UNITES STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DISCUSSION, STATISTICAL ANALYSIS AND LISTING OF THE SPECTROGRAPHIC ANALYSES OF ALLUVIAL HEAVY-MINERAL CONCENTRATES, MOGOLLON MINING DISTRICT, CATRON COUNTY, NEW MEXICO

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Contents

Tables

INTRODUCTION

Preliminary results from sampling the Mogollon mining district and surrounding areas within latitudes 33°21'00" to 33°30'00" and longitudes 108°45'00" to 108°51'40" are shown here. This sampling program utilized alluvial heavy-mineral techniques, a method of goechemical exploration that has seen considerable success in other parts of the southwestern US. The sampling was begun in fall 1977 and reached completion in spring 1978. The chief purpose was to determine geochemical exploration guidelines that would be helpful in the discovery of additional deposits in the district, as a supplement to current detailed geologic mapping being conducted by J. C. Ratté. Helpful guidelines to exploration can result from determining district patterns of metal zonation. Zonation patterns of metals can provide clues to the position of metal system epicenters, which can be tested for the presence of ore bodies by the use of detailed exploration involving drilling and other techniques.

The most outstanding finding that can be reported at this time is that there exists extensive geochemical anomalies on the east (hanging wall) side of the Queen fault. Economic mineral deposits are not as yet known to be present on this side of the fault. Ferguson (1927) suggested the possibility for mineral deposits in that area but indicated that if present, they would be substantially deeper than on the foot wall side where much of the ore was found close to the surface. Preliminary observation of the data suggests that many metals occur in zonal patterns relative to each other and although the relationships between metals have not been determined in detail, possibilities exist for finding the centers of ore bodies on the basis of metal zonation relationships. There is also a suggestion that mineralized ground is more extensive areally than one would suppose from the surface distribution of known mines. Providing that the optimum sampling medium is employed, the outer extremities of a mineralized area can best be determined geochemically, and while the outer extremities may not contain ore grade material, the extent of permeation by mineralizing solutions can be ascertained.

Metals showing unusual variations and anomalous concentrations in the area include: Ca, Mn, Ag, As, Au, B, Ba, Be, Bi, Cu, Co, Mo, Nb, Pb, Sb, Sn, V, and Zn. The minerals fluorite, and barite, and carbonate minerals were frequently noted during mineralogic scans of the samples. These gangue minerals are the same as reported in published descriptions of the known deposits (Ferguson, 1927). Quartz, which was a very abundant gangue mineral with the ore of course is never present in a heavy-mineral concentrate and so it was not noted in our samples.

There were 186 sample sites established in this study, but sometimes an inadequate amount of nonmagnetic material prohibited the analysis of some nonmagnetic samples. As a result, there is more data available for the magnetic fraction than for the nonmagnetic. The available analytical results for all of the samples are summarized statistically in table 1, analysed by Spearman Rank Correlation in table 2 and tabulated in their entirety in table 3.

Less Osborne and Peter Leiggi provided assistance in the field during spring 1978, sometimes under difficult working conditions. J. C. Ratte suggested this geochemical program and introduced us to the geology and geography of the area.

METHODS

Sampling and sampling-preparation methods

Sampling was accomplished by jeep and foot traverses. About 4.5 kg of bulk alluvial gravel was collected for the purpose of panning a heavy-mineral concentrate. Fortunately in the Mogollon area, water was found at close enough intervals that panning was possible at or near many sample sites or if not, sites were often relatively close to jeep roads; thus we were generally able to circumvent the necessity of carrying samples for long distances.

The bulk sample was generally collected into a 20 X 36 cm (8 X 14 in) cloth bag or if water was nearby, one full 16" gold pan was collected for panning. The sample material was gathered with an army-type entrenching tool, and a prospector's pick where holes were required or boulders were removed. Where possible, the sediment was collected at oblique angles to the active drainage channel, across its full width, and as deep and close to underlying bedrock as practicable. If the active sediment channel was wide, it was collected as a series of random scoops across the full width.

The alluvial samples were collected from small tributaries which often measured <3 km^2 (<0.5 mi^2) in drainage area. Some of these tributaries could be described as little more than topographic indentations, sampled where sample-site control was wanted. Usually these topographic indentations were filled by alluvial gravel, sand and silt, which were the sample materials sought but sometimes these deposits were covered by colluvium, soil, and organic litter that

required removal by scraping aside and digging sometimes as much as 0.5 m deep. Wherever possible the sampling was kept within the medial portion of the drainage where the most representative sample material is usually found. Sometimes alluvium was not available at all and dubious recourse was made to soil and colluvium, the only sample materials available. In all cases, obvious sources of contamination, such as mill wastes were avoided in the sampling, either by collecting above obviously suspicious accumulations or by sampling nearby, uncontaminated drainages instead. Cumulative dilution and contamination effects result from incremental introductions of barren material and contamination and both increase with increase in catchment area size. Prohibitively large amounts of both types of interference were somewhat circumvented by making use of tributaries and rills of small drainage area rather than the large drainage systems. Panning reduces the proportions of both barren material and contamination relative to the minerals of interest. The minerals of interest are those heavy, ore-related ones that are indigenous to the sample locality and those metal-rich minerals brought to the surface by mining and pitting and other surface disturbances but that are nevertheless representative of the sampled area, and close to their source.

Subsequent to panning, the wet heavy-mineral concentrate was placed in a kraft paper bag which allowed the sample to dry. The sample was then processed in the following steps:

1. Air- and heat-dried in the kraft paper sample bags.
2. Sieved to <16 mesh (<1.2 mm); coarse discarded.
3. Hand magnet removal of magnetite; magnetite discarded.
4. Bromoform separation (specific gravity, >2.85); light-fraction discarded.
5. Washed with acetone and dried.
6. Further hand magnet removal of magnetite; magnetite discarded.
7. Electromagnetic separation using a Frantz Isodynamic Separator[1] at 0.1 amp and 1.0 amp (forward setting 25°, side setting 15°); fraction magnetic at 0.1 amp (mainly residual magnetite) discarded.

[1]Use of a specific brand name is for descriptive purpose only and does constitute endorsement by the U.S. Geological Survey.

8. Two fractions derived at a 1.0-amp setting:

   (a) Nonmagnetic (at 1.0 amp) contains light-colored, heavy-rock accessory minerals such as zircon, sphene, clinozoisite, and apatite and in mineralized areas commonly primary and secondary ore minerals such as fluorite, galena, barite, scheelite, cassiterite, pyrite, chalcopyrite, molybdenite, and wulfenite.

   (b) Magnetic (at 1.0 amp) contains secondary hydrous Fe- and Mn-oxides, which many times, when metal-rich are derived from gossans, fracture fillings and coatings, related to metallization. Mafic mafic rock-forming minerals such as biotite, amphibole, pyroxene, as well as, such minerals as epidote (usually pistacite), sphene, and garnet are also included in this concentrate fraction.

9. Microscopic examination for mineralogy and assessment of processing quality.

10. Pulverization to <150 mesh (<0.10 mm) using an agate mortar and pestle.

Analytical methods

All samples were analyzed by 6-step semiquantitative emission spectrography for the determination of Fe, Mg, Ca, Ti, Mn, Ag, As, Au, B, Ba, Be, Bi, Cd, Co, Cr, Cu, La, Mo, Nb, Ni, Pb, Sb, Sc, Sn, Sr, V, W, Y, Zn, Zr and Th (Th was not analyzed in all samples) using the field method of Grimes and Marranzino (1968). Results of these spectrographic analyses for all of the sample media were measured within geometric intervals having the boundaries 1,200, 830, 560, 380, 180, 120 in parts per million but they were reported as approximate geometric midpoints such as 1,000, 700, 500, 300, 200, 150, 100. For purposes of geochemical exploration Motooka and Grimes (1976) found analytical precision for most of the elements to be well within what is required. Their studies on precision making use of repeat analyses showed that concentrations fall within one adjoining reporting interval 83 percent of the time and within two adjoining reporting intervals 96 percent of the time for all of the elements.

The analyses for this report were performed by Carl L. Forn and David F. Siems.

Statistical methods

All data listed in the tables were entered into the U.S. Geological Survey computer data storage system entitled RASS (Rock Analyses Storage System). The data were then retrieved from this system and analyzed statistically using the U.S. Geological Survey STATPAC programs (VanTrump and Miesch, 1976) for log transformation and graphical analysis. The transformation of raw analytical data to logarithms prior to graphical analysis is based on the assumption that trace-element data approximates a log normal frequency distribution.

The Spearman Rank Correlation Coefficients were calculated on the raw analytical data utilizing another existing STATPAC program (VanTrump and Miesch, 1976). The Spearman Rank Correlation is an appropriate correlation analysis for trace-element data because being nonparametric no assumptions are made with regard to the prevailing type of frequency distribution. For that reason, it usually produces more realistic calculated values than does product-moment calculations using log transformed data based on an assumption of approximate log normality. The main shortcoming of the Spearman Rank Correlation is that it can only accomodate matrices under 400 rows (samples) in the data file. As is the case with other types of correlation coefficients +1.00 indicates perfect positive correlation between variables, -1.00 indicates negative correlation or antipathy and 0.00 indicates random relationship or lack of dependence between variables. Most coefficients in table 2 fall somewhere between these extremes. Spearman Rank Correlation Coefficients are listed for the nonmagnetic fraction in table 2 and for the magnetic in table 3.

Christine McDougal made the initial data retrievals from the RASS system.

DISCUSSION

Geochemical sampling has shown that ore indicator metals are enriched on the hanging wall side of the Queen fault where commercial mineral deposits are not as yet known to exist. It can be inferred that additional mineral deposits may be found east of the Queen fault but probably at greater depths than the previously commercial ones to the west. The geochemical anomalies are sufficiently strong to warrant further investigation.

Cu, Pb, Ag, As, Sb, Zn, Au, Sn, Nb, Be, Bi, B, Mn, Ba, and Ca are some of the prominent elements showing enrichments and variation that suggest the occurrence of mineralization in the area. Gold is a metal previously mined from the district so the distribution of it is of some interest. It was detected in only a few samples including sample sites east of the Queen fault as mapped by Ratte (1977) and Ferguson (1927). Owing to the poor spectrographic detection limits and the particulate nature of gold, and because it is not always possible to dig deep enough with the entrenching tool to obtain gold, its presence in certain areas could very well have gone undetected. Silver, copper, and lead seem the most specific indicators of metallization of the types known in the past to occur. Silver shows closest spatial correlation with areas of known deposits on the west side of the Queen fault. Silver anomalies, based on the maximum area within which high values have been found, roughly outline the mining district but they are also present east of the fault where they extend outward an average of about 600 m. Unusual

enrichments of Cu and Pb are pronouncedly developed on the eastern, hanging wall side of the Queen fault. The Cu halo extends out an average distance eastward of about 1200 m and Pb forms a strong halo that extends an average of about 700 m. The Cu and Pb halos appear to have been faulted or were localized by faults because halo shapes seem roughly controlled by fault trace terminations. Unusual enrichments in Sb, Nb, Sn, As, and B to mention a few, show prominantly in the southern part of the Mogollon quadrangle, east of the Queen fault, particularly in the vicinity of Deadwood Gulch. Of this group, As shows the broadest metal halo east of the Queen fault. The anomaly halo for As begins at about 700 m and extends to 3000 m eastward from Deadwood Gulch. Tin extends eastward from the surface trace of the Queen fault an average distance of about 600 m. Tin concentrations in the range 500 to >2000 parts per million are usually indicative of the presence of cassiterite in other areas within the region but this mineral was not observed here during microscope scans. Boron enrichments in certain parts of the area are high enough to suggest the presence of a distinct mineral phase containing boron as a major constituent. Tourmaline was sought in samples containing high boron but was not found, perhaps because the samples were small and sparse fine-mineral grains were the only ones present; these being used up in the analysis. Boron could be a very useful pathfinder element because it could be specific for the location of tourmalinized altered zones or greisens adjacent to intrusives or breccia pipes if they exist in the area. Boron minerals other then tourmaline may be present instead but most of these minerals could also indicate similar contact metamorphic environments.

Other indicator elements that may prove useful in the area, are Ba and Ca in the nonmagnetic fraction, which when in concentrations of about 5000 ppm and 50 percent, respectively, may indicate halos and gangue of barite, fluorite, and calcite the known distribution of which could aid in location of veins. In the magnetic fraction, Mn in amounts of $\geq$5000 ppm is usually due to the presence of manganese oxides which are known to form broad halos on the periphery of deposits. Barite behaves in a similar manner in many mineralized areas. These Mn and Ba halos could be used to define the outer horizontal extremity of the mineralized area but more importantly, they may also occur on the upper level within the vertical zonation of metals thereby indicating the possible positions of unroofed, blind mineral deposits at depth. Ferguson (1927, p. 42) points out that manganese mineralization in the form of manganiferous calcite and rhodochrosite dominates in the near surface veins east of the Queen fault and occurs in the upper portions of productive veins west of the fault. Weathering of the calcite and rhodochrosite will yield hydrous Mn-oxides of the type collected into the heavy-mineral concentrate.

This discussion does not include a consideration of all metals of interest but should serve to demonstrate possibilities that can be exploited in gaining maximum exploration advantage from this data.

Explanation for table 3

The column listings on table 2 are arranged so that column 1 contains the row numbers and column 2 contains the field sample numbers. The first two numbers of the field sample number designate the year the sample was collected. The next two letters indicate the 7 1/2-minute quadrangle in which the sample was collected. The letter abbreviation and corresponding quadrangles are as follows:

Mo - Mogollon

HM - Holt Mountain

The three numbers following letter abbreviations are the unique identification of the sample site. Letter suffixes at the end of the field sample number have the following meanings:

N - nonmagnetic (NM-1) heavy-mineral concentrate.

M - magnetic (M-1) heavy-mineral concentrate.

The latitude and longitude for each sample locality is shown in degrees, minutes, and seconds in columns 3 and 4. The remaining columns list the 31 elements for which data area available.

The following examples illustrate the element column headings:

S-Fe% - Semiquantitative spectrographic analyses of iron in percent.

S-Mn - Semiquantitative spectrographic analyses of manganese in ppm.

Symbols used where metal contents were not determined are:

N - Not detected at the lowest level of the spectrographic standard level or at the value shown.

< - Detected, but below the lowest level of the spectrographic standard or below value shown.

> - Greater than the value shown.

- - No data available.

The lower limits in 1977 on the spectrographic standard for semiquantitative emission spectrographic analyses of heavy-mineral concentrates area as follows: (Ti, Mg, Fe, and Ca are reported in percent: all other elements are reported in ppm), Ti, 0.005; Mg, .05; Fe and Ca, 1.0; Ag, 1.0; Be, 2; Co, Cu, Mo, Ni, and Sc, 10; Mn, Au, B, Bi, Cr, Pb, Sn, V, Y, and Zr, 20; Ba, Cd, La, and Nb, 50; W, 100; Sb and Sr, 200; and As and Zn, 500.

The upper limits in 1977 on the spectrographic standard for semiquantitative emission spectrographic analyses of heavy-mineral concentrates are as follows: (Ti, Mg, Fe, and Ca are reported in percent; all other elements are reported in ppm), Ti, 2; Mg, 20; Fe and Ca, 50; Sc, 200; Au and Cd, 1000; Be, Bi, La, Sn, and Zr, 2000; B, Co, Mo, Nb, and Y, 5000; Mn, Ag, Ba, Cr, Sr, and Ni, 10,0000; As, Sb, W, V, and Zn, 20,000; and Cu and Pb, 50,000.

In 1978 both upper and lower boundaries were two reporting intervals lower than 1977, as can be observed from the data tabulation. For most elements these differences are not critical to the data interpretations.

Analytical results for nonmagnetic (NM-1) heavy mineral concentrates begin on p. 38; for magnetic (M-1) on p. 51 of table 3.

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Table 1.--Statistical summary of the analytical results for heavy-mineral-concentrate samples derived from alluvium, Mogollon Mining District, New Mexico

[Values for Fe, Mg, Ca, and Ti reported in percent; all other values reported in ppm (parts per million). Lower limits for semiquantitative emission spectrographic analyses of heavy-mineral concentrates: Fe and Ca = 1.0; Mg = .05; Ti = 0.005; Mn, Au, B, Bi, Cr, Pb, Sn, V, Y, and Zr = 20; Ag - 1.0; As and Zn = 500; Ba, Cd, La, and Nb = 50; Be = 2; Co, Cu, Mo, Ni, and Sc = 10; Sb and Sr = 200; Th and W = 100. Upper limits on standards for semiquantitative emission spectrographic analyses of heavy-mineral concentrates: Ti = 2; Mg = 20; Fe and Ca = 50; Cd and Au = 1,000; Be, Bi, La, Sn, and Zr = 2,000; B, Co, Mo, Nb, and Sc = 200; Th and Y = 2,000; Mn, Ag, Ba, Cr, and Ni = 10,000; As, Sb, W, V, and Zn = 20,000; and Cu and Pb = 50,000. An unqualified value is one in which the element concentration falls within the standards for the analytical method. A qualified value is one in which the element concentrations are designated by symbol: — = lacking analysis; N = not detected at limit of detection; < detected, but below limit standard; > = greater than limit of standard; n = 178 for nonmagnetic concentrates; n = 186 for magnetic concentrates. Leaders (--) = no data or insufficient data. Analysts: C. L. Forn and D. F. Siems]

Element	Data based on qualified values					Data based on unqualified values				Percentile distribution based on n samples analyzed					
	Sample type	Number of samples				Number of values	Range of values	Geometric mean	Geometric deviation	25	50	75	90	95	99
		—	N	<	>										
Fe	1	2	1	2	0	173	0.1-20	1.0	2.6	0.5	1.0	2.1	3.4	4.6	13.3
	2	0	0	0	78	108	3 -50	21	1.6	22	35	--	--	--	--
Mg	1	0	0	18	0	158	.05-7	0.3	2.9	0.1	0.2	0.5	1.1	1.6	--
	2	0	0	0	0	186	0.1-7	0.8	2.5	0.4	0.8	1.6	2.8	4.1	--
Ca	1	2	0	2	3	171	0.1-50	4.4	5.4	1.2	5.1	18.6	43.5	50.7	--
	2	0	0	16	0	170	.05-7	0.7	3.2	0.2	0.6	1.4	3.1	4.4	--
Ti	1	2	0	0	71	105	.07-2	0.6	2.6	0.5	1.8	--	--	--	--
	2	0	0	0	41	145	0.2-2	0.8	2.0	0.5	1.2	2.4	--	--	--
Mn	1	2	0	1	0	175	50-10000	577	2.4	318	503	1035	1898	2415	4857
	2	0	0	0	35	151	500-10000	2893	2.0	2092	3904	7291	--	--	--

Table 1.--Statistical summary of the analytical results for heavy-mineral-concentrate samples derived from alluvium, Mogollon Mining District, New Mexico--Continued.

Element	Data based on qualified values					Data based on unqualified values				Percentile distribution based on n samples analyzed					
	Sample type	Number of samples —	N	<	>	Number of values	Range of values	Geometric mean	Geometric deviation	25	50	75	90	95	99
Ag	1	2	134	0	1	41	1-3000	43	7.7	--	--	--	78	271	2470
	2	0	148	0	0	32	1-1000	7	5.9	--	--	--	3	12	--
As	1	2	137	19	2	18	500-5000	839	1.8	--	--	--	--	904	--
	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Au	1	2	168	1	0	7	20-1000	110	3.4	--	--	--	--	--	146
	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B	1	2	6	140	0	30	20-5000	49	4.3	--	--	--	--	61	1328
	2	0	1	102	0	83	20- 100	24	1.5	--	--	--	30	43	70
Ba	1	2	0	14	24	138	50-10000	685	3.1	301	665	2459	--	--	--
	2	0	0	0	5	181	100-5000	760	2.0	470	755	1239	2110	3097	--
Be	1	2	4	53	0	119	2.0-100	5.9	2.5	--	3.2	6.3	11.9	32.9	74.9
	2	0	12	63	0	111	1.5- 50	5.5	1.9	--	2.5	6.1	10.1	11.8	19.8
Bi	1	2	168	2	1	5	50-500	151	2.6	--	--	--	--	--	420
	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Co	1	2	78	38	0	60	10-100	16	1.7	--	--	--	20	25	--
	2	0	0	0	0	186	20-1000	52	1.8	34	48	71	103	133	275
Cr	1	2	11	84	0	81	20-1000	43	2.5	--	--	29	90	123	617
	2	0	0	0	0	186	30-3000	440	2.1	283	494	716	968	1157	1874
Cu	1	2	5	30	0	141	10-20000	46	4.4	--	19	71	230	482	7123
	2	0	0	0	0	186	15-5000	104	2.1	67	96	143	222	297	1875
La	1	2	12	19	7	138	50-2000	181	2.2	64	138	284	616	1307	--
	2	0	4	18	0	164	50-1000	153	2.1	64	130	241	412	502	--
Mo	1	2	171	0	0	5	10-70	21	2.3	--	--	--	--	--	29
	2	0	176	1	0	11	10-20	13	1.4	--	--	--	--	--	--

Table 1.--Statistical summary of the analytical results for heavy-mineral-concentrate samples derived from alluvium, Mogollon Mining District, New Mexico--Continued.

Element	Data based on qualified values					Data based on unqualified values				Percentile distribution based on n samples analyzed					
	Sample type	Number c. samples —	N	<	>	Number of values	Range of values	Geometric mean	Geometric deviation	25	50	75	90	95	99
Nb	1	2	56	47	0	73	50-1000	103	2.1	--	--	67	187	254	522
	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ni	1	2	25	124	0	27	10-200	40	2.0	--	--	--	27	57	90
	2	0	0	1	0	185	20-300	99	1.7	69	100	142	192	237	--
Pb	1	2	31	46	4	95	20-50000	130	5.4	--	--	117	673	3459	--
	2	0	0	16	0	170	20-5000	76	2.6	32	56	120	228	404	1980
Sb	1	2	162	3	0	11	200-3000	868	2.6	--	--	--	--	282	2368
	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sc	1	2	14	58	2	102	10-150	31	2.1	--	14	37	68	89	--
	2	0	0	1	0	185	10-100	24	1.5	19	24	33	45	56	79
Sn	1	2	118	3	8	47	20-2000	163	3.1	--	--	71	458	1920	--
	2	0	171	2	0	7	20-700	80	3.0	--	--	--	--	34	275
Sr	1	25	35	22	1	95	200-10000	439	2.1	--	--	462	817	1253	8066
	2	0	66	31	0	89	200-2000	341	1.7	--	--	313	512	658	1085
V	1	2	0	11	1	164	20-3000	99	2.4	48	92	167	298	458	1597
	2	0	0	0	0	186	100-2000	573	2.1	338	667	1002	1291	1543	--
Y	1	2	2	3	2	169	20-5000	274	3.1	118	250	611	1339	1737	--
	2	0	1	14	0	171	20-3000	106	3.0	34	84	232	454	548	1278
Zn	1	2	152	4	0	20	500-2000	1199	1.5	--	--	--	838	1174	--
	2	0	112	21	0	53	500-3000	766	1.5	--	--	--	874	1092	1875
Zr	1	2	9	0	146	21	20-2000	382	3.7	--	--	--	--	--	--
	2	0	0	0	42	144	30-2000	323	3.0	203	525	2193	--	--	--
Th	1	88	82	1	0	7	300-1000	488	1.6	--	--	--	--	--	--
	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--

1--Nonmagnetic (NM-1) heavy-mineral concentrate
2--Magnetic (M-1) heavy-mineral concentrate

Table 2.--Spearman Rank Correlation Coefficients for each concentrate fraction, Mogollon mining district, New Mexico

Spearman Correlation Coefficients-Nonmagnetic Fraction

Column	vs	Column	Corr Coeff	Sign test	No deg freedom
3(S-FE%)		4(S-MG%)	0.3290	4.3513e+00	156
3(S-FE%)		5(S-CA%)	-0.0356	-4.6046e-01	167
3(S-FE%)		6(S-TI%)	0.5858	7.2995e+00	102
3(S-FE%)		7(S-MN)	0.5003	7.5565e+00	171
3(S-FE%)		8(S-AG)	0.0481	2.9679e-01	38
3(S-FE%)		9(S-AS)	0.2899	1.2115e+00	16
3(S-FE%)		10(S-AU)	0.8303	0.0000e+00	5
3(S-FE%)		11(S-B)	-0.1614	-8.6519e-01	28
3(S-FE%)		12(S-BA)	0.2898	3.5315e+00	136
3(S-FE%)		13(S-BE)	0.2803	3.1449e+00	116
3(S-FE%)		14(S-BI)	-0.4104	0.0000e+00	3
3(S-FE%)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
3(S-FE%)		16(S-CO)	0.5281	4.7361e+00	58
3(S-FE%)		17(S-CR)	-0.0868	-7.7471e-01	79
3(S-FE%)		18(S-CU)	0.3088	3.8133e+00	138
3(S-FE%)		19(S-LA)	0.1965	2.3375e+00	136
3(S-FE%)		20(S-MO)	0.4588	0.0000e+00	3
3(S-FE%)		21(S-NB)	-0.0263	-2.2049e-01	70
3(S-FE%)		22(S-NI)	0.3256	1.7221e+00	25
3(S-FE%)		23(S-PB)	0.0920	8.8653e-01	92
3(S-FE%)		24(S-SB)	0.1242	3.5411e-01	8
3(S-FE%)		25(S-SC)	-0.0659	-6.6044e-01	100
3(S-FE%)		26(S-SN)	0.2245	1.5284e+00	44
3(S-FE%)		27(S-SR)	0.1030	9.9889e-01	93
3(S-FE%)		28(S-V)	0.6454	1.0720e+01	161
3(S-FE%)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
3(S-FE%)		30(S-Y)	0.2355	3.1125e+00	165
3(S-FE%)		31(S-ZN)	0.0910	3.8753e-01	18
3(S-FE%)		32(S-ZR)	0.1995	8.8731e-01	19
3(S-FE%)		33(S-TH)	-0.7717	0.0000e+00	5
4(S-MG%)		5(S-CA%)	-0.0394	-4.8582e-01	152
4(S-MG%)		6(S-TI%)	0.1776	1.7494e+00	94
4(S-MG%)		7(S-MN)	0.5488	8.1994e+00	156
4(S-MG%)		8(S-AG)	-0.0971	-6.0129e-01	38
4(S-MG%)		9(S-AS)	0.2951	1.2356e+00	16
4(S-MG%)		10(S-AU)	0.5769	0.0000e+00	5
4(S-MG%)		11(S-B)	-0.0573	-3.0391e-01	28

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag m3

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
4(S-MG%)		12(S-BA)	0.3236	3.8688e+00	128
4(S-MG%)		13(S-BE)	0.0738	7.6900e-01	108
4(S-MG%)		14(S-BI)	-0.3078	0.0000e+00	3
4(S-MG%)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
4(S-MG%)		16(S-CO)	0.3839	3.1386e+00	57
4(S-MG%)		17(S-CR)	0.4464	4.3491e+00	76
4(S-MG%)		18(S-CU)	0.1451	1.6653e+00	129
4(S-MG%)		19(S-LA)	0.0040	4.5457e-02	127
4(S-MG%)		20(S-MO)	-0.6325	0.0000e+00	2
4(S-MG%)		21(S-NB)	-0.1755	-1.4479e+00	66
4(S-MG%)		22(S-NI)	0.4687	2.6526e+00	25
4(S-MG%)		23(S-PB)	-0.0679	-6.5317e-01	92
4(S-MG%)		24(S-SB)	0.6128	0.0000e+00	7
4(S-MG%)		25(S-SC)	-0.1047	-1.0262e+00	95
4(S-MG%)		26(S-SN)	0.0552	3.5861e-01	42
4(S-MG%)		27(S-SR)	0.3114	3.1261e+00	91
4(S-MG%)		28(S-V)	0.3300	4.2672e+00	149
4(S-MG%)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
4(S-MG%)		30(S-Y)	-0.1648	-2.0467e+00	150
4(S-MG%)		31(S-ZN)	0.2427	1.0006e+00	16
4(S-MG%)		32(S-ZR)	0.2920	1.3309e+00	19
4(S-MG%)		33(S-TH)	-0.3607	0.0000e+00	4
5(S-CA%)		6(S-TI%)	-0.0276	-2.7300e-01	98
5(S-CA%)		7(S-MN)	-0.0307	-3.9953e-01	169
5(S-CA%)		8(S-AG)	0.1474	9.1871e-01	38
5(S-CA%)		9(S-AS)	-0.2865	-1.1963e+00	16
5(S-CA%)		10(S-AU)	0.4818	0.0000e+00	5
5(S-CA%)		11(S-B)	-0.1284	-6.8519e-01	28
5(S-CA%)		12(S-BA)	-0.0374	-4.3344e-01	134
5(S-CA%)		13(S-BE)	-0.1220	-1.3181e+00	115
5(S-CA%)		14(S-BI)	0.0000	0.0000e+00	3
5(S-CA%)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
5(S-CA%)		16(S-CO)	-0.0889	-6.7387e-01	57
5(S-CA%)		17(S-CR)	-0.2251	-2.0409e+00	78
5(S-CA%)		18(S-CU)	0.0385	4.5096e-01	137
5(S-CA%)		19(S-LA)	0.0792	9.1573e-01	133
5(S-CA%)		20(S-MO)	0.1026	0.0000e+00	3
5(S-CA%)		21(S-NB)	-0.0710	-5.9569e-01	70
5(S-CA%)		22(S-NI)	-0.2086	-1.0667e+00	25
5(S-CA%)		23(S-PB)	-0.1550	-1.4966e+00	91
5(S-CA%)		24(S-SB)	-0.6460	-2.3935e+00	8
5(S-CA%)		25(S-SC)	-0.3371	-3.5621e+00	99
5(S-CA%)		26(S-SN)	-0.0031	-2.0641e-02	45
5(S-CA%)		27(S-SR)	-0.3496	-3.5598e+00	91
5(S-CA%)		28(S-V)	-0.0118	-1.4857e-01	159
5(S-CA%)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
5(S-CA%)		30(S-Y)	-0.3520	-4.8156e+00	164
5(S-CA%)		31(S-ZN)	-0.3510	-1.5905e+00	18
5(S-CA%)		32(S-ZR)	0.2376	9.7837e-01	16
5(S-CA%)		33(S-TH)	-0.2890	0.0000e+00	5

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag m3

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
6(S-TI%)		7(S-MN)	0.1948	2.0060e+00	102
6(S-TI%)		8(S-AG)	-0.1256	-6.3299e-01	25
6(S-TI%)		9(S-AS)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
6(S-TI%)		10(S-AU)	1.0000	-6.3299e-01	1
6(S-TI%)		11(S-B)	-0.2026	-8.7769e-01	18
6(S-TI%)		12(S-BA)	-0.0391	-3.4099e-01	76
6(S-TI%)		13(S-BE)	0.5424	5.4396e+00	71
6(S-TI%)		14(S-BI)	-0.6325	0.0000e+00	2
6(S-TI%)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
6(S-TI%)		16(S-CO)	0.3949	2.4681e+00	33
6(S-TI%)		17(S-CR)	-0.4217	-3.2220e+00	48
6(S-TI%)		18(S-CU)	0.1820	1.6238e+00	77
6(S-TI%)		19(S-LA)	0.5245	5.6466e+00	84
6(S-TI%)		20(S-MO)	-0.5000	0.0000e+00	1
6(S-TI%)		21(S-NB)	0.5145	3.3940e+00	32
6(S-TI%)		22(S-NI)	0.1307	5.2712e-01	16
6(S-TI%)		23(S-PB)	0.0109	7.5397e-02	48
6(S-TI%)		24(S-SB)	0.1091	0.0000e+00	5
6(S-TI%)		25(S-SC)	0.3289	2.5112e+00	52
6(S-TI%)		26(S-SN)	0.3114	1.4655e+00	20
6(S-TI%)		27(S-SR)	0.0572	4.7241e-01	68
6(S-TI%)		28(S-V)	0.7173	1.0087e+01	96
6(S-TI%)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
6(S-TI%)		30(S-Y)	0.5647	6.7730e+00	98
6(S-TI%)		31(S-ZN)	0.1131	3.7768e-01	11
6(S-TI%)		32(S-ZR)	0.3941	1.8691e+00	19
6(S-TI%)		33(S-TH)	0.0000	0.0000e+00	1
7(S-MN)		8(S-AG)	-0.3167	-2.0853e+00	39
7(S-MN)		9(S-AS)	0.1338	5.3997e-01	16
7(S-MN)		10(S-AU)	0.7361	0.0000e+00	5
7(S-MN)		11(S-B)	0.1791	9.6304e-01	28
7(S-MN)		12(S-BA)	0.3203	3.9425e+00	136
7(S-MN)		13(S-BE)	0.0972	1.0561e+00	117
7(S-MN)		14(S-BI)	-0.1581	0.0000e+00	3
7(S-MN)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
7(S-MN)		16(S-CO)	0.3516	2.8600e+00	58
7(S-MN)		17(S-CR)	0.0958	8.5576e-01	79
7(S-MN)		18(S-CU)	0.1858	2.2292e+00	139
7(S-MN)		19(S-LA)	0.2013	2.3969e+00	136
7(S-MN)		20(S-MO)	0.9177	0.0000e+00	3
7(S-MN)		21(S-NB)	0.0227	1.9148e-01	71
7(S-MN)		22(S-NI)	0.1633	8.2739e-01	25
7(S-MN)		23(S-PB)	-0.0842	-8.1084e-01	92
7(S-MN)		24(S-SB)	0.6986	2.9291e+00	9
7(S-MN)		25(S-SC)	-0.0486	-4.8688e-01	100
7(S-MN)		26(S-SN)	0.2086	1.4306e+00	45
7(S-MN)		27(S-SR)	0.2854	2.8712e+00	93
7(S-MN)		28(S-V)	0.3763	5.1701e+00	162
7(S-MN)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
7(S-MN)		30(S-Y)	0.2337	3.1055e+00	167

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
7(S-MN)		31(S-ZN)	-0.0841	-3.5824e-01	18
7(S-MN)		32(S-ZR)	0.2597	1.1723e+00	19
7(S-MN)		33(S-TH)	-0.2890	0.0000e+00	5
8(S-AG)		9(S-AS)	0.1876	0.0000e+00	4
8(S-AG)		10(S-AU)	0.6842	0.0000e+00	3
8(S-AG)		11(S-B)	-0.2561	0.0000e+00	5
8(S-AG)		12(S-BA)	0.1457	8.2014e-01	31
8(S-AG)		13(S-BE)	0.2123	1.1078e+00	26
8(S-AG)		14(S-BI)	0.2000	1.1078e+00	2
8(S-AG)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		16(S-CO)	-0.2804	-1.0931e+00	14
8(S-AG)		17(S-CR)	0.1361	6.1452e-01	20
8(S-AG)		18(S-CU)	0.2169	1.2763e+00	33
8(S-AG)		19(S-LA)	-0.0078	-4.5714e-02	34
8(S-AG)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		21(S-NB)	-0.2645	-1.1308e+00	17
8(S-AG)		22(S-NI)	-0.7345	0.0000e+00	7
8(S-AG)		23(S-PB)	0.2815	1.6067e+00	30
8(S-AG)		24(S-SB)	0.2609	0.0000e+00	4
8(S-AG)		25(S-SC)	0.0715	3.4355e-01	23
8(S-AG)		26(S-SN)	0.1339	4.4811e-01	11
8(S-AG)		27(S-SR)	-0.2165	-1.1737e+00	28
8(S-AG)		28(S-V)	-0.2277	-1.4418e+00	38
8(S-AG)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		30(S-Y)	0.0885	5.5503e-01	39
8(S-AG)		31(S-ZN)	-0.2082	0.0000e+00	7
8(S-AG)		32(S-ZR)	-0.3964	0.0000e+00	5
8(S-AG)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		11(S-B)	0.1118	0.0000e+00	3
9(S-AS)		12(S-BA)	0.0345	1.2932e-01	14
9(S-AS)		13(S-BE)	-0.3628	-1.5080e+00	15
9(S-AS)		14(S-BI)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		16(S-CO)	0.2040	6.2502e-01	9
9(S-AS)		17(S-CR)	-0.0217	-6.8696e-02	10
9(S-AS)		18(S-CU)	-0.0329	-1.3186e-01	16
9(S-AS)		19(S-LA)	-0.0603	-2.1777e-01	13
9(S-AS)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		21(S-NB)	0.1349	5.4478e-01	16
9(S-AS)		22(S-NI)	0.5000	0.0000e+00	2
9(S-AS)		23(S-PB)	-0.2802	-1.1306e+00	15
9(S-AS)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		25(S-SC)	-0.1405	-5.3098e-01	14
9(S-AS)		26(S-SN)	-0.3685	-1.1892e+00	9
9(S-AS)		27(S-SR)	-0.0659	-2.0892e-01	10
9(S-AS)		28(S-V)	0.1313	5.2971e-01	16
9(S-AS)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		30(S-Y)	0.0424	1.6984e-01	16
9(S-AS)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag m3

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
9(S-AS)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		11(S-B)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		12(S-BA)	0.8359	0.0000e+00	4
10(S-AU)		13(S-BE)	0.5000	0.0000e+00	2
10(S-AU)		14(S-BI)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		16(S-CO)	-0.5774	0.0000e+00	3
10(S-AU)		17(S-CR)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		18(S-CU)	0.3462	0.0000e+00	5
10(S-AU)		19(S-LA)	0.2244	0.0000e+00	5
10(S-AU)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		21(S-NB)	-1.0000	0.0000e+00	1
10(S-AU)		22(S-NI)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		23(S-PB)	0.3927	0.0000e+00	5
10(S-AU)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		25(S-SC)	0.8944	0.0000e+00	2
10(S-AU)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		27(S-SR)	0.8660	0.0000e+00	1
10(S-AU)		28(S-V)	0.6005	0.0000e+00	5
10(S-AU)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		30(S-Y)	0.6605	0.0000e+00	5
10(S-AU)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		12(S-BA)	-0.0563	-2.7609e-01	24
11(S-B)		13(S-BE)	0.2752	1.4877e+00	27
11(S-B)		14(S-BI)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		16(S-CO)	-0.0998	-3.1702e-01	10
11(S-B)		17(S-CR)	0.0228	1.0431e-01	21
11(S-B)		18(S-CU)	-0.1099	-5.1857e-01	22
11(S-B)		19(S-LA)	0.1121	5.4107e-01	23
11(S-B)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		21(S-NB)	0.2234	9.7213e-01	18
11(S-B)		22(S-NI)	-0.1547	0.0000e+00	6
11(S-B)		23(S-PB)	-0.1400	-6.3249e-01	20
11(S-B)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		25(S-SC)	-0.1707	-8.1277e-01	22
11(S-B)		26(S-SN)	-0.0137	-4.3481e-02	10
11(S-B)		27(S-SR)	0.0434	2.1257e-01	24
11(S-B)		28(S-V)	-0.3971	-2.2894e+00	28
11(S-B)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		30(S-Y)	0.2353	1.2810e+00	28
11(S-B)		31(S-ZN)	0.1414	0.0000e+00	4
11(S-B)		32(S-ZR)	0.8660	0.0000e+00	1
11(S-B)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
12(S-BA)		13(S-BE)	-0.0616	-6.1698e-01	100
12(S-BA)		14(S-BI)	-1.0000	-6.1698e-01	1
12(S-BA)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
12(S-BA)		16(S-CO)	0.2437	1.7586e+00	49
12(S-BA)		17(S-CR)	0.0380	3.0901e-01	66
12(S-BA)		18(S-CU)	0.1360	1.4853e+00	117
12(S-BA)		19(S-LA)	-0.0168	-1.7666e-01	110
12(S-BA)		20(S-MO)	-0.5000	0.0000e+00	2
12(S-BA)		21(S-NB)	-0.1011	-7.9329e-01	61
12(S-BA)		22(S-NI)	0.1892	9.0390e-01	22
12(S-BA)		23(S-PB)	0.1629	1.4770e+00	80
12(S-BA)		24(S-SB)	0.8824	0.0000e+00	4
12(S-BA)		25(S-SC)	-0.0684	-6.3197e-01	85
12(S-BA)		26(S-SN)	0.2179	1.3398e+00	36
12(S-BA)		27(S-SR)	0.4878	4.8719e+00	76
12(S-BA)		28(S-V)	0.1888	2.2087e+00	132
12(S-BA)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
12(S-BA)		30(S-Y)	-0.0614	-7.0663e-01	132
12(S-BA)		31(S-ZN)	-0.1357	-5.1230e-01	14
12(S-BA)		32(S-ZR)	-0.1637	-5.7475e-01	12
12(S-BA)		33(S-TH)	-0.3395	0.0000e+00	4
13(S-BE)		14(S-BI)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
13(S-BE)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
13(S-BE)		16(S-CO)	0.1657	1.0079e+00	36
13(S-BE)		17(S-CR)	-0.1367	-1.1297e+00	67
13(S-BE)		18(S-CU)	0.1727	1.7004e+00	94
13(S-BE)		19(S-LA)	0.3935	4.4066e+00	106
13(S-BE)		20(S-MO)	-1.0000	4.4066e+00	1
13(S-BE)		21(S-NB)	0.2515	2.0785e+00	64
13(S-BE)		22(S-NI)	0.0499	2.0583e-01	17
13(S-BE)		23(S-PB)	0.0383	3.1641e-01	68
13(S-BE)		24(S-SB)	0.3530	0.0000e+00	6
13(S-BE)		25(S-SC)	0.2256	2.0968e+00	82
13(S-BE)		26(S-SN)	0.2240	1.3599e+00	35
13(S-BE)		27(S-SR)	-0.1782	-1.5791e+00	76
13(S-BE)		28(S-V)	0.3410	3.8904e+00	115
13(S-BE)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
13(S-BE)		30(S-Y)	0.4116	4.8010e+00	113
13(S-BE)		31(S-ZN)	-0.0152	-5.0500e-02	11
13(S-BE)		32(S-ZR)	0.4092	1.6778e+00	14
13(S-BE)		33(S-TH)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
14(S-BI)		15(S-CD)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		16(S-CO)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		17(S-CR)	0.6325	0.0000e+00	2
14(S-BI)		18(S-CU)	0.0000	0.0000e+00	3
14(S-BI)		19(S-LA)	0.3591	0.0000e+00	3
14(S-BI)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		21(S-NB)	0.8660	0.0000e+00	1
14(S-BI)		22(S-NI)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		23(S-PB)	-1.0000	0.0000e+00	1
14(S-BI)		24(S-SB)	0.2000	0.0000e+00	2
14(S-BI)		25(S-SC)	0.0000	0.0000e+00	3
14(S-BI)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
14(S-BI)		27(S-SR)	-0.6325	0.0000e+00	2
14(S-BI)		28(S-V)	-0.2236	0.0000e+00	3
14(S-BI)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		30(S-Y)	0.3591	0.0000e+00	3
14(S-BI)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
14(S-BI)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		16(S-CO)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		17(S-CR)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		18(S-CU)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		19(S-LA)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		21(S-NB)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		22(S-NI)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		23(S-PB)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		25(S-SC)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		27(S-SR)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		28(S-V)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		30(S-Y)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
15(S-CD)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
16(S-CO)		17(S-CR)	0.4337	2.8065e+00	34
16(S-CO)		18(S-CU)	0.4626	3.8697e+00	55
16(S-CO)		19(S-LA)	0.1422	9.5323e-01	44
16(S-CO)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
16(S-CO)		21(S-NB)	-0.2636	-1.2819e+00	22
16(S-CO)		22(S-NI)	0.5252	2.6902e+00	19
16(S-CO)		23(S-PB)	0.0512	3.1176e-01	37
16(S-CO)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
16(S-CO)		25(S-SC)	0.0041	2.4791e-02	36
16(S-CO)		26(S-SN)	-0.1128	-3.7657e-01	11
16(S-CO)		27(S-SR)	0.0963	5.9667e-01	38
16(S-CO)		28(S-V)	0.4366	3.6640e+00	57
16(S-CO)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
16(S-CO)		30(S-Y)	0.1521	1.1414e+00	55
16(S-CO)		31(S-ZN)	-0.4804	0.0000e+00	5
16(S-CO)		32(S-ZR)	0.6262	0.0000e+00	4
16(S-CO)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
17(S-CR)		18(S-CU)	0.3537	3.0952e+00	67
17(S-CR)		19(S-LA)	-0.1311	-1.0825e+00	67
17(S-CR)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
17(S-CR)		21(S-NB)	-0.2463	-1.7419e+00	47
17(S-CR)		22(S-NI)	0.1068	4.6812e-01	19
17(S-CR)		23(S-PB)	-0.0490	-3.5010e-01	51
17(S-CR)		24(S-SB)	0.3591	0.0000e+00	3
17(S-CR)		25(S-SC)	-0.0228	-1.7630e-01	60

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
17(S-CR)		26(S-SN)	-0.3609	-1.7304e+00	20
17(S-CR)		27(S-SR)	0.2048	1.5796e+00	57
17(S-CR)		28(S-V)	-0.1723	-1.5353e+00	77
17(S-CR)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
17(S-CR)		30(S-Y)	-0.0800	-6.9528e-01	75
17(S-CR)		31(S-ZN)	-0.3485	0.0000e+00	7
17(S-CR)		32(S-ZR)	-0.1202	-3.6336e-01	9
17(S-CR)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
18(S-CU)		19(S-LA)	0.0084	8.8037e-02	109
18(S-CU)		20(S-MO)	-0.2294	0.0000e+00	3
18(S-CU)		21(S-NB)	0.1238	9.5846e-01	59
18(S-CU)		22(S-NI)	0.1329	6.7054e-01	25
18(S-CU)		23(S-PB)	0.2652	2.4906e+00	82
18(S-CU)		24(S-SB)	-0.7106	0.0000e+00	7
18(S-CU)		25(S-SC)	0.0640	5.9478e-01	86
18(S-CU)		26(S-SN)	0.1282	7.7588e-01	36
18(S-CU)		27(S-SR)	0.0577	4.9072e-01	72
18(S-CU)		28(S-V)	0.2643	3.1721e+00	134
18(S-CU)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
18(S-CU)		30(S-Y)	-0.0604	-7.0509e-01	136
18(S-CU)		31(S-ZN)	-0.4108	-1.6861e+00	14
18(S-CU)		32(S-ZR)	-0.2069	-6.3438e-01	9
18(S-CU)		33(S-TH)	-0.6892	0.0000e+00	5
19(S-LA)		20(S-MO)	-0.7379	0.0000e+00	2
19(S-LA)		21(S-NB)	0.0816	6.5002e-01	63
19(S-LA)		22(S-NI)	-0.0441	-2.0728e-01	22
19(S-LA)		23(S-PB)	-0.1180	-1.0630e+00	80
19(S-LA)		24(S-SB)	0.1718	0.0000e+00	6
19(S-LA)		25(S-SC)	0.1333	1.2897e+00	92
19(S-LA)		26(S-SN)	0.1165	7.1375e-01	37
19(S-LA)		27(S-SR)	-0.2150	-1.9814e+00	81
19(S-LA)		28(S-V)	0.4151	5.2627e+00	133
19(S-LA)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
19(S-LA)		30(S-Y)	0.5287	7.2109e+00	134
19(S-LA)		31(S-ZN)	-0.2240	-7.9618e-01	12
19(S-LA)		32(S-ZR)	0.6278	3.4220e+00	18
19(S-LA)		33(S-TH)	-0.5270	0.0000e+00	3
20(S-MO)		21(S-NB)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		22(S-NI)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		23(S-PB)	-0.5000	0.0000e+00	1
20(S-MO)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		25(S-SC)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		27(S-SR)	0.5000	0.0000e+00	1
20(S-MO)		28(S-V)	0.7255	0.0000e+00	3
20(S-MO)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		30(S-Y)	0.6669	0.0000e+00	3
20(S-MO)		31(S-ZN)	0.8660	0.0000e+00	1
20(S-MO)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
21(S-NB)		22(S-NI)	0.0073	2.1952e-02	9
21(S-NB)		23(S-PB)	-0.0239	-1.7374e-01	53
21(S-NB)		24(S-SB)	-0.4867	0.0000e+00	3
21(S-NB)		25(S-SC)	0.0885	6.9982e-01	62
21(S-NB)		26(S-SN)	0.2335	1.1765e+00	24
21(S-NB)		27(S-SR)	-0.2086	-1.4621e+00	47
21(S-NB)		28(S-V)	0.1088	9.1545e-01	70
21(S-NB)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
21(S-NB)		30(S-Y)	0.2946	2.5980e+00	71
21(S-NB)		31(S-ZN)	0.0981	2.9571e-01	9
21(S-NB)		32(S-ZR)	0.6325	0.0000e+00	2
21(S-NB)		33(S-TH)	-0.5000	0.0000e+00	1
22(S-NI)		23(S-PB)	-0.1506	-6.4633e-01	18
22(S-NI)		24(S-SB)	LESS THAN 3 PAIRS DETECTED.		
22(S-NI)		25(S-SC)	-0.1915	-8.5062e-01	19
22(S-NI)		26(S-SN)	0.0896	0.0000e+00	4
22(S-NI)		27(S-SR)	-0.1363	-5.6720e-01	17
22(S-NI)		28(S-V)	0.4482	2.4560e+00	24
22(S-NI)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
22(S-NI)		30(S-Y)	-0.3037	-1.5936e+00	25
22(S-NI)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
22(S-NI)		32(S-ZR)	-0.4000	-1.5936e+00	2
22(S-NI)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
23(S-PB)		24(S-SB)	0.0000	0.0000e+00	3
23(S-PB)		25(S-SC)	0.1107	9.1164e-01	67
23(S-PB)		26(S-SN)	-0.0427	-2.3401e-01	30
23(S-PB)		27(S-SR)	0.1423	1.0856e+00	57
23(S-PB)		28(S-V)	-0.0737	-7.0094e-01	90
23(S-PB)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
23(S-PB)		30(S-Y)	0.0578	5.5264e-01	91
23(S-PB)		31(S-ZN)	0.0056	2.0903e-02	14
23(S-PB)		32(S-ZR)	0.0000	0.0000e+00	6
23(S-PB)		33(S-TH)	-0.8660	0.0000e+00	1
24(S-SB)		25(S-SC)	0.2079	0.0000e+00	5
24(S-SB)		26(S-SN)	-0.5000	0.0000e+00	1
24(S-SB)		27(S-SR)	0.1215	0.0000e+00	5
24(S-SB)		28(S-V)	0.5849	2.0397e+00	8
24(S-SB)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
24(S-SB)		30(S-Y)	0.4915	0.0000e+00	7
24(S-SB)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
24(S-SB)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
24(S-SB)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
25(S-SC)		26(S-SN)	0.0316	1.7301e-01	30
25(S-SC)		27(S-SR)	-0.1637	-1.2959e+00	61
25(S-SC)		28(S-V)	0.2458	2.5105e+00	98
25(S-SC)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
25(S-SC)		30(S-Y)	0.5294	6.2397e+00	100
25(S-SC)		31(S-ZN)	0.0333	1.1066e-01	11
25(S-SC)		32(S-ZR)	0.2739	0.0000e+00	5
25(S-SC)		33(S-TH)	-0.9474	0.0000e+00	3

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffients nonmag m3

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
26(S-SN)		27(S-SR)	-0.2476	-1.2256e+00	23
26(S-SN)		28(S-V)	0.2107	1.4134e+00	43
26(S-SN)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
26(S-SN)		30(S-Y)	0.2523	1.7488e+00	45
26(S-SN)		31(S-ZN)	0.1699	0.0000e+00	5
26(S-SN)		32(S-ZR)	-0.6325	0.0000e+00	2
26(S-SN)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
27(S-SR)		28(S-V)	0.0021	2.0428e-02	93
27(S-SR)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
27(S-SR)		30(S-Y)	-0.0644	-6.1519e-01	91
27(S-SR)		31(S-ZN)	0.1588	5.3330e-01	11
27(S-SR)		32(S-ZR)	-0.1460	-5.7149e-01	15
27(S-SR)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
28(S-V)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
28(S-V)		30(S-Y)	0.3193	4.2357e+00	158
28(S-V)		31(S-ZN)	-0.0206	-8.7410e-02	18
28(S-V)		32(S-ZR)	0.5422	2.6607e+00	17
28(S-V)		33(S-TH)	-0.6892	0.0000e+00	5
29(S-W)		30(S-Y)	LESS THAN 3 PAIRS DETECTED.		
29(S-W)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
29(S-W)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
29(S-W)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
30(S-Y)		31(S-ZN)	-0.0404	-1.7169e-01	18
30(S-Y)		32(S-ZR)	0.3390	1.4412e+00	16
30(S-Y)		33(S-TH)	-0.7146	0.0000e+00	5
31(S-ZN)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
31(S-ZN)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		
32(S-ZR)		33(S-TH)	LESS THAN 3 PAIRS DETECTED.		

Spearman Correlation Coefficients-Magnetic Fraction

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
2(LONGITUD)		28(S-V)	0.2292	3.1947e+00	184
2(LONGITUD)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
2(LONGITUD)		30(S-Y)	-0.3672	-5.1319e+00	169
2(LONGITUD)		31(S-ZN)	-0.1168	-8.4003e-01	51
2(LONGITUD)		32(S-ZR)	-0.0051	-6.1370e-02	142
3(S-FE%)		4(S-MG%)	-0.5021	-5.9777e+00	106
3(S-FE%)		5(S-CA%)	-0.3630	-3.9538e+00	103
3(S-FE%)		6(S-TI%)	0.4508	4.8445e+00	92
3(S-FE%)		7(S-MN)	0.3541	3.6124e+00	91
3(S-FE%)		8(S-AG)	-0.0042	-2.0125e-02	23
3(S-FE%)		9(S-AS)	LESS THAN 3 PAIRS DETECTED.		
3(S-FE%)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
3(S-FE%)		11(S-B)	0.1282	9.5873e-01	55
3(S-FE%)		12(S-BA)	-0.1333	-1.3579e+00	102
3(S-FE%)		13(S-BE)	0.1900	1.8046e+00	87
3(S-FE%)		16(S-CO)	0.2120	2.2336e+00	106
3(S-FE%)		17(S-CR)	-0.1833	-1.9200e+00	106
3(S-FE%)		18(S-CU)	0.1346	1.3990e+00	106
3(S-FE%)		19(S-LA)	0.5185	5.9717e+00	97
3(S-FE%)		20(S-MO)	0.0000	0.0000e+00	7
3(S-FE%)		21(S-NB)	-0.0411	-2.5328e-01	38
3(S-FE%)		22(S-NI)	-0.2195	-2.3054e+00	105
3(S-FE%)		23(S-PB)	0.1547	1.5499e+00	98
3(S-FE%)		25(S-SC)	-0.0376	-3.8586e-01	105
3(S-FE%)		26(S-SN)	0.7255	0.0000e+00	3
3(S-FE%)		27(S-SR)	-0.4073	-3.9133e+00	77
3(S-FE%)		28(S-V)	0.7033	1.0186e+01	106
3(S-FE%)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
3(S-FE%)		30(S-Y)	0.3910	4.3317e+00	104
3(S-FE%)		31(S-ZN)	0.4626	2.4477e+00	22
3(S-FE%)		32(S-ZR)	0.5386	5.8237e+00	83
4(S-MG%)		5(S-CA%)	0.7646	1.5375e+01	168
4(S-MG%)		6(S-TI%)	0.3634	4.6643e+00	143
4(S-MG%)		7(S-MN)	0.1872	2.3256e+00	149
4(S-MG%)		8(S-AG)	-0.2398	-1.3527e+00	30
4(S-MG%)		9(S-AS)	LESS THAN 3 PAIRS DETECTED.		
4(S-MG%)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
4(S-MG%)		11(S-B)	-0.0458	-4.1275e-01	81
4(S-MG%)		12(S-BA)	0.3119	4.3927e+00	179
4(S-MG%)		13(S-BE)	0.1355	1.4281e+00	109
4(S-MG%)		16(S-CO)	0.1148	1.5676e+00	184
4(S-MG%)		17(S-CR)	0.2432	3.4007e+00	184
4(S-MG%)		18(S-CU)	0.0272	3.6906e-01	184
4(S-MG%)		19(S-LA)	0.0934	1.1946e+00	162
4(S-MG%)		20(S-MO)	0.0000	0.0000e+00	7
4(S-MG%)		21(S-NB)	0.0836	5.4988e-01	43
4(S-MG%)		22(S-NI)	0.6288	1.0939e+01	183
4(S-MG%)		23(S-PB)	-0.1190	-1.5530e+00	168
4(S-MG%)		25(S-SC)	0.1746	2.3988e+00	183
4(S-MG%)		26(S-SN)	0.0508	1.6864e-01	11

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
4(S-MG%)		27(S-SR)	0.6303	7.5734e+00	87
4(S-MG%)		28(S-V)	0.0260	3.5263e-01	184
4(S-MG%)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
4(S-MG%)		30(S-Y)	-0.2205	-2.9388e+00	169
4(S-MG%)		31(S-ZN)	0.0996	7.1477e-01	51
4(S-MG%)		32(S-ZR)	0.0899	1.0760e+00	142
5(S-CA%)		6(S-TI%)	0.3907	4.8390e+00	130
5(S-CA%)		7(S-MN)	0.2458	2.9358e+00	134
5(S-CA%)		8(S-AG)	-0.2647	-1.5034e+00	30
5(S-CA%)		9(S-AS)	LESS THAN 3 PAIRS DETECTED.		
5(S-CA%)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
5(S-CA%)		11(S-B)	-0.0187	-1.6806e-01	81
5(S-CA%)		12(S-BA)	0.2343	3.0765e+00	163
5(S-CA%)		13(S-BE)	0.2344	2.5053e+00	108
5(S-CA%)		16(S-CO)	0.0510	6.6216e-01	168
5(S-CA%)		17(S-CR)	-0.0896	-1.1666e+00	168
5(S-CA%)		18(S-CU)	-0.1312	-1.7149e+00	168
5(S-CA%)		19(S-LA)	0.1069	1.3216e+00	151
5(S-CA%)		20(S-MO)	-0.1865	0.0000e+00	7
5(S-CA%)		21(S-NB)	0.1181	7.7971e-01	43
5(S-CA%)		22(S-NI)	0.3811	5.3261e+00	167
5(S-CA%)		23(S-PB)	-0.2197	-2.8127e+00	156
5(S-CA%)		25(S-SC)	0.1645	2.1611e+00	168
5(S-CA%)		26(S-SN)	0.1309	4.3782e-01	11
5(S-CA%)		27(S-SR)	0.7138	9.5078e+00	87
5(S-CA%)		28(S-V)	0.0376	4.8707e-01	168
5(S-CA%)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
5(S-CA%)		30(S-Y)	-0.1343	-1.7197e+00	161
5(S-CA%)		31(S-ZN)	0.2791	2.0344e+00	49
5(S-CA%)		32(S-ZR)	0.1082	1.2309e+00	128
6(S-TI%)		7(S-MN)	0.6639	9.8453e+00	123
6(S-TI%)		8(S-AG)	-0.1499	-8.3035e-01	30
6(S-TI%)		9(S-AS)	LESS THAN 3 PAIRS DETECTED.		
6(S-TI%)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
6(S-TI%)		11(S-B)	0.2208	1.7967e+00	63
6(S-TI%)		12(S-BA)	0.2847	3.5014e+00	139
6(S-TI%)		13(S-BE)	0.4147	4.3229e+00	90
6(S-TI%)		16(S-CO)	0.0897	1.0766e+00	143
6(S-TI%)		17(S-CR)	-0.5323	-7.5195e+00	143
6(S-TI%)		18(S-CU)	0.0041	4.8861e-02	143
6(S-TI%)		19(S-LA)	0.6104	8.5467e+00	123
6(S-TI%)		20(S-MO)	-0.0581	0.0000e+00	6
6(S-TI%)		21(S-NB)	-0.0549	-2.6940e-01	24
6(S-TI%)		22(S-NI)	0.0645	7.6969e-01	142
6(S-TI%)		23(S-PB)	0.1070	1.2321e+00	131
6(S-TI%)		25(S-SC)	0.3196	4.0189e+00	142
6(S-TI%)		26(S-SN)	0.5000	4.0189e+00	1
6(S-TI%)		27(S-SR)	-0.1368	-1.2200e+00	78
6(S-TI%)		28(S-V)	0.2630	3.2595e+00	143
6(S-TI%)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
6(S-TI%)		30(S-Y)	0.4883	6.3306e+00	128
6(S-TI%)		31(S-ZN)	0.4083	2.1909e+00	24
6(S-TI%)		32(S-ZR)	0.7846	1.4259e+01	127
7(S-MN)		8(S-AG)	0.1398	7.4692e-01	28
7(S-MN)		9(S-AS)	LESS THAN 3 PAIRS DETECTED.		
7(S-MN)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
7(S-MN)		11(S-B)	0.2499	2.0812e+00	65
7(S-MN)		12(S-BA)	0.4588	6.3030e+00	149
7(S-MN)		13(S-BE)	0.4667	5.1158e+00	94
7(S-MN)		16(S-CO)	0.2679	3.3936e+00	149
7(S-MN)		17(S-CR)	-0.4058	-5.4199e+00	149
7(S-MN)		18(S-CU)	0.0364	4.4437e-01	149
7(S-MN)		19(S-LA)	0.6667	1.0120e+01	128
7(S-MN)		20(S-MO)	-0.2582	0.0000e+00	2
7(S-MN)		21(S-NB)	0.6026	4.3375e+00	33
7(S-MN)		22(S-NI)	0.0131	1.5908e-01	148
7(S-MN)		23(S-PB)	0.1477	1.7218e+00	133
7(S-MN)		25(S-SC)	0.4698	6.4742e+00	148
7(S-MN)		26(S-SN)	0.8660	0.0000e+00	1
7(S-MN)		27(S-SR)	-0.0764	-6.5509e-01	73
7(S-MN)		28(S-V)	0.2397	3.0134e+00	149
7(S-MN)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
7(S-MN)		30(S-Y)	0.5969	8.6451e+00	135
7(S-MN)		31(S-ZN)	0.4717	3.3407e+00	39
7(S-MN)		32(S-ZR)	0.5866	7.9673e+00	121
8(S-AG)		9(S-AS)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		11(S-B)	-0.1717	-7.1868e-01	17
8(S-AG)		12(S-BA)	-0.0433	-2.3715e-01	30
8(S-AG)		13(S-BE)	0.4017	2.2367e+00	26
8(S-AG)		16(S-CO)	-0.1760	-9.7908e-01	30
8(S-AG)		17(S-CR)	0.0591	3.2416e-01	30
8(S-AG)		18(S-CU)	0.1919	1.0712e+00	30
8(S-AG)		19(S-LA)	0.2214	1.2011e+00	28
8(S-AG)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		21(S-NB)	-0.1050	0.0000e+00	4
8(S-AG)		22(S-NI)	0.3530	2.0316e+00	29
8(S-AG)		23(S-PB)	0.5514	3.6199e+00	30
8(S-AG)		25(S-SC)	-0.0227	-1.2426e-01	30
8(S-AG)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		27(S-SR)	-0.0174	-8.1541e-02	22
8(S-AG)		28(S-V)	-0.0185	-1.0124e-01	30
8(S-AG)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
8(S-AG)		30(S-Y)	0.1820	1.0139e+00	30
8(S-AG)		31(S-ZN)	0.1887	5.4337e-01	8
8(S-AG)		32(S-ZR)	-0.0383	-1.9902e-01	27
9(S-AS)		10(S-AU)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		11(S-B)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		12(S-BA)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		13(S-BE)	LESS THAN 3 PAIRS DETECTED.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
9(S-AS)		16(S-CO)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		17(S-CR)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		18(S-CU)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		19(S-LA)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		21(S-NB)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		22(S-NI)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		23(S-PB)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		25(S-SC)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		27(S-SR)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		28(S-V)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		30(S-Y)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
9(S-AS)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		11(S-B)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		12(S-BA)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		13(S-BE)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		16(S-CO)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		17(S-CR)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		18(S-CU)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		19(S-LA)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		20(S-MO)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		21(S-NB)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		22(S-NI)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		23(S-PB)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		25(S-SC)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		27(S-SR)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		28(S-V)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		30(S-Y)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
10(S-AU)		32(S-ZR)	LESS THAN 3 PAIRS DETECTED.		
11(S-B)		12(S-BA)	-0.0097	-8.6977e-02	80
11(S-B)		13(S-BE)	0.2162	1.8525e+00	70
11(S-B)		16(S-CO)	-0.3372	-3.2231e+00	81
11(S-B)		17(S-CR)	-0.0534	-4.8123e-01	81
11(S-B)		18(S-CU)	-0.2946	-2.7740e+00	81
11(S-B)		19(S-LA)	0.2913	2.6890e+00	78
11(S-B)		20(S-MO)	-0.6667	0.0000e+00	3
11(S-B)		21(S-NB)	-0.2282	-1.2177e+00	27
11(S-B)		22(S-NI)	-0.0699	-6.3059e-01	81
11(S-B)		23(S-PB)	-0.2401	-2.2120e+00	80
11(S-B)		25(S-SC)	0.1804	1.6509e+00	81
11(S-B)		26(S-SN)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
11(S-B)		27(S-SR)	0.0945	7.2262e-01	58
11(S-B)		28(S-V)	0.3289	3.1347e+00	81
11(S-B)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
11(S-R)		30(S-Y)	-0.0095	-8.3652e-02	78
11(S-R)		31(S-ZN)	0.1045	5.8488e-01	31
11(S-R)		32(S-ZR)	0.1768	1.5026e+00	70
12(S-RA)		13(S-RE)	0.1186	1.2296e+00	106
12(S-RA)		16(S-CO)	0.3114	4.3843e+00	179
12(S-RA)		17(S-CR)	-0.0813	-1.0918e+00	179
12(S-RA)		18(S-CU)	0.0358	4.7925e-01	179
12(S-RA)		19(S-LA)	0.1522	1.9294e+00	157
12(S-RA)		20(S-MO)	0.1625	0.0000e+00	5
12(S-RA)		21(S-NB)	-0.0111	-7.1365e-02	41
12(S-RA)		22(S-NI)	0.1604	2.1678e+00	178
12(S-RA)		23(S-PB)	0.1259	1.6198e+00	163
12(S-RA)		25(S-SC)	0.0878	1.1765e+00	178
12(S-RA)		26(S-SN)	0.2334	7.9621e-01	11
12(S-RA)		27(S-SR)	0.2030	1.9004e+00	84
12(S-RA)		28(S-V)	0.1886	2.5690e+00	179
12(S-RA)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
12(S-RA)		30(S-Y)	-0.0066	-8.4292e-02	164
12(S-RA)		31(S-ZN)	0.1710	1.2394e+00	51
12(S-RA)		32(S-ZR)	0.2409	2.9365e+00	140
13(S-RE)		16(S-CO)	-0.0604	-6.3180e-01	109
13(S-RE)		17(S-CR)	-0.1585	-1.6756e+00	109
13(S-RE)		18(S-CU)	-0.2087	-2.2281e+00	109
13(S-RE)		19(S-LA)	0.3651	4.0375e+00	106
13(S-RE)		20(S-MO)	0.0000	0.0000e+00	4
13(S-RE)		21(S-NB)	-0.2654	-1.7190e+00	39
13(S-RE)		22(S-NI)	0.1245	1.3037e+00	108
13(S-RE)		23(S-PB)	0.0786	8.1193e-01	106
13(S-RE)		25(S-SC)	-0.0716	-7.4904e-01	109
13(S-RE)		26(S-SN)	0.6286	0.0000e+00	5
13(S-RE)		27(S-SR)	-0.0016	-1.3788e-02	79
13(S-RE)		28(S-V)	0.3221	3.5523e+00	109
13(S-RE)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
13(S-RE)		30(S-Y)	0.1948	2.0641e+00	108
13(S-RE)		31(S-ZN)	0.1297	7.5159e-01	33
13(S-RE)		32(S-ZR)	0.3538	3.5083e+00	86
16(S-CO)		17(S-CR)	0.0509	6.9105e-01	184
16(S-CO)		18(S-CU)	0.4604	7.0359e+00	184
16(S-CO)		19(S-LA)	0.2129	2.7739e+00	162
16(S-CO)		20(S-MO)	0.0933	0.0000e+00	7
16(S-CO)		21(S-NB)	0.0412	2.7044e-01	43
16(S-CO)		22(S-NI)	0.2122	2.9380e+00	183
16(S-CO)		23(S-PB)	0.2951	4.0039e+00	168
16(S-CO)		25(S-SC)	0.3711	5.4059e+00	183
16(S-CO)		26(S-SN)	-0.2254	-7.6746e-01	11
16(S-CO)		27(S-SR)	-0.0194	-1.8090e-01	87
16(S-CO)		28(S-V)	0.0059	8.0172e-02	184
16(S-CO)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
16(S-CO)		30(S-Y)	0.2189	2.9157e+00	169
16(S-CO)		31(S-ZN)	0.1113	7.9964e-01	51

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	DEG FREEDOM
16(S-CO)		32(S-ZR)	0.1350	1.6234e+00	142
17(S-CR)		18(S-CU)	0.0988	1.3469e+00	184
17(S-CR)		19(S-LA)	-0.3238	-4.3560e+00	162
17(S-CR)		20(S-MO)	-0.1387	0.0000e+00	7
17(S-CR)		21(S-NB)	-0.0650	-4.2737e-01	43
17(S-CR)		22(S-NI)	0.5748	9.5016e+00	183
17(S-CR)		23(S-PB)	0.0093	1.2047e-01	168
17(S-CR)		25(S-SC)	0.0053	7.1817e-02	183
17(S-CR)		26(S-SN)	-0.1883	-6.3591e-01	11
17(S-CR)		27(S-SR)	0.0586	5.4710e-01	87
17(S-CR)		28(S-V)	0.0363	4.9228e-01	184
17(S-CR)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
17(S-CR)		30(S-Y)	-0.3299	-4.5436e+00	169
17(S-CR)		31(S-ZN)	-0.2059	-1.5026e+00	51
17(S-CR)		32(S-ZR)	-0.4891	-6.6813e+00	142
18(S-CU)		19(S-LA)	0.0236	3.0025e-01	162
18(S-CU)		20(S-MO)	0.0481	0.0000e+00	7
18(S-CU)		21(S-NB)	-0.0443	-2.9085e-01	43
18(S-CU)		22(S-NI)	0.1740	2.3899e+00	183
18(S-CU)		23(S-PB)	0.3444	4.7541e+00	168
18(S-CU)		25(S-SC)	0.1435	1.9616e+00	183
18(S-CU)		26(S-SN)	-0.1191	-3.9778e-01	11
18(S-CU)		27(S-SR)	0.0077	7.1531e-02	87
18(S-CU)		28(S-V)	0.0186	2.5284e-01	184
18(S-CU)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
18(S-CU)		30(S-Y)	0.0778	1.0144e+00	169
18(S-CU)		31(S-ZN)	-0.0035	-2.4894e-02	51
18(S-CU)		32(S-ZR)	0.0790	9.4411e-01	142
19(S-LA)		20(S-MO)	-0.3781	0.0000e+00	5
19(S-LA)		21(S-NB)	0.4434	3.2442e+00	43
19(S-LA)		22(S-NI)	-0.1231	-1.5737e+00	161
19(S-LA)		23(S-PB)	0.2773	3.5588e+00	152
19(S-LA)		25(S-SC)	0.4760	6.8894e+00	162
19(S-LA)		26(S-SN)	0.3069	1.0198e+00	10
19(S-LA)		27(S-SR)	-0.3168	-3.0789e+00	85
19(S-LA)		28(S-V)	0.1490	1.9173e+00	162
19(S-LA)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
19(S-LA)		30(S-Y)	0.6368	1.0292e+01	155
19(S-LA)		31(S-ZN)	0.4587	3.6131e+00	49
19(S-LA)		32(S-ZR)	0.6174	8.5977e+00	120
20(S-MO)		21(S-NB)	-0.2357	0.0000e+00	2
20(S-MO)		22(S-NI)	-0.1443	0.0000e+00	7
20(S-MO)		23(S-PB)	0.1711	0.0000e+00	6
20(S-MO)		25(S-SC)	-0.1085	0.0000e+00	7
20(S-MO)		26(S-SN)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		27(S-SR)	0.2415	0.0000e+00	5
20(S-MO)		28(S-V)	0.0000	0.0000e+00	7
20(S-MO)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
20(S-MO)		30(S-Y)	0.0458	0.0000e+00	7
20(S-MO)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
20(S-MO)		32(S-ZR)	0.5132	0.0000e+00	6
21(S-NB)		22(S-NI)	-0.1828	-1.2050e+00	42
21(S-NB)		23(S-PB)	0.0189	1.2386e-01	43
21(S-NB)		25(S-SC)	0.3414	2.3814e+00	43
21(S-NB)		26(S-SN)	-0.3753	0.0000e+00	5
21(S-NB)		27(S-SR)	0.0522	2.8652e-01	30
21(S-NB)		28(S-V)	-0.1493	-9.9025e-01	43
21(S-NB)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
21(S-NB)		30(S-Y)	0.5630	4.4667e+00	43
21(S-NB)		31(S-ZN)	0.2486	1.2307e+00	23
21(S-NB)		32(S-ZR)	-0.0380	-1.7817e-01	22
22(S-NI)		23(S-PB)	-0.0851	-1.1040e+00	167
22(S-NI)		25(S-SC)	0.0568	7.6740e-01	182
22(S-NI)		26(S-SN)	-0.0869	-2.8936e-01	11
22(S-NI)		27(S-SR)	0.3543	3.5130e+00	86
22(S-NI)		28(S-V)	0.1305	1.7805e+00	183
22(S-NI)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
22(S-NI)		30(S-Y)	-0.3065	-4.1732e+00	168
22(S-NI)		31(S-ZN)	-0.0392	-2.8023e-01	51
22(S-NI)		32(S-ZR)	-0.1267	-1.5223e+00	142
23(S-PB)		25(S-SC)	0.1206	1.5702e+00	167
23(S-PB)		26(S-SN)	0.2747	9.0340e-01	10
23(S-PB)		27(S-SR)	-0.3068	-2.9547e+00	84
23(S-PB)		28(S-V)	-0.0076	-9.8291e-02	168
23(S-PB)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
23(S-PB)		30(S-Y)	0.3169	4.1729e+00	156
23(S-PB)		31(S-ZN)	-0.0235	-1.6258e-01	48
23(S-PB)		32(S-ZR)	0.2138	2.5048e+00	131
25(S-SC)		26(S-SN)	-0.4294	-1.5770e+00	11
25(S-SC)		27(S-SR)	-0.0446	-4.1668e-01	87
25(S-SC)		28(S-V)	-0.1717	-2.3576e+00	183
25(S-SC)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
25(S-SC)		30(S-Y)	0.4716	6.9525e+00	169
25(S-SC)		31(S-ZN)	0.1419	1.0240e+00	51
25(S-SC)		32(S-ZR)	0.2590	3.1835e+00	141
26(S-SN)		27(S-SR)	-0.8889	0.0000e+00	2
26(S-SN)		28(S-V)	0.5969	2.4673e+00	11
26(S-SN)		29(S-W)	LESS THAN 3 PAIRS DETECTED.		
26(S-SN)		30(S-Y)	-0.3024	-1.0524e+00	11
26(S-SN)		31(S-ZN)	0.0883	2.6579e-01	9
26(S-SN)		32(S-ZR)	-0.2033	-5.8725e-01	8
27(S-SR)		28(S-V)	-0.2793	-2.7127e+00	87
27(S-SR)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
27(S-SR)		30(S-Y)	-0.2041	-1.9335e+00	86
27(S-SR)		31(S-ZN)	0.0243	1.0011e-01	17
27(S-SR)		32(S-ZR)	-0.1695	-1.4490e+00	71
28(S-V)		29(S-W)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
28(S-V)		30(S-Y)	-0.2216	-2.9539e+00	169
28(S-V)		31(S-ZN)	0.0352	2.5136e-01	51
28(S-V)		32(S-ZR)	0.2478	3.0480e+00	142

SPEARMAN CORRELATION COEFFICIENTS FOR spearman coeffic mag mo

COLUMN	VS	COLUMN	CORR COEFF	SIGN TEST	NO DEG FREEDOM
29(S-W)		30(S-Y)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
29(S-W)		31(S-ZN)	LESS THAN 3 PAIRS DETECTED.		
29(S-W)		32(S-ZR)	HAS ONE OF THE COLUMNS WITH ALL THE SAME VALUE.		
30(S-Y)		31(S-ZN)	0.3812	2.8864e+00	49
30(S-Y)		32(S-ZR)	0.6001	8.4538e+00	127
31(S-ZN)		32(S-ZR)	0.2286	1.2204e+00	27

Table 3.--Analytical results for 178 nonmagnetic and 186 magnetic heavy-mineral concentrate samples derived from alluvium, Mogollon mining district, New Mexico

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
77M0100N	33 23 49	108 47 41	3.00	.30	5.00	2.00	300	20.0	N	N	20	>10,000
77M0101N	33 23 35	108 47 13	.70	.15	50.00	.70	300	N	N	N	<20	2,000
77M0102N	33 23 34	108 47 2	.20	.10	50.00	.20	200	N	N	N	<20	700
77M0103N	33 23 32	108 46 40	1.00	.30	1.00	2.00	500	N	N	N	20	1,000
77M0104N	33 23 32	108 46 34	2.00	.30	2.00	2.00	1,500	N	N	N	20	700
77M0105N	33 23 31	108 46 32	5.00	.50	3.00	1.50	1,500	N	N	N	50	10,000
77M0106N	33 26 15	108 46 54	1.50	.50	20.00	.50	300	N	N	N	<20	7,000
77M0107N	33 53 14	108 46 58	2.00	.70	3.00	.50	500	N	N	N	20	1,000
77M0108N	33 26 8	108 46 45	1.00	.15	2.00	.20	200	N	N	N	20	3,000
77M0109N	33 26 11	108 46 39	1.00	.15	5.00	.30	500	N	N	N	20	700
77M0110N	33 26 6	108 46 23	.30	.30	50.00	.10	10,000	N	N	N	<20	2,000
77M0111N	33 26 6	108 46 13	1.50	.15	10.00	1.00	1,500	N	N	N	30	>10,000
77M0112N	33 26 8	108 45 50	2.00	.15	5.00	>2.00	1,000	N	N	N	100	1,500
77M0113N	33 26 1	108 45 36	2.00	.20	7.00	.50	1,000	N	N	N	<20	2,000
77M0115N	33 27 34	108 47 10	1.50	.70	50.00	.20	5,000	N	N	N	<20	2,000
77M0116N	33 27 34	108 47 28	1.50	.30	20.00	.20	2,000	N	N	N	<20	700
77M0117N	33 27 19	108 48 5	1.00	.30	50.00	.20	2,000	N	N	N	<20	500
77M0118N	33 27 15	108 48 5	5.00	1.00	2.00	.70	700	N	N	N	20	1,500
77M0119N	33 27 16	108 48 38	.50	.10	5.00	1.00	700	N	N	N	<20	>10,000
77M0120N	33 27 11	108 48 43	2.00	.70	20.00	.50	700	N	N	N	<20	1,500
77M0121N	33 27 13	108 48 58	.50	.20	50.00	.15	1,000	N	N	N	<20	>10,000
77M0201N	33 25 47	108 48 36	1.00	.20	20.00	>2.00	300	N	N	N	<20	5,000
77M0203N	33 23 9	108 50 12	.30	.10	50.00	.15	500	N	N	N	<20	700
77M0204N	33 23 18	108 49 57	.70	.20	30.00	1.50	500	N	N	N	N	1,000
77M0205N	33 23 22	108 49 36	1.00	.20	3.00	>2.00	500	N	700	N	<20	1,500
77M0206N	33 23 39	108 49 33	2.00	.30	30.00	2.00	500	7.0	N	N	<20	500
77M0207N	33 23 40	108 49 29	2.00	.50	20.00	2.00	300	300.0	<500	N	<20	500
77M0208N	33 23 38	108 49 28	3.00	.20	7.00	>2.00	700	10.0	1,000	N	<20	300
77M0210N	33 23 39	108 48 50	2.00	.15	20.00	2.00	300	70.0	500	N	<20	500
77M0211N	33 23 40	108 48 18	5.00	.70	20.00	1.50	1,000	3.0	N	N	200	500
77M0212N	33 23 29	108 48 4	1.50	.05	50.00	.07	200	3,000.0	N	N	N	<50
77M0213N	33 23 26	108 47 38	3.00	.50	1.00	2.00	500	5.0	N	N	20	700
77M0214N	33 23 23	108 47 39	3.00	1.50	7.00	2.00	2,000	N	N	N	20	5,000
77M0215N	33 23 21	108 47 30	5.00	.50	10.00	>2.00	500	200.0	N	N	20	700
77M0216N	33 23 16	108 47 31	20.00	.70	3.00	>2.00	700	10.0	1,500	N	<20	500
77M0217N	33 23 17	108 47 28	2.00	.20	20.00	2.00	500	N	500	N	<20	1,000
77M0218N	33 24 11	108 47 35	.30	.10	50.00	.20	500	7.0	N	N	<20	70
77M0219N	33 23 58	108 47 28	.50	.15	50.00	.20	300	500.0	N	N	<20	70
77M0220N	33 23 55	108 47 8	1.00	<.05	30.00	>2.00	1,500	N	N	N	<20	>10,000
77M0221N	33 23 52	108 47 1	3.00	.30	10.00	2.00	1,000	700.0	N	1,000	20	700
77M0222N	33 23 50	108 46 59	--	--	--	--	--	--	--	--	--	--
77M0223N	33 23 22	108 46 44	.20	.10	1.50	.20	200	2.0	N	N	<20	>10,000
77M0224N	33 23 6	108 46 27	5.00	.15	20.00	1.50	500	N	<500	N	20	1,000
77M0225N	33 23 4	108 46 18	1.00	.15	10.00	>2.00	1,000	N	N	N	20	300
77M0226N	33 22 59	108 46 20	--	--	--	--	--	--	--	--	--	--
77M0227N	33 22 47	108 46 1	2.00	1.00	10.00	>2.00	1,500	N	500	N	20	300
77M0228N	33 22 48	108 45 51	2.00	1.00	3.00	2.00	2,000	N	700	N	1,000	700
77M0229N	33 22 46	108 45 50	2.00	.50	1.00	1.50	1,500	N	N	N	1,500	200
77M0230N	33 24 30	108 46 21	3.00	1.00	10.00	.70	2,000	2.0	N	N	<20	1,500
77M0231N	33 24 43	108 46 24	.70	.50	20.00	.20	1,500	1.0	N	N	N	500

nonmag concentrates mogollon, new mexico

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
77M0100N	5	50	N	N	50	7,000	100	N	70	<10	50,000
77M0101N	30	N	N	N	<20	50	150	10	<50	<10	300
77M0102N	2	N	N	N	<20	10	300	N	N	<10	70
77M0103N	2	N	N	N	<20	10	1,000	N	70	30	300
77M0104N	3	N	N	N	20	10	500	N	100	<10	20
77M0105N	5	70	N	N	20	10	200	N	70	<10	5,000
77M0106N	2	N	N	N	<20	10	100	N	N	<10	30
77M0107N	3	N	N	N	20	10	100	N	N	<10	<20
77M0108N	3	N	N	N	<20	<10	200	N	<50	<10	<20
77M0109N	3	N	N	N	<20	<10	100	N	<50	<10	N
77M0110N	2	N	N	50	<20	10	70	N	N	<10	20
77M0111N	3	N	N	N	20	<10	150	N	50	<10	N
77M0112N	10	N	N	N	20	<10	700	N	150	<10	30
77M0113N	5	N	N	10	20	10	100	N	<50	<10	<20
77M0115N	2	N	N	10	50	10	100	N	N	20	100
77M0116N	3	N	N	N	30	10	100	N	N	<10	N
77M0117N	2	N	N	N	30	<10	50	N	N	<10	N
77M0118N	3	N	N	20	100	70	70	N	N	100	<20
77M0119N	3	N	N	N	100	15	200	N	50	<10	<20
77M0120N	3	N	N	10	50	15	50	N	N	50	N
77M0121N	2	N	N	10	30	<10	50	N	N	<10	N
77M0201N	7	N	N	N	20	<10	150	N	70	<10	N
77M0203N	2	N	N	N	<20	<10	150	N	N	<10	N
77M0204N	2	N	N	N	<20	N	150	N	<50	<10	N
77M0205N	10	N	N	N	<20	100	150	N	300	<10	50
77M0206N	5	N	N	N	20	30	200	N	100	<10	20
77M0207N	7	N	N	N	20	50	150	N	150	<10	100
77M0208N	50	N	N	15	20	10	200	N	200	<10	200
77M0210N	100	N	N	10	20	70	200	N	200	<10	150
77M0211N	10	N	N	20	20	20	300	N	70	70	20
77M0212N	2	N	N	N	<20	200	70	N	N	<10	3,000
77M0213N	2	N	N	20	20	N	100	N	70	<10	300
77M0214N	5	<20	N	20	30	150	100	N	<50	70	3,000
77M0215N	5	N	N	20	20	20	150	N	50	<10	50
77M0216N	5	N	N	100	50	2,000	200	N	200	200	50
77M0217N	50	N	N	N	20	15	700	N	150	<10	15,000
77M0218N	2	N	N	N	<20	1,500	150	N	N	<10	3,000
77M0219N	<2	N	N	N	<20	500	300	N	N	<10	2,000
77M0220N	15	N	N	N	<20	N	700	N	200	<10	N
77M0221N	7	N	N	10	20	100	700	N	50	<10	1,500
77M0222N	--	--	--	--	--	--	--	--	--	--	--
77M0223N	2	N	N	N	20	30	150	N	<50	<10	2,000
77M0224N	15	N	N	N	20	20	2,000	N	50	<10	20
77M0225N	10	N	N	N	20	<10	700	N	100	<10	20
77M0226N	--	--	--	--	--	--	--	--	--	--	--
77M0227N	15	N	N	N	50	70	>2,000	N	100	<10	200
77M0228N	7	N	N	N	30	10	>2,000	N	200	<10	20
77M0229N	10	N	N	N	<20	10	200	N	50	<10	<20
77M0230N	3	N	N	20	50	50	100	N	N	50	50
77M0231N	2	N	N	N	<20	<10	70	N	N	<10	N

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
77M0100N	200	20	>2,000	3,000	150	N	70	N	>2,000	--
77M0101N	N	10	70	300	50	N	150	N	>2,000	--
77M0102N	N	<10	N	300	50	N	200	N	>2,000	--
77M0103N	N	100	700	500	1,000	N	5,000	1,500	>2,000	--
77M0104N	N	70	N	300	500	N	3,000	1,000	>2,000	--
77M0105N	2,000	20	>2,000	1,500	150	N	700	N	>2,000	--
77M0106N	N	<10	N	700	100	N	150	N	>2,000	--
77M0107N	N	<10	N	700	100	N	70	N	>2,000	--
77M0108N	N	<10	50	700	70	N	100	N	>2,000	--
77M0109N	N	<10	N	700	100	N	150	N	>2,000	--
77M0110N	N	N	N	500	50	N	N	N	1,500	--
77M0111N	N	15	100	1,000	150	N	300	N	>2,000	--
77M0112N	N	70	1,000	500	150	N	2,000	1,000	>2,000	--
77M0113N	N	10	N	1,000	70	N	150	N	>2,000	--
77M0115N	N	10	N	500	100	N	30	N	1,000	--
77M0116N	N	<10	N	500	30	N	20	N	700	--
77M0117N	N	<10	N	500	20	N	<20	N	70	--
77M0118N	N	15	N	300	200	N	20	N	500	--
77M0119N	N	10	N	>10,000	100	N	200	N	>2,000	--
77M0120N	N	10	N	300	70	N	20	N	200	--
77M0121N	N	N	N	1,000	20	N	20	N	200	--
77M0201N	N	70	N	300	200	N	100	N	>2,000	--
77M0203N	N	N	N	200	50	N	70	N	150	--
77M0204N	N	10	N	200	70	N	150	N	2,000	--
77M0205N	N	50	N	500	200	N	500	N	>2,000	--
77M0206N	N	50	N	200	200	N	300	N	>2,000	--
77M0207N	N	30	N	200	200	N	300	N	>2,000	--
77M0208N	N	70	200	300	200	N	700	N	>2,000	--
77M0210N	N	15	2,000	<200	100	N	150	N	>2,000	--
77M0211N	N	15	N	300	300	N	100	N	700	--
77M0212N	300	N	1,000	200	20	N	70	1,000	200	--
77M0213N	<200	100	N	500	300	N	700	1,500	>2,000	--
77M0214N	N	20	>2,000	1,000	200	N	150	N	>2,000	--
77M0215N	N	50	<20	300	700	N	150	N	>2,000	--
77M0216N	N	15	N	300	300	N	150	N	>2,000	--
77M0217N	N	50	500	300	500	N	500	N	>2,000	--
77M0218N	N	N	70	200	20	N	50	N	>2,000	--
77M0219N	N	N	20	200	150	N	50	N	1,500	--
77M0220N	N	50	N	200	300	N	500	N	>2,000	--
77M0221N	N	50	200	500	150	N	700	N	>2,000	--
77M0222N	--	--	--	--	--	--	--	--	--	--
77M0223N	N	N	N	10,000	100	N	70	N	>2,000	--
77M0224N	N	15	N	200	500	N	500	N	>2,000	--
77M0225N	N	30	500	200	200	N	1,000	N	>2,000	--
77M0226N	--	--	--	--	--	--	--	--	--	--
77M0227N	N	50	300	200	100	N	1,500	N	>2,000	--
77M0228N	N	20	20	<200	100	N	1,000	N	>2,000	--
77M0229N	N	50	N	200	100	N	1,500	N	>2,000	--
77M0230N	N	15	N	700	100	N	50	N	>2,000	--
77M0231N	N	<10	N	500	20	N	50	N	>2,000	--

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
77MO232N	33 24 30	108 45 42	2.00	1.00	10.00	.70	2,000	N	N	N	<20	700
77MO233N	33 24 23	108 45 43	2.00	.50	5.00	1.00	1,000	N	N	N	<20	300
77MO234N	33 24 44	108 46 24	5.00	2.00	10.00	1.50	2,000	N	>20,000	N	30	7,000
77MO235N	33 24 48	108 46 45	3.00	.50	50.00	.50	1,000	N	<500	N	<20	500
77MO236N	33 24 57	108 46 50	.15	2.00	7.00	.70	2,000	N	N	N	<20	>10,000
77MO237N	33 24 60	108 47 24	.50	.30	50.00	.30	200	300.0	N	N	100	1,000
77MO238N	33 25 10	108 47 39	5.00	.30	50.00	1.50	300	1,000.0	N	N	<20	1,000
77MO239N	33 25 3	108 47 41	1.00	.20	50.00	.50	150	N	N	N	N	200
77MO240N	33 25 10	108 47 46	3.00	1.00	15.00	1.00	1,000	20.0	N	N	<20	500
77MO241N	33 25 18	108 50 4	10.00	1.00	3.00	1.00	2,000	N	N	N	<20	1,000
77MO242N	33 25 12	108 49 32	5.00	1.00	10.00	>2.00	1,500	N	<500	N	<20	500
77MO243N	33 25 28	108 48 10	1.50	.15	30.00	>2.00	300	30.0	N	N	<20	3,000
77MO244N	33 25 24	108 48 30	.70	.20	50.00	1.50	200	N	N	N	<20	700
77MO245N	33 25 13	108 48 9	3.00	1.00	5.00	2.00	1,000	N	1,000	N	20	>10,000
77MO257N	33 24 11	108 48 46	.70	.30	50.00	2.00	300	50.0	N	N	<20	200
77MO258N	33 24 15	108 48 60	.70	.15	50.00	.50	150	200.0	N	N	<20	70
77MO 122N	33 23 6	108 48 6	2.00	.07	5.00	>2.00	500	2.0	<500	N	<20	100
77MO 123N	33 22 54	108 47 59	.70	.07	50.00	2.00	500	N	N	N	<20	50
77MO 124N	33 22 55	108 47 55	2.00	.50	2.00	>2.00	1,000	N	N	N	<20	300
77MO 125N	33 23 13	108 49 8	.10	.05	50.00	.30	200	N	N	N	<20	50
77MO 126N	33 22 58	108 47 14	2.00	.70	2.00	2.00	1,000	N	N	N	20	700
77MO 127N	33 22 53	108 47 17	1.50	.20	2.00	>2.00	1,000	N	1,500	N	5,000	300
77MO 128N	33 22 49	108 47 15	1.00	1.00	15.00	>2.00	1,000	N	5,000	N	20	200
77MO 129N	33 22 42	108 46 56	1.00	.50	1.50	>2.00	1,000	N	1,000	N	<20	2,000
77MO 130N	33 22 47	108 46 59	.70	.15	10.00	2.00	1,000	7.0	500	N	<20	200
77MO 249N	33 22 32	108 50 17	1.00	.20	10.00	2.00	1,000	N	<500	N	<20	2,000
77MO 250N	33 22 37	108 49 60	2.00	.07	50.00	2.00	500	N	N	N	<20	10,000
77MO 251N	33 23 6	108 49 36	1.00	.30	5.00	>2.00	700	N	500	N	<20	>10,000
77MO 252N	33 23 8	108 49 43	1.50	.70	10.00	>2.00	700	N	<500	N	<20	2,000
77MO 253N	33 23 53	108 48 15	.70	.15	50.00	>2.00	200	30.0	<500	N	<20	500
77MO 254N	33 23 57	108 49 21	.70	.15	50.00	1.50	100	20.0	N	N	<20	100
77MO 255N	33 24 15	108 48 28	.20	.05	>50.00	.10	150	200.0	N	N	<20	<50
77MO 256N	33 24 18	108 48 6	.50	.15	>50.00	.50	200	N	N	N	<20	700
78MO300N	33 23 29	108 46 11	5.00	.15	.70	>1.00	2,000	N	<500	N	<20	1,000
78MO301N	33 23 25	108 46 12	2.00	.07	.30	>1.00	500	N	N	N	<20	150
78MO302N	33 23 30	108 49 9	1.50	.10	.20	>1.00	500	N	<500	N	<20	200
78MO303N	33 23 8	108 48 47	1.00	.15	10.00	>1.00	500	N	<500	N	<20	500
78MO304N	33 24 42	108 47 8	2.00	<.05	.50	1.00	500	N	<500	N	<20	>5,000
78MO305N	33 24 42	108 47 12	1.00	.70	.50	1.00	1,000	N	<500	N	<20	300
78MO306N	33 23 48	108 47 41	3.00	.30	3.00	1.00	300	500.0	<500	N	<20	>5,000
78MO307N	33 24 19	108 49 14	.50	.15	>20.00	1.00	200	N	N	N	<20	200
78MO308N	33 24 38	108 49 29	1.50	.30	15.00	>1.00	300	N	<500	N	<20	200
78MO309N	33 24 45	108 49 20	1.00	.30	10.00	>1.00	500	N	<500	N	<20	300
78MO310N	33 24 44	108 49 14	1.00	.30	10.00	>1.00	500	N	<500	N	<20	300
78MO311N	33 24 33	108 48 39	.30	.05	20.00	.30	150	100.0	N	N	<20	<50
78MO312N	33 24 38	108 48 42	.30	.07	20.00	.20	150	N	N	N	<20	<50
78MO313N	33 24 51	108 48 31	.50	1.00	20.00	1.00	500	N	N	N	<20	100
78MO314N	33 24 11	108 45 1	.30	.05	20.00	.20	300	N	N	N	<20	<50
78MO315N	33 25 54	108 45 8	.50	.07	.50	.30	300	N	N	N	<20	500
78MO316N	33 25 59	108 45 24	.50	.10	.50	1.00	500	N	N	N	<20	500

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
77M0232N	5	N	N	15	<20	15	150	N	50	<10	20
77M0233N	10	N	N	N	20	10	200	N	50	<10	<20
77M0234N	10	N	100	20	100	100	500	N	70	50	<20
77M0235N	2	N	N	10	50	15	700	N	N	<10	<20
77M0236N	5	N	N	N	<20	<10	100	N	N	<10	<20
77M0237N	2	N	N	N	30	50	150	N	N	<10	<20
77M0238N	5	N	N	15	20	100	200	N	<50	20	100
77M0239N	2	N	N	10	<20	15	100	N	N	<10	N
77M0240N	5	N	N	20	70	7,000	150	N	50	70	<20
77M0241N	10	N	N	20	30	70	500	N	50	20	30
77M0242N	10	N	N	20	150	70	500	N	200	50	20
77M0243N	7	N	N	N	<20	<10	200	N	200	<10	70
77M0244N	3	N	N	N	50	10	500	N	70	<10	<20
77M0245N	7	N	N	20	30	70	300	N	50	50	300
77M0257N	10	N	N	N	<20	<10	150	N	100	<10	70
77M0258N	<2	N	N	N	<20	700	100	N	N	<10	<20
77M0122N	5	N	N	N	30	200	200	N	200	<10	20
77M0123N	5	N	N	N	20	N	2,000	N	70	<10	30
77M0124N	3	<20	N	N	<20	150	100	N	50	<10	1,500
77M0125N	7	N	N	N	50	N	200	N	50	<10	20
77M0126N	7	N	N	20	20	70	150	N	70	<10	50
77M0127N	10	N	N	10	20	15	>2,000	N	500	<10	100
77M0128N	5	N	N	10	20	10	700	N	300	50	50
77M0129N	7	N	N	N	20	20	500	N	500	<10	100
77M0130N	5	300	N	N	<20	500	500	N	500	<10	>50,000
77M0249N	10	N	N	N	30	<10	700	N	50	<10	70
77M0250N	5	N	N	N	20	70	500	N	100	<10	20
77M0251N	20	N	N	10	20	15	500	N	200	<10	30
77M0252N	10	N	N	10	20	150	200	N	100	<10	100
77M0253N	20	N	N	N	20	70	>2,000	N	200	<10	300
77M0254N	10	N	N	N	20	10	500	N	100	<10	70
77M0255N	2	N	N	N	<20	10	100	N	N	<10	<20
77M0256N	2	N	N	N	20	<10	150	N	50	<10	N
78M0300N	<2	N	N	N	<20	100	>1,000	N	300	N	N
78M0301N	<2	N	N	<10	<20	50	200	N	N	N	N
78M0302N	5	N	N	N	N	30	100	N	70	N	150
78M0303N	70	N	N	N	N	70	700	N	50	N	500
78M0304N	5	N	N	<10	N	150	>1,000	N	100	N	N
78M0305N	2	N	N	N	100	100	70	N	150	N	<20
78M0306N	<2	500	N	<10	100	5,000	150	N	<50	30	>20,000
78M0307N	<2	N	N	15	<20	15	100	N	N	N	150
78M0308N	<2	N	N	N	<20	20	70	N	50	N	50
78M0309N	5	N	N	<10	<20	30	500	N	150	N	200
78M0310N	3	N	N	<10	70	15	300	N	50	N	70
78M0311N	<2	N	N	N	<20	<10	100	N	N	N	N
78M0312N	<2	N	N	N	<20	<10	70	N	N	N	N
78M0313N	<2	N	N	N	100	20	100	N	<50	20	20
78M0314N	2	N	N	<10	<20	<10	150	N	N	N	30
78M0315N	7	N	N	N	<20	10	70	N	N	N	500
78M0316N	5	N	N	N	<20	15	100	N	<50	N	<20

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
77MO232N	N	10	N	500	70	N	150	N	>2,000	--
77MO233N	N	15	N	300	150	N	200	N	>2,000	--
77MO234N	N	30	N	1,000	500	N	500	N	>2,000	--
77MO235N	N	10	N	300	500	N	200	N	>2,000	--
77MO236N	N	15	100	5,000	70	N	200	N	>2,000	--
77MO237N	N	10	N	500	20	N	70	N	500	--
77MO238N	N	30	N	300	100	N	200	N	>2,000	--
77MO239N	N	10	N	300	50	N	50	N	>2,000	--
77MO240N	N	15	N	700	100	N	70	N	>2,000	--
77MO241N	N	15	N	500	200	N	200	N	>2,000	--
77MO242N	N	30	N	300	200	N	500	N	>2,000	--
77MO243N	N	20	N	300	100	N	500	N	>2,000	--
77MO244N	N	10	N	300	70	N	200	N	>2,000	--
77MO245N	N	20	70	1,500	300	N	150	N	>2,000	--
77MO257N	N	20	300	200	100	N	200	N	>2,000	--
77MO258N	N	<10	N	200	30	N	100	N	>2,000	--
77MO 122N	200	20	N	200	150	N	500	N	>2,000	--
77MO 123N	N	20	N	500	100	N	500	1,000	>2,000	--
77MO 124N	2,000	20	>2,000	500	200	N	150	N	>2,000	--
77MO 125N	N	N	N	200	20	N	100	N	1,500	--
77MO 126N	N	15	N	700	200	N	200	2,000	>2,000	--
77MO 127N	N	20	300	500	100	N	700	2,000	>2,000	--
77MO 128N	N	30	70	300	150	N	700	<500	>2,000	--
77MO 129N	N	20	200	200	200	N	500	N	>2,000	--
77MO 130N	1,000	20	100	500	200	N	1,000	1,000	>2,000	--
77MO 249N	N	30	N	500	150	N	700	500	>2,000	--
77MO 250N	N	10	N	500	70	N	300	N	>2,000	--
77MO 251N	N	30	N	1,000	200	N	500	N	>2,000	--
77MO 252N	N	50	200	300	300	N	150	N	>2,000	--
77MO 253N	N	30	300	300	200	N	700	N	>2,000	--
77MO 254N	N	20	N	200	150	N	200	N	2,000	--
77MO 255N	N	N	N	200	20	N	100	N	20	--
77MO 256N	N	<10	N	200	50	N	150	N	500	--
78MO300N	N	70	700	N	3,000	N	1,500	N	>1,000	300
78MO301N	N	150	N	N	150	N	2,000	N	>1,000	300
78MO302N	N	30	N	N	70	N	700	N	>1,000	N
78MO303N	N	20	200	N	50	N	200	N	>1,000	N
78MO304N	N	50	N	<200	500	N	700	1,000	>1,000	500
78MO305N	N	<10	200	N	50	N	200	N	>1,000	N
78MO306N	700	20	>1,000	1,500	100	N	200	N	>1,000	N
78MO307N	N	20	N	N	70	N	100	<500	>1,000	N
78MO308N	N	70	100	N	150	N	200	N	>1,000	N
78MO309N	N	70	50	N	100	N	700	N	>1,000	N
78MO310N	N	100	30	N	150	N	300	N	>1,000	N
78MO311N	N	<10	100	N	20	N	100	N	500	N
78MO312N	N	<10	N	N	20	N	50	N	50	N
78MO313N	N	30	N	N	100	N	100	N	N	N
78MO314N	N	<10	N	N	20	N	300	N	N	N
78MO315N	N	20	150	<200	30	N	500	N	N	N
78MO316N	N	20	700	<200	30	N	1,000	N	N	1,000

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
78M0318N	33 26 18	108 47 0	2.00	1.00	2.00	1.00	700	N	N	N	<20	5,000
78M0319N	33 26 43	108 46 36	1.50	.50	.50	>1.00	300	N	N	N	<20	>5,000
78M0320N	33 26 43	108 48 25	2.00	1.50	2.00	>1.00	1,000	N	N	N	<20	1,500
78M0321N	33 26 39	108 49 8	1.50	.20	.20	>1.00	1,500	N	1,000	N	<20	5,000
78M0323N	33 26 39	108 47 37	2.00	.15	15.00	>1.00	1,500	N	N	N	<20	5,000
78M0324N	33 26 35	108 47 27	1.50	.50	5.00	>1.00	1,500	N	N	N	N	2,000
78M0327N	33 26 45	108 45 33	1.50	.10	10.00	>1.00	1,000	10.0	N	N	<20	3,000
78M0328N	33 26 60	108 45 30	1.00	.70	1.50	>1.00	700	N	N	N	<20	700
78M0329N	33 27 3	108 45 2	3.00	2.00	2.00	>1.00	2,000	N	N	N	<20	1,500
78M0330N	33 26 50	108 46 50	1.00	.20	10.00	1.00	700	N	N	N	<20	500
78M0331N	33 26 2	108 47 10	2.00	1.50	1.00	>1.00	700	N	N	N	200	1,000
78M0332N	33 25 58	108 47 9	1.00	.10	15.00	>1.00	1,000	N	N	N	<20	2,000
78M0333N	33 25 40	108 47 24	1.00	.30	1.50	>1.00	1,000	N	N	N	<20	2,000
78M0334N	33 25 41	108 47 18	1.00	<.05	2.00	>1.00	300	N	N	N	<20	>5,000
78M0335N	33 25 42	108 45 30	15.00	1.50	3.00	>1.00	5,000	N	N	N	<20	5,000
78M0336N	33 25 32	108 45 31	2.00	.05	.20	>1.00	300	N	N	N	<20	500
78M0337N	33 25 32	108 45 21	2.00	.05	.30	>1.00	500	N	N	N	<20	300
78M0338N	33 25 28	108 45 20	2.00	.07	.20	>1.00	300	N	N	N	<20	500
78M0339N	33 25 36	108 45 51	1.50	.10	.50	>1.00	500	N	N	N	100	3,000
78M0340N	33 25 41	108 46 3	1.50	.10	.50	>1.00	500	N	N	N	<20	500
78M0341N	33 25 55	108 48 55	1.50	.50	.70	>1.00	500	N	N	100	<20	500
78M0342N	33 26 10	108 48 33	1.50	.20	3.00	>1.00	500	3,000.0	>10,000	N	<20	300
78M0343N	33 26 10	108 48 15	5.00	.30	15.00	>1.00	1,500	N	N	N	<20	>5,000
78M0400N	33 22 40	108 45 38	3.00	.20	1.50	>1.00	3,000	N	N	N	<20	500
78M0404N	33 22 38	108 45 59	2.00	<.05	1.50	>1.00	2,000	N	N	N	<20	<50
78M0402N	33 23 14	108 45 36	<.10	<.05	1.00	>1.00	3,000	100.0	N	N	<20	<50
78M0403N	33 22 58	108 46 20	2.00	.50	3.00	>1.00	2,000	N	N	N	<20	>5,000
78M0404N	33 24 20	108 50 1	.70	.20	15.00	>1.00	500	70.0	N	100	70	700
78M0405N	33 23 30	108 50 21	.70	<.05	7.00	1.00	700	N	N	N	<20	500
78M0406N	33 23 41	108 20 11	.50	.50	15.00	>1.00	300	N	N	N	<20	2,000
78M0407N	33 23 34	108 49 2	5.00	.05	.20	>1.00	300	150.0	1,000	<20	<20	500
78M0408N	33 23 11	108 48 58	1.00	.15	.70	>1.00	1,000	N	500	N	<20	300
78M0409N	33 24 33	108 47 28	2.00	.30	7.00	>1.00	1,000	70.0	N	N	<20	5,000
78M0410N	33 24 32	108 47 35	1.50	.50	.70	>1.00	700	N	N	N	<20	1,000
78M0411N	33 24 19	108 49 21	.50	.20	20.00	>1.00	300	N	N	N	<20	100
78M0412N	33 24 42	108 49 7	.30	.20	15.00	>1.00	300	N	N	N	<20	200
78M0413N	33 24 36	108 49 5	.50	.20	7.00	>1.00	200	3.0	N	N	<20	300
78M0414N	33 24 37	108 49 16	.30	.20	15.00	.70	150	N	N	N	<20	<50
78M0415N	33 24 38	108 48 39	.20	.05	20.00	.20	50	N	N	N	<20	<50
78M0416N	33 24 52	108 48 18	1.00	.20	1.00	>1.00	500	>5,000.0	700	200	<20	1,000
78M0417N	33 24 50	108 48 21	.50	.07	.20	>1.00	300	10.0	700	20	<20	150
78M0418N	33 24 7	108 46 26	.50	.07	.50	>1.00	1,000	N	N	N	<20	300
78M0419N	33 24 16	108 45 6	.20	.07	.50	.20	300	N	<500	N	<20	100
78M0420N	33 25 58	108 45 1	.20	<.05	.20	.70	150	N	N	N	<20	200
78M0421N	33 26 5	108 46 41	.30	.10	.50	.50	100	N	N	N	<20	>5,000
78M0422N	33 26 22	108 46 46	.50	.20	1.00	.30	300	N	N	N	<20	5,000
78M0423N	33 26 46	108 49 4	.50	1.00	.70	.30	500	N	N	N	<20	5,000
78M0424N	33 53 45	108 48 2	1.00	.50	7.00	.70	700	N	N	N	<20	500
78M0425N	33 26 54	108 47 34	.70	.20	3.00	.50	500	100.0	N	50	<20	500
78M0426N	33 26 51	108 47 13	1.00	.10	5.00	1.00	700	70.0	N	100	<20	>5,000

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
78M0318N	<2	N	N	N	100	100	70	N	N	70	100
78M0319N	<2	N	N	15	20	20	50	N	N	N	300
78M0320N	<2	N	N	N	100	70	<50	N	50	70	50
78M0321N	70	N	N	15	20	100	100	N	50	N	150
78M0323N	<2	N	N	<10	100	300	200	N	<50	N	200
78M0324N	<2	N	N	<10	<20	200	<50	N	N	<10	N
78M0327N	5	150	N	<10	50	70	500	N	<50	<10	300
78M0328N	10	N	N	<10	150	30	500	N	70	<10	<20
78M0329N	50	N	N	100	1,000	150	<50	N	N	<10	>20,000
78M0330N	<2	N	N	20	<20	50	<50	N	N	<10	<20
78M0331N	5	N	N	20	<20	700	N	N	<50	<10	150
78M0332N	5	N	N	<10	N	50	100	70	<50	<10	<20
78M0333N	<2	N	N	<10	N	30	<50	N	N	<10	<20
78M0334N	<2	N	N	<10	N	<10	500	N	N	<10	<20
78M0335N	20	N	N	50	700	70	>1,000	N	<50	<10	<20
78M0336N	5	N	N	<10	N	15	150	N	<50	<10	<20
78M0337N	7	N	N	<10	N	15	200	N	N	<10	<20
78M0338N	7	N	N	<10	N	15	500	N	N	<10	<20
78M0339N	5	N	N	<10	N	15	200	N	<50	<10	700
78M0340N	2	N	N	<10	30	15	150	N	<50	<10	50
78M0341N	7	N	N	10	50	50	70	N	<50	<10	70
78M0342N	<2	N	N	10	150	20,000	150	N	<50	20	100
78M0343N	<2	N	N	30	<20	300	300	N	100	<10	700
78M0400N	<2	N	N	N	<20	<10	<50	N	N	<10	<20
78M0404N	<2	N	N	N	<20	<10	<50	N	<50	<10	<20
78M0402N	<2	>1,000	N	N	<20	<10	<50	N	N	<10	>20,000
78M0403N	<2	N	N	N	<20	200	<50	N	N	<10	<20
78M0404N	5	N	N	<10	<20	200	300	N	<50	20	10,000
78M0405N	<2	N	N	<10	<20	<10	200	N	N	<10	<20
78M0406N	<2	N	N	<10	<20	15	200	N	50	<10	100
78M0407N	70	N	N	30	<20	200	70	N	100	20	300
78M0408N	50	N	N	<10	<20	15	150	N	150	<10	500
78M0409N	<2	N	N	20	70	300	<50	N	N	<10	700
78M0410N	<2	N	N	15	<20	70	<50	N	<50	30	100
78M0411N	<2	N	N	N	<20	15	70	N	<50	<10	<20
78M0412N	<2	N	N	10	<20	15	100	N	70	<10	30
78M0413N	<2	N	N	10	<20	70	70	N	<50	<10	20
78M0414N	N	N	N	<10	<20	15	70	N	<50	<10	<20
78M0415N	N	N	N	<10	<20	<10	50	N	N	<10	20
78M0416N	10	N	N	15	<20	30	70	N	200	<10	300
78M0417N	<2	N	N	15	<20	30	150	N	500	<10	200
78M0418N	5	N	N	<10	<20	50	500	N	150	<10	30
78M0419N	5	N	N	<10	<20	10	150	N	<50	<10	20
78M0420N	5	N	N	N	<20	<10	<50	N	<50	<10	<20
78M0421N	<2	N	N	10	<20	15	50	N	<50	<10	<20
78M0422N	<2	N	N	10	<20	20	50	N	N	<10	<20
78M0423N	<2	N	N	15	100	30	N	N	N	70	<20
78M0424N	<2	N	N	20	<20	50	<50	N	N	<10	50
78M0425N	<2	N	N	15	<20	30	100	30	N	<10	200
78M0426N	<2	N	N	<10	<20	300	200	N	<50	<10	50

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
78M0318N	N	50	N	500	100	N	200	N	N	N
78M0319N	N	20	N	500	100	N	500	N	N	N
78M0320N	N	150	N	<200	300	N	200	N	N	N
78M0321N	N	50	<20	<200	150	N	1,500	N	N	N
78M0323N	N	30	N	<200	100	<100	500	N	N	N
78M0324N	N	100	N	--	100	N	1,000	N	>1,000	N
78M0327N	N	70	N	--	150	N	1,000	2,000	>1,000	N
78M0328N	N	70	N	--	150	N	2,000	N	>1,000	N
78M0329N	3,000	>100	N	--	500	N	>2,000	N	>1,000	N
78M0330N	N	<10	N	--	100	N	500	<500	>1,000	N
78M0331N	N	<10	N	--	200	N	500	N	>1,000	N
78M0332N	N	70	N	--	150	N	700	1,500	>1,000	N
78M0333N	N	<10	N	--	70	N	200	N	>1,000	N
78M0334N	N	70	N	--	70	N	500	N	>1,000	N
78M0335N	N	>100	N	--	500	N	>2,000	N	>1,000	N
78M0336N	N	70	30	--	100	N	1,000	N	>1,000	N
78M0337N	N	30	150	--	70	N	1,500	N	>1,000	N
78M0338N	N	50	N	--	70	N	1,500	N	>1,000	N
78M0339N	N	50	100	--	70	N	1,500	N	>1,000	N
78M0340N	N	30	150	--	70	N	1,000	N	>1,000	N
78M0341N	N	30	N	--	100	N	500	N	>1,000	N
78M0342N	N	70	100	--	>10,000	N	300	N	>1,000	N
78M0343N	N	70	N	--	200	N	700	1,000	>1,000	N
78M0400N	N	<10	N	N	<20	N	1,500	N	>1,000	N
78M0404N	N	<10	N	N	<20	N	1,500	N	>1,000	N
78M0402N	2,000	<10	700	N	500	N	2,000	N	>1,000	N
78M0403N	N	<10	N	<200	<20	N	150	N	>1,000	N
78M0404N	<200	<10	>1,000	<200	100	N	1,500	N	>1,000	300
78M0405N	N	<10	N	<200	150	N	1,500	N	>1,000	N
78M0406N	N	<10	N	<200	100	N	200	N	>1,000	N
78M0407N	<200	<10	>1,000	N	70	N	1,500	N	>1,000	N
78M0408N	N	<10	150	N	50	<100	500	N	>1,000	N
78M0409N	N	<10	70	700	200	N	500	700	>1,000	N
78M0410N	N	<10	<20	300	150	N	100	N	>1,000	N
78M0411N	N	<10	N	<200	100	N	100	N	>1,000	N
78M0412N	N	70	N	N	150	N	200	N	>1,000	N
78M0413N	N	50	N	N	150	N	70	N	>1,000	N
78M0414N	N	<10	N	N	70	N	70	N	>1,000	N
78M0415N	N	<10	100	N	<20	N	30	N	70	N
78M0416N	N	50	N	300	50	<100	300	N	>1,000	N
78M0417N	N	30	N	N	50	100	200	N	>1,000	N
78M0418N	N	50	N	N	100	N	1,000	N	>1,000	700
78M0419N	N	<10	N	N	20	N	200	N	>1,000	700
78M0420N	N	<10	N	<200	50	N	700	N	>1,000	<200
78M0421N	N	<10	50	700	100	<100	100	N	>1,000	N
78M0422N	N	<10	N	<200	70	<100	300	N	>1,000	N
78M0423N	N	<10	N	<200	70	N	150	N	>1,000	N
78M0424N	N	<10	N	500	150	N	100	N	>1,000	N
78M0425N	N	<10	N	300	50	N	200	1,000	>1,000	N
78M0426N	N	<10	N	<200	100	N	300	1,000	>1,000	N

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
78MO427N	33 26 51	108 46 5	1.00	1.50	10.00	1.00	700	N	N	N	<20	700
78MO428N	33 26 60	108 46 25	.50	.20	1.50	.30	300	N	N	N	<20	500
78MO429N	33 27 6	108 46 45	1.00	.50	2.00	.50	500	N	N	N	<20	>5,000
78MO430N	33 27 5	108 46 39	.30	.07	.10	>1.00	300	N	N	N	<20	300
78MO431N	33 25 33	108 47 7	.30	<.05	.10	>1.00	300	N	N	N	<20	500
78MO432N	36 25 17	108 47 5	.50	1.50	3.00	>1.00	1,000	N	N	N	<20	2,000
78MO433N	33 25 32	108 47 3	.50	.20	.10	>1.00	300	N	N	N	50	>5,000
78MO434N	33 25 5	108 46 33	.30	7.00	5.00	.07	3,000	N	N	N	<20	>5,000
78MO435N	33 25 12	108 46 31	.30	.70	.70	.70	700	N	N	N	<20	1,000
78MO436N	33 25 32	108 46 27	.50	5.00	3.00	.15	2,000	N	N	N	<20	2,000
78MO437N	33 25 39	108 46 15	.10	<.05	.20	.50	150	N	N	N	<20	>5,000
78MO438N	33 25 53	108 48 14	.70	.30	1.00	.50	300	50.0	N	N	<20	3,000
78MO439N	33 26 13	108 47 46	1.50	<.05	1.00	>1.00	500	N	N	N	<20	1,000
78MO440N	33 26 14	108 47 11	.70	.30	.50	.70	300	N	N	N	<20	500
78MO441N	33 26 12	108 47 54	1.00	1.50	1.50	.70	500	100.0	N	N	<20	1,000
78HM100N	33 22 22	108 45 41	.30	<.05	3.00	>1.00	200	N	N	N	<20	300
78HM102N	33 21 9	108 45 7	.30	<.05	5.00	>1.00	300	N	N	N	<20	<50
78HM103N	33 21 15	108 45 27	.20	<.05	7.00	.70	200	N	N	N	<20	100
78HM200N	33 21 15	108 45 6	<.10	<.05	7.00	>1.00	500	N	N	N	<20	<50
78HM201N	33 21 27	108 45 32	1.00	7.00	<.10	.10	1,500	N	N	N	<20	<50
78HM202N	33 21 33	108 47 9	.50	.70	15.00	.20	1,000	N	N	N	N	>5,000
78HM203N	33 21 32	108 47 32	.20	<.05	20.00	.30	300	N	N	N	<20	200
78HM204N	33 21 45	108 48 10	.20	<.05	.20	.20	300	N	N	N	<20	>5,000
78HM205N	33 21 35	108 48 33	.50	.50	.30	.50	500	N	<500	N	<20	>5,000
78MD600N	33 28 41	108 48 43	.50	1.50	.50	.07	500	N	N	N	<10	<20
78MD602N	33 29 5	108 46 35	.50	<.02	3.00	.10	150	N	N	N	<10	1,500
78MD604N	33 29 8	108 46 26	N	<.02	<.05	.15	<10	N	N	N	<10	<20
78MD605N	33 29 17	108 46 7	.70	.10	1.50	.15	300	N	N	N	<10	1,000

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
78MO427N	5	N	N	20	500	200	500	N	<50	70	50
78MO428N	<2	N	N	10	<20	15	100	N	<50	<10	<20
78MO429N	<2	N	N	20	300	30	N	N	N	<10	<20
78MO430N	2	N	N	<10	<20	15	150	N	<50	<10	<20
78MO431N	<2	N	N	<10	<20	30	300	N	<50	<10	<20
78MO432N	2	N	N	10	<20	50	150	N	<50	20	<20
78MO433N	<2	N	N	<10	50	200	<50	N	<50	<10	30
78MO434N	<2	N	N	15	<20	<10	N	N	N	<10	<20
78MO435N	3	N	N	<10	<20	15	N	N	<50	<10	N
78MO436N	N	N	N	15	<20	300	N	N	N	<10	N
78MO437N	<2	N	N	N	<20	10	N	N	N	<10	N
78MO438N	<2	N	N	<10	<20	50	N	10	<50	<10	200
78MO439N	<2	N	N	15	<20	50	N	N	<50	<10	N
78MO440N	<2	N	N	10	<20	30	N	N	N	<10	<20
78MO441N	<2	N	N	<10	<20	100	N	N	N	<10	100
78HM100N	5	N	N	N	100	15	200	N	50	<10	<20
78HM102N	7	N	N	N	70	15	700	20	50	<10	<20
78HM103N	10	N	N	N	150	15	300	N	<50	<10	N
78HM200N	20	N	N	N	<20	100	N	N	1,000	<10	N
78HM201N	N	N	N	<10	<20	<10	<50	N	<50	N	N
78HM202N	<2	N	N	10	<20	50	200	N	N	10	50
78HM203N	30	N	N	N	<20	10	150	N	<50	N	N
78HM204N	5	N	N	N	<20	<10	50	N	N	N	N
78HM205N	5	N	N	<10	<20	15	200	N	N	N	<20
78MD600N	<1	N	N	<5	150	<5	<20	N	<20	<5	N
78MD602N	<1	N	N	N	<10	50	<20	N	<20	N	N
78MD604N	<1	N	N	<5	N	<5	<20	N	<20	N	1,500
78MD605N	<1	N	N	<5	<10	20	<20	N	<20	N	N

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
78MO427N	N	<10	1,500	<200	200	N	500	N	>1,000	N
78MO428N	N	<10	N	200	50	N	150	N	>1,000	N
78MO429N	N	<10	N	500	100	N	200	N	>1,000	N
78MO430N	N	<10	N	<200	70	N	500	N	>1,000	N
78MO431N	N	<10	N	N	70	N	500	N	>1,000	N
78MO432N	N	<10	500	700	50	N	200	N	>1,000	N
78MO433N	N	<10	N	1,000	70	N	300	<500	>1,000	N
78MO434N	N	<10	N	700	30	N	30	N	>1,000	N
78MO435N	N	<10	N	N	50	N	500	N	>1,000	N
78MO436N	N	<10	N	500	20	N	50	N	>1,000	N
78MO437N	N	<10	N	1,500	50	N	200	N	>1,000	N
78MO438N	N	<10	N	200	50	N	70	1,000	>1,000	N
78MO439N	N	<10	200	N	150	N	300	2,000	>1,000	N
78MO440N	N	<10	N	N	70	N	50	N	>1,000	N
78MO441N	N	<10	N	<200	50	N	70	2,000	>1,000	N
78HM100N	N	<10	N	N	50	N	1,000	N	>1,000	N
78HM102N	N	<10	30	N	50	N	1,500	N	>1,000	N
78HM103N	N	<10	N	N	20	N	1,000	N	>1,000	N
78HM200N	N	<10	N	N	<20	N	1,000	N	>1,000	N
78HM201N	700	N	>1,000	--	<20	N	N	N	700	--
78HM202N	N	30	N	--	70	N	200	N	>1,000	--
78HM203N	1,500	100	N	--	20	N	300	N	>1,000	--
78HM204N	N	30	N	--	<20	N	100	N	>1,000	--
78HM205N	N	100	N	--	20	N	150	N	>1,000	--
78MD600N	N	N	N	N	<10	N	<10	N	>1,000	N
78MD602N	N	N	N	<100	<10	N	300	N	>1,000	N
78MD604N	N	N	N	N	<10	N	<10	N	>1,000	N
78MD605N	N	N	N	<100	<10	N	150	N	>1,000	N

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
77M0100M	33 23 49	108 47 41	20	.70	.50	1.0	3,000	2.0	N	N	50	500
77M0101M	33 23 35	108 47 13	20	.50	.70	>2.0	5,000	N	N	N	20	500
77M0102M	33 23 34	108 47 2	20	1.00	.70	1.5	3,000	2.0	N	N	<20	700
77M0103M	33 23 32	108 46 40	30	.50	.50	>2.0	7,000	N	N	N	20	300
77M0104M	33 23 32	108 46 34	20	1.00	1.00	>2.0	10,000	N	N	N	20	1,500
77M0105M	33 23 31	108 46 32	30	.30	.50	>2.0	10,000	N	N	N	<20	1,500
77M0106M	33 26 15	108 46 54	50	.70	1.00	2.0	3,000	<1.0	N	N	70	700
77M0107M	33 26 14	108 46 58	30	.70	1.00	1.0	2,000	<1.0	N	N	50	700
77M0108M	33 26 8	108 46 45	30	.50	.50	2.0	5,000	N	N	N	50	700
77M0109M	33 26 11	108 46 39	50	.50	.50	>2.0	5,000	N	N	N	50	500
77M0110M	33 26 6	108 46 23	20	1.00	1.00	1.5	7,000	N	N	N	100	1,500
77M0111M	33 26 6	108 46 13	30	.70	1.00	>2.0	7,000	N	N	N	50	700
77M0112M	33 26 8	108 45 50	30	5.00	5.00	>2.0	7,000	N	N	N	<20	700
77M0113M	33 26 1	108 45 36	30	1.50	1.50	>2.0	7,000	N	N	N	<20	500
77M0115M	33 27 34	108 47 10	20	5.00	7.00	2.0	5,000	N	N	N	30	700
77M0116M	33 27 34	108 47 28	20	3.00	5.00	2.0	3,000	N	N	N	<20	700
77M0117M	33 27 19	108 48 5	20	2.00	2.00	2.0	5,000	N	N	N	20	1,000
77M0118M	33 27 15	108 48 5	15	5.00	3.00	1.0	5,000	N	N	N	<20	1,500
77M0119M	33 27 16	108 48 38	20	2.00	3.00	2.0	>10,000	N	N	N	<20	5,000
77M0120M	33 27 11	108 48 43	15	2.00	2.00	1.0	5,000	N	N	N	20	2,000
77M0121M	33 27 13	108 48 58	30	1.50	1.50	1.5	>10,000	N	N	N	20	>10,000
77M0201M	33 25 47	108 48 36	30	2.00	1.00	1.5	7,000	2.0	N	N	30	1,500
77M0203M	33 23 9	108 50 12	15	2.00	1.50	1.0	7,000	N	N	N	20	1,500
77M0204M	33 23 18	108 49 57	20	1.00	2.00	2.0	3,000	N	N	N	20	1,000
77M0205M	33 23 22	108 49 36	50	.30	.50	>2.0	3,000	N	N	N	20	500
77M0206M	33 23 39	108 49 33	20	2.00	5.00	1.0	3,000	2.0	N	N	20	700
77M0207M	33 23 40	108 49 29	30	3.00	3.00	1.0	3,000	1.0	N	N	30	1,000
77M0208M	33 23 38	108 49 28	30	1.00	1.00	2.0	5,000	1.0	N	N	20	500
77M0210M	33 23 39	108 48 50	50	1.00	.50	1.0	2,000	N	N	N	20	700
77M0211M	33 23 40	108 48 18	30	2.00	1.00	.7	2,000	N	N	N	20	700
77M0212M	33 23 29	108 48 4	30	.70	2.00	.7	>10,000	1,000.0	N	N	20	700
77M0213M	33 23 26	108 47 38	30	.70	.70	1.5	5,000	20.0	N	N	20	700
77M0214M	33 23 23	108 47 39	20	2.00	2.00	2.0	2,000	3.0	N	N	<20	700
77M0215M	33 23 21	108 47 30	20	1.00	1.00	1.0	2,000	1.5	N	N	<20	700
77M0216M	33 23 16	108 47 31	30	1.50	1.50	2.0	3,000	2.0	N	N	20	700
77M0217M	33 23 17	108 47 28	30	1.00	.70	2.0	5,000	<1.0	N	N	20	700
77M0218M	33 24 11	108 47 35	30	1.00	1.00	1.5	5,000	<1.0	N	N	20	1,000
77M0219M	33 23 58	108 47 28	30	1.50	1.50	1.5	5,000	<1.0	N	N	20	1,000
77M0220M	33 23 55	108 47 8	30	1.00	.70	1.5	3,000	N	N	N	20	1,000
77M0221M	33 23 52	108 47 1	20	3.00	1.00	1.5	5,000	N	N	N	20	2,000
77M0222M	33 23 50	108 46 59	30	1.50	1.00	1.5	5,000	N	N	N	<20	2,000
77M0223M	33 23 22	108 46 44	30	1.00	1.00	2.0	5,000	N	N	N	20	2,000
77M0224M	33 23 6	108 46 27	30	1.00	1.50	1.5	5,000	N	N	N	30	1,000
77M0225M	33 23 4	108 46 18	30	1.50	1.50	1.5	>10,000	30.0	N	N	20	3,000
77M0226M	33 22 59	108 46 20	30	.70	1.50	1.0	7,000	N	N	N	20	2,000
77M0227M	33 22 47	108 46 1	20	3.00	3.00	2.0	10,000	N	N	N	<20	2,000
77M0228M	33 22 48	108 45 51	20	3.00	.50	2.0	>10,000	N	N	N	<20	1,000
77M0229M	33 22 46	108 45 50	30	1.00	1.00	>2.0	>10,000	N	N	N	<20	1,500
77M0230M	33 24 30	108 46 21	20	2.00	3.00	1.5	7,000	N	N	N	30	1,000
77M0231M	33 24 43	108 46 24	15	5.00	7.00	1.0	5,000	N	N	N	20	1,000

mag concentrates mogollon, new mexico

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
77M0100M	5.0	N	N	30	300	300	150	N	<50	100	100
77M0101M	7.0	N	N	30	200	100	300	N	100	70	70
77M0102M	3.0	N	N	50	150	150	150	N	<50	70	50
77M0103M	5.0	N	N	30	200	70	500	N	100	70	50
77M0104M	7.0	N	N	30	500	100	500	N	100	100	70
77M0105M	5.0	N	N	70	300	70	700	N	100	70	70
77M0106M	10.0	N	N	20	500	70	200	N	<50	50	50
77M0107M	7.0	N	N	20	500	70	150	N	<50	70	30
77M0108M	7.0	N	N	20	500	30	300	N	50	50	50
77M0109M	10.0	N	N	70	500	100	500	N	70	70	50
77M0110M	10.0	N	N	100	200	70	500	N	<50	100	50
77M0111M	10.0	N	N	50	300	100	1,000	N	70	100	50
77M0112M	2.0	N	N	70	500	100	1,000	N	100	200	20
77M0113M	2.0	N	N	50	200	100	700	N	70	100	20
77M0115M	7.0	N	N	50	700	100	100	N	<50	300	30
77M0116M	5.0	N	N	50	700	100	150	N	<50	200	20
77M0117M	10.0	N	N	70	700	100	150	N	<50	200	30
77M0118M	3.0	N	N	50	700	200	70	N	<50	300	20
77M0119M	5.0	N	N	150	700	150	200	N	50	200	200
77M0120M	15.0	N	N	50	500	70	100	N	<50	150	50
77M0121M	10.0	N	N	1,000	500	150	200	10	<50	150	700
77M0201M	10.0	N	N	70	1,000	100	150	N	<50	150	70
77M0203M	10.0	N	N	50	700	100	100	N	<50	150	50
77M0204M	10.0	N	N	70	100	100	300	N	<50	30	100
77M0205M	5.0	N	N	70	100	20	200	N	70	20	150
77M0206M	10.0	N	N	150	300	150	200	N	<50	150	70
77M0207M	7.0	N	N	100	500	150	200	N	<50	150	70
77M0208M	7.0	N	N	100	500	150	200	N	100	70	150
77M0210M	15.0	N	N	70	500	150	150	N	<50	150	100
77M0211M	5.0	N	N	70	700	70	150	N	<50	150	50
77M0212M	30.0	N	N	70	300	1,500	150	N	<50	100	3,000
77M0213M	5.0	N	N	70	300	70	200	N	50	100	150
77M0214M	3.0	N	N	50	300	70	50	N	<50	150	20
77M0215M	5.0	N	N	70	300	70	200	N	<50	100	50
77M0216M	7.0	N	N	70	500	1,000	100	N	<50	200	50
77M0217M	15.0	N	N	70	500	150	150	N	50	150	200
77M0218M	10.0	N	N	100	300	200	100	N	<50	150	50
77M0219M	10.0	N	N	100	500	150	500	N	<50	150	70
77M0220M	10.0	N	N	100	500	100	300	N	<50	100	70
77M0221M	7.0	N	N	100	300	100	150	N	50	100	70
77M0222M	7.0	N	N	100	500	150	300	N	50	100	70
77M0223M	7.0	N	N	70	500	100	200	N	50	100	50
77M0224M	10.0	N	N	50	300	50	300	N	70	70	100
77M0225M	10.0	N	N	150	500	70	500	20	100	150	300
77M0226M	7.0	N	N	50	100	30	300	N	100	30	70
77M0227M	5.0	N	N	100	500	70	300	N	200	100	50
77M0228M	5.0	N	N	30	500	70	500	<10	100	100	150
77M0229M	5.0	N	N	30	200	70	500	10	100	70	200
77M0230M	7.0	N	N	30	500	70	150	N	<50	200	50
77M0231M	5.0	N	N	30	500	70	100	N	<50	200	30

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
77M0100M	N	20	N	200	1,000	100	30	N	500	--
77M0101M	N	30	N	200	1,000	<100	150	N	2,000	--
77M0102M	N	15	N	200	700	N	50	N	1,000	--
77M0103M	N	30	N	200	1,500	N	150	1,000	>2,000	--
77M0104M	N	50	N	300	1,000	N	200	500	>2,000	--
77M0105M	N	50	300	<200	1,000	N	500	1,000	>2,000	--
77M0106M	N	30	N	200	1,500	N	100	N	1,500	--
77M0107M	N	20	N	500	1,000	N	50	N	200	--
77M0108M	N	30	N	<200	1,000	N	70	N	2,000	--
77M0109M	N	50	N	<200	1,500	N	150	N	>2,000	--
77M0110M	N	30	N	300	1,500	N	100	N	500	--
77M0111M	N	70	N	200	1,500	N	200	1,000	>2,000	--
77M0112M	N	100	N	<200	500	N	1,000	1,000	>2,000	--
77M0113M	N	50	N	<200	500	N	700	1,000	>2,000	--
77M0115M	N	50	N	700	700	N	100	N	300	--
77M0116M	N	50	N	500	1,000	N	100	N	200	--
77M0117M	N	30	N	500	1,000	N	30	N	500	--
77M0118M	N	30	N	500	500	N	30	N	200	--
77M0119M	N	50	N	500	700	N	200	N	1,500	--
77M0120M	N	20	N	500	700	N	50	N	300	--
77M0121M	N	20	N	1,000	1,000	N	150	N	1,000	--
77M0201M	N	20	N	300	1,500	<100	70	N	500	--
77M0203M	N	20	N	700	1,000	100	50	N	300	--
77M0204M	N	30	N	500	700	N	150	N	2,000	--
77M0205M	N	20	N	200	1,000	N	200	1,500	>2,000	--
77M0206M	N	30	N	1,000	1,000	N	100	N	300	--
77M0207M	N	20	N	700	1,000	N	100	N	500	--
77M0208M	N	20	N	200	700	N	300	700	>2,000	--
77M0210M	N	20	N	200	1,000	N	100	N	500	--
77M0211M	N	20	N	300	1,000	N	20	N	150	--
77M0212M	N	15	700	<200	1,000	N	100	3,000	500	--
77M0213M	N	20	N	200	2,000	N	50	N	1,500	--
77M0214M	N	20	N	500	700	N	30	N	200	--
77M0215M	N	20	N	300	1,000	N	30	N	500	--
77M0216M	N	20	N	500	1,000	N	50	N	200	--
77M0217M	N	20	N	200	1,000	N	100	N	1,000	--
77M0218M	N	20	N	200	1,000	N	50	N	1,000	--
77M0219M	N	20	N	200	1,500	N	70	N	700	--
77M0220M	N	20	N	200	1,500	N	70	N	500	--
77M0221M	N	20	N	300	1,000	N	70	N	1,500	--
77M0222M	N	20	N	300	1,500	N	200	<500	2,000	--
77M0223M	N	20	N	300	1,500	N	70	N	1,500	--
77M0224M	N	20	N	500	1,500	N	200	N	2,000	--
77M0225M	N	20	70	700	1,000	N	500	N	2,000	--
77M0226M	N	15	N	500	1,500	N	300	N	1,500	--
77M0227M	N	50	N	200	700	N	500	N	>2,000	--
77M0228M	N	20	N	<200	300	N	1,000	1,000	>2,000	--
77M0229M	N	20	300	200	700	100	1,000	1,000	>2,000	--
77M0230M	N	20	N	700	1,000	N	150	N	1,000	--
77M0231M	N	50	N	700	500	N	70	N	700	--

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
77MO232M	33 24 30	108 45 42	50	1.50	2.00	2.0	7,000	N	N	N	50	1,000
77MO233M	33 24 23	108 45 43	20	3.00	5.00	1.0	5,000	N	N	N	50	700
77MO234M	33 24 44	108 46 24	15	1.50	3.00	1.5	3,000	N	N	N	20	1,500
77MO235M	33 24 48	108 46 45	15	1.50	2.00	1.0	2,000	N	N	N	<20	1,000
77MO236M	33 24 57	108 46 50	50	.70	1.00	>2.0	10,000	N	N	N	20	1,000
77MO237M	33 24 60	108 47 24	15	1.50	2.00	1.5	1,500	5.0	N	N	<20	700
77MO238M	33 25 10	108 47 39	20	2.00	2.00	1.5	3,000	10.0	N	N	20	700
77MO239M	33 25 3	108 47 41	10	2.00	1.50	1.5	2,000	N	N	N	<20	1,000
77MO240M	33 25 10	108 47 46	15	3.00	5.00	1.0	2,000	N	N	N	<20	1,000
77MO241M	33 25 18	108 50 4	15	1.50	2.00	1.0	3,000	N	N	N	<20	1,000
77MO242M	33 25 12	108 49 32	20	1.50	1.50	1.5	5,000	<1.0	N	N	20	700
77MO243M	33 25 28	108 48 10	50	1.00	1.50	2.0	5,000	2.0	N	N	20	700
77MO244M	33 25 24	108 48 30	20	2.00	2.00	1.5	2,000	1.0	N	N	20	700
77MO245M	33 25 13	108 48 9	20	2.00	1.50	1.5	2,000	N	N	N	<20	1,000
77MO247M	33 25 9	108 49 40	20	.70	1.50	2.0	5,000	10.0	N	N	<20	1,000
77MO248M	33 25 54	108 50 1	20	1.00	5.00	1.0	7,000	1.0	N	N	20	1,500
77MO257M	33 24 11	108 48 46	15	2.00	3.00	1.0	2,000	2.0	N	N	<20	1,000
77MO258M	33 24 15	108 48 60	15	1.50	1.50	1.0	1,500	100.0	N	N	<20	700
77MO 122M	33 23 6	108 48 6	20	.70	.30	1.5	5,000	N	N	N	30	1,500
77MO 123M	33 22 54	108 47 59	30	.50	.20	1.5	3,000	N	N	N	20	700
77MO 124M	33 22 55	108 47 55	30	.50	.30	2.0	3,000	N	N	N	50	700
77MO 125M	33 23 13	108 48 8	20	.70	.30	1.5	5,000	30.0	N	N	20	500
77MO 126M	33 22 58	108 47 14	30	.70	.50	1.0	3,000	N	N	N	20	700
77MO 127M	33 22 53	108 47 17	20	.70	.50	2.0	3,000	N	N	N	20	500
77MO 128M	33 22 49	108 47 15	20	.50	.70	1.5	5,000	N	N	N	70	700
77MO 129M	33 22 42	108 46 56	20	1.00	.50	2.0	7,000	N	N	N	<20	500
77MO 130M	33 22 47	108 46 59	20	.70	1.00	2.0	10,000	N	N	N	30	1,500
77MO 249M	33 22 32	108 50 17	30	.50	.70	>2.0	5,000	N	N	N	<20	500
77MO 250M	33 22 37	108 49 60	20	.50	.50	>2.0	7,000	N	N	N	<20	700
77MO 251M	33 23 6	108 49 36	30	.70	.70	2.0	3,000	N	N	N	<20	500
77MO 252M	33 23 8	108 49 43	20	1.00	.70	2.0	2,000	N	N	N	20	700
77MO 253M	33 23 53	108 48 15	20	1.50	.70	1.5	10,000	30.0	N	N	<20	1,000
77MO 254M	33 23 57	108 48 21	30	1.50	.50	1.0	7,000	20.0	N	N	30	700
77MO 255M	33 24 15	108 48 28	30	1.00	1.50	1.0	10,000	1,000.0	N	20	<20	700
77MO 256M	33 24 18	108 48 6	15	3.00	5.00	.5	3,000	10.0	N	N	20	500
78MO400M	33 22 40	108 45 38	>20	2.00	1.00	>1.0	>5,000	N	N	N	20	300
78MO401M	33 22 38	108 45 59	>20	.70	.70	>1.0	>5,000	N	N	N	20	3,000
78MO402M	33 23 14	108 45 36	>20	.30	.50	>1.0	>5,000	N	N	N	20	2,000
78MO403M	33 22 58	108 46 20	>20	.70	.70	.7	>5,000	N	N	N	20	1,500
78MO404M	33 24 20	108 50 1	>20	.70	.70	>1.0	>5,000	N	N	N	20	3,000
78MO405M	33 23 30	108 50 21	>20	.30	.50	.3	>5,000	N	N	N	20	2,000
78MO406M	33 23 41	108 50 11	>20	1.50	.70	1.0	1,500	N	N	N	20	1,000
78MO407M	33 23 34	108 49 2	>20	.20	.05	>1.0	>5,000	N	N	N	20	300
78MO408M	33 23 11	108 48 58	>20	.15	.70	>1.0	5,000	N	500	N	20	300
78MO409M	33 24 33	108 47 28	>20	1.00	.70	.5	1,500	N	N	N	20	1,500
78MO410M	33 24 32	108 47 35	>20	.70	.50	.5	2,000	N	N	N	20	700
78MO411M	33 24 19	108 49 21	>20	1.50	.70	.5	1,500	N	N	N	20	500
78MO412M	33 24 42	108 49 7	>20	1.50	.70	.7	2,000	2.0	N	N	20	700
78MO413M	33 24 38	108 49 5	>20	1.00	.50	.3	1,000	N	N	N	20	300
78MO414M	33 24 37	108 49 16	>20	1.50	.70	.3	3,000	N	N	N	20	1,000

mag concentrates mogollon, new mexico--continued

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
77MO232M	10.0	N	N	50	500	100	500	N	50	200	50
77MO233M	7.0	N	N	30	700	70	150	N	<50	150	50
77MO234M	5.0	N	N	30	200	70	70	N	<50	70	<20
77MO235M	5.0	N	N	20	200	100	70	N	<50	100	20
77MO236M	3.0	N	N	70	200	100	500	N	70	100	30
77MO237M	7.0	N	N	30	200	100	100	N	<50	150	20
77MO238M	5.0	N	N	30	300	100	150	N	<50	150	20
77MO239M	5.0	N	N	30	150	70	50	N	<50	100	<20
77MO240M	5.0	N	N	30	300	100	50	N	<50	150	<20
77MO241M	5.0	N	N	20	100	30	100	N	<50	50	20
77MO242M	5.0	N	N	30	300	70	100	20	50	100	30
77MO243M	3.0	N	N	100	700	100	150	N	50	100	70
77MO244M	5.0	N	N	30	500	100	70	N	<50	100	20
77MO245M	3.0	N	N	50	300	70	70	N	<50	100	20
77MO247M	10.0	N	N	20	30	100	200	N	50	<10	150
77MO248M	7.0	N	N	50	150	100	150	N	<50	70	70
77MO257M	5.0	N	N	50	300	70	100	N	<50	150	30
77MO258M	5.0	N	N	30	150	2,000	100	N	<50	100	50
77MO 122M	10.0	N	N	30	500	70	200	N	50	150	100
77MO 123M	15.0	N	N	20	500	70	200	N	50	100	100
77MO 124M	7.0	N	N	30	500	50	500	N	50	70	70
77MO 125M	15.0	N	N	30	700	100	150	N	50	150	150
77MO 126M	5.0	N	N	50	1,000	50	100	N	<50	200	30
77MO 127M	7.0	N	N	30	700	70	150	N	<50	200	50
77MO 128M	10.0	N	N	30	300	50	300	N	50	100	70
77MO 129M	15.0	N	N	20	300	50	300	N	100	70	200
77MO 130M	5.0	N	N	30	300	70	200	10	70	100	100
77MO 249M	5.0	N	N	50	100	100	200	N	50	50	70
77MO 250M	7.0	N	N	30	50	100	200	N	50	30	150
77MO 251M	5.0	N	N	30	70	100	300	N	50	50	100
77MO 252M	5.0	N	N	20	100	70	200	N	<50	20	100
77MO 253M	10.0	N	N	50	500	150	500	N	<50	300	150
77MO 254M	10.0	N	N	50	700	100	200	10	<50	200	200
77MO 255M	50.0	N	N	100	500	1,000	500	N	<50	300	1,500
77MO 256M	10.0	N	N	30	700	150	150	N	N	200	70
78MO400M	<2.0	N	N	100	1,000	150	500	N	50	150	100
78MO401M	1.5	N	N	200	500	150	500	N	<50	100	200
78MO402M	<2.0	N	N	100	150	150	500	N	50	70	50
78MO403M	<2.0	N	N	50	300	150	200	N	<50	70	500
78MO404M	<2.0	N	N	200	700	200	300	N	<50	150	500
78MO405M	5.0	N	N	100	150	200	150	N	N	70	300
78MO406M	2.0	N	N	70	700	200	<50	N	N	150	150
78MO407M	3.0	N	N	100	700	200	70	N	<50	70	500
78MO408M	5.0	N	N	70	200	150	150	N	<50	70	500
78MO409M	2.0	N	N	70	1,000	150	70	N	N	150	70
78MO410M	1.5	N	N	50	700	100	70	N	N	70	150
78MO411M	2.0	N	N	70	1,000	200	70	N	N	150	150
78MO412M	1.5	N	N	70	1,500	200	100	N	N	150	70
78MO413M	<2.0	N	N	50	700	150	50	N	N	100	30
78MO414M	3.0	N	N	100	2,000	300	100	N	N	200	200

mag concentrates mogollon, new mexico--continued

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
77M0232M	N	30	N	500	1,500	N	500	1,500	2,000	--
77M0233M	N	50	N	500	1,000	N	100	N	300	--
77M0234M	N	15	N	700	200	N	30	N	500	--
77M0235M	N	10	N	700	200	N	30	N	300	--
77M0236M	N	30	N	<200	700	N	300	2,000	>2,000	--
77M0237M	N	20	N	500	500	N	30	N	700	--
77M0238M	N	20	N	500	1,000	N	50	N	700	--
77M0239M	N	15	N	500	300	N	30	N	300	--
77M0240M	N	20	N	700	500	N	30	N	300	--
77M0241M	N	20	N	300	500	N	100	N	1,000	--
77M0242M	N	20	N	300	700	N	100	N	1,500	--
77M0243M	N	20	N	200	1,000	N	150	1,000	>2,000	--
77M0244M	N	20	N	500	700	N	50	N	1,000	--
77M0245M	N	20	N	500	500	N	50	N	1,000	--
77M0247M	N	15	N	200	500	N	150	N	>2,000	--
77M0248M	N	20	N	500	500	N	200	N	1,000	--
77M0257M	N	20	N	1,000	300	N	50	N	300	--
77M0258M	N	20	N	500	500	N	30	N	200	--
77M0 122M	N	20	N	200	700	N	100	500	>2,000	--
77M0 123M	N	20	N	200	1,500	N	100	500	2,000	--
77M0 124M	N	30	N	200	1,500	N	70	N	1,500	--
77M0 125M	N	20	N	200	700	N	500	1,000	2,000	--
77M0 126M	N	20	N	200	1,000	N	50	N	1,000	--
77M0 127M	N	20	N	200	1,000	N	150	N	500	--
77M0 128M	N	20	N	300	1,000	N	100	N	1,000	--
77M0 129M	N	20	N	200	1,000	N	500	700	>2,000	--
77M0 130M	N	20	N	500	1,000	N	200	N	1,000	--
77M0 249M	N	20	N	<200	700	N	150	500	2,000	--
77M0 250M	N	20	N	<200	500	N	200	1,000	>2,000	--
77M0 251M	N	20	N	200	700	N	300	700	>2,000	--
77M0 252M	N	20	N	200	1,000	N	50	N	700	--
77M0 253M	N	20	N	300	700	N	150	N	300	--
77M0 254M	N	20	N	300	1,000	N	70	500	500	--
77M0 255M	N	30	N	500	700	N	150	700	200	--
77M0 256M	N	15	N	2,000	700	N	30	N	100	--
78M0400M	N	70	150	N	200	<100	500	700	300	N
78M0401M	N	30	N	N	1,000	<100	200	700	300	N
78M0402M	N	30	100	200	700	<100	500	700	300	N
78M0403M	N	20	N	200	1,000	N	200	<500	700	N
78M0404M	N	70	70	300	700	N	500	1,000	>1,000	N
78M0405M	N	10	N	200	1,000	100	30	N	100	N
78M0406M	N	20	N	N	700	N	20	N	150	N
78M0407M	N	50	70	N	700	<100	500	1,000	300	N
78M0408M	N	30	30	N	700	<100	1,000	1,000	300	N
78M0409M	N	30	N	200	1,000	N	30	500	200	N
78M0410M	N	30	N	200	1,500	N	30	500	200	N
78M0411M	N	20	N	N	1,000	<100	20	500	200	N
78M0412M	N	30	N	<200	1,000	N	30	700	300	N
78M0413M	N	15	N	N	700	N	<20	500	70	N
78M0414M	N	30	N	<200	1,500	<100	30	700	70	N

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
78M0415M	33 24 38	108 48 39	>20	1.00	.70	.5	1,500	7.0	N	N	20	700
78M0416M	33 24 52	108 48 18	>20	.70	.50	1.0	5,000	10.0	N	N	20	700
78M0417M	33 24 50	108 48 21	>20	.50	.07	.5	1,500	N	N	N	20	700
78M0418M	33 24 7	108 46 26	>20	.50	1.00	>1.0	>5,000	N	N	N	20	1,500
78M0419M	33 24 16	108 45 6	>20	.20	.05	>1.0	>5,000	N	700	N	20	300
78M0420M	33 25 58	108 45 1	>20	1.50	.70	>1.0	>5,000	N	N	N	20	700
78M0421M	33 26 5	108 46 41	>20	1.50	.50	.7	>5,000	N	N	N	30	2,000
78M0422M	33 26 22	108 46 46	>20	.50	.20	.5	1,500	N	N	N	30	700
78M0423M	33 26 46	108 49 4	>20	.70	.10	.3	1,500	N	N	N	<20	500
78M0424M	33 26 45	108 48 2	>20	.30	<.10	.3	1,000	N	N	N	<20	300
78M0425M	33 26 54	108 47 34	>20	.30	.10	.3	3,000	N	N	N	<20	1,000
78M0426M	33 26 51	108 47 13	>20	.30	.15	.3	1,500	N	N	N	<20	500
78M0427M	33 26 51	108 46 5	10	1.50	.20	.3	>5,000	N	N	N	N	>5,000
78M0428M	33 26 60	108 46 25	>20	.30	.20	.3	2,000	N	N	N	<20	1,000
78M0429M	33 27 6	108 46 45	>20	.30	<.10	.3	700	N	N	N	<20	700
78M0430M	33 27 5	108 46 39	20	2.00	1.50	.7	>5,000	N	N	N	<20	1,500
78M0431M	33 25 33	108 47 7	>20	.20	<.10	>1.0	2,000	N	N	N	<20	300
78M0432M	33 25 17	108 47 5	>20	.50	.15	.3	1,000	N	N	N	<20	500
78M0433M	33 25 32	108 47 3	>20	.70	.10	.7	2,000	N	N	N	<20	500
78M0434M	33 25 5	108 46 33	>20	.30	.30	1.0	>5,000	N	N	N	<20	1,000
78M0435M	33 25 12	108 46 31	>20	.20	.20	1.0	3,000	N	N	N	<20	300
78M0436M	33 25 32	108 46 27	>20	1.50	1.50	.5	2,000	N	N	N	<20	500
78M0437M	33 25 39	108 46 15	>20	.50	.20	>1.0	>5,000	N	N	N	20	2,000
78M0438M	33 25 53	108 48 14	>20	.20	<.10	.3	1,500	N	N	N	<20	500
78M0439M	33 26 13	108 47 46	>20	.70	.10	.3	3,000	N	N	N	<20	1,000
78M0440M	33 26 14	108 47 11	>20	.50	.10	.3	2,000	N	N	N	<20	1,000
78M0441M	33 26 12	108 47 54	>20	.50	.10	.3	>5,000	N	N	N	20	1,500
78M0300M	33 23 29	108 46 11	20	.30	.15	>1.0	5,000	N	N	N	<20	1,000
78M0301M	33 23 25	108 46 12	>20	.20	.20	>1.0	5,000	N	N	N	<20	1,000
78M0302M	33 23 30	108 49 9	>20	.15	<.10	>1.0	2,000	N	N	N	<20	300
78M0303M	33 23 8	108 48 47	20	.20	<.10	.5	1,500	N	N	N	<20	200
78M0304M	33 24 43	108 47 8	20	.30	.10	.5	1,500	N	N	N	<20	300
78M0305M	33 24 42	108 47 12	>20	.70	.20	.3	1,000	N	N	N	<20	500
78M0306M	33 23 48	108 47 41	20	.30	.10	.5	1,000	N	N	N	<20	700
78M0307M	33 24 19	108 49 14	20	.70	.50	.3	700	N	N	N	<20	300
78M0308M	33 24 39	108 49 29	>20	.50	.10	.5	700	N	N	N	<20	300
78M0309M	33 24 45	108 49 20	>20	.50	.50	.7	1,000	5.0	N	N	<20	300
78M0310M	33 24 44	108 49 14	>20	.50	.50	.7	1,000	N	N	N	<20	300
78M0311M	33 24 34	108 48 39	>20	.50	.20	.3	500	5.0	N	N	<20	300
78M0312M	33 24 39	108 48 42	20	1.50	.20	.3	700	N	N	N	<20	300
78M0313M	33 24 52	108 48 31	>20	1.50	.70	.3	1,000	3.0	N	N	<20	500
78M0314M	33 24 12	108 45 1	>20	.70	.30	.3	1,500	N	N	N	<20	500
78M0315M	33 25 54	108 45 8	>20	.20	.10	>1.0	5,000	N	N	N	<20	300
78M0316M	33 25 59	108 45 24	>20	.10	<.10	1.0	3,000	N	N	N	<20	100
78M0317M	33 26 0	108 46 25	20	.70	<.10	.7	2,000	N	N	N	<20	1,000
78M0318M	33 26 18	108 47 0	>20	.30	<.10	.3	1,500	N	N	N	<20	300
78M0319M	33 26 43	108 46 36	>20	.15	<.10	.2	700	N	N	N	<20	500
78M0320M	33 26 43	108 48 25	20	.50	<.10	.2	500	N	N	N	<20	300
78M0321M	33 26 39	108 49 8	>20	.50	.10	>1.0	3,000	N	--	N	<20	300
78M0322M	33 26 42	108 47 54	>20	.20	.10	.5	3,000	N	N	N	<20	1,500

Mag concentrates mogollon, new mexico--continued

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
78M0415M	<2.0	N	N	70	1,500	200	70	N	N	150	70
78M0416M	1.5	N	N	70	1,000	150	100	N	<50	150	200
78M0417M	5.0	N	N	100	1,000	700	50	N	<50	150	1,000
78M0418M	<2.0	N	N	200	300	300	500	N	100	70	200
78M0419M	2.0	N	N	50	200	150	200	N	150	50	50
78M0420M	<2.0	N	N	100	700	300	300	N	N	150	20
78M0421M	2.0	N	N	50	700	200	150	N	N	100	100
78M0422M	2.0	N	N	70	700	200	<50	N	N	100	30
78M0423M	5.0	N	N	50	1,000	100	70	N	N	200	50
78M0424M	<2.0	N	N	20	700	70	<50	N	N	100	30
78M0425M	<2.0	N	N	50	700	70	70	N	N	150	30
78M0426M	N	N	N	30	700	50	70	N	N	100	50
78M0427M	<2.0	N	N	300	700	150	70	20	N	150	300
78M0428M	<2.0	N	N	30	200	50	<50	N	N	70	30
78M0429M	<2.0	N	N	30	1,000	70	100	N	N	100	50
78M0430M	<2.0	N	N	70	700	70	100	N	<50	200	70
78M0431M	<2.0	N	N	50	500	150	300	N	<50	50	100
78M0432M	<2.0	N	N	30	700	50	70	N	N	100	30
78M0433M	<2.0	N	N	30	700	50	200	N	<50	100	70
78M0434M	<2.0	N	N	70	200	100	100	N	<50	70	30
78M0435M	<2.0	N	N	70	200	100	100	N	<50	70	30
78M0436M	<2.0	N	N	50	500	70	100	N	<50	100	30
78M0437M	<2.0	N	N	100	500	200	100	N	<50	70	100
78M0438M	N	N	N	50	500	70	70	N	N	70	20
78M0439M	<2.0	N	N	50	700	100	50	N	N	100	30
78M0440M	<2.0	N	N	50	1,000	100	50	N	N	150	30
78M0441M	<2.0	N	N	50	700	100	50	N	N	100	50
78M0300M	<2.0	N	N	70	200	70	150	N	50	50	150
78M0301M	<2.0	N	N	70	300	100	150	N	<50	30	70
78M0302M	<2.0	N	N	70	150	50	70	N	<50	30	100
78M0303M	3.0	N	N	50	700	200	50	N	<50	100	150
78M0304M	<2.0	N	N	20	700	50	70	N	<50	70	100
78M0305M	<2.0	N	N	30	1,000	70	<50	N	N	100	30
78M0306M	2.0	N	N	30	700	150	50	N	N	100	200
78M0307M	2.0	N	N	50	1,000	200	70	N	N	150	70
78M0308M	2.0	N	N	30	700	70	50	N	N	70	50
78M0309M	<2.0	N	N	50	700	100	200	N	<50	70	100
78M0310M	2.0	N	N	50	700	200	100	N	<50	100	100
78M0311M	2.0	N	N	70	700	300	<50	N	N	100	150
78M0312M	<2.0	N	N	30	1,000	100	<50	N	N	100	100
78M0313M	<2.0	N	N	50	3,000	150	<50	N	<50	100	50
78M0314M	<2.0	N	N	20	700	70	<50	N	<50	70	50
78M0315M	<2.0	N	N	70	150	100	150	N	<50	70	<20
78M0316M	N	N	N	50	100	100	100	N	N	100	<20
78M0317M	<2.0	N	N	50	500	70	<50	N	N	150	30
78M0318M	<2.0	N	N	30	1,000	70	<50	N	N	70	<20
78M0319M	<2.0	N	N	20	500	50	<50	N	N	100	<20
78M0320M	<2.0	N	N	20	700	50	<50	N	<50	100	30
78M0321M	<2.0	N	N	50	700	100	<50	N	N	100	50
78M0322M	<2.0	N	N	70	700	100	50	N	N	100	30

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
78M0415M	N	20	N	N	1,000	N	30	700	70	N
78M0416M	N	30	N	N	1,000	<100	500	500	700	N
78M0417M	N	20	N	N	1,000	<100	200	500	500	N
78M0418M	N	70	30	N	300	<100	1,500	1,000	700	N
78M0419M	N	50	30	N	200	<100	500	1,000	700	N
78M0420M	N	70	20	N	300	N	700	1,000	700	N
78M0421M	N	30	N	N	1,500	N	50	<500	700	N
78M0422M	N	30	N	N	2,000	N	<20	700	200	N
78M0423M	N	20	N	<200	700	N	50	N	150	N
78M0424M	N	15	N	N	1,000	N	<20	N	70	N
78M0425M	N	20	N	<200	1,000	N	20	N	100	N
78M0426M	N	15	N	N	500	N	20	N	100	N
78M0427M	N	30	N	<200	500	N	30	N	100	N
78M0428M	N	15	N	<200	1,000	N	20	N	70	N
78M0429M	N	20	N	<200	1,500	N	30	N	70	N
78M0430M	N	30	N	N	300	N	100	N	300	N
78M0431M	N	30	N	N	500	N	70	<500	700	N
78M0432M	N	15	N	N	1,000	N	70	<500	70	N
78M0433M	N	30	N	N	700	N	70	<500	200	N
78M0434M	N	30	N	N	300	N	300	700	>1,000	N
78M0435M	N	30	N	N	200	N	300	500	>1,000	N
78M0436M	N	15	N	300	500	N	50	N	100	N
78M0437M	N	20	N	N	500	N	100	<500	>1,000	N
78M0438M	N	10	N	N	500	N	<20	N	100	N
78M0439M	N	20	N	<200	700	N	30	<500	100	N
78M0440M	N	15	N	<200	1,000	N	<20	<500	70	N
78M0441M	N	15	N	300	700	N	<20	<500	100	N
78M0300M	N	20	N	N	200	N	300	700	700	N
78M0301M	N	30	N	N	300	N	150	500	>1,000	N
78M0302M	N	30	N	N	300	N	200	700	500	N
78M0303M	N	15	N	N	300	N	70	<500	300	N
78M0304M	N	15	N	N	700	N	50	<500	70	N
78M0305M	N	15	N	N	700	N	<20	<500	300	N
78M0306M	N	15	N	N	500	N	30	N	70	N
78M0307M	N	15	N	N	300	N	20	N	300	N
78M0308M	N	15	N	N	500	N	30	<500	>1,000	N
78M0309M	N	30	N	N	300	N	100	500	1,000	N
78M0310M	N	20	N	N	500	N	50	<500	700	N
78M0311M	N	15	N	N	300	N	30	N	70	N
78M0312M	N	15	N	N	300	N	<20	N	50	N
78M0313M	N	20	N	N	500	N	30	<500	300	N
78M0314M	N	15	N	N	500	N	150	<500	300	N
78M0315M	N	30	N	N	150	N	300	700	>1,000	N
78M0316M	N	30	N	N	200	N	300	500	>1,000	N
78M0317M	N	15	N	N	300	N	70	N	500	N
78M0318M	N	10	N	N	700	N	<20	N	50	N
78M0319M	N	15	N	N	700	N	<20	N	70	N
78M0320M	N	<10	N	N	200	N	N	N	50	N
78M0321M	N	30	N	N	200	N	300	N	700	N
78M0322M	N	15	N	<200	700	N	70	<500	200	N

sample	LATITUDE	LONGITUD	S-FE%	S-MG%	S-CA%	S-TI%	S-MN	S-AG	S-AS	S-AU	S-B	S-BA
78M0323M	33 26 39	108 47 37	>20	.50	.70	.3	5,000	N	N	N	<20	1,500
78M0324M	33 26 35	108 47 27	>20	.50	.70	.3	2,000	N	N	N	<20	1,500
78M0325M	33 26 29	108 47 22	>20	.50	.70	.3	5,000	N	N	N	<20	1,500
78M0326M	33 26 39	108 45 18	10	5.00	3.00	1.0	3,000	N	N	N	<20	1,000
78M0327M	33 26 45	108 45 33	7	5.00	3.00	.7	>5,000	N	N	N	<20	2,000
78M0328M	33 26 60	108 45 30	5	5.00	1.50	.5	2,000	N	N	N	<20	300
78M0329M	33 27 3	108 45 2	10	2.00	2.00	.7	>5,000	N	N	N	<20	2,000
78M0330M	33 26 50	108 46 50	>20	.30	<.10	.3	1,000	N	N	N	<20	500
78M0331M	33 26 2	108 47 10	>20	.20	<.10	.3	1,500	N	N	N	<20	500
78M0332M	33 25 58	108 47 9	>20	.10	<.10	.3	1,000	N	N	N	<20	300
78M0333M	33 25 40	108 47 24	20	1.50	1.00	.5	5,000	N	N	N	<20	1,000
78M0334M	33 25 41	108 47 18	>20	.30	<.10	.3	1,000	N	N	N	<20	300
78M0335M	33 25 42	108 45 30	>20	.50	.70	>1.0	3,000	N	N	N	<20	300
78M0336M	33 25 32	108 45 31	>20	.30	.50	>1.0	3,000	N	N	N	<20	200
78M0337M	33 25 32	108 45 21	>20	.30	.50	>1.0	5,000	N	N	N	<20	300
78M0338M	33 25 28	108 45 20	>20	.20	.15	>1.0	5,000	N	N	N	<20	150
78M0339M	33 25 36	108 45 51	>20	.30	.50	>1.0	5,000	N	N	N	<20	300
78M0340M	33 25 41	108 46 3	>20	.10	1.00	>1.0	>5,000	N	N	N	<20	1,500
78M0341M	33 25 55	108 48 55	>20	1.50	.70	1.0	5,000	N	N	N	<20	1,000
78M0342M	33 26 10	108 48 33	>20	1.50	.10	.5	2,000	15.0	N	N	<20	700
78M0343M	33 26 10	108 48 15	>20	.50	.10	.3	2,000	N	N	N	<20	1,000
78HM100M	33 22 22	108 45 41	20	3.00	5.00	.5	>5,000	N	N	N	<20	500
78HM101M	33 22 26	108 45 6	15	1.50	.50	.5	>5,000	N	N	N	<20	>5,000
78HM102M	33 21 9	108 45 7	20	.70	.15	1.0	>5,000	N	N	N	<20	1,500
78HM103M	33 21 15	108 45 27	>20	.70	.15	>1.0	>5,000	N	N	N	<20	1,500
78HM200M	33 21 15	108 45 6	>20	.50	.20	>1.0	>5,000	N	N	N	<20	3,000
78HM201M	33 21 27	108 45 32	>20	1.50	.70	>1.0	>5,000	N	N	N	<20	>5,000
78HM202M	33 21 33	108 47 9	10	1.50	.70	1.0	>5,000	N	N	N	<20	>5,000
78HM203M	33 21 32	108 47 32	>20	.30	.10	.7	>5,000	N	N	N	<20	3,000
78HM204M	33 21 45	108 48 10	>20	.20	.10	>1.0	5,000	N	N	N	<20	1,500
78HM205M	33 21 35	108 48 33	>20	.20	<.10	>1.0	>5,000	N	N	N	<20	500
78M0600M	33 28 41	108 48 43	7	7.00	3.00	.2	2,000	N	N	N	<10	700
78M0602M	33 29 5	108 46 35	5	5.00	5.00	.5	2,000	N	N	N	<10	700
78M0603M	33 29 12	108 46 31	5	5.00	5.00	.5	>5,000	N	N	N	<10	3,000
78M0604M	33 29 8	108 46 26	3	7.00	7.00	.5	1,500	N	N	N	<10	200
78M0605M	33 29 17	108 46 7	>20	.70	.07	>1.0	5,000	N	N	N	50	1,000

sample	S-BE	S-BI	S-CD	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI	S-PB
78M0323M	<2.0	N	N	50	700	200	50	N	N	100	100
78M0324M	<2.0	N	N	30	700	70	50	N	N	100	50
78M0325M	<2.0	N	N	50	700	70	100	N	N	100	50
78M0326M	N	N	N	50	700	50	200	N	<50	150	<20
78M0327M	N	N	N	70	700	50	70	N	<50	150	100
78M0328M	N	N	N	50	700	15	<50	N	N	150	<20
78M0329M	<2.0	N	N	70	500	70	100	N	<50	70	50
78M0330M	<2.0	N	N	20	700	50	50	N	N	50	30
78M0331M	<2.0	N	N	30	1,000	50	50	N	N	70	30
78M0332M	<2.0	N	N	20	500	70	50	N	N	50	<20
78M0333M	<2.0	N	N	30	1,000	100	<50	N	N	50	30
78M0334M	<2.0	N	N	20	300	100	50	N	N	70	20
78M0335M	<2.0	N	N	70	150	100	150	N	<50	70	<20
78M0336M	<2.0	N	N	50	200	150	100	N	<50	50	<20
78M0337M	<2.0	N	N	70	150	150	300	N	<50	70	20
78M0338M	<2.0	N	N	50	300	100	200	N	<50	70	<20
78M0339M	N	N	N	50	200	100	200	N	<50	50	50
78M0340M	N	N	N	70	300	70	200	N	<50	70	100
78M0341M	<2.0	N	N	50	1,000	70	150	N	<50	150	150
78M0342M	<2.0	N	N	30	1,000	5,000	150	N	<50	100	150
78M0343M	<2.0	N	N	50	700	100	<50	N	N	100	70
78HM100M	<2.0	N	N	50	1,500	100	150	N	<50	100	70
78HM101M	<2.0	N	N	200	700	150	500	N	<50	100	5,000
78HM102M	<2.0	N	N	50	300	100	300	N	<50	50	150
78HM103M	<2.0	N	N	70	500	100	300	N	<50	70	200
78HM200M	2.0	N	N	50	150	150	300	N	<50	50	500
78HM201M	7.0	N	N	50	1,000	200	300	N	70	100	300
78HM202M	7.0	N	N	30	700	200	200	N	100	100	200
78HM203M	2.0	N	N	100	700	150	150	N	<50	150	150
78HM204M	<2.0	N	N	50	150	70	100	N	<50	30	200
78HM205M	<2.0	N	N	50	150	100	150	N	<50	50	150
78M0600M	N	N	N	70	1,500	30	N	N	N	300	<10
78M0602M	N	N	N	50	700	50	N	N	N	200	<10
78M0603M	N	N	N	200	1,500	100	N	10	N	200	20
78M0604M	N	N	N	50	1,000	15	N	10	N	150	<10
78M0605M	<1.0	N	N	70	150	150	<20	N	N	70	30

sample	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR	S-TH
78M0323M	N	20	N	<200	700	N	30	N	200	N
78M0324M	N	20	N	<200	1,000	N	20	N	100	N
78M0325M	N	20	N	<200	1,000	N	30	N	100	N
78M0326M	N	50	N	N	150	N	200	N	200	N
78M0327M	N	30	N	N	150	N	70	N	150	N
78M0328M	N	20	N	N	100	N	70	N	100	N
78M0329M	N	30	N	N	200	N	100	N	200	N
78M0330M	N	15	N	<200	700	N	<20	N	70	N
78M0331M	N	15	N	<200	100	N	<20	N	70	N
78M0332M	N	15	N	N	700	N	<20	N	70	N
78M0333M	N	20	N	500	1,000	N	20	N	70	N
78M0334M	N	15	N	N	1,500	N	20	N	70	N
78M0335M	N	30	N	N	200	N	500	500	>1,000	N
78M0336M	N	30	N	N	150	N	500	<500	>1,000	N
78M0337M	N	30	N	N	200	N	500	500	>1,000	N
78M0338M	N	30	N	N	200	N	300	<500	>1,000	N
78M0339M	N	50	N	N	150	N	500	N	>1,000	N
78M0340M	N	70	N	N	200	N	200	N	>1,000	N
78M0341M	N	50	N	<200	300	N	100	N	500	N
78M0342M	N	30	N	<200	700	N	200	N	500	N
78M0343M	N	20	N	<200	300	N	<20	<500	70	N
78HM100M	N	70	N	N	100	N	300	N	>1,000	N
78HM101M	N	30	N	N	150	<100	2,000	N	>1,000	N
78HM102M	N	30	N	300	150	<100	500	N	>1,000	N
78HM103M	N	30	N	N	150	<100	500	N	>1,000	N
78HM200M	N	30	N	<200	200	<100	500	N	>1,000	N
78HM201M	N	50	N	300	150	100	300	N	>1,000	N
78HM202M	N	30	N	300	150	<100	300	N	>1,000	N
78HM203M	N	20	N	300	300	N	200	N	1,000	N
78HM204M	N	30	<20	N	300	N	150	N	>1,000	N
78HM205M	N	30	<20	N	200	N	200	N	>1,000	N
78M0600M	N	30	30	<100	100	N	20	N	30	N
78M0602M	N	30	N	<100	150	N	30	N	70	N
78M0603M	N	50	N	200	200	N	30	N	70	N
78M0604M	N	70	N	N	150	N	20	N	70	N
78M0605M	N	20	N	N	300	N	70	1,500	1,000	N