	6.6	21.0	3.4	130	223	27.8	3.0	9.4	1.5	58.3	30	7.3
2-23	28	2.0	7.3	0.3	38	76	37.0	2.6	9.7	0.4	50.3	12	3.6
2-24	200	8.2	46.0	8.3	190	453	44.2	1.8	10.2	1.8	42.0	32	12.0
2-26	47	6.3	15.0	0.5	110	179	26.3	3.5	8.4	0.3	61.5	23	15.0
2-31	170	13.0	13.0	0.6	120	317	53.7	4.1	4.1	0.2	37.9	120	15.0
2-37	75	7.0	260.0	7.9	34	384	19.5	1.8	67.7	2.1	8.9	12	46.0
2-38	82	0.5	23.0	1.4	130	237	34.6	0.2	9.7	0.6	54.9	18	5.0
2-55	35	5.4	6.9	0.5	130	178	19.7	3.0	3.9	0.3	73.1	13	5.4
5-32	12	0.5	32.0	2.1	110	157	7.7	0.3	20.4	1.3	70.2		
5-35	76	2.1	590.0	16.0	130	814	9.3	0.3	72.5	2.0	16.0		
5-47	77	8.1	880.0	35.0	190	1190	6.5	0.7	73.9	2.9	16.0	14	52.0
6-8	46	6.4	24.0	1.9	240	318	14.5	2.0	7.5	0.6	75.4	9	3.6
6-17	33	3.3	14.0	0.7	99	150	22.0	2.2	9.3	0.5	66.0	4	<0.2
6-69	80	6.6	130.0	5.7	190	412	19.4	1.6	31.5	1.4	46.1	11	5.6
6-70	70	7.2	24.0	1.5	190	293	23.9	2.5	8.2	0.5	64.9	15	6.6
6-71	54	8.4	560.0	30.0	150	802	6.7	1.0	69.8	3.7	18.7	13	44.0
6-72	78	4.2	32.0	2.3	180	297	26.3	1.4	10.8	0.8	60.7	12	4.8
6-73	28	2.0	8.8	0.7	150	189	14.8	1.1	4.6	0.3	79.2		
6-77	37	3.0	15.0	0.8	140	196	18.9	1.5	7.7	0.4	71.5	8	<0.2
6-78	26	1.6	8.6	0.6	130	167	15.6	1.0	5.2	0.3	78.0	6	<0.2
6-79	56	<0.4	64.0	3.7	90	214	26.2	0.0	29.9	1.7	42.1	17	19.0
6-86	32	7.0	38.0	2.6	88	168	19.1	4.2	22.7	1.6	52.5	13	4.8
6-87	34	4.2	9.4	1.5	140	189	18.0	2.2	5.0	0.8	74.0	14	5.3
6-88	57	6.7	490.0	25.0	110	689	8.3	1.0	71.1	3.6	16.0	17	50.0
6-89	160	9.3	2100.0	120.0	1600	3989	4.0	0.2	52.6	3.0	40.1	21	75.0
6-90	77	5.2	500.0	23.0	230	835	9.2	0.6	59.9	2.8	27.5	13	46.0
6-91	21	3.2	50.0	5.5	38	118	17.8	2.7	42.5	4.7	32.3	10	11.0
6-92	20	0.8	38.0	1.5	33	93	21.4	0.8	40.7	1.6	35.4	5	4.0
6-93	21	1.5	36.0	1.6	25	85	24.7	1.8	42.3	1.9	29.4	4	2.2
6-94	24	2.1	110.0	6.1	39	181	13.2	1.2	60.7	3.4	21.5	5	7.5
6-95	31	7.3	37.0	2.5	26	104	29.9	7.0	35.6	2.4	25.0	9	4.6

Table 2. Continued.

Sample	Ba Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Ba Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
6-96	34	3.2	320.0	31.0	38	426	8.0	0.8	75.1	7.3	8.9	9	31.0
6-97	19	1.0	5.2	0.3	40	65	29.0	1.5	7.9	0.4	61.1	5	<0.2
6-98	13	0.3	10.0	0.4	59	83	15.7	0.4	12.1	0.4	71.4	2	<0.2
6-99	20	0.3	18.0	1.2	150	189	10.6	0.1	9.5	0.6	79.2	1	<0.2
6-105	190	22.0	3300.0	170.0	3100	6782	2.8	0.3	48.7	2.5	45.7	33	65.0
6-108	15	2.1	43.0	1.6	36	98	15.4	2.1	44.0	1.6	36.8	2	<0.2
6-109	14	<0.4	21.0	11.0	240	286	4.9	0.0	7.3	3.8	83.9	1	1.5
6-112	21	2.1	50.0	1.8	130	205	10.2	1.0	24.4	0.9	63.4	2	4.7
7-8	70	4.4	360.0	14.0	130	578	12.1	0.8	62.2	2.4	22.5	10	
7-9	68	<0.4	380.0	24.0	230	702	9.7	0.0	54.1	3.4	32.8	8	
7-25	51	<0.4	260.0	33.0	250	594	8.6	0.0	43.8	5.6	42.1	6	
7-28	14	0.8	45.0	3.0	190	253	5.5	0.3	17.8	1.2	75.2	2	
7-29	85	3.3	600.0	72.0	250	1010	8.4	0.3	59.4	7.1	24.7	12	
7-30	120	1.8	1400.0	130.0	460	2112	5.7	0.1	66.3	6.2	21.8	19	
7-31	19	<0.4	26.0	3.5	230	279	6.8	0.0	9.3	1.3	82.6	1	
7-32	34	<0.4	130.0	26.0	230	420	8.1	0.0	31.0	6.2	54.8	5	
7-33	37	<0.4	72.0	14.0	190	313	11.8	0.0	23.0	4.5	60.7	6	
7-34	170	<0.4	1100.0	120.0	230	1620	10.5	0.0	67.9	7.4	14.2	36	
7-35	38	<0.4	42.0	13.0	210	303	12.5	0.0	13.9	4.3	69.3	10	
7A-10	150	0.9	290.0	63.0	220	724	20.7	0.1	40.1	8.7	30.4	49	
7A-12	120	<0.4	91.0	9.4	190	410	29.2	0.0	22.2	2.3	46.3	51	
7A-14	45	2.7	17.0	2.6	80	147	30.5	1.8	11.5	1.8	54.3	24	
7A-16	250	0.7	2000.0	150.0	430	2831	8.8	0.0	70.7	5.3	15.2	90	
7A-26	100	<0.4	260.0	74.0	210	644	15.5	0.0	40.4	11.5	32.6	16	
7A-31	62	<0.4	46.0	8.7	280	397	15.6	0.0	11.6	2.2	70.6	19	
7A-32	24	0.5	14.0	2.1	120	161	14.9	0.3	8.7	1.3	74.7	9	
7A-35	99	<0.4	160.0	13.0	150	422	23.5	0.0	37.9	3.1	35.5	24	
7A-36	47	<0.4	56.0	5.9	160	269	17.5	0.0	20.8	2.2	59.5	15	
7A-38	73	0.4	160.0	10.0	110	353	20.7	0.1	45.3	2.8	31.1	19	
7A-40	26	<0.4	21.0	2.1	150	199	13.1	0.0	10.5	1.1	75.3	8	
7A-44	53	2.1	210.0	11.0	150	426	12.4	0.5	49.3	2.6	35.2	12	
7A-45	87	<0.4	140.0	9.3	130	366	23.8	0.0	38.2	2.5	35.5	22	
7A-46	43	<0.4	56.0	4.1	100	203	21.2	0.0	27.6	2.0	49.2	13	
7A-47	88	<0.4	45.0	4.6	210	348	25.3	0.0	12.9	1.3	60.4	19	
7A-51	63	1.3	24.0	1.3	97	187	33.8	0.7	12.9	0.7	52.0	35	
7A-55	260	<0.4	75.0	4.7	220	560	46.5	0.0	13.4	0.8	39.3	59	
7A-58	300	<0.4	86.0	5.7	270	662	45.3	0.0	13.0	0.9	40.8	60	
7A-73	320	0.9	130.0	6.6	260	718	44.6	0.1	18.1	0.9	36.2	210	
7A-78	280	0.8	99.0	4.9	200	585	47.9	0.1	16.9	0.8	34.2	140	
7A-79	330	18.0	70.0	3.3	240	661	49.9	2.7	10.6	0.5	36.3	160	
Analytical range for the extraction of Ba.													
Maximum	330	45	3300	170	3100	6782	53.7	12.2	75.1	11.5	83.9	210	75
Minimum	12	<0.4	4.6	0.3	25	53	2.8	0.0	3.7	0.0	8.9	1.0	<0.2

Table 2. Continued.

Sample	Ca Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Ca Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	700	640	870	26	420	2656	26.4	24.1	32.8	1.0	15.8	110	37
1A-31	1900	1200	5000	130	570	8800	21.6	13.6	56.8	1.5	6.5	130	<2.0
1A-55	1100	480	1300	46	430	3356	32.8	14.3	38.7	1.4	12.8	200	<2.0
1A-61	2000	2600	94000	2500	330	101430	2.0	2.6	92.7	2.5	0.3	92	<2.0
1A-63	1900	690	530	23	470	3613	52.6	19.1	14.7	0.6	13.0	210	<2.0
1A-72	1500	1700	38000	990	310	42500	3.5	4.0	89.4	2.3	0.7	170	<2.0
1A-77	1400	1800	55000	1500	330	60030	2.3	3.0	91.6	2.5	0.5	230	<2.0
1A-78	1000	1200	9700	340	580	12820	7.8	9.4	75.7	2.7	4.5	180	44
1A-79	1600	2200	77000	2600	390	83790	1.9	2.6	91.9	3.1	0.5	180	<2.0
1A-80	1500	1600	20000	510	500	24110	6.2	6.6	83.0	2.1	2.1	140	<2.0
1A-81	1500	980	19000	720	660	22860	6.6	4.3	83.1	3.1	2.9	220	27
1A-82	900	690	7600	220	500	9910	9.1	7.0	76.7	2.2	5.0	220	<2.0
2-10	1500	490	3200	<5	420	5610	26.7	8.7	57.0	0.0	7.5	130	<2.0
2-13	940	470	6800	41	350	8601	10.9	5.5	79.1	0.5	4.1		
2-20	740	320	4500	200	580	6340	11.7	5.0	71.0	3.2	9.1	200	2.2
2-21	1500	1400	52000	2000	600	57500	2.6	2.4	90.4	3.5	1.0	220	25
2-23	1400	2300	91000	2500	310	97510	1.4	2.4	93.3	2.6	0.3	72	<2.0
2-24	1600	340	2300	390	580	5210	30.7	6.5	44.1	7.5	11.1	230	22
2-26	450	32	1200	<5	320	2002	22.5	1.6	59.9	0.0	16.0	130	<2.0
2-31	610	290	2700	<5	370	3970	15.4	7.3	68.0	0.0	9.3	210	<2.0
2-37	2100	3000	81000	2100	260	88460	2.4	3.4	91.6	2.4	0.3	49	<2.0
2-38	1400	580	4500	20	400	6900	20.3	8.4	65.2	0.3	5.8	140	<2.0
2-55	550	150	1300	<5	350	2350	23.4	6.4	55.3	0.0	14.9	120	<2.0
5-32	500	61	270	37	650	1518	32.9	4.0	17.8	2.4	42.8		
5-35	510	910	2600	70	530	4620	11.0	19.7	56.3	1.5	11.5		
5-47	1500	2000	46000	1300	570	51370	2.9	3.9	89.5	2.5	1.1	57	<2.0
6-8	3200	680	110	<5	850	4840	66.1	14.0	2.3	0.0	17.6	230	13.0
6-17	5200	2700	78000	2000	500	88400	5.9	3.1	88.2	2.3	0.6	160	<2.0
6-69	2400	1200	17000	690	940	22230	10.8	5.4	76.5	3.1	4.2	210	13
6-70	2000	1200	22000	690	840	26730	7.5	4.5	82.3	2.6	3.1	220	18
6-71	3200	4200	20000	590	500	28490	11.2	14.7	70.2	2.1	1.8	91	14
6-72	2000	520	2400	170	800	5890	34.0	8.8	40.7	2.9	13.6	210	21
6-73	1400	680	8000	210	550	10840	12.9	6.3	73.8	1.9	5.1		
6-77	1100	120	1100	41	540	2901	37.9	4.1	37.9	1.4	18.6	220	<2.0
6-78	1000	79	170	16	530	1795	55.7	4.4	9.5	0.9	29.5	290	<2.0
6-79	1500	740	12000	430	540	15210	9.9	4.9	78.9	2.8	3.6	290	21
6-86	2400	2400	36000	1400	640	42840	5.6	5.6	84.0	3.3	1.5	130	11
6-87	800	320	1300	86	700	3206	25.0	10.0	40.5	2.7	21.8	230	15
6-88	2100	2600	74000	2400	410	81510	2.6	3.2	90.8	2.9	0.5	250	<2.0
6-89	1600	2100	6200	190	340	10430	15.3	20.1	59.4	1.8	3.3	140	<2.0
6-90	530	160	1900	59	310	2959	17.9	5.4	64.2	2.0	10.5	120	<2.0
6-91	1200	1400	22000	640	260	25500	4.7	5.5	86.3	2.5	1.0	160	<2.0
6-92	940	940	20000	620	400	22900	4.1	4.1	87.3	2.7	1.7	120	<2.0
6-93	380	23	500	19	340	1262	30.1	1.8	39.6	1.5	26.9	120	<2.0
6-94	560	360	4800	140	330	6190	9.0	5.8	77.5	2.3	5.3	120	<2.0
6-95	660	380	5800	260	280	7380	8.9	5.1	78.6	3.5	3.8	150	<2.0

Table 2. Continued.

Sample	Ca Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Ca Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
6-96	1500	1400	32000	950	400	36250	4.1	3.9	88.3	2.6	1.1	96	32
6-97	530	100	130	7	360	1127	47.0	8.9	11.5	0.6	32.0	160	<2.0
6-98	2800	3500	66000	1800	370	74470	3.8	4.7	88.6	2.4	0.5	160	<2.0
6-99	2700	970	6800	210	460	11140	24.2	8.7	61.0	1.9	4.1	180	<2.0
6-105	2200	1800	70000	2100	420	76520	2.9	2.4	91.5	2.7	0.5	200	<2.0
6-108	1500	1900	48000	1400	320	53120	2.8	3.6	90.4	2.6	0.6	310	<2.0
6-109	2000	640	5100	970	700	9410	21.3	6.8	54.2	10.3	7.4	120	16
6-112	1000	370	1300	42	530	3242	30.8	11.4	40.1	1.3	16.3	140	<2.0
7-8	1700	1200	27000	970	720	31590	5.4	3.8	85.5	3.1	2.3	230	
7-9	2200	920	18000	860	770	22750	9.7	4.0	79.1	3.8	3.4	200	
7-25	2000	360	3600	220	690	6870	29.1	5.2	52.4	3.2	10.0	180	
7-28	1400	570	8600	290	660	11520	12.2	4.9	74.7	2.5	5.7	160	
7-29	1400	830	16000	590	690	19510	7.2	4.3	82.0	3.0	3.5	160	
7-30	1400	410	6100	230	690	8830	15.9	4.6	69.1	2.6	7.8	180	
7-31	1800	760	12000	540	710	15810	11.4	4.8	75.9	3.4	4.5	160	
7-32	1700	640	11000	730	750	14820	11.5	4.3	74.2	4.9	5.1	190	
7-33	1900	310	28000	1300	720	32230	5.9	1.0	86.9	4.0	2.2	220	
7-34	2500	600	35000	1800	530	40430	6.2	1.5	86.6	4.5	1.3	140	
7-35	1200	380	2600	490	670	5340	22.5	7.1	48.7	9.2	12.5	270	
7A-10	1300	85	7600	470	640	10095	12.9	0.8	75.3	4.7	6.3	340	
7A-12	1200	1200	3800	200	570	6970	17.2	17.2	54.5	2.9	8.2	420	
7A-14	550	1800	370	18	370	3108	17.7	57.9	11.9	0.6	11.9	200	
7A-16	470	57	180	9	390	1106	42.5	5.2	16.3	0.8	35.3	210	
7A-26	1800	480	6500	500	620	9900	18.2	4.8	65.7	5.1	6.3	280	
7A-31	940	92	500	62	620	2214	42.5	4.2	22.6	2.8	28.0	260	
7A-32	610	190	1300	35	420	2555	23.9	7.4	50.9	1.4	16.4	110	
7A-35	1000	240	2000	79	490	3809	26.3	6.3	52.5	2.1	12.9	310	
7A-36	920	170	1200	46	490	2826	32.6	6.0	42.5	1.6	17.3	280	
7A-38	710	110	3100	110	430	4460	15.9	2.5	69.5	2.5	9.6	160	
7A-40	1800	1600	61000	2700	620	67720	2.7	2.4	90.1	4.0	0.9	190	
7A-44	850	360	4100	130	540	5980	14.2	6.0	68.6	2.2	9.0	190	
7A-45	720	59	340	10	460	1589	45.3	3.7	21.4	0.6	28.9	310	
7A-46	1400	750	18000	750	460	21360	6.6	3.5	84.3	3.5	2.2	210	
7A-47	1900	660	10000	670	650	13880	13.7	4.8	72.0	4.8	4.7	220	
7A-51	1500	1200	23000	900	420	27020	5.6	4.4	85.1	3.3	1.6	190	
7A-55	1400	230	1200	53	560	3443	40.7	6.7	34.9	1.5	16.3	300	
7A-58	1400	130	490	19	620	2659	52.7	4.9	18.4	0.7	23.3	310	
7A-73	980	73	160	<5	540	1753	55.9	4.2	9.1	0.0	30.8	630	
7A-78	1200	410	2900	120	510	5140	23.3	8.0	56.4	2.3	9.9	440	
7A-79	970	200	1400	44	510	3124	31.0	6.4	44.8	1.4	16.3	440	
Analytical range for the extraction of Ca.													
Maximum	5200	4200	94000	2700	940	101430	66.1	57.9	93.3	10.3	42.8	630	44
Minimum	380	23	110	<5.0	260	1106	1.4	0.8	2.3	0.0	0.3	49	<2.0

Table 2. Continued.

Sample	Cr Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Cr Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	<6	<6	<6	<6	8	8	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
1A-31	<6	<6	18	<6	42	60	0.0	0.0	30.0	0.0	70.0	3.2	<3.0
1A-55	<6	<6	25	<6	32	57	0.0	0.0	43.9	0.0	56.1	<3.0	<3.0
1A-61	<6	<6	19	<6	20	39	0.0	0.0	48.7	0.0	51.3	<3.0	<3.0
1A-63	<6	<6	21	<6	44	65	0.0	0.0	32.3	0.0	67.7	<3.0	<3.0
1A-72	<6	<6	19	<6	13	32	0.0	0.0	59.4	0.0	40.6	<3.0	<3.0
1A-77	<6	<6	14	<6	10	24	0.0	0.0	58.3	0.0	41.7	<3.0	<3.0
1A-78	<6	<6	18	<6	22	40	0.0	0.0	45.0	0.0	55.0	<3.0	<3.0
1A-79	<6	<6	19	<6	19	38	0.0	0.0	50.0	0.0	50.0	<3.0	<3.0
1A-80	<6	<6	13	<6	26	39	0.0	0.0	33.3	0.0	66.7	<3.0	<3.0
1A-81	<6	<6	39	<6	56	95	0.0	0.0	41.1	0.0	58.9	<3.0	<3.0
1A-82	<6	<6	22	<6	26	48	0.0	0.0	45.8	0.0	54.2	5.2	13
2-10	<6	<6	21	9	31	61	0.0	0.0	34.6	14.3	51.1	10	8.9
2-13	<6	<6	10	<6	25	35	0.0	0.0	28.6	0.0	71.4		
2-20	<6	<6	17	9	36	62	0.0	0.0	27.4	14.7	58.0	<3.0	<3.0
2-21	<6	<6	23	<6	32	55	0.0	0.0	41.8	0.0	58.2	<3.0	<3.0
2-23	<6	<6	7	<6	7	13	0.0	0.0	50.0	0.0	50.0	<3.0	6.5
2-24	<6	<6	19	9	58	86	0.0	0.0	22.0	10.9	67.1	<3.0	<3.0
2-26	<6	<6	<6	<6	25	25	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
2-31	<6	<6	15	<6	24	39	0.0	0.0	38.5	0.0	61.5	<3.0	<3.0
2-37	<6	<6	<6	<6	8	8	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
2-38	<6	<6	29	8	34	71	0.0	0.0	41.0	11.0	48.0	<3.0	<3.0
2-55	<6	<6	10	<6	24	34	0.0	0.0	29.4	0.0	70.6	<3.0	<3.0
5-32	<6	<6	9	<6	25	34	0.0	0.0	26.5	0.0	73.5		
5-35	<6	<6	<6	<6	8	8	0.0	0.0	0.0	0.0	100.0		
5-47	<6	<6	9	<6	9	18	0.0	0.0	50.0	0.0	50.0	<3.0	<3.0
6-8													
6-17	<6	<6	16	<6	27	43	0.0	0.0	37.2	0.0	62.8	<3.0	9.3
6-69	<6	<6	16	<6	38	54	0.0	0.0	29.6	0.0	70.4	9.6	11
6-70	<6	<6	11	<6	51	62	0.0	0.0	17.7	0.0	82.3	<3.0	<3.0
6-71	<6	<6	<6	<6	13	13	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
6-72	<6	<6	19	<6	54	73	0.0	0.0	26.0	0.0	74.0	<3.0	<3.0
6-73	<6	<6	22	<6	34	56	0.0	0.0	39.3	0.0	60.7		
6-77	<6	<6	21	<6	34	55	0.0	0.0	38.2	0.0	61.8	<3.0	<3.0
6-78	<6	<6	9	<6	39	48	0.0	0.0	18.4	0.0	81.6	<3.0	<3.0
6-79	<6	<6	17	<6	15	32	0.0	0.0	53.1	0.0	46.9	<3.0	<3.0
6-86	<6	<6	11	<6	10	21	0.0	0.0	52.4	0.0	47.6	<3.0	<3.0
6-87	<6	<6	12	<6	15	27	0.0	0.0	44.4	0.0	55.6	<3.0	<3.0
6-88	<6	<6	9	<6	20	29	0.0	0.0	30.1	0.0	69.9	<3.0	<3.0
6-89	<6	<6	<6	<6	9	9	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
6-90	<6	<6	<6	<6	6	6	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
6-91	<6	<6	15	<6	18	33	0.0	0.0	45.5	0.0	54.5	<3.0	<3.0
6-92	<6	<6	12	<6	18	30	0.0	0.0	40.0	0.0	60.0	<3.0	<3.0
6-93	<6	<6	11	<6	13	24	0.0	0.0	45.8	0.0	54.2	<3.0	8.4
6-94	<6	<6	6	<6	11	17	0.0	0.0	36.8	0.0	63.2	<3.0	3.8
6-95	<6	<6	7	<6	10	17	0.0	0.0	40.8	0.0	59.2	<3.0	<3.0

Table 2. Continued.

Sample	Cr Analytical Values in PPM						Percent Cr Extracted					PPM	PPM
	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
6-96	<6	<6	7	37	12	56	0.0	0.0	12.0	66.4	21.5	6.7	12
6-97	<6	<6	8	<6	13	21	0.0	0.0	38.1	0.0	61.9	<3.0	<3.0
6-98	<6	<6	11	<6	15	26	0.0	0.0	42.3	0.0	57.7	<3.0	<3.0
6-99	<6	<6	26	6	36	68	0.0	0.0	38.1	9.1	52.8	<3.0	<3.0
6-105	<6	<6	12	<6	26	38	0.0	0.0	31.6	0.0	68.4	<3.0	<3.0
6-108	<6	<6	<6	<6	13	13	0.0	0.0	0.0	0.0	100.0	<3.0	<3.0
6-109													
6-112	<6	<6	15	<6	27	42	0.0	0.0	35.7	0.0	64.3	<3.0	<3.0
7-8	<6	<6	16	8	30	54	0.0	0.0	29.6	14.8	55.6	<3.0	
7-9	<6	<6	26	6	44	76	0.0	0.0	34.2	7.9	57.9	<3.0	
7-25	<6	<6	26	7	59	92	0.0	0.0	28.3	7.6	64.1	<3.0	
7-28	<6	<6	10	<6	41	51	0.0	0.0	19.6	0.0	80.4	<3.0	
7-29	<6	<6	11	<6	32	43	0.0	0.0	25.6	0.0	74.4	<3.0	
7-30	<6	<6	12	<6	44	56	0.0	0.0	21.4	0.0	78.6	<3.0	
7-31	<6	<6	20	<6	47	67	0.0	0.0	29.9	0.0	70.1	<3.0	
7-32	<6	<6	18	<6	46	64	0.0	0.0	28.1	0.0	71.9	<3.0	
7-33	<6	<6	34	7	34	75	0.0	0.0	45.3	9.3	45.3	42.0	
7-34	<6	<6	11	<6	18	29	0.0	0.0	37.9	0.0	62.1	21.0	
7-35	<6	<6	17	6	36	59	0.0	0.0	28.8	10.2	61.0	4.0	
7A-10	<6	<6	16	7	38	61	0.0	0.0	26.2	11.5	62.3	<3.0	
7A-12	<6	<6	28	7	37	72	0.0	0.0	38.9	9.7	51.4	<3.0	
7A-14	<6	<6	9	<6	15	24	0.0	0.0	37.5	0.0	62.5	<3.0	
7A-16	<6	<6	10	<6	20	30	0.0	0.0	33.3	0.0	66.7	<3.0	
7A-26	<6	<6	22	10	49	81	0.0	0.0	27.2	12.3	60.5	<3.0	
7A-31	<6	<6	30	28	58	116	0.0	0.0	25.9	24.1	50.0	<3.0	
7A-32	<6	<6	12	<6	22	34	0.0	0.0	35.3	0.0	64.7	<3.0	
7A-35	<6	<6	24	<6	35	59	0.0	0.0	40.7	0.0	59.3	<3.0	
7A-36	<6	<6	19	<6	29	48	0.0	0.0	39.6	0.0	60.4	<3.0	
7A-38	<6	<6	10	<6	23	33	0.0	0.0	30.3	0.0	69.7	<3.0	
7A-40	<6	<6	22	<6	37	59	0.0	0.0	37.3	0.0	62.7	<3.0	
7A-44	<6	<6	11	<6	27	38	0.0	0.0	28.9	0.0	71.1	<3.0	
7A-45	<6	<6	16	<6	31	47	0.0	0.0	34.0	0.0	66.0	<3.0	
7A-46	<6	<6	55	<6	30	85	0.0	0.0	64.7	0.0	35.3	24.0	
7A-47	<6	<6	60	<6	50	110	0.0	0.0	54.5	0.0	45.5	15.0	
7A-51	<6	<6	23	<6	21	44	0.0	0.0	52.3	0.0	47.7	<3.0	
7A-55	<6	<6	47	7	63	117	0.0	0.0	40.2	6.0	53.8	<3.0	
7A-58	<6	<6	30	<6	56	86	0.0	0.0	34.9	0.0	65.1	<3.0	
7A-73	<6	<6	27	<6	40	67	0.0	0.0	40.3	0.0	59.7	<3.0	
7A-78	<6	<6	37	<6	43	80	0.0	0.0	46.3	0.0	53.8	<3.0	
7A-79	<6	<6	29	<6	45	74	0.0	0.0	39.2	0.0	60.8	<3.0	
Analytical range for the extraction of Cr.													
Maximum	<6.0	<6.0	60.0	37.0	63.0	117.0	0.0	0.0	64.7	66.4	100.0	42.0	13.0
Minimum	<6.0	<6.0	<6.0	<6.0	5.5	5.5	0.0	0.0	0.0	0.0	21.5	<3.0	<3.0

Table 2. Continued.

Sample	Fe Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Fe Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	36	120	35000	11000	15000	61156	0.06	0.20	57.2	18.0	24.5	14.0	18.0
1A-31	56	66	17000	1800	9000	27922	0.20	0.24	60.9	6.4	32.2	9.3	1.6
1A-55	93	140	110000	17000	18000	145233	0.06	0.10	75.7	11.7	12.4	<0.8	<0.8
1A-61	86	80	54000	5300	12000	71466	0.12	0.11	75.6	7.4	16.8	1.2	<0.8
1A-63	110	60	22000	3800	15000	40970	0.27	0.15	53.7	9.3	36.6	4.8	2.4
1A-72	120	190	98000	15000	23000	136310	0.09	0.14	71.9	11.0	16.9	24.0	<0.8
1A-77	240	170	34000	6400	10000	50810	0.47	0.33	66.9	12.6	19.7	34.0	<0.8
1A-78	220	50	22000	6900	7200	36370	0.60	0.14	60.5	19.0	19.8	5.2	12.0
1A-79	130	140	28000	9200	13000	50470	0.26	0.28	55.5	18.2	25.8	14.0	<0.8
1A-80	57	26	6500	700	4600	11883	0.48	0.22	54.7	5.9	38.7	4.4	<0.8
1A-81	540	9	12000	3600	12000	28149	1.92	0.03	42.6	12.8	42.6	3.7	6.9
1A-82	57	41	12000	850	4600	17548	0.32	0.23	68.4	4.8	26.2	5.7	<0.8
2-10	16	<1.6	20000	6600	11000	37616	0.04	0.00	53.2	17.5	29.2	3.3	<0.8
2-13	<1.6	<1.6	2900	240	3900	7040	0.00	0.00	41.2	3.4	55.4		
2-20	200	34	17000	11000	11000	39234	0.51	0.09	43.3	28.0	28.0	5.6	2.2
2-21	560	82	25000	6300	9400	41342	1.35	0.20	60.5	15.2	22.7	12.0	7.0
2-23	<1.6	<1.6	6100	180	1400	7680	0.00	0.00	79.4	2.3	18.2	1.5	<.8
2-24	480	24	17000	11000	18000	46504	1.03	0.05	36.6	23.7	38.7	22.0	5.3
2-26	<1.6	<1.6	2300	120	3100	5520	0.00	0.00	41.7	2.2	56.2	<0.8	<0.8
2-31	5	<1.6	18000	2500	9200	29705	0.02	0.00	60.6	8.4	31.0	<0.8	<0.8
2-37	<1.6	<1.6	3700	67	1200	4967	0.00	0.00	74.5	1.3	24.2	<0.8	<0.8
2-38	<1.6	<1.6	20000	3300	12000	35300	0.00	0.00	56.7	9.3	34.0	<0.8	9.3
2-55	<1.6	<1.6	12000	1800	6700	20500	0.00	0.00	58.5	8.8	32.7	<0.8	4.5
5-32	<1.6	<1.6	3200	260	3700	7160	0.00	0.00	44.7	3.6	51.7		
5-35	<1.6	<1.6	1200	70	1400	2670	0.00	0.00	44.9	2.6	52.4		
5-47	<1.6	17	8800	380	1300	10497	0.00	0.16	83.8	3.6	12.4	<0.8	6.6
6-8	86	86	32000	4300	19000	55472	0.16	0.16	57.7	7.8	34.3	11.0	7.0
6-17	<1.6	12	15000	1500	10000	26512	0.00	0.05	56.6	5.7	37.7	3.4	<0.8
6-69	12	32	10000	2800	22000	34844	0.03	0.09	28.7	8.0	63.1	5.9	6.3
6-70	72	98	9800	1500	20000	31470	0.23	0.31	31.1	4.8	63.6	9.8	7.4
6-71	32	94	2600	290	3200	6216	0.51	1.51	41.8	4.7	51.5	11.0	16.0
6-72	82	62	20000	2500	23000	45644	0.18	0.14	43.8	5.5	50.4	11.0	7.2
6-73	<1.6	7	18000	1100	8000	27107	0.00	0.03	66.4	4.1	29.5		
6-77	<1.6	8	22000	1300	7300	30608	0.00	0.02	71.9	4.2	23.9	11.0	<0.8
6-78	<1.6	<1.6	2400	120	4800	7320	0.00	0.00	32.8	1.6	65.6	4.3	<0.8
6-79	46	19	14000	1400	8000	23465	0.20	0.08	59.7	6.0	34.1	18.0	43.0
6-86	120	260	60000	7200	20000	87580	0.14	0.30	68.5	8.2	22.8	12.0	12.0
6-87	74	110	24000	3000	12000	39184	0.19	0.28	61.2	7.7	30.6	13.0	6.4
6-88	<1.6	36	24000	4000	9000	37036	0.00	0.10	64.8	10.8	24.3	18.0	<0.8
6-89	<1.6	<1.6	5000	850	2500	8350	0.00	0.00	59.9	10.2	29.9	4.4	<0.8
6-90	5	<1.6	1600	160	980	2745	0.17	0.00	58.3	5.8	35.7	3.9	<0.8
6-91	110	28	26000	4100	3100	33338	0.33	0.08	78.0	12.3	9.3	7.3	<0.8
6-92	4	<1.6	3600	420	1800	5824	0.07	0.00	61.8	7.2	30.9	13.0	<0.8
6-93	110	23	9800	2000	3200	15133	0.73	0.15	64.8	13.2	21.1	6.5	<0.8
6-94	17	<1.6	6500	1200	2100	9817	0.17	0.00	66.2	12.2	21.4	7.4	<0.8
6-95	210	55	20000	3200	3000	26465	0.79	0.21	75.6	12.1	11.3	13.0	15.0

Table 2. Continued.

	Fe Analytical Values in PPM						Percent Fe Extracted					PPM	PPM
Sample	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
6-96	380	9	3900	760	840	5889	6.45	0.15	66.2	12.9	14.3	4.3	11.0
6-97	70	9	7000	840	2300	10219	0.68	0.09	68.5	8.2	22.5	11.0	<0.8
6-98	33	<1.6	2800	200	3000	6033	0.55	0.00	46.4	3.3	49.7	2.5	<0.8
6-99	33	4	30000	5300	23000	58337	0.06	0.01	51.4	9.1	39.4	5.8	<0.8
6-105	56	34	9400	1200	8900	19590	0.29	0.17	48.0	6.1	45.4	2.8	<0.8
6-108	27	10	860	82	1200	2179	1.24	0.46	39.5	3.8	55.1	2.6	<0.8
6-109	480	22	22000	14000	20000	56502	0.85	0.04	38.9	24.8	35.4	16.0	6.8
6-112	64	12	7100	580	6500	14256	0.45	0.08	49.8	4.1	45.6	2.4	<0.8
7-8	<1.6	29	2800	510	4000	7339	0.00	0.40	38.2	6.9	54.5	9.8	
7-9	<1.6	33	17000	4500	16000	37533	0.00	0.09	45.3	12.0	42.6	18.0	
7-25	<1.6	23	21000	6000	20000	47023	0.00	0.05	44.7	12.8	42.5	37.0	
7-28	<1.6	39	4600	1100	7500	13239	0.00	0.29	34.7	8.3	56.7	6.2	
7-29	<1.6	32	7500	2300	9800	19632	0.00	0.16	38.2	11.7	49.9	5.3	
7-30	<1.6	31	7600	1700	9400	18731	0.00	0.17	40.6	9.1	50.2	11.0	
7-31	9	31	17000	4300	15000	36340	0.02	0.09	46.8	11.8	41.3	17.0	
7-32	10	29	14000	4800	15000	33839	0.03	0.09	41.4	14.2	44.3	25.0	
7-33	4	15	13000	4600	11000	28619	0.01	0.05	45.4	16.1	38.4	33.0	
7-34	5	14	1900	550	2900	5369	0.09	0.26	35.4	10.2	54.0	15.0	
7-35	6	9	15000	5800	9600	30415	0.02	0.03	49.3	19.1	31.6	61.0	
7A-10	6	13	21000	8400	12000	41419	0.01	0.03	50.7	20.3	29.0	31.0	
7A-12	15	15	21000	5900	9600	36530	0.04	0.04	57.5	16.2	26.3	53.0	
7A-14	23	14	23000	6900	8100	38037	0.06	0.04	60.5	18.1	21.3	18.0	
7A-16	13	7	11000	3100	5600	19720	0.07	0.03	55.8	15.7	28.4	31.0	
7A-26	6	13	17000	7400	17000	41419	0.01	0.03	41.0	17.9	41.0	53.0	
7A-31	6	15	17000	6900	18000	41921	0.01	0.04	40.6	16.5	42.9	29.0	
7A-32	4	12	3900	460	3300	7676	0.05	0.16	50.8	6.0	43.0	9.9	
7A-35	22	10	14000	1700	9200	24932	0.09	0.04	56.2	6.8	36.9	39.0	
7A-36	8	15	48000	3900	12000	63923	0.01	0.02	75.1	6.1	18.8	39.0	
7A-38	5	12	3100	380	4500	7997	0.06	0.15	38.8	4.8	56.3	12.0	
7A-40	7	17	13000	1900	10000	24924	0.03	0.07	52.2	7.6	40.1	22.0	
7A-44	4	19	11000	1800	8700	21523	0.02	0.09	51.1	8.4	40.4	6.9	
7A-45	6	12	11000	1200	7100	19318	0.03	0.06	56.9	6.2	36.8	29.0	
7A-46	2	22	7900	630	5700	14254	0.01	0.15	55.4	4.4	40.0	18.0	
7A-47	5	27	19000	3400	18000	40432	0.01	0.07	47.0	8.4	44.5	26.0	
7A-51	15	36	10000	1400	6200	17651	0.08	0.20	56.7	7.9	35.1	14.0	
7A-55	10	20	24000	3500	17000	44530	0.02	0.04	53.9	7.9	38.2	22.0	
7A-58	15	47	31000	3400	17000	51462	0.03	0.09	60.2	6.6	33.0	33.0	
7A-73	9	34	34000	2300	10000	46343	0.02	0.07	73.4	5.0	21.6	26.0	
7A-78	6	13	29000	2000	8500	39519	0.02	0.03	73.4	5.1	21.5	21.0	
7A-79	17	32	34000	2600	12000	48649	0.03	0.07	69.9	5.3	24.7	3.9	
Analytical range for the extraction of Fe.													
Maximum	560	260	110000	17000	23000	145233	6.5	1.5	83.8	28.0	65.6	61.0	43.0
Minimum	<1.6	<1.6	860	67	840	2179	0.0	0.0	28.7	1.3	9.3	<0.8	<0.8

Table 2. Continued.

Sample	Mg Analytical Values in PPM						Percent Mg Extracted					PPM	PPM
	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
1A-19	36	<23	210	27	300	573	6.3	0.0	36.6	4.7	52.4	<10	<10
1A-31	550	370	3800	190	2400	7310	7.5	5.1	52.0	2.6	32.8	200	<10
1A-55	210	98	1300	130	2200	3938	5.3	2.5	33.0	3.3	55.9	110	<10
1A-61	850	1400	49000	1300	1400	53950	1.6	2.6	90.8	2.4	2.6	97	<10
1A-63	390	110	1900	190	2600	5190	7.5	2.1	36.6	3.7	50.1	210	<10
1A-72	450	590	19000	470	690	21200	2.1	2.8	89.6	2.2	3.3	56	<10
1A-77	630	910	29000	700	500	31740	2.0	2.9	91.4	2.2	1.6	85	<10
1A-78	220	260	5400	280	1600	7760	2.8	3.4	69.6	3.6	20.6	33	<10
1A-79	690	1100	41000	1300	1500	45590	1.5	2.4	89.9	2.9	3.3	74	<10
1A-80	300	390	10000	290	1300	12280	2.4	3.2	81.4	2.4	10.6	56	<10
1A-81	540	480	11000	740	4200	16960	3.2	2.8	64.9	4.4	24.8	140	<10
1A-82	250	250	4300	120	1300	6220	4.0	4.0	69.1	1.9	20.9	66	<10
2-10	410	280	3700	600	3300	8290	4.9	3.4	44.6	7.2	39.8	230	<10
2-13	180	270	5700	280	1700	8130	2.2	3.3	70.1	3.4	20.9		
2-20	200	170	3100	640	2800	6910	2.9	2.5	44.9	9.3	40.5	55	<10
2-21	560	720	29000	1400	2600	34280	1.6	2.1	84.6	4.1	7.6	79	<10
2-23	570	1300	50000	1200	480	53550	1.1	2.4	93.4	2.2	0.9	55	<10
2-24	480	180	3500	1700	6600	12460	3.9	1.4	28.1	13.6	53.0	260	<10
2-26	<23	45	1100	68	1100	2313	0.0	1.9	47.6	2.9	47.6	47	<10
2-31	190	220	2300	120	1900	4730	4.0	4.7	48.6	2.5	40.2	65	<10
2-37	400	1100	43000	1000	590	46090	0.9	2.4	93.3	2.2	1.3	44	<10
2-38	330	480	7400	750	3900	12860	2.6	3.7	57.5	5.8	30.3	190	<10
2-55	<23	200	1400	150	1800	3550	0.0	5.6	39.4	4.2	50.7	37	<10
5-32	88	<23	1700	130	1400	3318	2.7	0.0	51.2	3.9	42.2		
5-35	54	190	1900	25	540	2709	2.0	7.0	70.1	0.9	19.9		
5-47	700	1100	24000	630	360	26790	2.6	4.1	89.6	2.4	1.3	20	<10
6-8	540	320	1100	47	4400	6407	8.4	5.0	17.2	0.7	68.7	330	35
6-17	540	130	14000	450	2500	17620	3.1	0.7	79.5	2.6	14.2	250	<10
6-69	580	500	11000	560	8400	21040	2.8	2.4	52.3	2.7	39.9	400	15
6-70	700	600	13000	430	5700	20430	3.4	2.9	63.6	2.1	27.9	260	<10
6-71	160	110	6400	170	760	7600	2.1	1.4	84.2	2.2	10.0	25	<10
6-72	640	220	4800	270	7200	13130	4.9	1.7	36.6	2.1	54.8	330	<10
6-73	550	370	7100	280	2300	10600	5.2	3.5	67.0	2.6	21.7		
6-77	320	64	1900	120	2200	4604	7.0	1.4	41.3	2.6	47.8	140	<10
6-78	350	71	2000	110	2000	4531	7.7	1.6	44.1	2.4	44.1	180	<10
6-79	620	440	7800	290	2800	11950	5.2	3.7	65.3	2.4	23.4	230	15
6-86	420	520	19000	740	1700	22380	1.9	2.3	84.9	3.3	7.6	60	<10
6-87	220	150	1300	58	2600	4328	5.1	3.5	30.0	1.3	60.1	73	<10
6-88	900	1400	39000	1200	1400	43900	2.1	3.2	88.8	2.7	3.2	120	<10
6-89	140	<23	2700	94	460	3394	4.1	0.0	79.6	2.8	13.6	32	<10
6-90	140	<23	1000	31	250	1421	9.9	0.0	70.4	2.2	17.6	26	<10
6-91	680	670	11000	280	400	13030	5.2	5.1	84.4	2.1	3.1	59	<10
6-92	390	410	10000	320	460	11580	3.4	3.5	86.4	2.8	4.0	34	<10
6-93	69	<23	300	<23	340	709	9.7	0.0	42.3	0.0	48.0	26	<10
6-94	190	100	2500	75	320	3185	6.0	3.1	78.5	2.4	10.0	21	<10
6-95	220	130	2800	140	310	3600	6.1	3.6	77.8	3.9	8.6	13	<10

Table 2. Continued.

Sample	Mg Analytical Values in PPM						Percent Mg Extracted					PPM	PPM
	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
6-96	380	170	17000	500	280	18330	2.1	0.9	92.7	2.7	1.5	<10	<10
6-97	120	<23	340	30	570	1060	11.3	0.0	32.1	2.8	53.8	19	<10
6-98	550	660	33000	850	1100	36160	1.5	1.8	91.3	2.4	3.0	54	<10
6-99	740	410	7600	580	5100	14430	5.1	2.8	52.7	4.0	35.3	270	<10
6-105	920	970	37000	1000	1700	41590	2.2	2.3	89.0	2.4	4.1	91	<10
6-108	640	1000	26000	690	500	28830	2.2	3.5	90.2	2.4	1.7	120	<10
6-109	480	300	4900	1900	5600	13180	3.6	2.3	37.2	14.4	42.5	160	<10
6-112	240	230	1700	95	2000	4265	5.6	5.4	39.9	2.2	46.9	48	<10
7-8	480	490	17000	870	2200	21040	2.3	2.3	80.8	4.1	10.5	180	
7-9	860	560	16000	2100	7000	26520	3.2	2.1	60.3	7.9	26.4	440	
7-25	780	270	6500	1400	7000	15950	4.9	1.7	40.8	8.8	43.9	500	
7-28	520	320	7300	780	3800	12720	4.1	2.5	57.4	6.1	29.9	200	
7-29	510	430	10000	860	3900	15700	3.2	2.7	63.7	5.5	24.8	150	
7-30	460	250	5700	740	4300	11450	4.0	2.2	49.8	6.5	37.6	210	
7-31	680	460	10000	1400	6700	19240	3.5	2.4	52.0	7.3	34.8	310	
7-32	640	400	9000	1600	6000	17640	3.6	2.3	51.0	9.1	34.0	310	
7-33	860	240	19000	1800	4200	26100	3.3	0.9	72.8	6.9	16.1	330	
7-34	550	370	21000	1300	1200	24420	2.3	1.5	86.0	5.3	4.9	140	
7-35	510	320	3900	1300	3600	9630	5.3	3.3	40.5	13.5	37.4	290	
7A-10	580	69	6700	1300	4000	12649	4.6	0.5	53.0	10.3	31.6	270	
7A-12	610	730	5100	930	3400	10770	5.7	6.8	47.4	8.6	31.6	330	
7A-14	160	560	890	210	1500	3320	4.8	16.9	26.8	6.3	45.2	79	
7A-16	150	65	700	150	1300	2365	6.3	2.7	29.6	6.3	55.0	92	
7A-26	840	390	8000	2100	6900	18230	4.6	2.1	43.9	11.5	37.8	510	
7A-31	400	110	1800	530	4400	7240	5.5	1.5	24.9	7.3	60.8	250	
7A-32	200	110	1200	100	1100	2710	7.4	4.1	44.3	3.7	40.6	58	
7A-35	420	180	3000	290	2700	6590	6.4	2.7	45.5	4.4	41.0	240	
7A-36	390	140	2500	250	2800	6080	6.4	2.3	41.1	4.1	46.1	240	
7A-38	230	78	3100	230	1900	5538	4.2	1.4	56.0	4.2	34.3	92	
7A-40	780	820	36000	1600	2800	42000	1.9	2.0	85.7	3.8	6.7	190	
7A-44	280	190	3200	280	2300	6250	4.5	3.0	51.2	4.5	36.8	92	
7A-45	320	100	3000	300	2600	6320	5.1	1.6	47.5	4.7	41.1	230	
7A-46	600	480	12000	680	2600	16360	3.7	2.9	73.3	4.2	15.9	210	
7A-47	790	420	9300	1000	6000	17510	4.5	2.4	53.1	5.7	34.3	420	
7A-51	630	620	14000	590	1700	17540	3.6	3.5	79.8	3.4	9.7	130	
7A-55	480	140	3100	410	5000	9130	5.3	1.5	34.0	4.5	54.8	320	
7A-58	490	110	2600	310	4700	8210	6.0	1.3	31.7	3.8	57.2	350	
7A-73	330	78	2300	280	3800	6788	4.9	1.1	33.9	4.1	56.0	260	
7A-78	440	240	3800	300	3000	7780	5.7	3.1	48.8	3.9	38.6	210	
7A-79	280	110	2600	290	3800	7080	4.0	1.6	36.7	4.1	53.7	170	
Analytical range for the extraction of Mg.													
Maximum	920	1400	50000	2100	8400	53950	11.3	16.9	93.4	14.4	68.7	510	35
Minimum	<23	<23	0	<23	0	0	0.0	0.0	0.0	0.0	0.0	<10	<10

Table 2. Continued.

Sample	Mn Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Mn Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	<35	<35	420	130	170	720	0.0	0.0	58.3	18.1	23.6	<18	<18
1A-31	<35	78	260	<35	68	406	0.0	19.2	64.0	0.0	16.7	<18	<18
1A-55	<35	64	390	110	110	674	0.0	9.5	57.9	16.3	16.3	<18	<18
1A-61	35	160	4000	160	110	4465	0.8	3.6	89.6	3.6	2.5	<18	<18
1A-63	<35	<35	100	<35	45	145	0.0	0.0	69.0	0.0	31.0	<18	<18
1A-72	<35	96	2000	100	75	2271	0.0	4.2	88.1	4.4	3.3	<18	<18
1A-77	48	97	2600	100	59	2904	1.7	3.3	89.5	3.4	2.0	<18	<18
1A-78	<35	<35	640	67	60	767	0.0	0.0	83.4	8.7	7.8	<18	<18
1A-79	37	140	3500	190	170	4037	0.9	3.5	86.7	4.7	4.2	<18	<18
1A-80	<35	79	870	41	71	1061	0.0	7.4	82.0	3.9	6.7	<18	<18
1A-81	56	<35	840	50	110	1056	5.3	0.0	79.5	4.7	10.4	<18	<18
1A-82	37	40	370	<35	<35	447	8.3	8.9	82.8	0.0	0.0	<18	<18
2-10	<35	<35	220	<35	50	270	0.0	0.0	81.5	0.0	18.5	<18	<18
2-13	<35	41	310	<35	<35	351	0.0	11.7	88.3	0.0	0.0		
2-20	<35	<35	380	100	88	568	0.0	0.0	66.9	17.6	15.5	<18	<18
2-21	38	62	2500	130	86	2816	1.3	2.2	88.8	4.6	3.1	<18	<18
2-23	<35	150	4300	110	<35	4560	0.0	3.3	94.3	2.4	0.0	<18	<18
2-24	<35	<35	310	100	170	580	0.0	0.0	53.4	17.2	29.3	<18	<18
2-26	<35	41	<35	<35	<35	41	0.0	100.0	0.0	0.0	0.0	<18	<18
2-31	<35	63	210	<35	67	340	0.0	18.5	61.8	0.0	19.7	<18	<18
2-37	<35	190	3800	100	<35	4090	0.0	4.6	92.9	2.4	0.0	<18	<18
2-38	<35	130	270	<35	60	460	0.0	28.3	58.7	0.0	13.0	<18	<18
2-55	<35	110	52	<35	50	212	0.0	51.9	24.5	0.0	23.6	<18	<18
5-32	<35	<35	37	<35	<35	37	0.0	0.0	100.0	0.0	0.0		
5-35	<35	39	120	<35	<35	159	0.0	24.5	75.5	0.0	0.0		
5-47	58	130	1900	62	<35	2150	2.7	6.0	88.4	2.9	0.0	<18	<18
6-8	<35	<35	280	200	160	640	0.0	0.0	43.8	31.3	25.0	<18	<18
6-17	42	41	990	47	69	1189	3.5	3.4	83.3	4.0	5.8	<18	<18
6-69	38	44	960	230	250	1522	2.5	2.9	63.1	15.1	16.4	<18	<18
6-70	<35	46	1100	57	180	1383	0.0	3.3	79.5	4.1	13.0	<18	<18
6-71	<35	<35	560	<35	<35	560	0.0	0.0	100.0	0.0	0.0	<18	<18
6-72	<35	<35	400	42	210	652	0.0	0.0	61.3	6.4	32.2	<18	<18
6-73	71	69	510	<35	67	717	9.9	9.6	71.1	0.0	9.3		
6-77	<35	55	100	<35	60	215	0.0	25.6	46.5	0.0	27.9	<18	<18
6-78	<35	57	<35	<35	52	109	0.0	52.3	0.0	0.0	47.7	<18	<18
6-79	<35	<35	620	41	110	771	0.0	0.0	80.4	5.3	14.3	<18	<18
6-86	<35	64	2200	140	220	2624	0.0	2.4	83.8	5.3	8.4	<18	<18
6-87	<35	<35	260	<35	110	370	0.0	0.0	70.3	0.0	29.7	<18	<18
6-88	58	160	3300	150	84	3752	1.5	4.3	88.0	4.0	2.2	<18	<18
6-89	<35	<35	250	<35	<35	250	0.0	0.0	100.0	0.0	0.0	<18	<18
6-90	<35	<35	81	<35	<35	81	0.0	0.0	100.0	0.0	0.0	<18	<18
6-91	56	57	1100	39	<35	1252	4.5	4.6	87.9	3.1	0.0	<18	<18
6-92	35	<35	920	41	65	1061	3.3	0.0	86.7	3.9	6.1	<18	<18
6-93	<35	<35	76	<35	94	170	0.0	0.0	44.7	0.0	55.3	<18	<18
6-94	<35	<35	260	<35	110	370	0.0	0.0	70.3	0.0	29.7	<18	<18
6-95	<35	<35	320	39	85	444	0.0	0.0	72.1	8.8	19.1	<18	<18

Table 2. Continued.

Sample	Mn Analytical Values in PPM						Percent Mn Extracted					PPM	PPM
	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
6-96	46	<35	1500	41	<35	1587	2.9	0.0	94.5	2.6	0.0	<18	<18
6-97	<35	<35	<35	<35	51	51	0.0	0.0	0.0	0.0	100.0	<18	<18
6-98	63	67	2500	86	76	2792	2.3	2.4	89.5	3.1	2.7	<18	<18
6-99	62	75	510	37	110	794	7.8	9.4	64.2	4.7	13.9	<18	<18
6-105	89	110	3000	98	<35	3297	2.7	3.3	91.0	3.0	0.0	<18	<18
6-108	37	120	1900	67	<35	2124	1.7	5.6	89.5	3.2	0.0	<18	<18
6-109	<35	<35	370	130	170	670	0.0	0.0	55.2	19.4	25.4	<18	<18
6-112	37	55	73	<35	74	239	15.5	23.0	30.5	0.0	31.0	<18	<18
7-8	<35	<35	650	<35	43	693	0.0	0.0	93.8	0.0	6.2	<18	
7-9	<35	<35	610	76	180	866	0.0	0.0	70.4	8.8	20.8	<18	
7-25	<35	<35	320	73	190	583	0.0	0.0	54.9	12.5	32.6	<18	
7-28	<35	<35	280	<35	68	348	0.0	0.0	80.5	0.0	19.5	<18	
7-29	<35	<35	480	40	100	620	0.0	0.0	77.4	6.5	16.1	<18	
7-30	<35	<35	220	<35	80	300	0.0	0.0	73.3	0.0	26.7	<18	
7-31	<35	<35	490	67	160	717	0.0	0.0	68.3	9.3	22.3	<18	
7-32	<35	<35	430	78	150	658	0.0	0.0	65.3	11.9	22.8	<18	
7-33	<35	<35	920	98	100	1118	0.0	0.0	82.3	8.8	8.9	<18	
7-34	<35	<35	900	60	<35	960	0.0	0.0	93.8	6.3	0.0	<18	
7-35	<35	<35	210	76	92	378	0.0	0.0	55.6	20.1	24.3	<18	
7A-10	<35	<35	420	110	130	660	0.0	0.0	63.6	16.7	19.7	<18	
7A-12	<35	48	340	80	95	563	0.0	8.5	60.4	14.2	16.9	<18	
7A-14	<35	47	500	140	74	761	0.0	6.2	65.7	18.4	9.7	<18	
7A-16	<35	<35	140	52	48	240	0.0	0.0	58.3	21.7	20.0	<18	
7A-26	<35	<35	420	120	190	730	0.0	0.0	57.5	16.4	26.0	<18	
7A-31	<35	<35	220	89	170	479	0.0	0.0	45.9	18.6	35.5	<18	
7A-32	<35	<35	57	<35	<35	57	0.0	0.0	100.0	0.0	0.0	<18	
7A-35	<35	<35	200	<35	79	279	0.0	0.0	71.7	0.0	28.3	<18	
7A-36	<35	<35	760	67	100	927	0.0	0.0	82.0	7.2	10.8	<18	
7A-38	<35	<35	100	<35	<35	100	0.0	0.0	100.0	0.0	0.0	<18	
7A-40	<35	52	1700	110	95	1957	0.0	2.7	86.9	5.6	4.9	<18	
7A-44	<35	<35	230	38	84	352	0.0	0.0	65.3	10.8	23.9	<18	
7A-45	<35	<35	99	<35	60	159	0.0	0.0	62.3	0.0	37.7	<18	
7A-46	<35	36	570	49	51	706	0.0	5.1	80.7	6.9	7.2	<18	
7A-47	<35	<35	530	89	170	789	0.0	0.0	67.2	11.3	21.5	<18	
7A-51	<35	<35	750	56	51	857	0.0	0.0	87.5	6.5	6.0	<18	
7A-55	<35	<35	340	60	170	570	0.0	0.0	59.6	10.5	29.8	<18	
7A-58	<35	<35	310	45	160	515	0.0	0.0	60.2	8.7	31.1	<18	
7A-73	<35	<35	410	50	110	570	0.0	0.0	71.9	8.8	19.3	<18	
7A-78	<35	<35	380	38	81	499	0.0	0.0	76.2	7.6	16.2	<18	
7A-79	<35	<35	430	54	120	604	0.0	0.0	71.2	8.9	19.9	<18	
Analytical range for the extraction of Mn.													
Maximum	89	190	4300	230	250	4560	15.5	100.0	100.0	31.3	100.0	<18	<18
Minimum	<35	<35	<35	<35	<35	37	0.0	0.0	0.0	0.0	0.0	<18	<18

Table 2. Continued.

Sample	Na Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Na Extracted: Extraction Step 2	3	4	5
6-96	680	64	<10	330	1200	2274	29.9	2.8	0.0	14.5	52.8
6-97	300	89	29	<10	1300	1718	17.5	5.2	1.7	0.0	75.7
6-98	450	92	80	<10	1700	2322	19.4	4.0	3.4	0.0	73.2
6-99	2000	98	95	<10	3300	5493	36.4	1.8	1.7	0.0	60.1
6-105	820	18	94	<10	2400	3332	24.6	0.5	2.8	0.0	72.0
6-108	540	23	63	<10	1000	1626	33.2	1.4	3.9	0.0	61.5
6-109	2200	200	<10	150	6600	9150	24.0	2.2	0.0	1.6	72.1
6-112	860	23	47	<10	3800	4730	18.2	0.5	1.0	0.0	80.3
7-8	550	570	<10	<10	9900	11020	5.0	5.2	0.0	0.0	89.8
7-9	1000	840	120	<10	9900	11860	8.4	7.1	1.0	0.0	83.5
7-25	1900	1000	99	<10	9100	12099	15.7	8.3	0.8	0.0	75.2
7-28	1200	920	34	<10	10000	12154	9.9	7.6	0.3	0.0	82.3
7-29	1100	100	<10	<10	9200	10400	10.6	1.0	0.0	0.0	88.5
7-30	1200	100	<10	<10	10000	11300	10.6	0.9	0.0	0.0	88.5
7-31	1600	1200	59	<10	10000	12859	12.4	9.3	0.5	0.0	77.8
7-32	1600	1200	51	<10	11000	13851	11.6	8.7	0.4	0.0	79.4
7-33	1200	81	81	<10	8500	9862	12.2	0.8	0.8	0.0	86.2
7-34	610	<10	<10	<10	3500	4110	14.8	0.0	0.0	0.0	85.2
7-35	1100	<10	<10	10	7900	9010	12.2	0.0	0.0	0.1	87.7
7A-10	1200	<10	<10	<10	8200	9400	12.8	0.0	0.0	0.0	87.2
7A-12	1200	<10	56	17	6400	7673	15.6	0.0	0.7	0.2	83.4
7A-14	730	<10	<10	<10	1600	2330	31.3	0.0	0.0	0.0	68.7
7A-16	690	<10	<10	60	2300	3050	22.6	0.0	0.0	2.0	75.4
7A-26	2500	<10	54	70	7800	10424	24.0	0.0	0.5	0.7	74.8
7A-31	10	<10	110	<10	7200	7320	0.1	0.0	1.5	0.0	98.4
7A-32	46	78	13	<10	3700	3837	1.2	2.0	0.3	0.0	96.4
7A-35	1100	<10	76	<10	4500	5676	19.4	0.0	1.3	0.0	79.3
7A-36	1200	<10	<10	14	4700	5914	20.3	0.0	0.0	0.2	79.5
7A-38	1000	<10	<10	<10	3000	4000	25.0	0.0	0.0	0.0	75.0
7A-40	1000	<10	15	13	4300	5328	18.8	0.0	0.3	0.2	80.7
7A-44	820	<10	<10	14	5500	6334	12.9	0.0	0.0	0.2	86.8
7A-45	1000	<10	<10	27	3600	4627	21.6	0.0	0.0	0.6	77.8
7A-46	1000	<10	<10	<10	2900	3900	25.6	0.0	0.0	0.0	74.4
7A-47	2000	<10	44	13	5900	7957	25.1	0.0	0.6	0.2	74.1
7A-51	660	91	<10	<10	2000	2751	24.0	3.3	0.0	0.0	72.7
7A-55	1600	110	<10	19	5300	7029	22.8	1.6	0.0	0.3	75.4
7A-58	1600	96	<10	16	5500	7212	22.2	1.3	0.0	0.2	76.3
7A-73	1200	89	<10	22	4200	5511	21.8	1.6	0.0	0.4	76.2
7A-78	1000	62	<10	25	3800	4887	20.5	1.3	0.0	0.5	77.8
7A-79	1100	44	<10	33	4000	5177	21.2	0.8	0.0	0.6	77.3
Analytical range for the extraction of Na.											
Maximum	2800	1200	240	330	11000	13851	50.3	13.2	13.1	14.5	98.4
Minimum	10	<10	<10	<10	300	682	0.1	0.0	0.0	0.0	43.1

Table 2. Continued.

Sample	Na Analytical Values in PPM						Percent Na Extracted				
	Sequential Extraction Step						Extraction Step				
	1	2	3	4	5	Total	2	3	4	5	
1A-19	780	82	<10	73	1200	2135	36.5	3.8	0.0	3.4	56.2
1A-31	260	12	180	<10	4100	4552	5.7	0.3	4.0	0.0	90.1
1A-55	500	31	210	<10	2300	3041	16.4	1.0	6.9	0.0	75.6
1A-61	490	26	240	<10	1300	2056	23.8	1.3	11.7	0.0	63.2
1A-63	730	19	74	<10	3000	3823	19.1	0.5	1.9	0.0	78.5
1A-72	460	12	130	<10	1300	1902	24.2	0.6	6.8	0.0	68.3
1A-77	360	14	97	<10	760	1231	29.2	1.1	7.9	0.0	61.7
1A-78	920	<10	<10	79	3400	4399	20.9	0.0	0.0	1.8	77.3
1A-79	480	15	230	<10	1400	2125	22.6	0.7	10.8	0.0	65.9
1A-80	430	12	170	<10	2500	3112	13.8	0.4	5.5	0.0	80.3
1A-81	1300	<10	<10	110	6600	8010	16.2	0.0	0.0	1.4	82.4
1A-82	450	12	54	<10	3100	3616	12.4	0.3	1.5	0.0	85.7
2-10	1100	65	100	12	3500	4777	23.0	1.4	2.1	0.3	73.3
2-13	720	82	130	26	3100	4058	17.7	2.0	3.2	0.6	76.4
2-20	1300	190	<10	85	4600	6175	21.1	3.1	0.0	1.4	74.5
2-21	1200	160	<10	74	3800	5234	22.9	3.1	0.0	1.4	72.6
2-23	520	51	230	43	910	1754	29.6	2.9	13.1	2.5	51.9
2-24	2800	140	<10	97	5200	8237	34.0	1.7	0.0	1.2	63.1
2-26	700	80	110	29	3000	3919	17.9	2.0	2.8	0.7	76.6
2-31	830	86	57	28	3000	4001	20.7	2.1	1.4	0.7	75.0
2-37	580	70	210	15	800	1675	34.6	4.2	12.5	0.9	47.8
2-38	2800	210	140	14	2400	5564	50.3	3.8	2.5	0.3	43.1
2-55	1100	110	92	31	3100	4433	24.8	2.5	2.1	0.7	69.9
5-32	1000	59	78	26	3700	4863	20.6	1.2	1.6	0.5	76.1
5-35	550	44	53	31	2900	3578	15.4	1.2	1.5	0.9	81.1
5-47	580	64	120	25	1900	2689	21.6	2.4	4.5	0.9	70.7
6-8	980	190	<10	71	7600	8841	11.1	2.1	0.0	0.8	86.0
6-17	230	120	140	38	2700	3228	7.1	3.7	4.3	1.2	83.6
6-69	940	52	<10	23	9700	10715	8.8	0.5	0.0	0.2	90.5
6-70	1100	10	<10	43	7800	8953	12.3	0.1	0.0	0.5	87.1
6-71	780	<10	<10	51	2800	3631	21.5	0.0	0.0	1.4	77.1
6-72	1500	<10	<10	52	8000	9552	15.7	0.0	0.0	0.5	83.8
6-73	550	70	100	13	4000	4733	11.6	1.5	2.1	0.3	84.5
6-77	620	66	92	27	3900	4705	13.2	1.4	2.0	0.6	82.9
6-78	610	83	66	13	3800	4572	13.3	1.8	1.4	0.3	83.1
6-79	840	<10	<10	<10	4200	5040	16.7	0.0	0.0	0.0	83.3
6-86	860	<10	<10	230	3600	4690	18.3	0.0	0.0	4.9	76.8
6-87	960	<10	<10	230	6200	7390	13.0	0.0	0.0	3.1	83.9
6-88	530	42	140	13	2100	2825	18.8	1.5	5.0	0.5	74.3
6-89	270	41	34	<10	1000	1345	20.1	3.0	2.5	0.0	74.3
6-90	260	90	32	<10	300	682	38.1	13.2	4.7	0.0	44.0
6-91	270	79	54	67	410	880	30.7	9.0	6.1	7.6	46.6
6-92	260	100	37	<10	1300	1697	15.3	5.9	2.2	0.0	76.6
6-93	220	90	41	<10	670	1021	21.5	8.8	4.0	0.0	65.6
6-94	170	98	33	<10	490	791	21.5	12.4	4.2	0.0	61.9
6-95	230	110	54	<10	470	864	26.6	12.7	6.3	0.0	54.4

Table 2. Continued.

Sample	Se Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Se Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	<0.10	<0.10	0.20	0.11	0.38	0.69	0.0	0.0	29.0	15.9	55.1	<0.010	0.025
1A-31	<0.10	<0.10	0.10	0.52	0.44	1.06	0.0	0.0	9.4	49.1	41.5	0.070	0.015
1A-55	<0.10	<0.10	0.24	0.21	0.79	1.24	0.0	0.0	19.4	16.9	63.7	<0.010	<0.010
1A-61	<0.10	<0.10	0.12	0.29	0.75	1.16	0.0	0.0	10.3	25.0	64.7	0.045	0.025
1A-63	<0.10	<0.10	0.15	0.14	0.71	1.00	0.0	0.0	15.0	14.0	71.0	0.020	<0.010
1A-72	<0.10	<0.10	0.20	0.10	0.88	1.18	0.0	0.0	16.9	8.5	74.6	0.045	0.010
1A-77	0.15	0.10	0.28	0.23	0.37	1.13	13.3	8.8	24.8	20.4	32.7	0.070	0.010
1A-78	<0.10	<0.10	0.16	0.14	0.15	0.45	0.0	0.0	35.6	31.1	33.3	0.060	0.130
1A-79	0.10	0.10	0.16	1.57	0.68	2.61	3.8	3.8	6.1	60.2	26.1	0.125	0.200
1A-80	<0.10	<0.10	0.10	2.10	0.42	2.62	0.0	0.0	3.8	80.2	16.0	0.140	0.105
1A-81	<0.10	<0.10	<0.10	<0.10	0.14	0.14	0.0	0.0	0.0	0.0	100.0	0.055	0.125
1A-82	<0.10	<0.10	<0.10	0.88	0.29	1.17	0.0	0.0	0.0	75.2	24.8	0.025	<0.010
2-10	<0.10	<0.10	<0.10	1.56	1.40	2.96	0.0	0.0	0.0	52.7	47.3	0.030	0.405
2-13	0.65	0.18	<0.10	4.40	0.64	5.87	11.1	3.1	0.0	75.0	10.9		
2-20	<0.10	<0.10	<0.10	<0.10	0.10	0.10	0.0	0.0	0.0	0.0	100.0	0.040	0.050
2-21	<0.10	<0.10	<0.10	0.18	0.15	0.33	0.0	0.0	0.0	54.5	45.5	0.020	0.175
2-23	0.19	0.13	0.10	2.64	0.22	3.28	5.8	4.0	3.0	80.5	6.7	0.180	0.225
2-24	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.010	0.025
2-26	3.12	1.14	2.39	98.50	3.67	108.82	2.9	1.0	2.2	90.5	3.4	2.900	15.000
2-31	<0.10	<0.10	<0.10	0.10	0.10	0.20	0.0	0.0	0.0	50.0	50.0	0.060	0.020
2-37	0.19	0.28	0.20	0.40	0.10	1.17	16.2	23.9	17.1	34.2	8.5	0.300	0.010
2-38	0.81	0.40	0.20	0.50	0.30	2.21	36.7	18.1	9.0	22.6	13.6	0.650	0.110
2-55	0.79	0.20	0.20	3.38	1.23	5.80	13.6	3.4	3.4	58.3	21.2	0.700	1.300
5-32	0.24	<0.10	1.07	4.62	0.24	6.17	3.9	0.0	17.3	74.9	3.9		
5-35	<0.10	<0.10	<0.10	1.96	0.10	2.06	0.0	0.0	0.0	95.1	4.9		
5-47	<0.10	<0.10	<0.10	0.17	<0.10	0.17	0.0	0.0	0.0	100.0	0.0	<0.010	0.100
6-8	<0.10	<0.10	0.20	0.10	0.34	0.64	0.0	0.0	31.3	15.6	53.1	0.035	0.025
6-17	<0.10	<0.10	0.84	0.44	0.30	1.58	0.0	0.0	53.2	27.8	19.0	0.020	<0.010
6-69	<0.10	0.17	0.25	5.90	2.00	8.32	0.0	2.0	3.0	70.9	24.0	0.060	2.200
6-70	<0.10	<0.10	<0.10	<0.10	0.10	0.10	0.0	0.0	0.0	0.0	100.0	0.010	0.030
6-71	<0.10	<0.10	<0.10	<0.10	0.10	0.10	0.0	0.0	0.0	0.0	100.0	<0.010	0.105
6-72	<0.10	<0.10	0.10	<0.10	0.14	0.24	0.0	0.0	41.7	0.0	58.3	0.030	0.015
6-73	<0.10	<0.10	<0.10	1.40	0.27	1.67	0.0	0.0	0.0	83.8	16.2		
6-77	<0.10	<0.10	<0.10	1.86	0.52	2.38	0.0	0.0	0.0	78.2	21.8	0.055	0.010
6-78	1.03	0.33	1.62	85.00	3.67	91.65	1.1	0.4	1.8	92.7	4.0	1.650	0.470
6-79	<0.10	<0.10	0.14	<0.10	0.12	0.26	0.0	0.0	53.8	0.0	46.2	<0.010	0.030
6-86	<0.10	<0.10	0.20	<0.10	0.35	0.55	0.0	0.0	36.4	0.0	63.6	0.015	0.045
6-87	<0.10	<0.10	0.10	<0.10	1.80	1.90	0.0	0.0	5.3	0.0	94.7	0.010	0.050
6-88	<0.10	<0.10	0.16	0.44	0.80	1.40	0.0	0.0	11.4	31.4	57.1	0.065	0.010
6-89	<0.10	<0.10	<0.10	1.92	0.36	2.28	0.0	0.0	0.0	84.2	15.8	0.080	0.025
6-90	<0.10	<0.10	<0.10	1.92	0.16	2.08	0.0	0.0	0.0	92.3	7.7	0.065	0.020
6-91	0.18	0.27	0.24	3.68	1.75	6.12	2.9	4.4	3.9	60.1	28.6	0.240	0.030
6-92	<0.10	<0.10	0.10	4.73	0.64	5.47	0.0	0.0	1.8	86.5	11.7	0.185	0.020
6-93	0.10	0.14	0.24	6.05	1.22	7.75	1.3	1.8	3.1	78.1	15.7	0.120	0.025
6-94	<0.10	<0.10	0.14	1.08	0.28	1.50	0.0	0.0	9.3	72.0	18.7	0.040	<0.010
6-95	<0.10	<0.10	0.12	0.42	0.44	0.98	0.0	0.0	12.2	42.9	44.9	0.025	<0.010

Table 2. Continued.

Sample	Se Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Se Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
6-96	<0.10	<0.10	<0.10	0.25	<0.10	0.25	0.0	0.0	0.0	100.0	0.0	0.010	0.090
6-97	0.10	<0.10	<0.10	2.42	0.47	2.99	3.3	0.0	0.0	80.9	15.7	0.100	0.025
6-98	0.95	0.61	0.52	21.50	1.08	24.66	3.9	2.5	2.1	87.2	4.4	1.000	0.300
6-99	<0.10	<0.10	<0.10	0.52	0.82	1.34	0.0	0.0	0.0	38.8	61.2	0.120	0.010
6-105	<0.10	<0.10	0.10	1.61	0.71	2.42	0.0	0.0	4.1	66.5	29.3	0.385	<0.010
6-108	<0.10	0.19	0.13	23.20	<0.10	23.52	0.0	0.8	0.6	98.6	0.0	1.250	0.125
6-109	<0.10	<0.10	<0.10	<0.10	1.60	1.60	0.0	0.0	0.0	0.0	100.0	<0.010	0.040
6-112	1.18	0.10	<0.10	18.40	0.10	19.78	6.0	0.5	0.0	93.0	0.5	0.950	0.120
7-8	0.14	<0.10	<0.10	0.24	1.10	1.48	9.5	0.0	0.0	16.2	74.3	<0.10	
7-9	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7-25	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7-28	0.14	0.17	0.14	1.80	0.56	2.81	5.0	6.0	5.0	64.1	19.9	0.40	
7-29	<0.10	<0.10	<0.10	0.10	0.14	0.24	0.0	0.0	0.0	41.7	58.3	<0.10	
7-30	1.10	<0.10	<0.10	1.80	0.63	3.53	31.2	0.0	0.0	51.0	17.8	0.20	
7-31	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7-32	<0.10	0.22	0.11	0.24	0.19	0.76	0.0	28.9	14.5	31.6	25.0	0.38	
7-33	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7-34	0.11	<0.10	<0.10	0.20	0.11	0.42	26.2	0.0	0.0	47.6	26.2	<0.10	
7-35	<0.10	<0.10	<0.10	<0.10	1.00	1.00	0.0	0.0	0.0	0.0	100.0	<0.10	
7A-10	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-12	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-14	0.14	<0.10	<0.10	<0.10	0.13	0.27	51.9	0.0	0.0	0.0	48.1	<0.10	
7A-16	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-26	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-31	<0.10	<0.10	<0.10	<0.10	0.11	0.11	0.0	0.0	0.0	0.0	100.0	<0.10	
7A-32	<0.10	0.14	0.16	0.68	0.26	1.24	0.0	11.3	12.9	54.8	21.0	0.60	
7A-35	<0.10	0.17	0.14	3.00	1.20	4.51	0.0	3.8	3.1	66.5	26.6	0.50	
7A-36	0.13	<0.10	<0.10	<0.10	<0.10	0.13	100.0	0.0	0.0	0.0	0.0	<0.10	
7A-38	<0.10	<0.10	<0.10	1.70	0.31	2.01	0.0	0.0	0.0	84.6	15.4	0.10	
7A-40	0.33	<0.10	<0.10	<0.10	1.30	1.63	20.2	0.0	0.0	0.0	79.8	<0.10	
7A-44	0.24	<0.10	<0.10	<0.10	0.10	0.34	70.6	0.0	0.0	0.0	29.4	<0.10	
7A-45	<0.10	0.14	0.11	6.00	1.10	7.35	0.0	1.9	1.5	81.6	15.0	0.50	
7A-46	0.10	<0.10	<0.10	3.30	0.41	3.81	2.6	0.0	0.0	86.6	10.8	0.18	
7A-47	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-51	0.21	<0.10	<0.10	0.17	0.14	0.52	40.4	0.0	0.0	32.7	26.9	<0.10	
7A-55	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-58	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-73	<0.10	<0.10	<0.10	<0.10	0.81	0.81	0.0	0.0	0.0	0.0	100.0	<0.10	
7A-78	<0.10	<0.10	<0.10	<0.10	<0.10	0.00						<0.10	
7A-79	<0.10	<0.10	<0.10	<0.10	0.10	0.10	0.0	0.0	0.0	0.0	100.0	<0.10	
Analytical range for the extraction of Se.													
Maximum	3.1	1.1	2.4	98.5	3.7	108.8	100.0	28.9	53.8	100.0	100.0	2.9	15
Minimum	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	<0.010	<0.010

Table 2. Continued.

Sample	Sr Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Sr Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	2.0	0.42	6.4	1.10	18	28	7.2	1.5	22.9	3.9	64.5	1.5	1.20
1A-31	21.0	1.60	8.2	0.33	110	141	14.9	1.1	5.8	0.2	77.9	6.9	<0.08
1A-55	26.0	3.80	18.0	1.20	82	131	19.8	2.9	13.7	0.9	62.6	12.0	1.60
1A-61	23.0	3.40	49.0	1.40	64	141	16.3	2.4	34.8	1.0	45.5	7.3	0.73
1A-63	32.0	2.30	6.9	0.39	92	134	24.0	1.7	5.2	0.3	68.9	11.0	0.42
1A-72	18.0	3.00	24.0	1.20	70	116	15.5	2.6	20.7	1.0	60.2	8.7	1.40
1A-77	7.2	1.30	25.0	1.10	33	68	10.7	1.9	37.0	1.6	48.8	4.3	<0.08
1A-78	9.0	1.20	22.0	2.70	88	123	7.3	1.0	17.9	2.2	71.6	6.6	2.20
1A-79	13.0	2.60	75.0	5.00	56	152	8.6	1.7	49.5	3.3	36.9	5.7	0.67
1A-80	9.3	1.60	25.0	0.66	67	104	9.0	1.5	24.1	0.6	64.7	4.5	<0.08
1A-81	26.0	5.00	120.0	5.20	160	316	8.2	1.6	38.0	1.6	50.6	11.0	2.00
1A-82	10.0	0.97	4.9	0.20	83	99	10.1	1.0	4.9	0.2	83.8	7.3	0.27
2-10	42.0	1.50	6.6	0.31	61	111	37.7	1.3	5.9	0.3	54.8	13.0	1.30
2-13	21.0	0.42	8.3	<0.10	47	77	27.4	0.5	10.8	0.0	61.3		
2-20	20.0	1.60	7.3	1.00	82	112	17.9	1.4	6.5	0.9	73.3	13.0	1.00
2-21	22.0	2.60	52.0	3.20	100	180	12.2	1.4	28.9	1.8	55.6	13.0	2.00
2-23	6.9	0.56	42.0	0.73	23	73	9.4	0.8	57.4	1.0	31.4	3.1	<0.08
2-24	66.0	5.00	14.0	2.20	74	161	40.9	3.1	8.7	1.4	45.9	20.0	2.80
2-26	12.0	<0.15	3.8	<0.10	63	79	15.2	0.0	4.8	0.0	79.9	8.0	1.10
2-31	18.0	0.43	3.1	<0.10	68	90	20.1	0.5	3.5	0.0	76.0	14.0	0.94
2-37	11.0	2.00	48.0	0.98	25	87	12.6	2.3	55.2	1.1	28.7	3.7	0.98
2-38	66.0	3.90	18.0	0.57	71	159	41.4	2.4	11.3	0.4	44.5	21.0	1.40
2-55	21.0	0.77	3.5	<0.10	79	104	20.1	0.7	3.4	0.0	75.8	13.0	1.10
5-32	8.3	0.43	2.6	0.23	68	80	10.4	0.5	3.3	0.3	85.5		
5-35	4.6	0.43	11.0	0.37	52	68	6.7	0.6	16.1	0.5	76.0		
5-47	5.8	0.92	33.0	1.20	48	89	6.5	1.0	37.1	1.3	54.0	1.7	0.65
6-8	13.0	1.40	4.0	0.26	100	119	11.0	1.2	3.4	0.2	84.3	4.1	1.10
6-17	13.0	1.90	35.0	0.94	33	84	15.5	2.3	41.7	1.1	39.4	2.6	<0.08
6-69	73.0	5.00	39.0	1.30	61	179	40.7	2.8	21.8	0.7	34.0	16.0	2.30
6-70	48.0	6.10	110.0	3.50	97	265	18.1	2.3	41.6	1.3	36.7	15.0	2.40
6-71	7.6	2.60	16.0	0.62	38	65	11.7	4.0	24.7	1.0	58.6	4.2	1.10
6-72	50.0	3.60	15.0	0.65	87	156	32.0	2.3	9.6	0.4	55.7	13.0	2.10
6-73	25.0	1.70	10.0	0.42	85	122	20.5	1.4	8.2	0.3	69.6		
6-77	28.0	2.00	11.0	0.41	89	130	21.5	1.5	8.4	0.3	68.2	10.0	0.24
6-78	25.0	1.50	3.3	0.18	85	115	21.7	1.3	2.9	0.2	73.9	11.0	0.52
6-79	22.0	2.20	20.0	0.83	62	107	20.6	2.1	18.7	0.8	57.9	12.0	2.10
6-86	13.0	2.40	28.0	1.60	56	101	12.9	2.4	27.7	1.6	55.4	6.7	1.30
6-87	16.0	1.80	7.8	0.58	88	114	14.0	1.6	6.8	0.5	77.1	10.0	1.60
6-88	21.0	6.80	250.0	7.90	43	329	6.4	2.1	76.1	2.4	13.1	8.9	1.60
6-89	7.5	<0.15	37.0	2.00	59	106	7.1	0.0	35.1	1.9	55.9	4.1	0.30
6-90	4.5	<0.15	9.6	0.36	23	37	12.0	0.0	25.6	1.0	61.4	3.0	0.39
6-91	8.2	<0.15	14.0	0.57	21	44	18.7	0.0	32.0	1.3	48.0	5.4	0.66
6-92	4.5	<0.15	7.4	0.25	30	42	10.7	0.0	17.6	0.6	71.2	3.2	<0.08
6-93	4.1	<0.15	1.7	0.23	27	33	12.4	0.0	5.1	0.7	81.7	3.0	0.26
6-94	3.7	<0.15	3.6	0.24	20	28	13.4	0.0	13.1	0.9	72.6	2.8	0.16
6-95	6.2	<0.15	6.5	0.38	18	31	19.9	0.0	20.9	1.2	57.9	4.3	0.29

Table 2. Continued.

Sample	Sr Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent Sr Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
6-96	3.2	0.62	14.0	1.00	22	41	7.8	1.5	34.3	2.4	53.9	2.4	1.60
6-97	4.8	<0.15	1.5	<0.15	45	51	9.4	0.0	2.9	0.0	87.7	3.7	<0.08
6-98	9.2	1.10	87.0	2.30	56	156	5.9	0.7	55.9	1.5	36.0	4.5	<0.08
6-99	42.0	3.30	15.0	0.60	84	145	29.0	2.3	10.4	0.4	58.0	7.8	<0.08
6-105	20.0	2.00	130.0	4.90	110	267	7.5	0.7	48.7	1.8	41.2	7.2	<0.08
6-108	7.2	3.10	76.0	2.10	29	117	6.1	2.6	64.7	1.8	24.7	3.7	<0.08
6-109	28.0	3.00	17.0	3.40	140	191	14.6	1.6	8.9	1.8	73.1	5.5	1.70
6-112	12.0	0.84	5.4	0.21	92	110	10.9	0.8	4.9	0.2	83.3	4.6	<0.08
7-8	16.0	1.20	20.0	1.10	55	93	17.1	1.3	21.4	1.2	58.9	8.3	
7-9	47.0	2.40	29.0	2.00	88	168	27.9	1.4	17.2	1.2	52.3	13.0	
7-25	48.0	1.80	20.0	2.00	100	172	27.9	1.0	11.6	1.2	58.2	12.0	
7-28	21.0	1.50	11.0	0.71	81	115	18.2	1.3	9.5	0.6	70.3	7.6	
7-29	19.0	1.20	17.0	1.30	72	111	17.2	1.1	15.4	1.2	65.2	8.2	
7-30	24.0	1.40	21.0	1.90	91	139	17.2	1.0	15.1	1.4	65.3	9.5	
7-31	33.0	2.00	24.0	1.50	89	150	22.1	1.3	16.1	1.0	59.5	9.8	
7-32	30.0	1.50	18.0	1.60	92	143	21.0	1.0	12.6	1.1	64.3	10.0	
7-33	25.0	1.10	22.0	1.60	74	124	20.2	0.9	17.8	1.3	59.8	11.0	
7-34	12.0	1.20	28.0	3.10	36	80	14.9	1.5	34.9	3.9	44.8	5.4	
7-35	23.0	1.00	8.5	1.30	86	120	19.2	0.8	7.1	1.1	71.8	12.0	
7A-10	25.0	0.51	11.0	1.40	94	132	19.0	0.4	8.3	1.1	71.3	15.0	
7A-12	24.0	1.50	10.0	1.10	95	132	18.2	1.1	7.6	0.8	72.2	16.0	
7A-14	9.8	1.10	3.4	0.42	60	75	13.1	1.5	4.6	0.6	80.3	7.3	
7A-16	11.0	0.63	18.0	2.00	77	109	10.1	0.6	16.6	1.8	70.9	8.4	
7A-26	47.0	1.80	26.0	2.90	79	157	30.0	1.1	16.6	1.9	50.4	16.0	
7A-31		1.00	7.0	1.30	170	179	0.0	0.6	3.9	0.7	94.8	13.0	
7A-32		0.53	4.3	0.28	69	74	0.0	0.7	5.8	0.4	93.1	4.4	
7A-35	18.0	0.91	7.7	0.52	100	127	14.2	0.7	6.1	0.4	78.7	12.0	
7A-36	19.0	0.92	6.8	0.50	85	112	16.9	0.8	6.1	0.4	75.7	12.0	
7A-38	9.8	0.70	6.8	0.39	73	91	10.8	0.8	7.5	0.4	80.5	6.3	
7A-40	17.0	1.20	22.0	1.00	110	151	11.2	0.8	14.6	0.7	72.8	8.0	
7A-44	11.0	0.66	5.4	0.32	84	101	10.9	0.7	5.3	0.3	82.9	7.0	
7A-45	16.0	0.77	8.3	0.52	85	111	14.5	0.7	7.5	0.5	76.9	11.0	
7A-46	15.0	1.10	15.0	0.72	59	91	16.5	1.2	16.5	0.8	65.0	8.0	
7A-47	37.0	1.90	19.0	1.30	98	157	23.5	1.2	12.1	0.8	62.3	12.0	
7A-51	9.6	0.72	8.4	0.35	74	93	10.3	0.8	9.0	0.4	79.5	5.6	
7A-55	36.0	1.60	6.5	0.45	130	175	20.6	0.9	3.7	0.3	74.5	13.0	
7A-58	36.0	1.30	6.6	0.45	130	174	20.6	0.7	3.8	0.3	74.6	13.0	
7A-73	32.0	1.60	7.8	0.44	100	142	22.6	1.1	5.5	0.3	70.5	25.0	
7A-78	23.0	1.20	7.7	0.38	130	162	14.2	0.7	4.7	0.2	80.1	16.0	
7A-79	24.0	1.20	4.8	0.29	110	140	17.1	0.9	3.4	0.2	78.4	16.0	
Analytical range for the extraction of Sr.													
Maximum	73	7	250	7.9	170	328.7	41.4	4.0	76.1	4.0	94.8	25.0	2.8
Minimum	0.0	<0.15	0.0	<0.15	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<0.08

Table 2. Continued.

Sample	U Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent U Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	<0.1	<0.1	0.7	0.1	0.4	1.2	0.0	0.0	58.3	8.3	33.3	0.05	0.05
1A-31	<0.1	0.1	0.8	0.1	1.9	2.9	0.0	3.4	27.6	3.4	65.5	0.10	0.05
1A-55	<0.1	0.5	3.3	0.3	1.3	5.4	0.0	9.3	61.1	5.6	24.1	0.50	0.70
1A-61	<0.1	0.5	1.7	0.1	0.7	3.0	0.0	16.7	56.7	3.3	23.3	0.50	0.45
1A-63	<0.1	0.2	1.5	0.2	1.8	3.7	0.0	5.4	40.5	5.4	48.6	0.40	0.40
1A-72	<0.1	0.5	2.3	0.3	1.2	4.3	0.0	11.6	53.5	7.0	27.9	0.45	0.80
1A-77	<0.1	0.2	1.2	0.2	0.6	2.2	0.0	9.1	54.5	9.1	27.3	0.20	0.25
1A-78	<0.1	0.1	0.8	0.1	0.7	1.7	0.0	5.9	47.1	5.9	41.2	0.15	0.15
1A-79	<0.1	0.3	1.3	0.3	0.9	2.8	0.0	10.7	46.4	10.7	32.1	0.20	0.30
1A-80	<0.1	0.1	0.4	<0.1	1.0	1.5	0.0	6.7	26.7	0.0	66.7	0.10	0.05
1A-81	<0.1	0.1	0.7	<0.1	1.4	2.2	0.0	4.5	31.8	0.0	63.6	0.25	0.20
1A-82	<0.1	0.1	0.5	<0.1	1.3	1.9	0.0	5.3	26.3	0.0	68.4	0.10	0.05
2-10	<0.1	0.1	3.1	0.4	1.7	5.3	0.0	1.9	58.5	7.5	32.1	1.20	1.40
2-13	<0.1	1.2	30.7	1.2	2.2	35.3	0.0	3.4	87.0	3.4	6.2		
2-20	<0.1	0.2	0.7	0.2	1.0	2.1	0.0	9.5	33.3	9.5	47.6	0.30	0.50
2-21	<0.1	0.1	0.8	<0.1	0.8	1.7	0.0	5.9	47.1	0.0	47.1	0.20	0.10
2-23	<0.1	<0.1	1.1	0.1	0.7	1.9	0.0	0.0	57.9	5.3	36.8	0.05	0.20
2-24	<0.1	<0.1	0.5	0.1	1.2	1.8	0.0	0.0	27.8	5.6	66.7	0.10	0.10
2-26	<0.1	0.5	5.4	0.3	2.4	8.6	0.0	5.8	62.8	3.5	27.9	2.40	2.40
2-31	<0.1	0.1	0.6	0.1	1.7	2.5	0.0	4.0	24.0	4.0	68.0	0.10	0.10
2-37	<0.1	0.1	1.3	0.1	1.1	2.6	0.0	3.8	50.0	3.8	42.3	<0.05	0.05
2-38	<0.1	0.3	7.5	0.5	2.2	10.5	0.0	2.9	71.4	4.8	21.0	3.10	2.30
2-55	<0.1	0.3	2.6	0.2	1.9	5.0	0.0	6.0	52.0	4.0	38.0	1.30	0.70
5-32	<0.1	0.7	4.8	0.3	2.1	7.9	0.0	8.9	60.8	3.8	26.6		
5-35	<0.1	0.2	3.0	0.2	0.9	4.3	0.0	4.7	69.8	4.7	20.9		
5-47	<0.1	0.1	1.7	0.1	0.6	2.5	0.0	4.0	68.0	4.0	24.0	0.45	0.65
6-8	0.2	<0.1	0.4	<0.1	1.1	1.7	11.8	0.0	23.5	0.0	64.7		
6-17	<0.1	<0.1	0.5	<0.1	1.1	1.6	0.0	0.0	31.3	0.0	68.8	0.05	<0.05
6-69	<0.1	0.2	1.2	<0.1	1.2	2.6	0.0	7.7	46.2	0.0	46.2	0.10	0.05
6-70	<0.1	0.2	1.2	<0.1	1.4	2.8	0.0	7.1	42.9	0.0	50.0	0.05	<0.05
6-71	<0.1	<0.1	0.2	<0.1	0.6	0.8	0.0	0.0	25.0	0.0	75.0	0.40	0.20
6-72	<0.1	0.4	1.7	<0.1	1.8	3.9	0.0	10.3	43.6	0.0	46.2	0.35	0.20
6-73	<0.1	0.7	2.0	0.1	2.0	4.8	0.0	14.6	41.7	2.1	41.7		
6-77	<0.1	0.3	1.5	0.1	1.9	3.8	0.0	7.9	39.5	2.6	50.0	0.40	0.30
6-78	0.1	2.4	53.2	1.9	4.0	61.6	0.2	3.9	86.4	3.1	6.5	43.00	12.00
6-79	<0.1	<0.1	1.5	<0.1	1.0	2.5	0.0	0.0	60.0	0.0	40.0	0.40	0.25
6-86	<0.1	0.5	2.1	0.1	1.3	4.0	0.0	12.5	52.5	2.5	32.5	0.70	0.45
6-87	<0.1	0.2	1.1	<0.1	1.3	2.6	0.0	7.7	42.3	0.0	50.0	0.20	0.15
6-88	<0.1	0.4	1.5	0.1	1.0	3.0	0.0	13.3	50.0	3.3	33.3	0.50	0.30
6-89	<0.1	0.1	0.3	<0.1	0.5	0.9	0.0	11.1	33.3	0.0	55.6	0.15	0.05
6-90	<0.1	0.1	0.1	<0.1	0.3	0.5	0.0	20.0	20.0	0.0	60.0	0.05	<0.05
6-91	<0.1	0.3	1.2	0.1	0.3	1.9	0.0	15.8	63.2	5.3	15.8	0.30	0.25
6-92	<0.1	0.2	0.4	<0.1	0.7	1.3	0.0	15.4	30.8	0.0	53.8	0.15	<0.05
6-93	<0.1	0.1	0.6	0.1	0.6	1.4	0.0	7.1	42.9	7.1	42.9	0.05	0.05
6-94	<0.1	0.1	0.4	0.1	0.4	1.0	0.0	10.0	40.0	10.0	40.0	<0.05	0.05
6-95	<0.1	0.2	0.9	0.1	0.4	1.6	0.0	12.5	56.3	6.3	25.0	0.15	0.15

Table 2. Continued.

Sample	U Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent U Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
6-96	<0.1	<0.1	0.3	<0.1	0.6	0.9	0.0	0.0	33.3	0.0	66.7	0.05	<0.05
6-97	<0.1	0.1	0.5	<0.1	0.8	1.4	0.0	7.1	35.7	0.0	57.1	0.10	0.10
6-98	0.1	1.4	15.5	1.3	1.9	20.2	0.5	6.9	76.7	6.4	9.4	1.35	8.50
6-99	<0.1	0.3	2.9	0.2	2.3	5.7	0.0	5.3	50.9	3.5	40.4	1.10	0.55
6-105	<0.1	<0.1	0.5	<0.1	1.1	1.6	0.0	0.0	31.3	0.0	68.8	0.15	0.10
6-108	0.4	5.4	60.8	3.3	3.0	72.9	0.5	7.4	83.4	4.5	4.1	24.50	37.00
6-109	<0.1	<0.1	0.7	0.2	1.7	2.6	0.0	0.0	26.9	7.7	65.4	0.25	0.15
6-112	<0.1	1.6	5.4	0.3	2.3	9.6	0.0	16.7	56.3	3.1	24.0	2.95	1.95
7-8	<0.1	0.9	5.6	0.5	2.0	9.0	0.0	10.0	62.2	5.6	22.2	3.75	
7-9	<0.1	<0.1	0.8	0.1	1.2	2.1	0.0	0.0	38.1	4.8	57.1	0.25	
7-25	<0.1	<0.1	0.7	<0.1	1.2	1.9	0.0	0.0	36.8	0.0	63.2	0.34	
7-28	<0.1	1.3	36.0	1.2	1.3	39.8	0.0	3.3	90.5	3.0	3.3	22.50	
7-29	<0.1	<0.1	0.4	<0.1	1.1	1.5	0.0	0.0	26.7	0.0	73.3	0.15	
7-30	<0.1	1.1	89.0	3.4	1.8	95.3	0.0	1.2	93.4	3.6	1.9	46.00	
7-31	<0.1	<0.1	0.8	<0.1	1.3	2.1	0.0	0.0	38.1	0.0	61.9	0.20	
7-32	<0.1	<0.1	0.4	<0.1	1.2	1.6	0.0	0.0	25.0	0.0	75.0	0.15	
7-33	<0.1	<0.1	0.4	<0.1	1.1	1.5	0.0	0.0	26.7	0.0	73.3	0.10	
7-34	<0.1	0.3	4.3	2.3	1.3	8.2	0.0	3.7	52.4	28.0	15.9	1.65	
7-35	<0.1	0.4	42.0	5.4	1.5	49.3	0.0	0.8	85.2	11.0	3.0	23.50	
7A-10	<0.1	<0.1	0.6	0.1	1.1	1.8	0.0	0.0	33.3	5.6	61.1	0.25	
7A-12	<0.1	<0.1	0.6	<0.1	1.0	1.6	0.0	0.0	37.5	0.0	62.5	0.20	
7A-14	<0.1	<0.1	0.8	0.1	0.5	1.4	0.0	0.0	57.1	7.1	35.7	0.15	
7A-16	<0.1	<0.1	0.3	<0.1	0.7	1.0	0.0	0.0	30.0	0.0	70.0	0.10	
7A-26	<0.1	<0.1	1.0	0.2	1.3	2.5	0.0	0.0	40.0	8.0	52.0	0.45	
7A-31	<0.1	<0.1	0.6	0.1	1.3	2.0	0.0	0.0	30.0	5.0	65.0	0.20	
7A-32	<0.1	<0.1	0.2	<0.1	0.8	1.0	0.0	0.0	20.0	0.0	80.0	0.05	
7A-35	<0.1	<0.1	0.6	<0.1	1.0	1.6	0.0	0.0	37.5	0.0	62.5	0.20	
7A-36	<0.1	<0.1	1.2	<0.1	1.0	2.2	0.0	0.0	54.5	0.0	45.5	0.40	
7A-38	<0.1	<0.1	0.7	<0.1	0.8	1.5	0.0	0.0	46.7	0.0	53.3	0.25	
7A-40	<0.1	<0.1	0.6	<0.1	0.8	1.4	0.0	0.0	42.9	0.0	57.1	0.25	
7A-44	<0.1	0.2	0.6	<0.1	1.0	1.8	0.0	11.1	33.3	0.0	55.6	0.34	
7A-45	<0.1	<0.1	1.7	0.1	1.0	2.8	0.0	0.0	60.7	3.6	35.7	0.70	
7A-46	<0.1	0.2	1.8	0.1	0.9	3.0	0.0	6.7	60.0	3.3	30.0	0.75	
7A-47	<0.1	<0.1	1.2	0.1	1.1	2.4	0.0	0.0	50.0	4.2	45.8	0.65	
7A-51	<0.1	<0.1	0.3	<0.1	0.5	0.8	0.0	0.0	37.5	0.0	62.5	0.10	
7A-55	<0.1	<0.1	1.0	<0.1	1.2	2.2	0.0	0.0	45.5	0.0	54.5	0.50	
7A-58	<0.1	<0.1	1.1	<0.1	1.3	2.4	0.0	0.0	45.8	0.0	54.2	0.50	
7A-73	<0.1	<0.1	1.4	<0.1	1.1	2.5	0.0	0.0	56.0	0.0	44.0	0.45	
7A-78	<0.1	<0.1	0.5	<0.1	1.1	1.6	0.0	0.0	31.3	0.0	68.8	0.15	
7A-79	<0.1	<0.1	0.7	<0.1	1.4	2.1	0.0	0.0	33.3	0.0	66.7	0.10	
Analytical range for the extraction of U.													
Maximum	0.4	5.4	89.0	5.4	4.0	95.3	11.8	20.0	93.4	28.0	80.0	46.0	37.0
Minimum	<0.1	<0.1	0.1	<0.1	0.3	0.5	0.0	0.0	20.0	0.0	1.9	<0.05	<0.05

Table 2. Continued.

Sample	V Analytical Values in PPM: Sequential Extraction Step 1	2	3	4	5	Total	Percent V Extracted: Extraction Step 1	2	3	4	5	PPM NaHCO3	PPM NaOCl+ NaHCO3
1A-19	<1.7	<1.7	60	13.0	16.0	89.0	0.0	0.0	67.4	14.6	18.0	0.80	1.30
1A-31	<1.7	2.3	58	5.0	45.0	110.3	0.0	2.1	52.6	4.5	40.8	<0.75	2.60
1A-55	<1.7	4.7	330	40.0	46.0	420.7	0.0	1.1	78.4	9.5	10.9	9.50	28.00
1A-61	<1.7	4.3	120	7.2	25.0	156.5	0.0	2.7	76.7	4.6	16.0	4.60	13.00
1A-63	<1.7	2.4	78	7.7	47.0	135.1	0.0	1.8	57.7	5.7	34.8	2.70	6.30
1A-72	<1.7	4.9	250	27.0	38.0	319.9	0.0	1.5	78.1	8.4	11.9	10.00	23.00
1A-77	<1.7	2.0	88	12.0	25.0	127.0	0.0	1.6	69.3	9.4	19.7	2.10	4.50
1A-78	<1.7	<1.7	59	12.0	22.0	93.0	0.0	0.0	63.4	12.9	23.7	1.50	2.70
1A-79	<1.7	2.6	81	22.0	44.0	149.6	0.0	1.7	54.1	14.7	29.4	2.10	4.20
1A-80	<1.7	1.9	19	<1.7	20.0	40.9	0.0	4.6	46.5	0.0	48.9	<0.75	<0.75
1A-81	<1.7	<1.7	24	2.5	62.0	88.5	0.0	0.0	27.1	2.8	70.1	<0.75	1.80
1A-82	<1.7	1.8	34	<1.7	22.0	57.8	0.0	3.1	58.8	0.0	38.1	<0.75	1.30
2-10	<1.7	11.0	220	31.0	46.0	308.0	0.0	3.6	71.4	10.1	14.9	73.00	91.00
2-13	<1.7	6.4	550	85.0	100.0	741.4	0.0	0.9	74.2	11.5	13.5		
2-20	<1.7	<1.7	51	14.0	42.0	107.0	0.0	0.0	47.7	13.1	39.3	7.90	0.85
2-21	<1.7	<1.7	55	7.3	36.0	98.3	0.0	0.0	56.0	7.4	36.6	3.20	2.10
2-23	<1.7	2.4	34	2.3	15.0	53.7	0.0	4.5	63.3	4.3	27.9	1.00	<0.75
2-24	<1.7	<1.7	26	14.0	58.0	98.0	0.0	0.0	26.5	14.3	59.2	<0.75	<0.75
2-26	53.0	160.0	1500	160.0	50.0	1923.0	2.8	8.3	78.0	8.3	2.6	980.00	290.00
2-31	<1.7	3.9	34	3.8	34.0	75.7	0.0	5.2	44.9	5.0	44.9	4.20	1.50
2-37	<1.7	4.7	33	3.9	31.0	72.6	0.0	6.5	45.5	5.4	42.7	<0.75	<0.75
2-38	<1.7	11.0	140	14.0	75.0	240.0	0.0	4.6	58.3	5.8	31.3	30.00	12.00
2-55	<1.7	8.6	87	10.0	51.0	156.6	0.0	5.5	55.6	6.4	32.6	19.00	21.00
5-32	2.0	17.0	300	72.0	63.0	454.0	0.4	3.7	66.1	15.9	13.9		
5-35	8.3	4.7	52	17.0	37.0	119.0	7.0	3.9	43.7	14.3	31.1		
5-47	<1.7	2.8	67	4.8	21.0	95.6	0.0	2.9	70.1	5.0	22.0	5.40	11.00
6-8	3.8	1.7	42	3.0	59.0	109.5	3.5	1.6	38.4	2.7	53.9	<0.75	4.50
6-17	<1.7	<1.7	38	2.3	28.0	68.3	0.0	0.0	55.6	3.4	41.0	1.40	2.50
6-69	<1.7	<1.7	32	7.2	69.0	108.2	0.0	0.0	29.6	6.7	63.8	<0.75	0.84
6-70	<1.7	<1.7	26	1.6	49.0	76.6	0.0	0.0	33.9	2.1	64.0	<0.75	0.86
6-71	<1.7	<1.7	13	<1.7	10.0	23.0	0.0	0.0	56.5	0.0	43.5	<0.75	<0.75
6-72	<1.7	<1.7	36	2.4	54.0	92.4	0.0	0.0	39.0	2.6	58.4	<0.75	2.10
6-73	<1.7	2.8	62	3.4	47.0	115.2	0.0	2.4	53.8	3.0	40.8		
6-77	<1.7	2.7	43	2.3	37.0	85.0	0.0	3.2	50.6	2.7	43.5	3.00	2.40
6-78	280.0	350.0	3400	410.0	120.0	4560.0	6.1	7.7	74.6	9.0	2.6	1400.00	1700.00
6-79	<1.7	<1.7	26	1.8	28.0	55.8	0.0	0.0	46.6	3.2	50.2	<0.75	<0.75
6-86	<1.7	<1.7	110	9.3	34.0	153.3	0.0	0.0	71.8	6.1	22.2	1.40	6.20
6-87	<1.7	<1.7	58	3.2	32.0	93.2	0.0	0.0	62.2	3.4	34.3	1.10	3.10
6-88	<1.7	3.2	58	5.9	22.0	89.1	0.0	3.6	65.1	6.6	24.7	3.50	6.80
6-89	<1.7	<1.7	17	<1.7	8.5	25.5	0.0	0.0	66.7	0.0	33.3	1.40	1.00
6-90	<1.7	<1.7	4	<1.7	4.2	8.2	0.0	0.0	48.8	0.0	51.2	<0.75	<0.75
6-91	<1.7	<1.7	110	6.8	8.4	125.2	0.0	0.0	87.9	5.4	6.7	4.30	11.00
6-92	<1.7	<1.7	16	<1.7	10.0	26.0	0.0	0.0	61.5	0.0	38.5	0.90	<0.75
6-93	<1.7	<1.7	33	4.3	12.0	49.3	0.0	0.0	66.9	8.7	24.3	0.90	1.20
6-94	<1.7	<1.7	20	2.8	11.0	33.8	0.0	0.0	59.2	8.3	32.5	<0.75	<0.75
6-95	<1.7	<1.7	81	8.1	11.0	100.1	0.0	0.0	80.9	8.1	11.0	2.90	8.00

Table 2. Continued.

Sample	V Analytical Values in PPM						Percent V Extracted					PPM	PPM
	Sequential Extraction Step						Extraction Step					NaHCO3	NaOCl+ NaHCO3
	1	2	3	4	5	Total	1	2	3	4	5		
6-96	<1.7	<1.7	21	<1.7	4.6	25.6	0.0	0.0	82.0	0.0	18.0	<0.75	<0.75
6-97	<1.7	<1.7	28	1.9	13.0	42.9	0.0	0.0	65.3	4.4	30.3	<0.75	0.95
6-98	<1.7	<1.7	53	3.3	28.0	84.3	0.0	0.0	62.9	3.9	33.2	2.10	3.10
6-99	<1.7	1.7	37	3.9	49.0	91.6	0.0	1.9	40.4	4.3	53.5	<0.75	<0.75
6-105	<1.7	<1.7	22	<1.7	27.0	49.0	0.0	0.0	44.9	0.0	55.1	<0.75	<0.75
6-108	2.6	9.7	150	270.0	35.0	467.3	0.6	2.1	32.1	57.8	7.5	30.00	310.00
6-109	<1.7	<1.7	39	16.0	62.0	117.0	0.0	0.0	33.3	13.7	53.0	<0.75	2.50
6-112	<1.7	3.0	58	4.2	42.0	107.2	0.0	2.8	54.1	3.9	39.2	8.20	6.10
7-8	1.9	4.6	150	18.0	59.0	233.5	0.8	2.0	64.2	7.7	25.3	32.00	
7-9	<1.7	<1.7	27	4.1	52.0	83.1	0.0	0.0	32.5	4.9	62.6	1.00	
7-25	<1.7	<1.7	40	5.9	65.0	110.9	0.0	0.0	36.1	5.3	58.6	2.20	
7-28	40.0	160.0	1200	310.0	91.0	1801.0	2.2	8.9	66.6	17.2	5.1	580.00	
7-29	<1.7	<1.7	34	4.0	37.0	75.0	0.0	0.0	45.3	5.3	49.3	8.60	
7-30	8.4	43.0	640	100.0	78.0	869.4	1.0	4.9	73.6	11.5	9.0	230.00	
7-31	<1.7	<1.7	36	4.7	54.0	94.7	0.0	0.0	38.0	5.0	57.0	1.80	
7-32	<1.7	<1.7	25	5.4	53.0	83.4	0.0	0.0	30.0	6.5	63.5	0.90	
7-33	<1.7	1.8	22	4.7	38.0	66.5	0.0	2.7	33.1	7.1	57.1	<0.75	
7-34	2.4	<1.7	120	20.0	29.0	171.4	1.4	0.0	70.0	11.7	16.9	34.00	
7-35	<1.7	<1.7	58	13.0	44.0	115.0	0.0	0.0	50.4	11.3	38.3	13.00	
7A-10	<1.7	1.8	44	8.6	46.0	100.4	0.0	1.8	43.8	8.6	45.8	2.20	
7A-12	<1.7	<1.7	42	6.0	42.0	90.0	0.0	0.0	46.7	6.7	46.7	4.90	
7A-14	<1.7	5.7	97	13.0	19.0	134.7	0.0	4.2	72.0	9.7	14.1	8.30	
7A-16	<1.7	<1.7	21	4.0	20.0	45.0	0.0	0.0	46.7	8.9	44.4	<0.75	
7A-26	<1.7	<1.7	31	8.0	48.0	87.0	0.0	0.0	35.6	9.2	55.2	0.90	
7A-31	<1.7	<1.7	33	7.6	66.0	106.6	0.0	0.0	31.0	7.1	61.9	1.50	
7A-32	<1.7	2.2	43	2.6	23.0	70.8	0.0	3.1	60.7	3.7	32.5	12.00	
7A-35	<1.7	<1.7	20	2.0	32.0	54.0	0.0	0.0	37.0	3.7	59.3	<0.75	
7A-36	<1.7	<1.7	71	4.6	33.0	108.6	0.0	0.0	65.4	4.2	30.4	4.70	
7A-38	<1.7	<1.7	34	3.6	27.0	64.6	0.0	0.0	52.6	5.6	41.8	3.20	
7A-40	<1.7	<1.7	17	1.9	33.0	51.9	0.0	0.0	32.8	3.7	63.6	<0.75	
7A-44	<1.7	<1.7	14	<1.7	26.0	40.0	0.0	0.0	35.0	0.0	65.0	<0.75	
7A-45	<1.7	2.0	130	12.0	43.0	187.0	0.0	1.1	69.5	6.4	23.0	10.00	
7A-46	<1.7	2.8	220	25.0	69.0	316.8	0.0	0.9	69.4	7.9	21.8	11.00	
7A-47	<1.7	<1.7	36	5.4	52.0	93.4	0.0	0.0	38.5	5.8	55.7	1.70	
7A-51	<1.7	<1.7	28	2.6	20.0	50.6	0.0	0.0	55.3	5.1	39.5	1.40	
7A-55	<1.7	<1.7	46	4.3	53.0	103.3	0.0	0.0	44.5	4.2	51.3	3.00	
7A-58	<1.7	<1.7	46	4.0	62.0	112.0	0.0	0.0	41.1	3.6	55.4	2.40	
7A-73	<1.7	<1.7	75	4.6	52.0	131.6	0.0	0.0	57.0	3.5	39.5	4.70	
7A-78	<1.7	<1.7	70	4.1	47.0	121.1	0.0	0.0	57.8	3.4	38.8	2.70	
7A-79	<1.7	<1.7	54	3.7	52.0	109.7	0.0	0.0	49.2	3.4	47.4	3.60	
Analytical range for the extraction of V.													
Maximum	280	350	3400	410	120	4560	7.0	8.9	87.9	57.8	70.1	1400	1700
Minimum	<1.7	<1.7	4.0	<1.7	4.2	8.2	0.0	0.0	26.5	0.0	2.6	<0.75	<0.75

Table 3. Average percent extracted in each of the sequential steps (1=soluble, 2=ligand exchangeable, 3=acid extractable, 4=oxidative acid decomposable, and 5=strong mixed acid digestible).

Element	STEPS				
	1	2	3	4	5
Al	0.098	0.16	0.32	10.3	87.8
As	1.65	5.13	40.8	5.74	46.7
Ba	20.5	1.60	28.5	2.20	47.2
Ca	18.3	6.90	63.0	2.50	9.20
Cr	0.0	0.0	33.4	2.90	63.7
Fe	0.27	0.12	54.9	9.60	35.2
Mg	4.17	2.74	59.4	4.36	29.3
Mn	0.92	5.65	71.7	6.11	15.7
Na	19.6	2.33	2.01	0.74	75.3
Se	5.62	1.52	6.21	38.7	32.9
U	0.15	4.72	46.8	3.29	45.0
V	0.30	1.45	54.4	6.88	37.0