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James Doyle Sell Mining Collection

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ASARCO

Copper Operations
Tucson, Arizona

JDS

January 21, 1994

Mr. T. E. Scartaccini
General Manager
RAY COMPLEX

Superior East Project
Magma Purchase of 40-acre Plot

I have reviewed the geological data pertaining to the 40-acre plot of Superior East ground that Magma Copper Company wishes to purchase (SW1/4, NW1/4, Sec. 5, T2S, R13E). This data was made available by Mr. J. D. Sell of Asarco's Exploration Department.

There does not appear to be anything in this geological information that would preclude the sale of this 40-acre parcel to Magma.

Weak to moderate copper-lead-zinc-silver mineralization has been detected in some of the Magma drill holes that were located to the east and south of the 40-acre parcel, suggesting that minable vein-type or replacement ore could exist at depth in the region. This mineralization could occur as veins and disseminations in a premineral "intrusive breccia" and vein and replacement ore in Paleozoic sediments. Based on Magma's recent experience, if ore-grade material is eventually discovered, it will be quite difficult to mine. The only reasonable access to the area is from Magma's existing No. 9 shaft.

It is doubtful that any mineral reserves developed on this 40-acre parcel would be of sufficient economic potential to justify the sinking of a deep production shaft, vent shaft, and surface plant, particularly considering the depths required to reach mineralization in this location. It is entirely possible that Magma is considering boring a ventilation shaft in the area to service its current workings from the No. 9 shaft. The location is quite suitable for that purpose.

In any event, any mineralization likely to be found in the area would be of little economic interest to Asarco. If Asarco can sell the acreage for $1,000/acre and retain a 3% NSR royalty, I believe the offer should be accepted.

There may be other considerations that might influence the decision regarding the sale of this property to Magma. There may be stock tanks on the parcel and other agricultural features of possible importance to Asarco in the area. These questions should be evaluated prior to the sale.

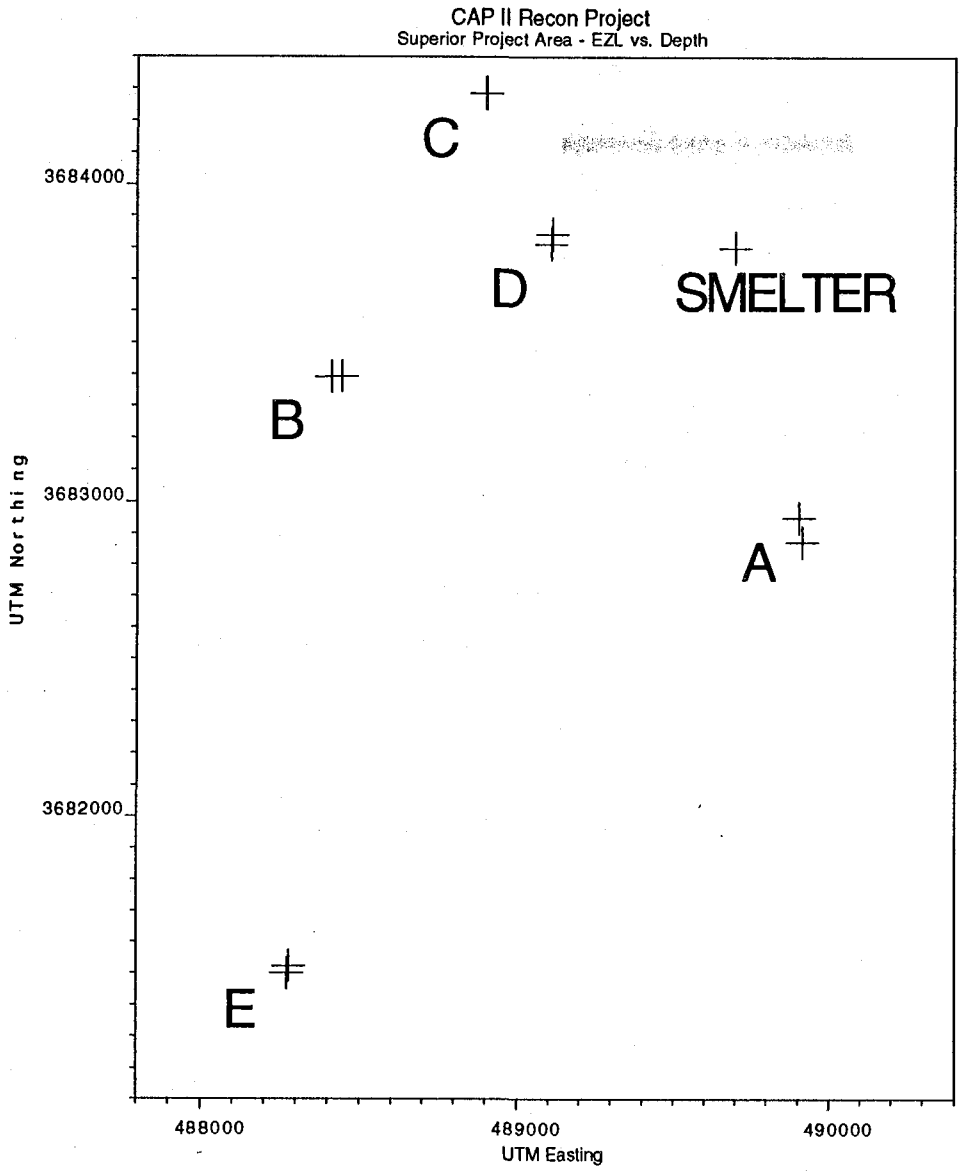
Based on the available geology and exploration data, I believe the sale of the 40-acre parcel to Magma is acceptable.

S. A. Anzalone

S. A. Anzalone

SAA:brw
cc: M. G. Lee
F. T. Graybeal
J. D. Sell

Jimmy —
correct the
mistakes!
(spacers?)


CAP II Recon Project
Superior Project Area - EZL vs. Depth
C
D
SMELTER
B
A
E
3684000
3683000
3682000
UTM Northing
488000
489000
490000
UTM Easting

1:24,000

1896RPT TEV 788

Enzyme Leach
Trace Element
Values = 99999

Sample ID:	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
SU041497-1	441	16	23	8	16	4	3	4	3	3	2	2	1	3	2	-1	-1	30	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	2	2
SU041497-2	286	13	19	4	13	3	1	4	1	3	-1	-1	-1	1	-1	-1	-1	27	0.2	-1	-1	-1	-0.1	-1	-1	13	-1	-1	2
SU041497-3	170	56	40	14	55	8	2	12	2	8	1	3	-1	3	-1	1	-1	29	-0.1	-1	-1	-1	-0.1	-1	-1	28	1	9	3
SU041497-4	458	11	22	4	14	3	1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	36	0.2	-1	-1	-1	-0.1	-1	-1	35	-1	2	3
SU041497-5	268	12	21	3	15	2	-1	4	-1	3	-1	-1	-1	1	-1	-1	-1	36	-0.1	-1	-1	-1	-0.1	-1	-1	22	-1	3	-1
SU041497-6	239	9	14	2	10	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	46	-0.1	-1	-1	-1	-0.1	-1	-1	15	-1	1	-1
SU041497-7	781	17	32	5	20	3	1	6	-1	3	-1	1	-1	1	-1	-1	-1	106	0.2	-1	-1	-1	-0.1	-1	-1	42	-1	3	1
SU041497-8	550	25	59	6	25	7	1	7	-1	5	-1	2	-1	2	-1	1	-1	32	-0.1	-1	-1	-1	-0.1	-1	-1	67	2	6	2
SU041497-9	571	30	63	8	33	6	2	9	1	7	1	3	-1	3	-1	2	-1	9	0.2	-1	-1	-1	-0.1	-1	-1	81	11	8	2
SU041497-10	106	16	17	4	15	3	-1	4	-1	3	-1	-1	-1	1	-1	-1	-1	25	-0.1	-1	-1	-1	-0.1	-1	-1	34	3	2	-1
SU041597-1	654	13	42	5	19	4	1	7	-1	5	1	1	-1	2	-1	-1	-1	8	0.2	-1	-1	-1	-0.1	1	-1	78	7	3	-1
SU041597-2	264	10	23	3	13	3	1	5	-1	4	-1	1	-1	1	-1	-1	-1	9	0.2	-1	-1	-1	-0.1	-1	-1	24	2	-1	-1
SU041597-3	524	10	34	3	16	4	1	4	-1	3	-1	1	-1	-1	-1	-1	-1	31	-0.1	-1	-1	-1	-0.1	-1	-1	110	7	-1	-1
SU041597-4	560	7	20	2	10	2	-1	3	-1	3	-1	2	-1	2	-1	-1	-1	2	-0.1	-1	-1	-1	-0.1	-1	-1	64	3	-1	-1
SU041597-5	197	14	35	4	14	3	-1	5	-1	4	-1	2	-1	2	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1	-1	-1	28	5	3	-1
SU041597-6	284	15	16	5	19	3	-1	5	-1	4	-1	2	-1	1	-1	-1	-1	15	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	2	-1
SU041597-7	245	8	22	3	11	3	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	26	-0.1	-1	-1	-1	-0.1	-1	-1	76	2	2	-1
SU041597-8	465	10	20	3	12	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	67	0.9	-1	-1	-1	-0.1	-1	-1	32	-1	1	-1
SU041597-9	100	25	28	10	43	8	1	11	1	6	1	2	-1	3	-1	-1	-1	70	-0.1	-1	-1	-1	-0.1	3.4	-1	32	-1	6	3
SU041597-10	271	13	22	4	14	2	-1	4	-1	2	-1	-1	-1	1	-1	-1	-1	104	-0.1	-1	-1	-1	-0.1	-1	-1	25	-1	2	-1
SU041597-11	364	11	25	4	15	2	-1	5	-1	2	-1	-1	-1	1	-1	-1	-1	34	-0.1	-1	-1	-1	-0.1	-1	-1	29	-1	1	-1
SU041597-12	202	9	18	2	10	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	21	-0.1	-1	-1	-1	0.3	-1	-1	69	5	3	-1
SU041597-13	258	8	19	2	8	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	33	-0.1	-1	-1	-1	-0.1	-1	-1	32	-1	2	-1
SU041597-14	315	11	21	3	11	2	-1	4	-1	2	-1	-1	-1	-1	-1	-1	-1	30	-0.1	-1	-1	-1	-0.1	-1	-1	32	-1	2	-1
SU041597-15	367	18	35	5	19	4	-1	5	-1	4	-1	1	-1	-1	-1	-1	-1	57	-0.1	-1	-1	-1	0.5	-1	-1	993	16	4	-1
SU041597-16	117	5	8	1	5	-1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	10	-0.1	-1	-1	-1	1.3	-1	-1	222	-1	1	-1
SU041597-17	511	3	8	2	5	1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	4	-0.1	-1	-1	-1	-0.1	-1	-1	27	-1	1	-1
SU041697-1	149	8	10	2	8	2	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	3	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	-1	-1
SU041697-2	280	10	14	3	12	2	-1	4	-1	2	-1	-1	-1	-1	-1	-1	-1	40	-0.1	-1	-1	-1	1.1	-1	-1	108	3	-1	-1
SU041697-3	291	4	10	1	4	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	22	-0.1	-1	-1	-1	-0.1	-1	-1	24	2	-1	-1
SU041697-4	259	10	27	3	11	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	26	0.2	-1	-1	-1	-0.1	-1	-1	99	2	2	-1
SU041697-5	293	22	40	5	19	3	1	7	-1	4	1	2	-1	-1	-1	-1	-1	15	1.1	-1	-1	-1	-0.1	-1	-1	251	-1	4	26
SU041697-6	433	14	25	3	12	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	56	-0.1	-1	-1	-1	0.2	3.9	-1	113	9	3	-1
SU041697-7	318	14	21	4	12	2	-1	4	-1	2	-1	1	-1	1	-1	-1	-1	48	-0.1	-1	-1	-1	0.7	-1	-1	405	12	3	-1

Sequence K

Sequence L

Sequence M

vein and the quartz monzonite, the chalcopyrite and bornite are very abundant, forming a copper rich zone with grades up to 3.9% Cu; 5% Zn; and 450 g/ton of silver. To the west of the Ramal de Ibarra vein, the chalcopyrite content drops, and the sphalerite increases, forming a zinc rich zone with grades up to 11% Zn. Copper-silver values locally increase in the Ibarra vein.

Minor constituents in the ore body (molybdenite, stibnite, and galena) are also zoned. Molybdenite tends to occur in the southeastern part of the 8-550 stope, close to the San Marcial vein. Stibnite is found in late-stage veins in the area west of the Ramal de Ibarra vein. Small amounts of galena are found in the Ramal de Ibarra vein, and it forms coarse grained aggregates in the Ibarra vein. The average grade of lead in the 8th level does not exceed 0.5%.

Burton (1975) performed a statistical study of the metal relationships and ratios in the mine, and found that silver and copper tend to be associated. This relation was confirmed in this study by field and microscopic observations. Sample M10 (Fig. 27) shows thin veinlets of native silver that cut across the older sulfides. The veinlets tend to be barren or more weakly mineralized when they cut sphalerite grains, while in the chalcopyrite they tend to be wider or may even

JDS

1896RPT

Enzyme Leach Job #: 1896 | Customer: Skyline Tucson | Geologist:Clark Arnold | Customer's Job #:TEV 788

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q.=That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Cs
SU041497-1	33	-20	25195	-100	658	189	1072	15	28	220	36	2	1	892	-30	245	26	1012	12	6	15	24	-1	-1	-1	-0.2	0.6	-0.2	-1	77	13	163	-1
SU041497-2	22	-20	21083	-100	167	167	3885	26	32	108	46	4	-1	170	-30	277	26	925	11	7	12	126	-1	-1	-1	-0.2	0.8	-0.2	-1	32	2	81	-1
SU041497-3	52	-20	12076	-100	1074	206	2880	46	89	488	83	12	2	401	-30	134	70	244	40	46	17	58	-1	-1	2	-0.2	1.2	-0.2	2	26	24	57	5
SU041497-4	43	-20	19788	-100	163	302	6655	52	63	333	60	3	1	413	-30	548	34	1425	11	8	12	191	-1	-1	-1	-0.2	2.3	-0.2	1	64	10	106	-1
SU041497-5	29	-20	6118	-100	943	231	6582	35	48	65	113	7	-1	59	-30	58	26	609	12	14	9	64	-1	-1	-1	0.4	1.7	-0.2	-1	23	-1	51	2
SU041497-6	36	-20	9444	-100	819	313	5896	33	48	63	57	5	-1	70	-30	73	19	925	9	8	8	173	1	-1	-1	0.2	1.6	-0.2	-1	25	1	97	-1
SU041497-7	36	-20	8963	-100	784	400	7807	82	129	415	164	10	2	1097	-30	380	41	734	16	27	9	169	-1	-1	-1	0.4	2.3	-0.2	1	56	26	79	2
SU041497-8	42	-20	21762	-100	1405	416	10925	136	147	696	401	13	3	1229	-30	187	60	671	22	42	13	198	-1	-1	1	1.8	4.5	-0.2	2	51	36	65	3
SU041497-9	66	-20	9711	-100	2180	566	2517	56	110	5634	314	31	10	6704	-30	330	82	400	32	85	12	76	-1	-1	2	2.6	2.5	-0.2	4	137	63	61	6
SU041497-10	28	-20	7855	-100	595	400	1006	12	26	2402	45	1	3	5637	-30	477	17	1109	14	11	8	42	-1	-1	-1	0.6	1	-0.2	-1	168	86	103	-1
SU041597-1	41	-20	8039	-100	532	153	10020	162	127	2211	333	9	3	1315	-30	279	57	694	22	24	7	67	-1	-1	-1	-0.2	7.2	-0.2	2	77	111	52	3
SU041597-2	18	-20	27120	-100	276	572	3307	69	119	989	64	4	2	1172	-30	275	12	838	17	13	6	65	-1	-1	-1	0.2	1.6	-0.2	-1	34	51	91	-1
SU041597-3	13	-20	23658	-100	533	297	3120	65	89	2967	186	17	4	2027	-30	389	22	726	16	8	5	43	-1	-1	-1	-0.2	3.9	-0.2	-1	85	93	54	-1
SU041597-4	82	-20	15694	-100	656	245	11967	141	97	1696	210	7	2	1108	-30	195	22	1243	16	9	6	22	-1	-1	-1	-0.2	8.1	-0.2	-1	30	97	62	-1
SU041597-5	48	-20	7445	-100	716	444	1249	29	66	1923	82	9	7	4290	-30	307	26	559	20	27	7	25	-1	-1	-1	0.8	1.7	-0.2	2	57	46	92	2
SU041597-6	27	-20	-3000	-100	622	934	786	23	34	104	24	6	-1	63	-30	93	10	1419	20	17	6	26	-1	-1	-1	-0.2	0.2	-0.2	-1	8	-1	66	-1
SU041597-7	16	-20	5965	-100	862	100	5760	25	36	1202	329	6	-1	220	-30	129	30	691	13	15	6	61	-1	-1	-1	0.8	3.7	-0.2	1	17	26	41	1
SU041597-8	50	-20	132371	-100	1131	325	5341	27	59	969	81	4	5	3074	-30	685	47	1469	11	7	6	147	-1	-1	-1	0.6	1.9	-0.2	-1	111	13	69	-1
SU041597-9	148	-20	14378	-100	257	585	698	27	22	413	53	4	2	703	-30	202	15	417	25	12	7	36	-1	-1	-1	-0.2	0.6	-0.2	-1	30	14	101	-1
SU041597-10	32	-20	10001	-100	368	302	2824	21	55	583	64	4	1	790	-30	216	42	817	12	12	5	110	-1	-1	-1	0.2	1.2	-0.2	-1	77	9	82	1
SU041597-11	41	-20	-3000	-100	733	256	6145	36	54	226	97	7	-1	278	-30	236	48	1143	12	8	5	251	-1	-1	-1	-0.2	2.7	-0.2	-1	53	3	76	-1
SU041597-12	15	-20	-3000	-100	525	105	4295	19	42	683	202	7	2	1277	-30	54	23	389	11	14	4	96	-1	-1	-1	0.6	3.1	-0.2	-1	43	17	21	2
SU041597-13	33	-20	30773	-100	875	310	5807	30	74	340	88	6	-1	237	-30	188	22	1215	9	14	4	107	-1	-1	-1	0.4	2.1	-0.2	-1	38	5	73	1
SU041597-14	31	-20	18018	-100	491	256	8368	39	54	214	131	6	-1	216	-30	193	24	561	11	11	5	122	-1	-1	-1	0.2	2.7	-0.2	-1	37	2	63	2
SU041597-15	28	-20	12583	-100	922	141	7001	24	73	2782	387	11	7	2912	-30	272	46	540	17	31	6	117	-1	-1	-1	5.8	5.2	-0.2	5	453	43	47	3
SU041597-16	26	-20	-3000	-100	339	245	12582	7	17	453	579	7	2	936	-30	104	24	273	6	10	4	209	-1	-1	-1	0.4	5.6	-0.2	-1	55	6	75	1
SU041597-17	12	-20	4382	-100	1063	156	312	14	19	52	17	-1	3	3943	-30	224	11	921	4	4	4	26	-1	-1	-1	-0.2	0.2	-0.2	-1	58	1	128	2
SU041697-1	20	-20	-3000	-100	685	86	42	5	16	25	-10	4	2	1243	-30	237	11	1282	7	2	3	10	-1	-1	-1	-0.2	0.2	-0.2	-1	23	-1	108	1
SU041697-2	26	-20	10776	-100	737	343	8239	14	40	827	187	6	4	2082	-30	367	21	425	13	6	3	476	-1	-1	-1	0.2	5.6	-0.2	-1	86	28	116	2
SU041697-3	17	-20	-3000	-100	-100	94	1463	13	34	392	38	8	2	1424	-30	165	22	730	4	3	3	72	-1	-1	-1	-0.2	1	-0.2	-1	159	32	92	-1
SU041697-4	33	-20	-3000	-100	866	287	8903	17	66	978	302	10	5	3292	46	334	45	273	12	24	4	191	-1	-1	1	0.4	2.9	-0.2	-1	119	17	113	2
SU041697-5	48	-20	449053	-100	765	258	2086	61	174	1258	46	4	6	3598	-30	3770	19	45613	26	2	-1	154	-1	-1	-1	0.8	5.6	-0.2	-1	53	39	748	-1
SU041697-6	26	-20	24563	-100	1395	259	4391	24	39	1871	145	7	6	3582	-30	258	42	1752	11	21	5	75	-1	-1	-1	0.6	2.5	-0.2	3	131	121	77	4
SU041697-7	31	-20	32550	-100	1341	124	7136	17	50	2979	322	14	4	1172	-30	883	44	1363	17	24	4	83	-1	-1	-1	1	5.8	-0.2	5	86	117	71	9

Sequence K

Sequence L

Sequence M

Certified By:

D. D'Anna, Dipl. T.
ICPMS Technical Manager, Actlabs Ltd.

Date:

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[illegible] to JDL 5-7-97

form small blebs. Scales and threads of native silver were also observed in a manto of massive bornite in the eastern part of the 8-550 stope.

The hypogene mineralization in the San Martin mine also shows vertical variations. Tetrahedrite is very abundant in the upper levels of the mine and becomes rare in the 8th level. Pyrrhotite increases with depth and sometimes form monomineralic masses in the deeper levels of the mine. It also occurs associated with high temperature, iron rich sphalerite. The copper, silver, and zinc grades drop at depth, while those of iron and lead increase.

Composition zoning is one of the most common features of mineral deposits. It can be observed in ore deposits of epigenetic-hydrothermal, syngenetic-hydrothermal, or syngenetic-sedimentary origin. Barnes (1975), recognized two different types of zoning, one, which is the most common, for hydrothermal deposits, and the other for sedimentary deposits.

The sequence of deposition in the first type depends directly on the sulfide solubility and not on temperature. According to the relative solubility of the metallic sulfides, the sequence in time and space in a hydrothermal deposit should be: Fe-Ni-Sn-Cu-Zn-Pb-Ag-Au-Sb-Hg. (Barnes, 1975).

TEV 787

		Sample ID:	U
Prichetgost Mtn	H	PM041097-14	1
		PM041097-15	1
		PM041097-16	1
	J	PM041197-1	1
		PM041197-2	1
Superior	J	SU041197-1	1
		SU041197-2	1
		SU041197-3	1
		SU041197-4	1
		SU041197-5	1
		SU041197-6	1
		SU041197-7	1
		SU041197-8	1
		SU041197-9	1

Prichetgost Mtn 7½' Quad

Superior 7½' Quad.

The zoning in San Martin fits well with Barnes' sequence, both on regional and local scales. On district-wide basis, from the intrusion outwards, the zoning is Cu-Zn-Pb-Ag-Au. The ore body zoning in upper levels of the San Martin mine also fits with the model, although certain overlapping can be seen. The sequence in the mine is Mo-Cu/Ag-Zn-Pb/Ag-Sb. This overlapping can be caused by several periods of mineralization in the deposit.

Deep drilling has shown that the amount of iron increases at depth, which can be expected as the solubility of iron sulfide complexes is the least (Barnes, 1975). Some of the cores have anomalous values in Pb (up to 3%), which can not be explained by a simple model. This, together with the textural relations observed between pyrrhotite and galena, and the observed overlapping in the zoning suggest that the ore deposits of the San Martin mine are probably not the product of a single mineralizing event.

5. Ore Controls in the San Martin Mine.

The major depositional controls in the district are the systems of fissures (or faults?) which directed the flow of the hydrothermal solutions. The replacement body in the San Martin mine appears to be genetically related to the intersection of three major veins with a northwest trending anti-

TEV 787

Pebble Spread into 9½" Spread

Sequence 7½" Spread

	Sample ID:	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.	Hg	Tl	Pb	Bi	Th
H	PM041097-14	<0.2	<1	171	5	71	<1	474	13	22	4	16	3	<1	4	<1	3	<1	<1	<1	1	<1	<1	<1	29	0.5	<1	<1	<1	<0.1		<1.0	<1	21	<1	1
	PM041097-15	<0.2	<1	47	4	120	<1	1105	12	24	3	17	3	1	4	<1	3	<1	1	<1	<1	<1	<1	<1	26	<0.1	<1	<1	<1	<0.1		<1.0	<1	11	<1	1
	PM041097-16	<0.2	<1	11	5	119	<1	547	9	15	3	13	2	<1	3	<1	2	<1	<1	<1	<1	<1	<1	<1	10	<0.1	<1	<1	<1	<0.1		<1.0	<1	9	<1	<1
I	PM041197-1	<0.2	4	56	101	69	5	1016	27	57	7	24	4	1	6	<1	4	<1	2	<1	2	<1	2	<1	19	<0.1	<1	<1	<1	<0.1		<1.0	<1	121	9	6
	PM041197-2	<0.2	<1	50	19	133	<1	1067	10	26	3	15	4	1	4	<1	3	<1	<1	<1	<1	<1	<1	<1	22	0.2	<1	<1	<1	<0.1		<1.0	<1	29	<1	<1
J	SU041197-1	<0.2	2	188	143	102	1	190	10	18	4	13	2	<1	4	<1	3	<1	<1	<1	<1	<1	<1	<1	34	<0.1	<1	<1	<1	0.2		<1.0	<1	53	9	2
	SU041197-2	<0.2	<1	55	28	44	<1	616	6	16	2	9	2	<1	2	<1	1	<1	<1	<1	<1	<1	<1	<1	17	<0.1	<1	<1	<1	<0.1		<1.0	<1	19	<1	1
	SU041197-3	<0.2	<1	28	7	32	1	290	6	9	2	8	<1	<1	2	<1	2	<1	<1	<1	<1	<1	<1	<1	7	<0.1	<1	<1	<1	<0.1		<1.0	<1	19	<1	1
	SU041197-4	<0.2	<1	85	26	41	<1	327	5	17	2	9	2	<1	2	<1	1	<1	<1	<1	<1	<1	<1	<1	14	<0.1	<1	<1	<1	<0.1		<1.0	<1	29	1	1
	SU041197-5	<0.2	<1	57	36	124	<1	369	7	18	3	9	2	<1	4	<1	2	<1	<1	<1	1	<1	<1	<1	13	<0.1	<1	<1	<1	<0.1		<1.0	<1	19	<1	1
	SU041197-6	<0.2	<1	85	95	53	<1	605	9	20	4	14	4	1	5	<1	4	<1	2	<1	2	<1	1	<1	10	0.2	<1	<1	<1	<0.1		<1.0	<1	68	6	1
	SU041197-7	<0.2	<1	20	5	119	1	308	14	25	5	18	3	1	5	<1	4	<1	1	<1	1	<1	<1	<1	3	<0.1	<1	<1	<1	<0.1		<1.0	<1	17	<1	4
	SU041197-8	<0.2	<1	10	2	141	<1	1585	9	14	3	15	2	1	4	<1	3	<1	<1	<1	1	<1	<1	<1	7	0.2	<1	<1	<1	<0.1		<1.0	<1	6	<1	<1
	SU041197-9	<0.2	<1	130	21	42	<1	955	6	20	2	9	<1	1	3	<1	2	<1	<1	<1	<1	<1	<1	<1	32	0.5	<1	<1	<1	<0.1		<1.0	<1	33	<1	1

cline. Fractures parallel to the hinge surface of the fold may have acted as a small-scale plumbing system which allowed access for the mineralizing solutions to a greater volume of country rock.

Silication played an important role in the location of the replacement bodies. Skarn minerals are easily soluble in acid solutions (Zharikov, 1970) and the interaction of the altered wall rock with the hydrothermal solutions tend to neutralize the solutions causing a decrease in the solubility of the ore minerals.

The stratigraphic control on a regional scale seems to be of no importance in the San Martin mine as the entire Cu-Zn replacement body is located in metasomatized Cuesta del Cura Limestone. In a local scale it is obvious that the composition of each sedimentary bed controlled the skarnitization and this in turn influenced the deposition of the ore minerals producing the characteristic mantos.

The study of cross sections 5487.5 S and 5550 S (Figs. 23 and 24), suggests that a small change in the dip of the quartz monzonite-country rock contact may also have influenced the deposition of the ore.

The mineral zoning in the 8-550 stope suggests that low pH and high temperature favored the deposition of chalcopyrite

1894RPT.XLS

TEV 787

Sequence 7½' Grind

Pulp Grind Mill 7½' Grind

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd
PM041097-14	17	-20	12843	-100	754	413	4230	75	67	137	18	3	2	1131	-30	435	14	1833	14	3	4	114	-1	-1	-1	-0.2	1.0
PM041097-15	64	-20	32743	-100	955	272	3221	35	44	122	-10	4	-1	407	-30	550	43	2258	12	6	1	174	-1	-1	-1	-0.2	0.8
PM041097-16	-10	-20	7444	-100	175	571	2735	64	92	269	14	4	-1	181	-30	219	9	2942	9	7	-1	27	-1	-1	-1	-0.2	0.6
PM041197-1	47	-20	6096	-100	2196	452	5335	71	77	1673	249	23	3	799	-30	139	67	994	21	50	7	40	-1	-1	2	1.0	1.9
PM041197-2	55	-20	39090	-100	655	565	6021	73	76	630	27	5	-1	652	-30	625	25	2039	15	4	-1	83	-1	-1	-1	-0.2	0.8
SU041197-1	21	-20	10409	-100	1031	214	1830	18	28	2177	75	9	5	3031	-30	164	20	932	12	13	2	18	-1	-1	-1	2.2	1.6
SU041197-2	-10	-20	21524	-100	791	226	7605	71	32	826	41	7	2	1424	-30	184	8	1136	7	8	1	177	-1	-1	-1	0.8	1.4
SU041197-3	19	-20	-3000	-100	653	178	5071	67	31	232	58	7	1	502	-30	82	10	561	7	13	1	32	-1	-1	-1	0.2	1.7
SU041197-4	13	-20	9088	-100	711	190	5355	55	58	528	88	9	4	2561	-30	139	12	756	7	9	1	47	-1	-1	-1	0.4	1.7
SU041197-5	65	-20	19058	-100	453	475	6414	85	72	696	77	5	3	2315	-30	255	17	1026	13	15	3	69	-1	-1	-1	0.2	2.3
SU041197-6	55	-20	11559	-100	593	219	4818	49	54	2514	338	8	2	1137	-30	164	21	1084	22	19	2	35	-1	-1	-1	0.2	9.0
SU041197-7	27	-20	17651	-100	791	949	922	20	38	329	63	10	3	2144	-30	341	15	1016	17	33	4	13	-1	-1	1	0.2	0.4
SU041197-8	11	-20	13566	-100	268	1082	4808	104	138	187	18	3	-1	107	-30	184	2	3004	14	7	-1	19	-1	-1	-1	-0.2	0.6
SU041197-9	-10	-20	8904	-100	788	404	12143	128	88	378	74	7	2	1382	-30	212	15	1747	9	11	-1	182	-1	-1	-1	0.2	1.7

Certified By:

D. D'Anna, Dipl. T.
ICPMS Technical Manager, Actlabs Ltd.

Date: _____

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and bornite close to the stock and higher pH and lower temperature facilitated the zinc mineralization further away. High values of copper in the Ibarra vein are normal as the heat transfer is more effective by the hot solutions percolating through the fissure than in the solid rock.

TEV 787

Enzyme Leach Job #: 1894
Trace Element Values Are in Part
Values = 999999 are greater than

	Sample ID:	U
E	PM040797-1	-1
	PM040797-2	-1
	PM040797-3	-1
	PM040797-4	1
	PM040797-5	-1
F	PM040897-1	2
	PM040897-2	1
	PM040897-3	-1
	PM040897-4	-1
	PM040897-5	-1
	PM040897-6	3
	PM040897-7	-1
	PM040897-8	-1
	PM040897-9	-1
	PM040897-10	-1
	PM040897-11	-1
	PM040897-12	-1
	PM040897-13	4
	PM040897-14	-1
	PM040897-15	-1
	PM040897-16	-1
G	PM040997-1	-1
	PM040997-2	-1
	PM040997-3	-1
	PM040997-4	-1
	PM040997-5	-1
	PM040997-6	1
	PM040997-7	-1
	PM040997-8	-1
	PM040997-9	-1
	PM040997-10	-1
	PM040997-11	1
	PM040997-12	2
	PM040997-13	1
	PM040997-14	-1
	PM040997-15	-1
H	PM041097-1	-1
	PM041097-2	2
	PM041097-3	-1
	PM041097-4	-1
	PM041097-5	-1
	PM041097-6	3
	PM041097-7	-1
	PM041097-8	-1
	PM041097-9	-1
	PM041097-10	-1
	PM041097-11	-1
	PM041097-12	-1
	PM041097-13	-1

Rechecked Mtg 7½ Good

CONCLUSIONS

Conclusions drawn from the study of the copper-zinc-silver deposit at San Martin include:

1. The San Martin ore deposit is located in a limy exoskarn of the infiltrational type. The calc-silicate assemblage in the skarn suggests a temperature of formation in the order of 500 to 550°C.

2. Mineralization in the mine is related to the intersection of three major veins, which acted as a plumbing system for the hydrothermal fluids, with a northwest plunging, open anticline.

3. The aureole around the Cerro de la Gloria stock was divided into four zones. Three of them, the saccharoidal quartz, ferrosalite-garnet, and tremolite-garnet are considered to be products of metasomatism. The tremolite-calcite zone is regarded as a product of thermal metamorphism.

4. The Cu-Zn-Ag replacement body is located in the ferrosalite-garnet zone. Replacement of calc-silicates by sulfides indicates that the mineralization is of the imposed, polymetallic type (Zharikov, 1970).

5. The replacement ore body is mainly composed of chalco-

TEV 787

Enzyme Leach Job #: 1894
Trace Element Values Are in Part
Values = 999999 are greater than

Sample ID:	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.	Hg	Tl	Pb	Bi	Th
PM040797-1	-0.2	-1	39	4	142	-1	152	12	27	4	23	3	-1	8	-1	2	-1	-1	-1	-1	-1	-1	-1	16	-0.1	-1	-1	-1	-0.1		-1.0	-1	16	-1	-1
PM040797-2	-0.2	-1	27	12	178	-1	161	13	24	4	17	3	-1	6	-1	3	-1	-1	-1	-1	-1	-1	-1	19	0.2	-1	-1	-1	-0.1		-1.0	-1	26	-1	-1
PM040797-3	-0.2	-1	38	33	91	-1	370	9	25	4	12	2	1	4	-1	3	-1	-1	-1	2	1	-1	-1	11	-0.1	-1	-1	-1	-0.1		-1.0	-1	33	-1	1
PM040797-4	-0.2	-1	8	12	80	-1	661	6	18	3	12	2	1	4	-1	3	-1	2	-1	2	-1	-1	-1	25	-0.1	-1	-1	-1	-0.1		-1.0	-1	15	-1	-1
PM040797-5	-0.2	-1	12	8	62	-1	1066	14	30	6	23	4	2	8	2	4	1	2	-1	3	1	-1	-1	20	-0.1	-1	-1	-1	-0.1		-1.0	-1	32	-1	1
PM040897-1	-0.2	-1	22	30	105	2	452	28	44	7	31	5	2	9	1	6	1	2	-1	2	-1	-1	-1	13	-0.1	-1	-1	-1	-0.1		-1.0	-1	34	2	5
PM040897-2	-0.2	-1	17	51	169	-1	1015	9	28	3	14	3	2	6	1	4	-1	2	-1	3	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1		-1.0	-1	24	-1	1
PM040897-3	-0.2	-1	26	26	123	-1	468	10	27	3	15	2	1	4	-1	3	-1	1	-1	1	-1	-1	-1	39	-0.1	-1	-1	-1	-0.1		-1.0	-1	23	-1	2
PM040897-4	-0.2	-1	34	23	107	-1	429	12	43	5	23	4	2	7	1	5	1	2	-1	3	-1	-1	-1	21	1.5	-1	-1	-1	-0.1		-1.0	-1	24	-1	2
PM040897-5	-0.2	-1	26	36	48	-1	820	8	24	4	16	3	1	4	-1	3	-1	2	-1	2	-1	-1	-1	3	0.2	-1	-1	-1	-0.1		-1.0	-1	32	-1	-1
PM040897-6	-0.2	2	15	8	62	8	660	36	56	8	31	5	1	8	1	6	1	2	-1	3	-1	3	-1	27	-0.1	-1	-1	-1	-0.1		-1.0	-1	56	3	12
PM040897-7	-0.2	-1	82	12	43	2	401	12	32	4	16	3	-1	4	-1	3	-1	1	-1	1	-1	-1	-1	22	0.2	-1	-1	-1	-0.1		-1.0	-1	18	-1	3
PM040897-8	-0.2	-1	119	117	43	-1	677	7	23	3	10	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	59	-0.1	-1	-1	-1	-0.1		-1.0	-1	38	2	-1
PM040897-9	-0.2	-1	12	4	74	1	473	11	21	3	12	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	27	-0.1	-1	-1	-1	-0.1		-1.0	-1	12	-1	3
PM040897-10	-0.2	-1	35	26	60	-1	395	9	31	3	18	4	1	6	-1	4	1	2	-1	2	-1	-1	-1	12	0.2	-1	-1	-1	-0.1		-1.0	-1	22	-1	-1
PM040897-11	-0.2	-1	42	43	57	-1	288	12	29	4	18	3	1	5	-1	3	-1	1	-1	2	-1	-1	-1	12	0.2	-1	-1	-1	-0.1		-1.0	-1	31	2	1
PM040897-12	-0.2	-1	15	10	145	-1	331	9	23	3	15	3	-1	5	-1	3	-1	1	-1	1	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1		-1.0	-1	12	-1	-1
PM040897-13	-0.2	-1	15	8	60	-1	486	7	22	2	9	3	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	7	0.4	-1	-1	-1	-0.1		-1.0	-1	22	-1	2
PM040897-14	-0.2	-1	48	4	92	-1	363	5	9	2	8	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1		-1.0	-1	7	-1	-1
PM040897-15	-0.2	-1	23	3	182	-1	581	7	12	2	10	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	8	0.2	-1	-1	-1	-0.1		-1.0	-1	6	-1	-1
PM040897-16	-0.2	-1	8	-1	71	-1	324	5	8	2	7	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	5	0.2	-1	-1	-1	-0.1		-1.0	-1	3	-1	-1
PM040997-1	-0.2	-1	39	32	89	-1	320	12	30	4	19	5	1	6	1	4	-1	2	-1	2	-1	-1	-1	6	0.2	-1	-1	-1	-0.1		-1.0	-1	28	-1	1
PM040997-2	-0.2	-1	39	88	57	-1	953	7	21	3	14	2	1	4	-1	3	1	2	-1	2	-1	-1	-1	3	-0.1	-1	-1	-1	-0.1		-1.0	-1	36	1	1
PM040997-3	-0.2	-1	77	95	76	1	235	14	29	4	18	3	1	5	-1	4	1	2	-1	2	-1	-1	-1	14	-0.1	-1	-1	-1	-0.1		-1.0	-1	46	8	2
PM040997-4	-0.2	-1	81	107	47	-1	251	7	22	3	12	3	-1	4	-1	3	-1	1	-1	1	-1	-1	-1	17	-0.1	-1	-1	-1	-0.1		-1.0	-1	67	5	2
PM040997-5	-0.2	-1	43	42	107	-1	290	10	19	4	19	3	1	5	-1	4	-1	1	-1	2	-1	-1	-1	13	-0.1	-1	-1	-1	-0.1		-1.0	-1	41	-1	-1
PM040997-6	-0.2	-1	33	34	97	2	323	13	26	4	16	3	-1	5	-1	3	-1	1	-1	1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1		-1.0	-1	29	3	3
PM040997-7	-0.2	-1	51	49	68	-1	435	9	25	4	18	4	1	5	-1	4	-1	2	-1	2	-1	-1	-1	10	-0.1	-1	-1	-1	-0.1		-1.0	-1	27	-1	-1
PM040997-8	-0.2	-1	72	70	52	-1	353	14	21	4	17	3	1	6	-1	4	-1	1	-1	2	-1	-1	-1	6	-0.1	-1	-1	-1	-0.1		-1.0	-1	58	8	2
PM040997-9	-0.2	-1	50	23	73	-1	266	10	11	5	19	4	1	6	-1	4	-1	2	-1	2	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1		-1.0	-1	35	-1	-1
PM040997-10	-0.2	-1	112	34	49	-1	299	9	25	4	17	4	1	5	-1	4	1	1	-1	2	-1	-1	-1	5	-0.1	-1	-1	-1	-0.1		-1.0	-1	29	-1	1
PM040997-11	-0.2	1	138	60	56	2	215	18	26	5	22	4	1	6	-1	4	-1	1	-1	2	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1		-1.0	-1	58	20	5
PM040997-12	-0.2	2	152	114	53	3	401	23	52	6	23	3	1	6	-1	4	-1	1	-1	3	-1	2	-1	12	0.2	-1	-1	-1	-0.1		-1.0	-1	120	23	7
PM040997-13	-0.2	-1	59	19	49	3	377	15	40	5	16	4	-1	5	-1	4	-1	1	-1	2	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1		-1.0	-1	44	3	5
PM040997-14	-0.2	-1	88	25	51	-1	473	8	18	3	9	2	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	24	0.2	-1	-1	-1	-0.1		-1.0	-1	28	-1	1
PM040997-15	-0.2	-1	72	13	147	-1	239	7	11	2	7	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	48	-0.1	-1	-1	-1	-0.1		-1.0	-1	16	-1	2
PM041097-1	-0.2	-1	102	191	67	-1	905	14	27	4	18	5	1	6	-1	3	-1	1	-1	2	-1	-1	-1	13	0.2	-1	-1	-1	-0.1		-1.0	-1	79	6	2
PM041097-2	0.3	4	161	190	91	6	943	28	61	8	29	6	2	7	1	5	1	1	-1	2	-1	2	-1	34	-0.1	-1	-1	-1	-0.1		1.2	-1	202	37	9
PM041097-3	-0.2	-1	82	14	150	-1	375	9	13	3	11	3	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	26	-0.1	-1	-1	-1	-0.1		-1.0	-1	22	-1	-1
PM041097-4	-0.2	-1	54	53	69	-1	741	10	19	3	13	3	1	4	-1	3	-1	-1	-1	1	-1	-1	-1	23	0.5	-1	-1	-1	-0.1		-1.0	-1	38	-1	1
PM041097-5	0.3	1	67	62	45	3	426	16	27	5	20	4	1	5	-1	3	-1	1	-1	2	-1	1	-1	5	-0.1	-1	-1	-1	-0.1		-1.0	-1	106	24	4
PM041097-6	-0.2	4	72	19	97	4	846	25	55	7	25	5	1	8	-1	4	-1	1	-1	2	-1	1	-1	30	0.2	-1	-1	-1	-0.1		-1.0	-1	136	8	7
PM041097-7	-0.2	-1	20	9	129	-1	933	9	10	3	10	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	18	-0.1	-1	-1	-1	-0.1		-1.0	-1	28	-1	-1
PM041097-8	-0.2	-1	112	219	85	-1	945	17	36	6	27	5	2	7	1	5	1	2	-1	2	-1	-1	-1	43	-0.1	-1	-1	-1	-0.1		-1.0	-1	136	5	-1
PM041097-9	-0.2	-1	24	30	180	-1	1487	10	21	4	17	3	3	6	-1	3	-1	1	-1	2	-1	-1	-1	10	0.5	-1	-1	-1	-0.1		-1.0	-1	45	-1	1
PM041097-10	-0.2	-1	66	20	24	2	692	8	26	2	10	3	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	21	-0.1	-1	-1	-1	-0.1		-1.0	-1	96	3	3
PM041097-11	-0.2	-1	25	73	32	-1	1089	7	19	3	12	3	1	4	-1	3	-1	1	-1	2	-1	-1	-1	2	-0.1	-1	-1	-1	-0.1		-1.0	-1	53	-1	-1
PM041097-12	-0.2	-1	31	3	86	-1	896	22	36	6	23	3	1	5	-1	4	-1	1	-1	1	-1	-1	-1	10	-0.1	-1	-1	-1	-0.1		-1.0	-1	12	-1	2
PM041097-13	-0.2	-1	17	5	101	-1	242	13	18	3	14	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1		-1.0	-1	9	-1	1

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Pre-Lot Test Mar 78 Gwen

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Prickly pear Mts 7½' Quad.

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Enzyme Leach Job #: 1894 **Customer: Skyline Tucson** **Geologist:Clark Arnold** **Customer's Job #:TEV 787**

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of Instrument. S.Q.=That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd
PM040797-1	18	-20	12586	-100	1164	165	1168	24	31	137	57	3	1	598	-30	227	12	1232	21	4	1	22	1	-1	-1	-0.2	-0.2
PM040797-2	30	-20	30332	-100	585	206	2491	41	55	416	25	4	-1	645	-30	445	22	747	15	4	1	62	-1	-1	-1	-0.2	0.8
PM040797-3	61	-20	12302	-100	568	194	5475	76	75	715	73	7	-1	601	-30	180	33	856	13	15	2	73	-1	-1	-1	-0.2	1.6
PM040797-4	95	-20	13114	-100	288	256	6508	127	123	279	31	6	-1	158	-30	80	20	724	14	14	1	23	-1	-1	-1	-0.2	1.2
PM040797-5	14	-20	10925	-100	924	204	2736	36	57	528	47	4	-1	283	-30	194	22	2841	25	15	1	30	-1	-1	-1	-0.2	2.4
PM040897-1	26	-20	6237	-100	758	285	3002	53	107	874	63	14	2	580	-30	183	25	980	27	32	3	37	-1	-1	-1	0.8	1.6
PM040897-2	66	-20	20864	-100	580	472	12752	251	184	784	87	14	1	427	-30	246	21	1333	22	15	1	32	-1	-1	-1	-0.2	3.3
PM040897-3	39	-20	22153	-100	572	541	4282	97	141	674	62	9	2	1533	-30	313	18	963	16	16	2	53	-1	-1	-1	-0.2	1.9
PM040897-4	89	-20	86508	-100	504	305	2705	68	125	1075	48	4	3	1441	-30	1008	11	1216	32	17	1	82	-1	-1	-1	-0.2	1.6
PM040897-5	55	-20	24001	-100	440	267	6613	123	98	1097	154	8	-1	681	-30	190	20	1056	18	16	2	35	-1	-1	-1	-0.2	3.1
PM040897-6	86	-20	5226	-100	2539	321	4246	81	88	468	139	22	3	389	-30	117	102	637	30	72	8	28	-1	-1	1	0.6	1.4
PM040897-7	33	-20	12307	-100	852	322	2215	47	72	335	63	9	2	932	-30	244	34	990	15	22	3	39	-1	-1	-1	0.4	0.6
PM040897-8	22	-20	14201	-100	496	386	3129	57	92	1160	83	4	3	1576	-30	334	17	1423	9	5	1	56	-1	-1	-1	-0.2	1.4
PM040897-9	45	-20	6713	-100	627	339	3554	60	78	186	49	14	-1	208	-30	167	25	820	11	25	3	31	-1	-1	-1	-0.2	0.6
PM040897-10	28	-20	12789	-100	213	383	3310	92	146	1246	79	4	1	1004	-30	414	8	728	23	10	-1	62	-1	-1	-1	-0.2	1.9
PM040897-11	39	-20	11576	-100	402	207	3149	54	78	1319	113	6	2	1423	-30	300	18	584	17	18	2	58	-1	-1	-1	0.2	2.1
PM040897-12	45	-20	9786	-100	394	465	2609	61	143	355	26	5	-1	686	-30	523	7	1018	18	6	-1	35	-1	-1	-1	-0.2	0.8
PM040897-13	17	-20	10444	-100	321	251	3977	57	66	441	35	4	-1	224	-30	176	7	702	11	8	1	57	-1	-1	-1	-0.2	1.6
PM040897-14	16	-20	7071	-100	895	191	948	30	27	290	15	4	-1	762	-30	317	4	898	8	3	-1	23	-1	-1	-1	-0.2	0.4
PM040897-15	52	-20	26864	-100	951	275	2925	36	25	123	-10	3	-1	138	-30	409	11	905	11	4	-1	87	-1	-1	-1	-0.2	0.6
PM040897-16	15	-20	8617	-100	927	208	3181	61	38	41	15	3	-1	25	-30	149	11	1388	6	4	-1	28	-1	-1	-1	-0.2	0.2
PM040997-1	31	-20	14419	-100	332	471	3948	79	187	1030	79	7	2	1482	-30	356	20	909	21	17	1	75	-1	-1	-1	0.2	2.0
PM040997-2	69	-20	7759	-100	445	270	10082	184	128	1249	118	6	2	1033	-30	188	23	1123	18	15	1	28	-1	-1	-1	-0.2	4.5
PM040997-3	34	-20	14726	-100	729	280	4463	78	76	2013	223	8	3	1948	-30	234	17	948	24	29	3	61	-1	-1	-1	0.6	4.5
PM040997-4	45	-20	8725	-100	457	164	4111	65	69	2566	219	9	2	1009	-30	151	23	690	14	14	1	25	-1	-1	-1	0.6	4.5
PM040997-5	23	-20	3000	-100	440	492	2692	53	86	1363	62	4	3	2373	-30	289	11	1359	22	12	-1	41	-1	-1	-1	-0.2	2.7
PM040997-6	59	-20	13469	-100	737	381	2472	44	71	959	109	9	3	1980	-30	172	38	719	18	31	3	30	-1	-1	2	0.6	1.9
PM040997-7	21	-20	15683	-100	298	274	2237	47	72	1501	80	5	2	1575	-30	349	14	831	20	13	-1	38	-1	-1	-1	-0.2	2.1
PM040997-8	36	-20	5159	-100	546	157	1914	29	46	3041	242	6	2	1442	-30	175	24	616	18	24	2	19	-1	-1	-1	0.8	3.3
PM040997-9	23	-20	6245	-100	136	266	1737	29	54	1411	84	3	3	1707	-30	266	12	603	20	8	-1	35	-1	-1	-1	-0.2	1.4
PM040997-10	32	-20	10209	-100	319	211	1355	20	45	1518	126	5	4	3160	-30	195	21	463	20	18	1	29	-1	-1	-1	-0.2	2.3
PM040997-11	31	-20	12204	-100	776	196	1083	22	39	4083	280	7	5	2742	-30	185	30	372	21	38	3	16	-1	-1	1	1.7	3.7
PM040997-12	59	-20	7924	-100	1233	190	1997	42	68	5528	509	14	5	2514	-30	195	81	456	22	52	7	28	-1	-1	1	1.2	6.0
PM040997-13	41	-20	4899	-100	1359	209	3463	55	40	795	134	15	2	1001	-30	141	37	415	19	29	4	33	-1	-1	-1	1.2	1.2
PM040997-14	12	-20	20422	-100	781	211	2983	39	41	579	37	4	3	1571	-30	231	12	1495	9	7	-1	114	-1	-1	-1	-0.2	1.0
PM040997-15	64	-20	15926	-100	-100	692	1539	16	41	179	-10	3	2	1983	-30	230	11	1890	7	6	17	30	-1	-1	-1	-0.2	0.4
PM041097-1	112	-20	18487	-100	540	217	4879	71	56	2776	251	6	4	2686	-30	230	30	909	20	14	2	50	-1	-1	-1	0.4	5.1
PM041097-2	65	-20	7731	-100	2549	515	4619	72	88	3692	523	23	9	4077	-30	286	93	1057	24	67	8	40	-1	-1	1	2.9	6.0
PM041097-3	52	-20	10093	-100	864	317	1082	17	30	338	20	1	2	1232	-30	211	13	1798	10	7	1	18	-1	-1	-1	-0.2	0.2
PM041097-4	50	-20	14566	-100	571	453	2649	49	79	942	50	6	4	2843	-30	242	24	1634	14	10	1	55	-1	-1	-1	-0.2	1.2
PM041097-5	80	-20	6476	-100	1101	176	2810	50	67	2800	432	13	3	1227	-30	99	48	710	19	39	4	19	-1	-1	1	0.6	6.2
PM041097-6	43	-20	10291	-100	2125	382	5150	84	80	2854	442	19	4	2419	-30	195	43	656	22	43	5	177	-1	-1	1	3.3	6.8
PM041097-7	74	-20	8201	-100	733	762	1525	22	29	649	31	2	-1	733	-30	212	10	2203	10	6	-1	47	-1	-1	-1	-0.2	0.8
PM041097-8	71	-20	6416	-100	620	494	6155	76	88	3757	168	4	7	4327	-30	517	19	1791	29	6	-1	55	-1	-1	-1	0.2	4.6
PM041097-9	32	-20	58407	-100	806	546	7579	184	118	1455	121	8	2	762	-30	888	13	1405	17	10	1	29	-1	-1	-1	-0.2	3.1
PM041097-10	15	-20	7581	-100	742	191	7613	67	44	694	110	10	2	1342	-30	70	19	671	8	13	2	40	-1	-1	-1	1.5	2.5
PM041097-11	65	-20	15539	-100	496	152	12412	206	107	1446	196	7	1	1004	-30	148	25	935	14	10	1	21	-1	-1	-1	0.2	6.2
PM041097-12	15	-20	9629	-100	1200	245	2375	41	52	189	28	4	-1	361	-30	193	10	2815	16	6	-1	31	-1	-1	-1	-0.2	0.6
PM041097-13	15	-20	21875	-100	776	257	2665	38	44	157	12	3	-1	224	-30	240	12	1149	10	4	-1	61	-1	-1	-1	-0.2	0.4

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Superior Project
Superior 7½ Quad.

Superior Data

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cr	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Rb	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Rel. No.	Samp. ID	Area	
498212	3686298	522	0.05	792	168	1.6	24	9198	18	2	265	0.5	58	10	82	2	13	29	24	0.05	18	686	0.5	27	4	2	89	12	117	30	76	8	SU 012897-11	Superior
497901	3686265	1239	0.05	1077	79	1.6	108	11418	25	9	351	2	91	35	61	11	34	52	52	0.05	20	617	3	31	9	2	191	18	204	74	84	10	SU 012897-12	Superior
497804	3684650	245	0.05	659	85	0.7	56	3315	19	0.5	291	3	63	23	14	1	31	8	18	0.2	6	476	0.5	12	7	2	94	2	47	38	87	5	SU 012897-13	Superior
499183	3683478	187	0.05	739	67	1.9	22	4641	29	0.5	301	0.5	46	13	55	1	12	20	19	0.05	6	704	0.5	14	2	1	101	12	79	16	1	5	SU 012897-14	Superior
499517	3682600	55	0.05	916	98	0.7	72	1500	23	4	59	2	229	38	20	8	34	23	23	0.05	3	753	3	2	11	3	252	19	82	30	36	12	SU 012897-15	Superior
499634	3680399	228	0.05	998	46	1	44	5479	17	2	88	1	116	16	39	3	17	19	15	0.05	8	836	1	6	4	1	138	13	56	21	33	9	SU 012997-04	Superior
499734	3686867	320	0.05	716	142	1	38	12912	34	0.5	182	0.5	98	17	47	0.5	22	39	9	0.05	11	640	0.5	10	2	2	123	27	21	18	31	12	SU 012997-01	Superior
499752	3687161	295	0.05	968	161	1	28	14627	12	1	53	0.5	146	13	4	5	16	10	11	0.05	4	708	0.5	2	4	0.5	99	2	24	28	30	10	SU 012997-06	Superior
499384	3687789	548	0.05	703	143	5.4	50	7600	26	0.5	296	0.5	60	11	49	1	13	13	33	0.2	14	755	0.5	9	2	0.5	82	3	78	23	35	8	SU 012997-07	Superior
499323	3687472	505	0.05	789	38	5.1	32	7276	26	0.5	446	2	54	16	64	2	20	20	45	0.05	12	584	0.5	21	2	0.5	85	13	146	34	41	9	SU 012997-08	Superior
498993	3687447	25	0.05	930	193	0.7	20	4283	12	0.5	34	0.5	131	18	0.5	1	17	33	7	0.05	3	569	0.5	2	1	0.5	99	0.5	5	11	51	23	SU 012997-09	Superior
498767	3687279	400	0.05	475	72	1.6	21	8032	11	1	662	0.5	42	9	85	1	12	21	27	0.05	22	324	0.5	17	4	0.5	84	17	127	17	57	8	SU 012997-10	Superior
499135	3687169	62	0.05	1130	135	1.9	26	5208	22	0.5	168	1	62	16	0.5	2	19	14	11	0.05	3	395	0.5	3	4	0.5	53	0.5	45	29	46	10	SU 012997-11	Superior
499023	3686907	28	0.05	863	206	0.4	89	7405	17	7	41	2	166	18	34	9	37	41	19	0.05	4	627	3	1	10	2	198	19	75	61	50	24	SU 012997-12	Superior
499035	3686567	338	0.05	712	74	1	26	10039	33	0.5	203	0.5	43	13	35	1	17	18	19	0.05	7	539	0.5	8	3	0.5	78	3	20	25	49	9	SU 012997-13	Superior
499330	3686232	199	0.05	1179	139	1	96	7838	22	9	51	2	179	14	13	13	38	31	23	0.05	5	695	4	4	11	3	173	18	75	78	40	15	SU 012997-14	Superior
499437	3686635	38	0.05	1137	300	0.7	89	11707	31	1	46	1	213	32	32	8	29	27	22	0.05	5	951	2	3	6	2	208	18	109	58	38	14	SU 012997-15	Superior
499488	3687173	253	0.05	1135	90	1.6	105	9378	22	5	239	3	74	34	81	8	37	31	42	0.2	11	470	3	7	18	4	108	33	118	68	37	8	SU 012997-16	Superior
499610	3687540	291	0.05	670	15	1.9	43	9182	14	1	378	0.5	62	20	108	3	13	21	36	0.05	21	395	0.5	35	3	0.5	117	21	75	20	34	10	SU 012997-17	Superior
498115	3681587	37	0.05	814	140	0.7	24	3302	18	1	40	0.5	90	10	13	0.5	11	21	8	0.05	2	666	0.5	0.5	1	0.5	61	11	32	10	79	14	SU 012997-18	Superior
498222	3680562	24	0.05	492	108	0.1	20	17067	17	0.5	5	0.5	93	7	0.5	1	12	2.5	8	0.05	1	553	0.5	0.5	2	2	201	0.5	5	8	75	30	SU 012997-19	Superior
499212	3687940	15	0.05	1409	202	0.4	29	16067	39	0.5	12	0.5	221	18	2	1	33	24	9	0.05	3	554	0.5	1	1	2	173	0.5	27	8	45	33	SU 012997-20	Superior
499407	3688437	31	0.05	1341	77	0.4	142	5629	34	11	45	3	156	62	2	12	98	48	26	0.05	4	591	4	2	22	2	167	12	176	109	29	26	SU 012997-21	Superior
499725	3688172	49	0.05	1428	167	0.1	124	9023	27	10	56	4	100	43	27	16	51	50	27	0.05	5	670	4	3	24	4	163	27	131	18	32	17	SU 012997-22	Superior
499357	3688302	124	0.05	432	15	1	37	6222	8	1	27	0.5	75	8	0.5	2	13	2.5	5	0.05	3	531	0.5	3	1	0.5	47	8	5	16	39	13	SU 012997-23	Superior
499125	3689280	58	0.05	1044	73	1	338	16178	25	0.5	52	2	41	12	0.5	2	20	10	13	0.05	2	410	0.5	2	5	2	83	4	15	33	48	12	SU 012997-24	Superior
498471	3689239	360	0.05	1561	199	4.5	28	16968	32	1	110	0.5	69	13	17	2	18	24	17	0.05	12	342	0.5	17	1	0.5	79	3	40	26	66	13	SU 012997-25	Superior
499129	3688871	110	0.05	391	52	1	47	3624	42	2	171	0.5	37	12	12	5	14	41	36	0.05	7	457	1	10	8	1	135	24	83	27	47	10	SU 012997-26	Superior
497504	3688330	408	0.05	827	108	2.7	75	10526	17	0.5	388	0.5	54	9	49	0.5	9	20	32	0.05	23	715	0.5	45	2	0.5	70	9	94	11	97	8	SU 013097-01	Superior
497792	3688717	303	0.05	1177	13	3.1	49	6618	60	4	267	1	27	17	102	4	18	30	70	0.05	14	356	1	27	6	1	141	18	174	30	88	8	SU 013097-02	Superior
497408	3688050	506	0.05	779	90	3.3	46	12709	33	2	389	0.5	84	19	97	3	21	36	62	0.05	22	871	0.5	23	4	1	173	11	100	15	162	8	SU 013097-03	Superior
498816	3688041	532	0.05	1164	142	2.5	36	4643	19	1	245	1	47	17	25	2	14	23	27	0.05	18	699	0.5	24	3	0.5	67	5	102	24	55	9	SU 013097-04	Superior
498937	3688372	259	0.05	952	15	2.7	34	8583	34	1	157	0.5	46	10	40	3	14	21	29	0.05	11	711	0.5	11	5	2	72	7	57	17	52	11	SU 013097-05	Superior
498878	3688757	119	0.05	1146	57	3.1	23	5793	27	1	113	0.5	30	8	33	2	8	15	23	0.05	5	589	0.5	7	4	0.5	46	4	42	21	54	13	SU 013097-06	Superior
498291	3688530	47	0.05	992	252	0.1	111	1500	7	10	64	6	72	31	11	17	31	25	48	0.05	3	571	7	0.5	24	5	217	2	103	103	74	23	SU 013097-07	Superior
498603	3688331	924	0.05	1050	167	3.3	52	12660	17	7	356	2	80	24	52	6	17	32	70	0.05	27	788	1	23	8	3	115	13	122	58	63	9	SU 013097-08	Superior
498101	3688046	510	0.05	1066	117	6.9	32	3222	62	1	375	1	43	19	41	4	18	29	50	0.05	26	806	0.5	52	3	0.5	102	3	134	28	80	10	SU 013097-09	Superior
497699	3687969	653	0.05	1445	171	5.4	56	13910	50	4	430	2	56	17	112	5	13	25	81	0.05	23	738	1	58	5	1	155	14	240	51	91	10	SU 013097-10	Superior
497450	3687550	570	0.1	512	132	6.5	35	1500	32	0.5	1288	0.5	105	12	141	3	15	22	135	0.05	36	933	0.5	50	3	0.5	154	14	317	11	100	2	SE 010396-01	Superior East
498140	3687700	330	0.05	965	308	1.6	26	1500	53	0.5	219	0.5	317	13	34	2	17	18	22	0.05	11	966	0.5	7	3	2	222	5	63	14	77	2	SE 010396-02	Superior East
498650	3688100	430	0.05	1192	367	4.8	44	10979	62	0.5	817	0.5	172	17	163	2	24	40	75	0.4	33	1486	0.5	37	3	1	330	11	209	9	62	2	SE 010396-03	Superior East
498360	3688120	673	0.05	1073	15	7.4	17	1500	34	0.5	929	0.5	35	7	36	0.3	7	15	68	0.05	16	514	0.5	11	0.5	0.5	89	2	363	0.5	69	2	SE 010396-04	Superior East
498350	3687480	368	0.2	1832	173	5.1	24	1500	47	0.5	654	1	95	10	26	2	14	11	35	0.2	11	770	0.5	12	2	0.5	81	2	343	23	79	2	SE 010396-05	Superior East
498320	3687160	425	0.05	1047	51	8	17	1500	31	1	371	0.5	64	6	91	2	8	21	43	0.05	23	818	0.5	25	2	0.5	122	6	182	7	71	2	SE 010396-06	Superior East
498000	3686970	326	0.05	1183	200	4.2	31	1500	40	0.5	546	2	116	16	23	2	24	20	29	0.05	15	845	0.5	14	4	1	102	3	175	47	87	2	SE 010396-07	Superior East
497680	3686900	227	0.05	878	82	2.8	33	1500	28	4	431	1	40	16	45	3	11	17	53	0.05	14	826	0.5	34	11	1	155	8	211	33	92	2	SE 010396-08	Superior East
498550	3687040	405	0.05	1088	108	1.3	45	1500	19	3	184	2	87	25	45	6	20	20	30	0.05	12	883	0.5	12	7	2	186	3	90	52	65	2	SE 010396-09	Superior East
498680	3686400	555	0.05	1200	184	0.9	37	8709	15	3	289	1	76	16	68	5	14	29	32	0.05	20	1430	0.5	18	6	1	166	11	104	38	60	2	SE 010396-10	Superior East
498340	3686940	455	0.05	815	102	6.3	13	8503	21	0.5	835	0.5	34	5	91	2	3	19	80	0.2	29	669	0.5	38	2	0.5	91	6	386	15	71	2	SE 010396-11	Superior East

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UTME	UTMN	As	Au	Ba	Br	Cd	Co	Cl	Ga	Ce	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Ru	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
491071	3680868	103	0.05	322	53	1.8	35	11876	45	5	245	2	32	21	44	6	21	58	49	0.05	21	397	2	3	7	2	103	41	307	38	141	18	SU 012297-02	Superior
490344	3680939	92	0.05	543	63	1.1	49	6877	38	8	156	3	131	35	118	10	33	82	84	0.05	4	882	3	0.5	13	2	405	58	638	68	145	15	SU 012297-03	Superior
490174	3680522	105	0.05	688	130	0.9	12	5065	35	0.5	76	0.5	102	13	62	0.5	22	50	9	0.05	10	1332	0.5	2	2	0.5	500	90	22	7	146	18	SU 012297-04	Superior
490107	3679427	30	0.05	521	228	0.1	16	9288	19	0.5	25	0.5	134	16	42	4	17	22	4	0.05	11	916	2	0.5	2	0.5	238	49	38	8	147	28	SU 012297-05	Superior
490966	3678838	57	0.05	276	78	0.6	20	13049	30	2	36	0.5	134	12	41	3	14	60	11	0.05	12	466	0.5	0.5	3	1	412	41	121	15	142	18	SU 012297-06	Superior
490836	3679752	45	0.05	678	258	0.6	9	3438	29	0.5	57	0.5	128	7	14	1	8	33	23	0.05	4	610	0.5	0.5	2	0.5	138	48	60	8	144	15	SU 012297-07	Superior
495758	3684681	1009	0.05	520	119	1.2	31	12065	15	3	117	0.5	77	20	44	4	14	25	14	0.05	21	465	0.5	19	6	0.5	108	23	94	21	118	11	SU 012297-08	Superior
496476	3684787	114	0.05	929	63	2.4	21	11712	49	1	99	0.5	69	19	12	1	11	26	11	0.05	4	522	0.5	9	2	0.5	84	13	96	10	111	8	SU 012297-09	Superior
495376	3683982	115	0.05	417	13	1.5	30	5010	46	0.5	126	0.5	35	11	2	1	16	10	13	0.05	5	422	0.5	2	3	1	57	13	71	17	124	7	SU 012297-10	Superior
495924	3682719	174	0.05	694	67	1.5	42	10999	18	3	337	0.5	33	16	3	5	18	25	26	0.05	12	500	2	3	7	1	96	7	114	20	116	16	SU 012297-11	Superior
495653	3682430	83	0.05	585	85	0.9	27	16396	24	1	143	0.5	50	14	4	1	14	13	11	0.05	4	447	0.5	4	2	1	40	4	77	11	119	14	SU 012297-12	Superior
495247	3681996	174	0.05	533	145	0.9	43	21778	14	3	156	0.5	125	16	20	5	16	31	13	0.05	9	515	0.5	6	5	2	95	8	78	19	125	12	SU 012297-13	Superior
494752	3681517	30	0.05	1575	13	1.5	11	7733	84	0.5	38	0.5	34	3	1	0.5	4	19	27	0.05	3	1349	1	4	0.5	2	187	8	19	1	128	12	SU 012297-14	Superior
494467	3681116	184	0.05	1242	132	1.8	53	9816	58	3	221	0.5	174	19	39	3	24	26	41	0.05	9	707	2	6	7	3	133	5	102	26	132	8	SU 012297-15	Superior
494328	3680386	123	0.05	951	157	1.2	28	10433	22	3	76	0.5	143	14	35	4	12	28	17	0.05	11	758	2	12	3	0.5	130	9	70	14	134	9	SU 012297-16	Superior
493581	3682060	120	0.05	1415	165	1.2	76	11464	51	8	111	3	137	34	15	15	34	28	19	0.05	5	592	4	4	8	3	161	10	105	47	139	14	SU 012297-17	Superior
494341	3682210	95	0.05	1029	156	0.9	46	8493	42	4	22	1	117	16	15	7	17	23	17	0.05	7	688	2	2	5	2	162	5	40	19	133	13	SU 012297-18	Superior
495013	3682554	28	0.05	1258	73	0.6	23	15295	17	0.5	23	0.5	75	16	2	1	25	10	12	0.2	2	522	0.5	0.5	1	2	59	1	28	10	126	16	SU 012297-19	Superior
494549	3682786	328	0.05	1137	152	0.9	30	10566	15	2	61	0.5	79	18	0.5	4	18	15	11	0.05	10	574	2	6	4	1	87	5	38	22	129	12	SU 012297-20	Superior
494965	3683083	780	0.05	1122	15	3.9	83	5741	23	7	926	2	46	34	16	7	31	20	75	0.05	28	538	4	20	14	3	73	8	166	33	127	8	SU 012297-21	Superior
494411	3683151	163	0.05	970	60	0.1	31	11880	13	1	24	0.5	76	21	0.5	1	22	12	10	0.05	4	465	0.5	2	3	1	102	1	19	12	131	16	SU 012297-22	Superior
495464	3683634	318	0.05	1427	78	3.5	36	7836	65	0.5	687	0.5	35	11	10	2	14	17	23	0.05	20	400	0.5	15	3	0.5	50	17	125	11	123	14	SU 012397-01	Superior
496187	3683635	706	0.05	377	213	0.3	15	15959	5	2	183	0.5	73	7	39	2	6	22	8	0.05	35	446	0.5	34	3	0.5	52	17	47	15	114	8	SU 012397-02	Superior
494545	3684027	231	0.05	712	111	6.4	42	18891	59	1	713	0.5	53	13	6	2	19	45	26	0.05	17	371	0.5	11	2	1	93	2	231	10	130	14	SU 012397-05	Superior
494071	3683225	384	0.05	927	33	2	24	11012	21	1	263	0.5	55	13	9	1	18	17	16	0.05	15	448	0.5	25	2	0.5	103	4	81	9	135	10	SU 012397-07	Superior
493730	3682886	1123	0.05	787	198	4.9	39	19299	16	5	901	1	143	21	16	3	20	35	44	0.05	32	502	2	28	4	1	92	6	244	26	137	8	SU 012397-08	Superior
493284	3683282	856	0.05	1211	172	2.9	45	13374	38	2	625	0.5	97	20	19	2	32	36	25	0.05	26	456	1	40	3	1	113	7	141	18	140	8	SU 012397-09	Superior
493585	3683834	2515	0.05	921	166	9.9	36	11406	36	0.5	2294	0.5	19	15	21	1	19	29	112	0.05	72	323	0.5	74	2	0.5	115	9	378	17	138	10	SU 012397-10	Superior
493959	3684280	328	0.05	833	105	2.6	28	1500	35	2	173	0.5	59	14	14	2	16	22	19	0.05	9	408	0.5	13	4	0.5	78	3	60	13	136	10	SU 012397-11	Superior
498686	3686028	407	0.05	599	69	2	49	11664	13	5	497	2	85	18	59	3	15	29	51	0.05	18	521	2	17	6	1	93	9	164	28	58	5	SU 012497-01	Superior
497641	3683969	199	0.05	762	15	0.9	51	1500	23	3	429	1	45	16	45	3	19	17	51	0.05	17	464	2	17	7	2	83	6	108	21	94	5	SU 012497-03	Superior
497666	3687336	103	0.05	755	143	0.3	29	3425	5	0.5	43	1	48	15	2	2	17	12	8	0.05	4	416	0.5	1	4	1	68	7	13	21	93	14	SU 012497-05	Superior
497433	3687068	198	0.05	674	185	1.4	27	12808	12	3	79	0.5	70	13	1	2	13	24	16	0.05	8	432	0.5	4	3	0.5	67	8	34	20	101	8	SU 012497-06	Superior
497225	3686960	55	0.05	402	15	0.1	27	6357	21	0.5	83	0.5	71	22	8	0.5	19	14	9	0.05	5	420	0.5	8	0.5	1	124	10	17	6	103	13	SU 012497-07	Superior
497083	3686754	359	0.05	894	239	1.1	82	12717	18	8	92	2	202	53	25	10	33	44	29	0.05	13	607	3	7	8	2	156	13	19	44	107	10	SU 012497-08	Superior
497154	3686104	20	0.05	224	219	0.3	92	4395	5	0.3	40	0.5	485	24	0.5	1	95	2.5	7	0.05	4	192	0.5	2	8	12	119	5	5	21	105	14	SU 012497-10	Superior
496983	3685738	51	0.05	643	226	0.9	122	16045	11	6	21	2	173	53	7	11	74	20	13	0.05	3	418	3	1	8	3	130	13	61	29	108	22	SU 012497-11	Superior
496924	3685185	152	0.05	742	125	1.4	117	3318	39	14	311	2	187	44	61	10	39	45	62	0.05	23	507	4	31	11	3	208	25	179	57	110	8	SU 012497-12	Superior
496958	3684447	62	0.05	182	15	0.3	26	3384	6	3	28	0.5	51	14	13	4	10	10	10	0.05	4	325	1	2	4	0.5	49	11	41	15	109	21	SU 012497-13	Superior
498429	3686499	66	0.05	1750	157	0.1	30	22584	9	0.5	6	1	29	9	0.5	4	11	2.5	11	0.05	2	472	1	0.5	8	1	160	11	20	34	68	13	SU 012897-01	Superior
498019	3686690	648	0.05	817	89	1.1	28	11850	56	1	678	1	60	13	69	2	15	25	60	0.05	22	614	0.5	29	3	0.5	125	11	101	24	81	14	SU 012897-02	Superior
497777	3686117	196	0.05	554	97	0.4	25	8782	39	1	121	0.5	78	10	15	2	15	34	10	0.05	7	691	0.5	5	2	0.5	98	13	28	19	90	10	SU 012897-03	Superior
497517	3686642	327	0.05	799	114	2.5	39	7312	24	0.5	281	0.5	92	16	41	1	18	26	18	0.05	12	831	0.5	12	14	0.5	133	12	30	16	96	11	SU 012897-04	Superior
497479	3686307	442	0.05	880	194	1.3	30	5136	29	2	144	0.5	65	16	33	2	17	26	14	0.05	11	627	0.5	12	2	0.5	106	48	91	16	99	13	SU 012897-05	Superior
497588	3685802	577	0.05	680	89	3.4	36	1500	41	1	318	0.5	80	13	46	2	16	32	25	0.05	21	578	0.5	45	4	0.5	125	40	78	21	95	16	SU 012897-06	Superior
497486	3685403	51	0.05	1071	222	1.3	131	10533	27	11	99	3	180	62	33	12	52	53	25	0.05	3	690	3	2	17	4	217	30	118	100	98	10	SU 012897-07	Superior
497783	3685438	937	0.05	929	208	1.9	33	18406	22	1	144	0.5	95	12	22	2	15	23	12	0.05	14	674	0.5	15	2	0.5	104	11	49	18	89	12	SU 012897-08	Superior
498124	3685736	818	0.05	429	110	3.4	20	5530	12	0.5	761	0.5	34	8	106	0.5	8	35	43	0.05	46	868	0.5	61	2	0.5	87	34	115	9	78	8	SU 012897-09	Superior
498321	3686032	63	0.05	466	158	0.1	81	10997	4	4	191	2	397	38	6	9	80	18	20	0.05	4	455	2	4	28	7	362	4	32	104	72	21	SU 012897-10	Superior

C

D above 3.4

E above 3.9

F

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Superior Project
Superior 7½' Quad.

Superior Data

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	U	La	Mg	Mn	Mo	Ni	Pb	Pd	Sb	Sr	Th	Ta	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
501044	3686735	45	0.05	632	35	1	11	5558	3	1	30	0.5	36	4	99	1	6	2.5	13	0.05	1	972	0.5	0.5	2	0.5	40	0.5	129	8	19	17	PR 013097-02	Pinal Ranch
501249	3688594	84	0.05	509	15	0.7	13	11231	8	1	109	0.5	44	9	15	1	13	6	10	0.05	5	1436	0.5	0.5	2	2	68	0.5	31	7	17	15	PR 013097-03	Pinal Ranch
500442	3688033	116	0.05	314	178	3	20	9884	68	0.5	479	0.5	33	10	9	0.5	17	75	19	0.4	8	539	0.5	1	2	0.5	117	0.5	87	14	24	9	PR 013097-04	Pinal Ranch
500539	3687641	329	0.05	1217	119	1.9	25	9339	79	2	161	0.5	155	13	70	2	14	7	21	0.05	17	1208	0.5	24	2	2	101	6	45	15	23	8	PR 013097-05	Pinal Ranch
500231	3687046	549	0.05	1173	122	3.3	23	11847	23	1	357	0.5	72	4	162	1	8	2.5	22	0.05	20	1516	0.5	34	2	0.5	58	11	177	12	26	7	PR 013097-06	Pinal Ranch
500239	3686455	390	0.05	1528	153	6.7	28	338294	51	1	361	0.5	63	12	86	2	12	29	34	0.05	12	1275	1	42	2	0.5	126	8	141	11	20	9	PR 013097-07	Pinal Ranch
501308	3687388	34	0.05	1084	228	0.1	20	11638	20	0.5	44	0.5	96	14	2	1	23	2.5	8	0.05	1	800	0.5	0.5	1	0.5	255	0.5	19	7	14	27	PR 013097-08	Pinal Ranch
501479	3688246	261	0.05	1304	125	0.7	19	10137	17	1	72	0.5	92	10	17	2	11	19	7	0.05	9	983	0.5	10	3	0.5	71	8	37	8	15	12	PR 013097-09	Pinal Ranch
505401	3680000	25	0.05	1218	15	0.1	34	1500	28	1	203	0.5	74	14	0.5	1	18	2.5	13	0.05	1	764	1	2	3	2	123	1	5	12	3	15	PR 013097-10	Pinal Ranch
504886	3680508	52	0.05	671	195	1	47	9107	23	0.5	140	0.5	84	53	13	2	54	66	7	0.2	5	1525	0.5	3	11	2	428	24	30	13	4	14	PR 013097-11	Pinal Ranch
505573	3680591	30	0.05	876	138	0.1	13	8163	112	0.5	35	0.5	115	6	4	0.5	8	43	11	0.05	3	711	0.5	0.5	2	0.5	229	41	161	7	2	15	PR 013097-12	Pinal Ranch
502519	3679931	30	0.05	599	166	1	17	8151	77	0.5	115	0.5	110	17	15	1	18	96	7	0.05	7	965	0.5	0.5	4	0.5	255	40	53	12	10	22	PR 013197-01	Pinal Ranch
501473	3679777	36	0.05	972	253	0.4	24	33795	25	7	42	1	57	14	21	3	16	16	7	0.05	7	964	0.5	0.5	4	0.5	80	42	54	26	16	8	PR 013197-02	Pinal Ranch
500572	3679927	127	0.05	1182	15	1.6	12	15325	46	1	45	0.5	40	3	42	1	5	19	6	0.05	6	720	0.5	10	1	0.5	67	27	5	6	22	8	PR 013197-03	Pinal Ranch
500191	3681343	229	0.05	978	165	4.8	38	11547	81	0.5	117	0.5	31	5	12	1	4	2.5	18	0.05	11	586	0.5	18	1	0.5	83	26	35	9	28	10	PR 013197-04	Pinal Ranch
500213	3683259	101	0.05	988	188	1	37	14431	51	1	71	0.5	161	12	32	2	3	30	8	0.05	6	1077	0.5	7	3	0.5	134	24	14	11	27	10	PR 013197-05	Pinal Ranch
500722	3684323	75	0.05	1245	129	1.3	38	1500	39	3	247	0.5	79	16	0.5	4	19	22	17	0.05	7	765	2	3	4	1	79	3	67	26	23	19	PR 013197-06	Pinal Ranch
501139	3684289	58	0.05	1158	120	0.1	24	10648	27	1	43	0.5	125	18	9	2	15	11	6	0.05	6	813	0.5	0.5	2	0.5	91	15	22	8	18	26	PR 013197-07	Pinal Ranch
501825	3682620	23	0.05	2397	199	1.9	105	1500	85	6	45	3	141	41	2	6	53	31	16	0.05	3	797	2	3	10	4	97	1	48	622	13	30	PR 013197-09	Pinal Ranch
502268	3681020	38	0.05	1299	223	0.4	34	7128	31	2	26	0.5	132	19	0.5	3	30	19	11	0.2	3	736	2	1	3	2	182	3	11	28	12	20	PR 013197-10	Pinal Ranch
503144	3681781	182	0.05	815	197	1	16	9694	17	3	95	0.5	68	11	36	4	13	15	9	0.05	9	749	1	3	2	0.5	51	36	41	20	7	13	PR 013197-11	Pinal Ranch
502782	3683171	11	0.05	149	33	0.1	7	8964	3	0.5	12	0.5	26	3	0.5	3	8	2.5	3	0.05	1	311	0.5	0.5	2	2	120	1	5	4	9	3	PR 013197-12	Pinal Ranch
502360	3684587	65	0.05	1138	533	0.1	37	31742	33	0.5	163	0.5	515	16	102	2	20	61	8	0.3	7	1006	0.5	0.5	2	1	835	85	160	14	11	16	PR 013197-13	Pinal Ranch
503191	3681016	64	0.05	194	118	0.4	21	1500	52	0.5	136	0.5	59	8	42	2	11	34	7	0.2	25	607	0.5	5	1	0.5	218	13	16	2	6	8	PR 013197-14	Pinal Ranch
502942	3679866	19	0.05	503	307	0.7	23	9573	69	1	74	0.5	91	14	120	0.5	19	68	6	0.2	8	1143	0.5	1	3	0.5	120	28	26	1	8	16	PR 013197-15	Pinal Ranch
504037	3679542	40	0.05	137	325	0.1	24	17917	12	1	92	0.5	279	8	9	0.5	12	28	4	0.2	4	814	0.5	2	4	2	508	7	5	3	5	36	PR 013197-16	Final Ranch
488861	3682170	103	0.05	214	194	0.5	12	4972	10	0.5	39	0.5	177	7	8	0.5	6	15	11	0.05	5	738	0.5	0.5	2	0.5	361	8	43	9	156	16	SU 011697-01	Superior
488491	3682672	108	0.05	1044	241	0.8	22	4947	50	2	606	0.5	112	12	9	3	14	61	30	0.05	6	552	0.5	26	3	0.5	195	37	82	29	159	12	SU 011797-01	Superior
489982	3682950	498	0.05	353	217	0.5	20	43851	29	0.5	576	0.5	90	14	8	0.5	15	39	9	0.4	5	1103	0.5	4	2	0.5	404	28	42	9	148	16	SU 011797-02	Superior
488471	3683304	136	0.05	132	43	0.3	6	4275	10	0.5	131	0.5	31	4	0.5	0.5	5	19	5	0.05	3	394	0.5	0.5	1	0.5	203	1	40	8	160	12	SU 011797-03	Superior
488411	3683392	1150	0.05	657	283	0.8	16	9819	58	2	648	0.5	102	10	17	2	13	74	12	0.05	15	845	0.5	9	2	0.5	426	9	52	20	161	15	SU 011797-04	Superior
488900	3684285	2282	0.05	182	114	1.2	7	16390	19	0.5	607	0.5	64	5	19	0.5	6	44	11	0.05	29	1068	0.5	8	0.5	0.5	275	42	47	3	155	20	SU 012197-01	Superior
489203	3684927	1733	0.05	234	52	7	33	17296	80	5	2793	2	36	17	11	9	21	84	31	0.05	29	571	2	58	5	1	333	16	448	40	150	8	SU 012197-02	Superior
489109	3683812	4918	0.2	205	37	3.9	36	14783	21	2	7747	0.5	40	16	11	3	17	33	124	0.05	182	337	0.5	50	5	0.5	151	140	466	19	152	10	SU 012197-04	Superior
489361	3681266	55	0.05	584	82	0.3	14	10008	19	2	73	0.5	123	7	18	3	7	61	15	0.05	12	1181	0.5	0.5	4	1	339	42	185	18	149	20	SU 012197-08	Superior
488791	3681403	260	0.05	397	114	0.9	63	17653	32	9	336	4	60	42	47	26	33	66	44	0.05	12	668	7	5	17	3	330	48	248	98	157	14	SU 012197-09	Superior
489146	3680431	71	0.05	188	80	0.3	42	8580	36	8	146	4	67	27	23	25	26	58	32	0.05	6	381	6	4	17	3	317	69	179	82	151	13	SU 012197-10	Superior
488569	3680439	143	0.05	87	276	1.2	25	5278	80	0.5	142	0.5	75	15	67	5	17	96	14	0.05	17	629	0.5	4	3	0.5	262	55	43	11	158	12	SU 012197-11	Superior
488937	3679512	661	0.05	835	941	1.5	49	162045	20	2	118	2	964	32	256	34	32	84	71	0.2	18	2568	2	0.5	34	7	7103	107	77	74	154	25	SU 012197-12	Superior
489000	3679143	27	0.05	184	57	0.1	48	9514	14	5	35	3	56	21	13	38	15	29	19	0.05	5	323	7	0.5	15	5	120	24	106	54	153	29	SU 012197-13	Superior
496171	3679294	35	0.05	822	40	0.3	165	5630	117	11	43	4	128	60	10	31	59	38	38	0.05	2	552	9	1	24	6	404	9	156	80	115	22	SU 012197-14	Superior
497093	3680735	25	0.05	525	15	0.9	28	4969	14	2	19	0.5	44	16	160	2	16	35	7	0.05	3	599	0.5	0.5	3	1	197	34	44	7	106	18	SU 012197-15	Superior
496305	3680370	28	0.05	643	143	0.3	53	13835	21	4	14	1	57	25	19	6	22	21	14	0.05	2	608	4	0.5	6	3	164	6	74	19	113	30	SU 012197-16	Superior
496331	3681163	59	0.05	672	15	0.6	39	9035	26	2	42	0.5	48	9	21	3	8	10	11	0.05	4	616	0.5	2	3	1	85	12	39	12	112	17	SU 012197-17	Superior
487315	3681884	74	0.05	1994	30	1.2	57	11757	33	4	79	2	40	22	8	8	14	16	26	0.05	3	578	3	1	10	3	78	5	95	33	175	15	SU 012197-18	Superior
495617	3681145	24	0.05	853	99	0.6	46	4829	17	6	24	1	104	22	17	9	20	29	13	0.05	2	623	2	0.5	6	3	184	13	86	27	120	22	SU 012197-19	Superior
495505	3680348	171	0.05	560	71	1.5	32	10343	23	4	221	0.5	101	16	40	4	13	27	23	0.05	10	730	2	10	2	1	95	14	96	21	122	8	SU 012197-20	Superior
495901	3681973	122	0.05	902	83	1.2	66	13190	13	4	67	2	41	21	28	11	21	14	18	0.05	5	312	3	2	9	2	43	16	53	42	117	8	SU 012197-21	Superior
490873	3681780	935	0.05	801	15	4.1	76	1500	81	9	2236	3	110	33	74	14	33	108	277	0.05	47	239	4	64	11	2	303	104	779	69	143	10	SU 012197-01	Superior

Superior Project

INTRODUCTION

1. Purpose and Scope.

The purpose of this investigation was to determine the extent of the contact metamorphic aureole around the Cerro de la Gloria Stock and to study its relationship to the sulfide replacement bodies in the San Martin mine. The mineral zoning in the mine was also studied, paying special attention to the horizontal zonation in the 8th level and to the vertical variations in mineralogy to deeper levels.

Black and white aerial photographs at a scale of 1: 15,000 were used as topographic base during the field work; the information compiled was plotted on a topographic map at the same scale. The mapped area was approximately 12 km^2. Detailed underground mapping at a scale of 1:250 was done in the 8-550 stope of the mine, paying special attention to the mineralogical variations. Over 500 m of drill core were described and sampled.

Laboratory work included routine petrographic study of thin sections of samples collected in the intrusive body, in the skarn zone, and in the metamorphic aureole. Universal and spindle stages were used to determine the composition of the plagioclase and other silicates. Plagioclase compositions

Superior Data

Superior Project
Picketpost Mtn 7½' Quad

UTME	UTMN	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cr	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Pd	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp ID	Area	
480441	3681391	71	0.05	819	334	0.3	45	14779	62	10	164	0.5	105	17	14	2	18	66	10	0.05	4	1118	0.5	2	5	1	109	29	94	8	230	20	PM 011397-01	Picketpost Mtn
481139	3681253	13	0.05	553	15	0.5	44	4351	111	5	72	0.5	58	23	11	3	14	83	9	0.05	6	367	0.5	0.5	12	1	117	31	67	13	209	30	PM 011397-02	Picketpost Mtn
481979	3680550	59	0.05	395	421	0.3	101	1500	27	3	94	0.5	82	68	2	3	71	44	8	0.05	3	1087	2	0.5	17	2	110	93	39	8	207	21	PM 011397-03	Picketpost Mtn
481578	3679867	19	0.05	1409	82	0.8	19	5198	50	4	65	0.5	54	20	12	2	17	39	16	0.05	8	784	0.5	0.5	5	0.5	121	55	132	11	208	20	PM 011397-04	Picketpost Mtn
483248	3680850	47	0.05	747	63	1.3	60	1500	105	5	100	0.5	46	20	19	3	23	66	14	0.05	6	487	2	2	14	1	93	180	135	10	202	16	PM 011397-05	Picketpost Mtn
482009	3681234	28	0.05	269	196	0.3	10	6105	26	0.5	17	0.5	154	7	23	0.5	8	30	2	0.05	5	1516	0.5	0.5	1	1	166	14	28	7	203	37	PM 011397-06	Picketpost Mtn
482082	3681333	15	0.05	894	86	0.3	30	11155	118	4	46	0.5	76	14	12	3	13	93	9	0.05	6	616	0.5	2	6	1	139	30	69	18	206	22	PM 011397-07	Picketpost Mtn
482567	3682143	10	0.05	340	276	0.8	60	1500	26	3	42	0.5	43	36	2	2	34	26	7	0.05	3	605	0.5	0.5	8	1	71	51	39	18	205	20	PM 011397-08	Picketpost Mtn
483432	3681771	51	0.05	72	146	0.3	24	7448	39	0.5	54	0.5	43	18	0.5	3	31	46	6	0.2	2	366	0.5	0.5	7	3	229	14	43	41	199	13	PM 011397-09	Picketpost Mtn
483400	3682506	45	0.05	1144	563	1.3	13	4643	67	0.5	116	0.5	344	14	6	0.5	24	67	6	0.05	2	2438	0.5	0.5	3	0.5	269	44	53	17	200	17	PM 011397-11	Picketpost Mtn
482878	3683130	28	0.05	95	249	0.5	11	5913	43	0.5	20	0.5	408	19	0.5	1	21	37	2	0.05	3	730	0.5	0.5	3	0.5	236	28	24	8	204	23	PM 011497-01	Picketpost Mtn
483315	3685731	14	0.05	173	63	0.3	20	6871	46	2	54	0.5	108	14	0.5	3	12	89	9	0.05	1	378	0.5	1	2	0.5	248	53	41	30	201	16	PM 011497-04	Picketpost Mtn
484185	3686332	46	0.05	165	107	1	12	8337	35	2	148	0.5	54	7	0.5	1	9	50	6	0.05	3	362	0.5	0.5	3	0.5	143	12	42	17	195	10	PM 011497-05	Picketpost Mtn
486074	3680940	85	0.05	94	192	1	39	10790	40	3	101	1	57	13	63	7	14	58	7	0.05	10	249	2	1	5	0.5	137	25	69	39	185	24	PM 011597-01	Picketpost Mtn
486500	3681350	10	0.05	144	218	1	40	6904	48	3	56	2	130	26	16	11	14	48	16	0.05	6	841	4	0.5	7	2	187	39	84	55	184	13	PM 011597-02	Picketpost Mtn
485455	3681442	23	0.05	143	193	0.8	36	21020	42	4	44	1	56	13	24	8	12	50	10	0.05	16	201	2	1	6	1	115	20	72	52	190	15	PM 011597-03	Picketpost Mtn
487161	3681206	773	0.05	302	88	1.8	43	15344	42	2	172	2	101	14	33	21	17	50	23	0.05	23	676	5	7	5	2	245	104	81	76	178	10	PM 011597-04	Picketpost Mtn
485206	3680932	260	0.05	144	65	2	15	8614	59	0.5	129	0.5	67	6	29	3	7	21	15	0.05	11	309	0.5	3	0.5	1	109	11	42	15	191	7	PM 011597-05	Picketpost Mtn
486972	3682117	404	0.05	232	272	0.5	11	7742	20	0.5	37	0.5	340	7	14	1	6	32	16	0.05	33	1197	0.5	1	1	1	120	26	42	11	180	27	PM 011597-06	Picketpost Mtn
484521	3681453	154	0.05	96	217	1	45	14994	41	3	117	1	62	13	9	10	14	47	20	0.05	22	154	2	2	5	1	74	36	85	48	194	10	PM 011597-07	Picketpost Mtn
484141	3680906	130	0.05	36	223	0.8	13	3193	21	0.5	66	0.5	103	13	0.5	2	13	41	3	0.05	10	277	0.5	0.5	2	0.5	88	11	40	15	196	15	PM 011597-09	Picketpost Mtn
483737	3684582	60	0.05	420	80	0.5	14	1500	39	1	47	0.5	77	7	0.5	1	9	39	5	0.05	3	457	0.5	1	3	0.5	211	17	31	18	198	11	PM 011597-10	Picketpost Mtn
484115	3683301	271	0.05	260	247	1	17	12814	20	0.5	68	0.5	132	8	12	1	9	41	3	0.05	15	1040	0.5	0.5	2	0.5	87	27	31	13	197	13	PM 011597-11	Picketpost Mtn
484919	3682890	66	0.05	593	202	1.3	25	4976	55	2	65	0.5	230	21	0.5	4	38	74	14	0.05	8	665	2	1	5	0.5	392	7	74	46	193	12	PM 011597-12	Picketpost Mtn
485690	3683326	37	0.05	1232	37	1	14	8773	93	0.5	242	0.5	110	9	1	0.5	10	79	6	0.05	3	1288	0.5	5	0.5	0.5	341	75	31	9	188	20	PM 011697-01	Picketpost Mtn
487015	3685979	132	0.05	332	206	0.3	8	7469	14	0.5	8	0.5	322	3	6	2	5	5	1	0.05	3	1515	0.5	0.5	1	0.5	559	11	17	3	179	32	PM 011697-04	Picketpost Mtn
487219	3683170	378	0.05	610	95	1.3	15	3824	40	0.5	583	0.5	95	8	37	0.5	11	32	21	0.05	26	1138	0.5	10	2	0.5	322	53	47	6	177	12	PM 011697-09	Picketpost Mtn
487840	3679536	158	0.05	136	34	0.8	8	3511	37	0.5	96	0.5	89	6	15	10	5	15	12	0.05	9	394	2	7	2	1	93	22	36	17	170	13	PM 011697-10	Picketpost Mtn
487262	3679597	57	0.05	87	208	0.8	10	3261	18	0.5	51	0.5	111	5	0.5	6	6	31	11	0.05	4	629	2	4	1	0.5	266	20	32	15	176	12	PM 011697-11	Picketpost Mtn
486877	3687857	20	0.05	119	146	0.5	82	6341	22	6	35	3	136	23	1	27	23	34	22	0.05	8	190	7	0.5	12	3	146	19	100	104	181	20	PM 011697-12	Picketpost Mtn
488212	3680133	129	0.05	547	295	1	11	6037	30	1	66	0.5	169	8	5	5	7	23	19	0.2	9	667	2	5	2	0.5	296	6	43	26	164	13	PM 011697-13	Picketpost Mtn
487620	3680839	336	0.05	312	106	2	27	5080	76	1	143	0.5	133	7	15	5	7	47	27	0.05	9	582	0.5	7	1	1	183	7	71	27	172	13	PM 011697-14	Picketpost Mtn
488280	3681522	745	0.05	571	356	2.8	22	12885	53	0.5	168	0.5	99	17	135	2	12	67	33	0.3	68	789	0.5	0.5	1	0.5	184	44	114	19	162	17	PM 011697-15	Picketpost Mtn
487895	3682137	95	0.05	1848	138	0.8	9	1500	63	0.5	180	0.5	151	8	3	0.5	8	59	16	0.05	7	668	0.5	3	2	0.5	255	4	32	7	168	11	PM 011697-16	Picketpost Mtn
487865	3681665	300	0.05	267	221	1.5	16	13385	28	0.5	581	0.5	135	9	30	3	11	31	26	0.3	26	733	0.5	12	2	0.5	81	25	56	13	169	10	PM 011697-17	Picketpost Mtn
487436	3681753	569	0.05	352	192	0.5	13	8350	27	0.5	108	0.5	98	8	36	0.5	7	35	11	0.05	24	1170	0.5	1	1	0.5	304	42	57	8	174	16	PM 011697-18	Picketpost Mtn
486748	3681801	791	0.05	409	204	5.6	31	5178	38	2	304	1	80	15	83	12	15	50	262	0.05	86	792	3	4	4	1	127	14	378	47	182	12	PM 011697-19	Picketpost Mtn
486589	3682251	51	0.05	605	13	0.5	12	4335	82	0.5	128	0.5	51	6	3	0.5	7	79	29	0.05	6	641	0.5	1	1	0.5	140	5	35	21	183	12	PM 011697-20	Picketpost Mtn
485011	3682261	19	0.05	466	86	0.3	22	1500	46	2	98	0.5	76	11	6	0.5	12	40	7	0.05	5	414	0.5	0.5	3	0.5	120	33	26	11	192	16	PM 011797-01	Picketpost Mtn
485836	3682343	132	0.05	1188	95	0.5	18	1500	78	1	150	0.5	115	10	5	1	15	131	4	0.05	3	535	0.5	3	1	0.5	286	8	28	17	187	12	PM 011797-02	Picketpost Mtn
486052	3683643	40	0.05	869	79	0.3	9	4146	113	0.5	76	0.5	28	4	0.5	0.5	4	72	2	0.05	4	556	0.5	2	0.5	0.5	55	15	30	7	186	8	PM 011797-03	Picketpost Mtn
487455	3682558	23	0.05	496	152	0.8	8	7007	41	0.5	94	0.5	125	9	0.5	0.5	9	51	0.5	0.05	2	1640	0.5	0.5	0.5	0.5	139	12	11	8	173	17	PM 011797-04	Picketpost Mtn
488171	3682745	121	0.05	1277	131	1	31	3765	50	3	378	1	95	18	0.5	3	20	68	20	0.05	5	933	2	2	3	0.5	309	12	99	48	165	21	PM 011797-05	Picketpost Mtn
488088	3683108	1898	0.05	721	91	4.3	6	1500	53	0.5	3556	0.5	35	3	2	0.5	4	30	56	0.05	36	336	0.5	13	0.5	0.5	169	18	207	5	166	8	PM 011797-06	Picketpost Mtn
485594	3684640	204	0.05	317	134	1.5	21	1500	102	0.5	477	0.5	109	9	15	0.5	10	126	18	0.05	7	714	0.5	12	3	0.5	256	10	70	12	189	16	PM 011797-07	Picketpost Mtn
487728	3683072	220	0.05	295	92	0.8	12	1500	63	0.5	260	0.5	125	5	5	0.5	10	73	6	0.2	6	453	0.5	2	1	0.5	433	2	61	9	171	10	PM 011797-08	Picketpost Mtn
488260	3684170	615	0.05	217	74	2.3	7	1500	49	0.5	499	0.5	90	4	0.5	0.5	5	46	13	0.05	15	327	0.5	1	2	0.5	137	7	60	10	163	12	PM 011797-09	Picketpost Mtn
487988	3683047	1685	0.05	53	92	0.3	10	1500	7	0.5	39	0.5	169	11	0.5	18	12	12	3	0.05	4	1841	2	0.5	4	0.5	308	10	12	11	167	22	PM 011797-10	Picketpost Mtn
500343	3689994	26	0.05	703	216	0.7	40	1500	5	3	41	0.5	130	20	22	4	17	18	10	0.05	51	552	0.5	0.5	4	1	79	8	47	21	23	25	PR 013097-01	Pinal Ranch

Page 1

were determined with the Slemmons' method (1962). Composition of other silicates were determined using Troger's tables of optical properties (1952). Ore textures and paragenesis were studied in polished sections.

2. Location and Access.

The San Martin district is in the north-central part of the state of Zacatecas, 620 km northwest of Mexico City and 150 km northwest of Zacatecas, Zac. (Fig. 1). The nearest major city is Durango, located 100 km to the northwest. The San Martin Mine is 6 km southwest of Federal Highway 45, which is an all weather road that affords easy access to a paved road that leads to the mine (Fig. 1).

Other important mines in the district are the Sabinas and Noria de San Pantaleon mines, located 1.5 km south and 3.0 km west of the San Martin Mine respectively. The Pachuca and El Refugio mines are in the northern and eastern portions of the district respectively.

3. History of the District.

Real de San Martin is one of the oldest mining districts in Mexico. The first vein discovered by the Spaniards was Veta de Ibarra in 1548. Other important veins, San Marcial,

FACSIMILE MESSAGE

DATE: 03 15 97

TO: EKMcL & LCA

FROM: (-)

PHONE/FAX:

SUBJECT: Missing Superior Project Numbers

NUMBER OF PAGES INCLUDING COVER 5

On the recent "Superior Data", pages 1 thru 4, which I received, I note the following missing numbers:

NORTHINGS

PM 01 14 97 - 2 and 3 { 2 - 3583235, 3 - 3584083

PM 01 16 97 - 2, 3, 5, 6, 7, 8. { 2 - 3583909, 3 - 3584915, 5 - 3587104, 6 - 3585215, 7 - 3584144, 8 - 3583833

SU 01 21 97 - 3, 5, 6, 7. { 3 - 3586405, 5 - 3582417, 6 - 3582156, 7 - 3581658

SU 01 23 97 - 3, 4, 6. { 3 - 3583212, 4 - 3582673, 6 - 3583506

SU 01 24 97 - 2, 4, 9. { 2 - 3585273, 4 - 3582682, 9 - 3586327

SU 01 29 97 - 1, 2, 3. { 1 - 3585545, 2 - 3585216, 3 - 3586149

Should they not be added to the list?

Do the new entries change any of the patterns/anomalies. (which I do not have a print-out of.).

Cheers

(-)

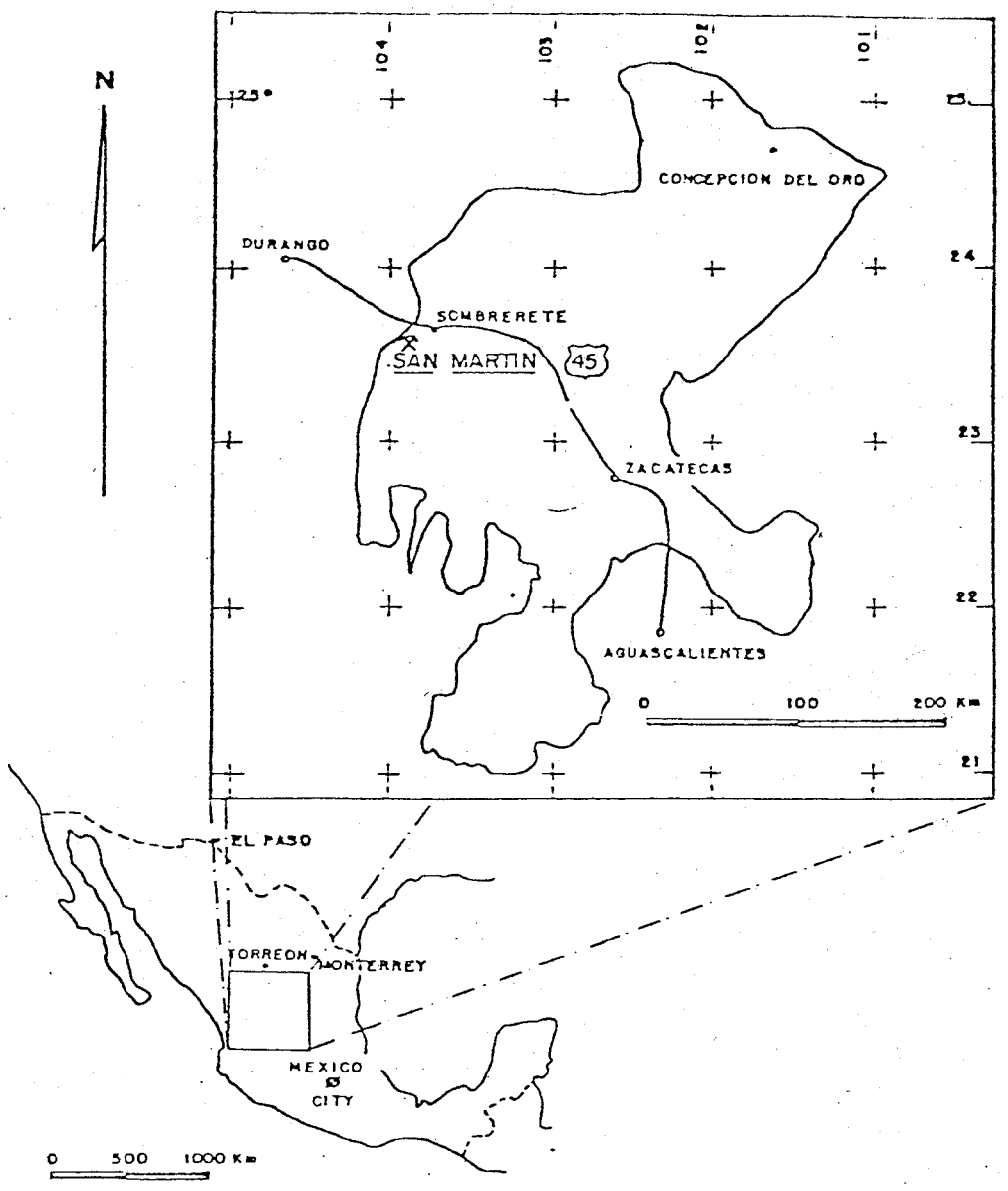


Fig. 1. LOCATION MAP

SU 012397-3	3583212
SU 012397-4	3582673
SU 012397-6	3583506
SU 012497-2	3585273
SU 012497-4	3582682
SU 012497-9	3586327
SU 012997-1	3585545
SU 012997-2	3585216
SU 012997-3	3586149

} 21

If all of the above samples belong with the Superior Data, then the range of coordinates will need to be modified so that they will be incorporated. With the UTMs I had used, 210 samples were selected and the Summary Sheets, PST Plots, and Contours were all based on the 210 samples. Please let me know what needs to be done.

Thanks,

Evelyn

Evelyn

210
21
231

Noria de San Pantaleon, Sabinas, and Las Animas were discovered later. Kohls and Amezaga (1956) have estimated that the total production during the period 1548-1821 was 250,000 metric tons of ore with 450 g of silver and 0.5 g of gold per ton. In the last part of the Nineteenth Century 50,000 metric tons of ore were mined. Primary sulfide ore was mined in the period of 1938-1943, with an average grade of 450 g/ton of silver, 1 to 3% lead, 1 to 4% Cu, and 6% zinc, (Kohls and Amezaga, 1956).

In 1978, the only significant production in the district came from the San Martin Mine (1200 metric tons/day) and from the Sabinas Mine (200 metric tons/day). The Noria de San Pantaleon Mine, which was the principal producer between 1930 and 1940, has been closed since the late 1940's due to labor problems. The Pachuca and El Refugio mines produced very small tonnages of high-grade silver ore in 1978.

The average grade of the ore produced in the San Martin Mine is 150 g/ton of silver, 6% zinc, and 1.0% copper. The Sabinas Mine produces ore with 190 g/ton silver, 4% lead, 4.5% zinc, and 0.5% copper.

Evelyn K. McLenna

No. 97- 29
Date: March 19, 1997

FACSIMILE TRANSMISSION

To:	Jim Sell	Fax No.	578-7196
CC:	L. Clark Arnold		
From:	Evelyn McLenna	Fax No.	(520) 546-9534

Total number of pages, including this cover letter: 6

If you do not receive all the pages or clear copies, please contact Evelyn McLenna immediately at (520) 885-6006.

Subject: Questions Regarding Superior

Jim:

Regarding your questions about the missing sample number on the set of Superior Data, the reason each of the "missing numbers" did not occur is that each of those samples falls out of the UTM ranges that I have for Superior as listed below:

Easting		**Northing**	
From	To	From	To
480000	510000	3676000	3700000

Missing samples northings are:

PM 011497-2	3583235
PM 011497-3	3584083
PM 011697-2	3583909
PM 011697-3	3584915
PM 011697-5	3587104
PM 011697-6	3585215
PM 011697-7	3584144
PM 011697-8	3583833
SU 012197-3	3586405
SU 012197-5	3582417
SU 012197-6	3582156
SU 012197-7	3581658

faxed 3-19-97

4. Previous Investigations.

In spite of the fact that the mining activity has been sustained intermittently for more than 400 years in the San Martin area, only three short papers had been published about its geology. Kohls and Amezaga (1956) published a short description of the geology of the district in one of the field-trip guides of the 20th International Geology Congress. A short reference to the district's geology and production was made by Gonzalez Reyna (1946) in his catalogue of ore deposits of Zacatecas. Recently, Torres Leyva (1977) published a paper in which he described the geometry of the replacement ore bodies in the San Martin Mine.

The most extensive study of the parameters controlling the mineralization in the ore bodies of the San Martin Mine was performed by Burton (1975), who studied the mineral zoning in the upper levels of the mine and determined the homogenization temperatures and salinities of the fluid inclusions in the gangue minerals.

Castillo and others (1976) made a photogeologic study of the surroundings of the district. The covered area was approximately 300 km^2 at a scale of 1:25,000. This unpublished report provided useful information about the geologic setting of the district.

03 19 97

Hi EKMcL !

Back to work, after being in Mexico, & what do I find !

✓ 1) The TEV 771 from CRoske

2) Your note about the "missing" PM + SU samples; well, I checked it out & it seems the 368 UTM got changed to 358 in your sample tally-Summary sheet, so that was the problem.

I enclose (fax) 9 sheets to you for your INFO + correction.

Thanks for finding this error

Sorry

GEOLOGIC SETTING OF THE SAN MARTIN DISTRICT

The San Martin District is in the transitional zone between two major morphotectonic provinces of Mexico (Fig. 2). To the west is the Sierra Madre Occidental, which is a deeply dissected volcanic plateau, 1200 km long and 200 to 300 km wide. This province consists mainly of flat lying or gently tilted mid-Tertiary lava flows, tuffs, and agglomerates with an overall andesitic composition (Guzman and de Cserna, 1963). In general, however, the lower part of the volcanic series tend to be andesitic and upper part grades to rhyolitic types (McDowell and Keizer, 1977). The volcanic rocks of the Sierra Madre Occidental thin toward the east, and gradually give way to the parallel folded mountain ranges of the Sierra Madre Oriental.

The west-central portion of the Sierra Madre Oriental, also known as the Mesa Central, is composed mainly of a thick sequence of marine sedimentary rocks which were folded and faulted during the Laramide Orogeny. Numerous erosional remnants or outliers of the eastern portion of the volcanic field of the Sierra Madre Occidental province are scattered throughout the region, capping the highest portions of the mountain ranges.

The Mesa Central has been the most important base metal-

FROM : Evelyn K. McLenna PHONE NO. : 520 546 9534 Feb. 10 1997 05:53PM P1

Evelyn K. McLenna

No. 25
Date: February 10, 1997

FACSIMILE TRANSMISSION

To:	Jim Sell	Fax No.	578-7196
CC:	L. Clark Arnold		
From:	Evelyn McLenna	Fax No.	(520) 546-9534

Total number of pages, including this cover letter. 1

If you do not receive all the pages or clear copies, please contact Evelyn McLenna immediately at (520) 885-6008.

Subject Questions

Jim:

Would you check on the UTMs for samples WM 012797-03 and SU-012897-14 for me? They appear to be incorrect in EZLDATA.

Thanks,

Evelyn

Evelyn

According to sheet sent in to me:

WM 012797-03 3581896 N
465809 E

SU 012897-14 3683478 N
499183 E

Corrected in EZL Data
2-20-97

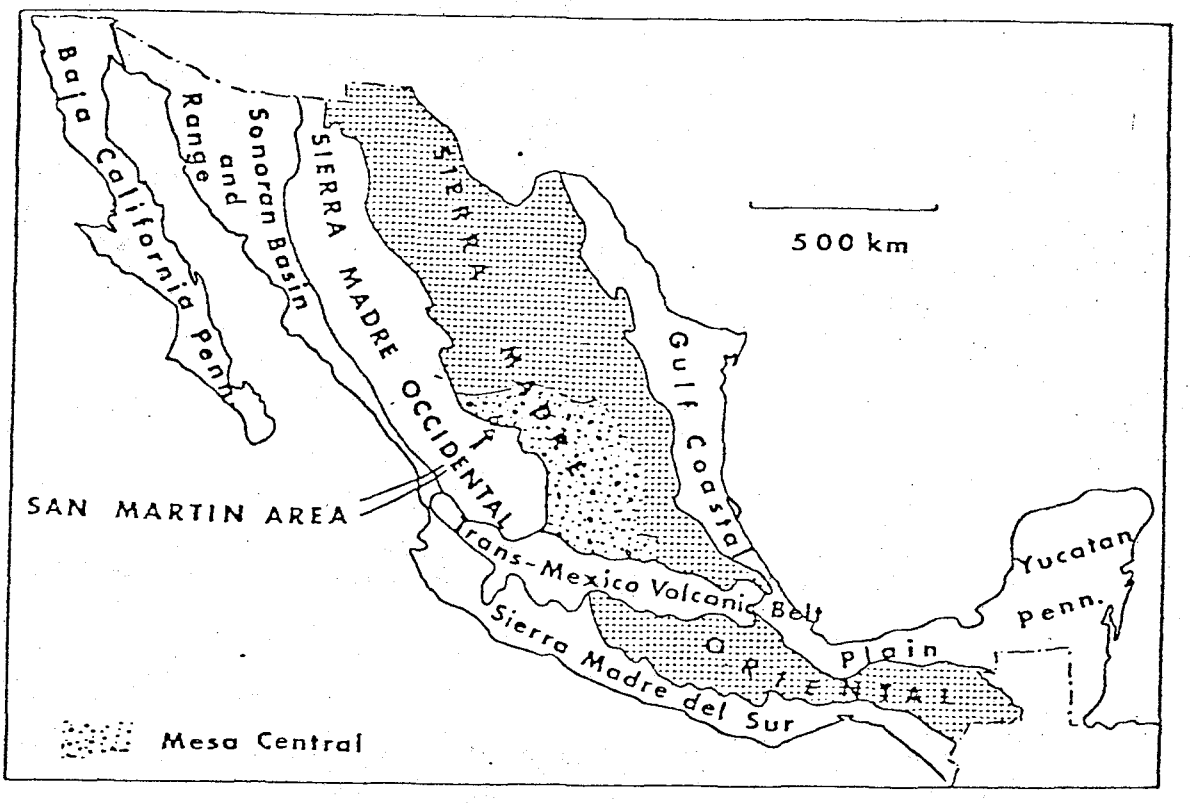
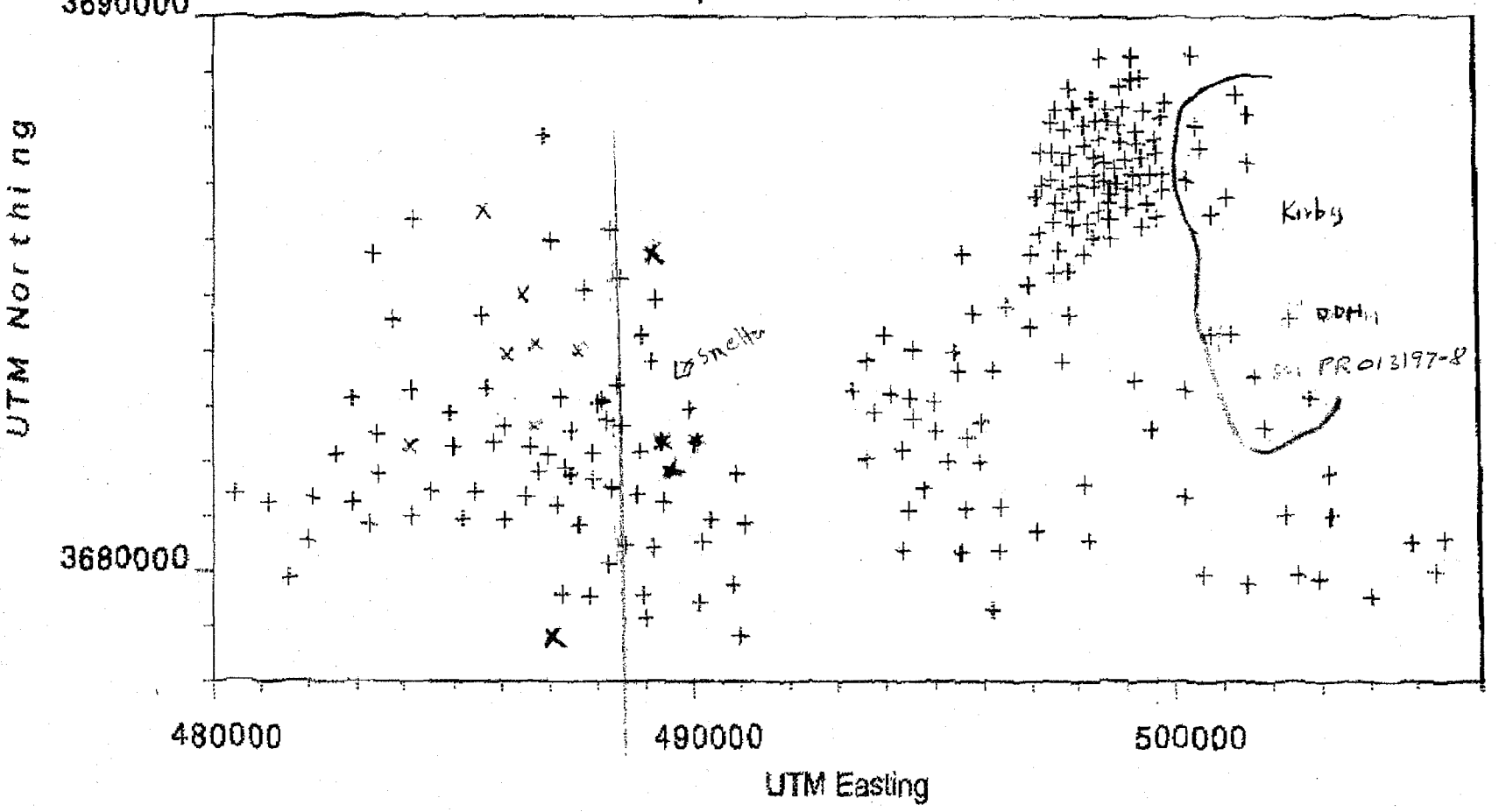


Figure 2. Morphotectonic provinces of México (Modified after Guzmán and de Cserna, 1963)

Superior Project Area

Sample Locations as of 3/6/97



1:120,000

producing region of Mexico. Zinc, lead, and silver have been the main products, with subordinate amounts of copper and gold. The ore deposits are of three principal types: 1. replacement in limestones that may or may not be associated with intrusive stocks; 2. veins; and 3. contact metamorphic ores. Volumetrically the least important of these types are the pyrometasomatic deposits, but these are the only important producers of copper, especially when zinc and minor lead are present (Clendenin, 1951).

Mineralization in the Mesa Central is related to relatively small intrusive bodies of granitic composition. The stocks in central Mexico can be divided into two groups according to their age (Pantoja Alor, et al, 1967): those intruded during the Cretaceous (70-80 m.y. old), and those emplaced during "the post-Laramide intrusive event" (50 to 30 m.y. old).

The Cerro de la Gloria Stock that crops out in the San Martin District is interpreted as Oligocene in age (Burton, 1975), although there is no absolute-age determination available. Sedimentary rocks of Cretaceous age crop out around the district. They are limestones containing argillaceous, silty and cherty layers, and limestones interbedded with brownish siltstones and shale layers. The mineralization is

Ag	Be	Bi	Dy	Er	Eu	Ga	Gd	Ge	Hg	Ho	In	Ir	Li	Lu	Mn	Os	Pd	Pr	Pt	Rb	Rh	Ru	Sc	Se	Sm	Sn	Tb	Ti	Tl	Tm	Y	Yb
-0.2	**-20**	**-1**	**2**	**-1**	**-1**	**-1**	**3**	**-1**	**-1**	**-1**	**-0.2**	**-1**	**19**	**-1**	**2028**	**-1**	**-1**	**4**	**-1**	**11**	**-1**	**-1**	**16**	**67**	**3**	**-1**	**-1**	**-100**	**-1**	**-1**	**11**	**-1**
0.5	-20	-1	7	4	6	6	11	-1	1.1	4	0.6	-1	20	6	1576	-1	-1	19	-1	8	-1	-1	-100	-30	8	-1	7	132	-1	4	37	6
-0.2	-20	-1	5	-1	2	9	9	1	2	1	0.3	-1	23	1	838	-1	-1	10	-1	9	-1	-1	-100	48	6	-1	2	-100	-1	-1	20	2
-0.2	-20	-1	3	1	2	4	6	2	-1	1	-0.2	-1	23	-1	1177	-1	-1	8	-1	10	-1	-1	-100	-30	5	-1	1	-100	-1	-1	15	2
-0.2	-20	-1	3	-1	-1	5	4	-1	-1	-1	-0.2	-1	25	-1	3000	-1	-1	3	-1	7	-1	-1	-100	58	4	-1	1	-100	-1	-1	9	1
-0.2	**-20**	**2**	**2**	**-1**	**-1**	**11**	**3**	**4**	**-1**	**-1**	**-0.2**	**-1**	**63**	**-1**	**5066**	**-1**	**-1**	**3**	**-1**	**21**	**-1**	**-1**	**-10**	**-30**	**3**	**-1**	**-1**	**-100**	**-1**	**-1**	**14**	**1**
0.5	-20	5	2	-1	-1	5	4	10	-1	-1	0.3	-1	18	-1	2008	-1	-1	4	-1	27	-1	-1	-100	42	3	-1	-1	-100	-1	-1	11	-1
0.2	-20	1	1	-1	-1	3	3	8	-1	-1	-0.2	-1	16	-1	1933	-1	-1	2	-1	31	-1	-1	-100	66	-1	-1	-1	-100	-1	-1	9	-1
-0.2	-20	-1	2	-1	1	2	4	5	-1	-1	-0.2	-1	26	-1	1973	-1	-1	3	-1	39	-1	-1	-100	39	-1	-1	-1	-100	-1	-1	10	-1
-0.2	-20	-1	2	-1	-1	2	3	6	-1	-1	-0.2	-1	23	-1	1635	-1	-1	3	-1	34	-1	-1	-100	31	2	-1	-1	-100	-1	-1	8	-1
0.2	-20	-1	-1	-1	-1	2	2	3	-1	-1	-0.2	-1	26	-1	1494	-1	-1	2	-1	39	-1	-1	-100	43	-1	-1	-1	-100	-1	-1	5	-1
-0.2	-20	-1	1	-1	-1	2	2	4	-1	-1	-0.2	-1	37	-1	1622	-1	-1	3	-1	38	-1	-1	-100	33	2	-1	-1	-100	-1	-1	9	-1
-0.2	**-20**	**1**	**1**	**-1**	**-1**	**-1**	**2**	**-1**	**-1**	**-1**	**-0.2**	**-1**	**15**	**-1**	**636**	**-1**	**-1**	**2**	**-1**	**8**	**-1**	**-1**	**11**	**105**	**1**	**-1**	**-1**	**-100**	**-1**	**-1**	**10**	**-1**
0.5	-20	-1	1	1	-1	11	3	1	-1	-1	0.3	-1	49	-1	1382	-1	1	3	-1	8	-1	-1	-100	-30	2	-1	-1	-100	-1	-1	14	-1
0.2	-20	-1	-1	-1	-1	6	2	-1	-1	-1	-0.2	-1	24	-1	1350	-1	-1	1	-1	12	-1	-1	-100	-30	2	-1	-1	-100	-1	-1	6	-1
-0.2	-20	-1	1	-1	-1	5	1	-1	-1	-1	-0.2	-1	28	-1	1234	-1	-1	-1	-1	12	-1	-1	-100	31	-1	-1	-1	-100	-1	-1	8	-1
3.9	**-20**	**33**	**4**	**1**	**1**	**6**	**4**	**9**	**-1**	**-1**	**0.4**	**-1**	**23**	**-1**	**754**	**-1**	**-1**	**5**	**-1**	**32**	**-1**	**-1**	**29**	**103**	**3**	**21**	**-1**	**101**	**-1**	**-1**	**20**	**2**
0.8	-20	16	2	-1	-1	3	3	5	-1	-1	0.3	-1	19	-1	1063	-1	-1	3	-1	17	-1	-1	-100	-30	2	5	-1	-100	-1	-1	14	-1
0.8	-20	15	3	-1	1	4	3	6	-1	-1	0.3	-1	15	-1	1086	-1	-1	3	-1	10	-1	-1	-100	64	-1	5	-1	-100	-1	-1	9	-1
1.6	-20	19	2	-1	1	6	3	6	-1	-1	0.3	-1	14	-1	1157	-1	-1	3	-1	10	-1	-1	-100	50	3	3	-1	-100	-1	-1	10	1
0.4	-20	8	-1	-1	-1	3	4	2	-1	-1	0.3	-1	19	-1	1252	-1	-1	2	-1	13	-1	-1	-100	40	2	-1	-1	-100	-1	-1	10	-1
-0.2	**-20**	**-1**	**2**	**-1**	**-1**	**4**	**3**	**1**	**-1**	**-1**	**-0.2**	**-1**	**21**	**-1**	**11946**	**-1**	**-1**	**3**	**-1**	**41**	**-1**	**-1**	**-10**	**73**	**2**	**1**	**-1**	**-100**	**-1**	**-1**	**10**	**-1**
0.2	-20	-1	1	-1	-1	6	3	-1	-1	-1	0.3	-1	28	-1	3958	-1	-1	2	-1	30	-1	-1	-100	-30	-1	-1	-1	101	-1	-1	8	-1
-0.2	-20	-1	3	-1	-1	8	6	-1	-1	-1	-0.2	-1	19	-1	5215	-1	-1	3	-1	27	-1	-1	-100	45	2	-1	-1	-100	-1	-1	11	1
-0.2	-20	-1	3	-1	1	7	3	-1	-1	-1	-0.2	-1	28	-1	4293	-1	-1	4	-1	53	-1	-1	-100	-30	3	-1	1	-100	-1	-1	16	-1
-0.2	-20	-1	2	-1	1	6	4	-1	-1	-1	-0.2	-1	36	-1	3894	-1	-1	3	-1	37	-1	-1	-100	44	-1	-1	-1	-100	-1	-1	13	-1
-0.2	-20	-1	1	-1	-1	6	3	-1	1.2	-1	-0.2	-1	35	-1	3661	-1	-1	4	-1	44	-1	-1	-100	34	3	-1	-1	-100	-1	-1	15	-1
-0.2	-20	-1	2	-1	-1	6	5	-1	-1	-1	-0.2	-1	29	-1	3822	-1	-1	3	-1	38	-1	-1	-100	-30	3	-1	-1	-100	-1	-1	14	1

associated with the quartz monzonite stock which intrudes the western flank of a NNW trending anticlinorium. Rhyolitic ash-flow tuffs of Miocene (?) age cover the southern part of the district.

CAP II Recon Project
Superior Project Area
EZL Results vs. Depth
May-97

Sample ID:	Samp Depth (inches)	Map Ref.	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr
Original Values																															
SU 011797-02	**16**	**A**	**498**	**-0.1**	**353**	**217**	**0.5**	**20**	**45851**	**29**	**-1**	**576**	**-1**	**90**	**14**	**8**	**-1**	**15**	**39**	**9**	**0.4**	**5**	**1103**	**-1**	**4**	**2**	**-1**	**404**	**28**	**42**	**9**
SU 031797-01A	4	A	357	0.3	567	262	2.8	34	22315	25	1	3574	-1	23	26	47	2	32	35	61	0.9	36	1623	-1	62	4	-1	338	32	58	17
SU 031797-01B	8		621	-0.1	264	257	0.5	23	45885	16	-1	405	-1	38	24	26	1	35	57	14	0.5	16	1465	-1	6	3	2	660	36	-10	6
SU 031797-01C	12		528	-0.1	168	300	0.2	17	56517	16	-1	295	-1	51	20	19	1	21	59	9	0.7	8	1324	-1	-1	3	4	672	43	15	6
SU 031797-01D	16		673	0.3	266	239	2.4	14	42837	18	-1	1090	-1	73	13	54	-1	15	59	48	0.9	14	1296	-1	6	3	3	523	175	51	9
Original Values																															
SU 011797-04	**15**	**B**	**1150**	**-0.1**	**657**	**283**	**0.8**	**16**	**9819**	**58**	**2**	**648**	**-1**	**102**	**10**	**17**	**2**	**13**	**74**	**12**	**-0.1**	**15**	**845**	**-1**	**9**	**2**	**-1**	**426**	**9**	**52**	**20**
SU 031797-02A	4	B	3463	0.3	241	159	1.7	19	4900	21	-1	3576	-1	38	11	14	-1	12	37	52	-0.1	298	1028	-1	21	5	-1	218	96	99	8
SU 031797-02B	8		5285	-0.1	239	231	0.9	10	6580	20	-1	1475	-1	75	8	33	-1	12	44	22	0.3	197	899	-1	13	2	-1	463	43	33	4
SU 031797-02C	13		7094	-0.1	198	417	0.7	19	8827	24	-1	521	-1	70	9	42	-1	12	44	13	0.3	70	1252	-1	-1	1	-1	717	37	15	6
SU 031797-02D	17		5829	-0.1	190	259	0.9	17	4421	22	-1	1214	-1	59	8	73	-1	9	38	16	-0.1	80	1382	-1	13	1	-1	579	38	46	4
SU 031797-02E	22		5218	-0.1	233	319	1.4	10	17775	25	-1	176	-1	61	6	150	-1	5	44	6	-0.1	33	1590	-1	-1	-1	-1	763	31	11	3
SU 031797-02F	26		3918	0.3	257	187	1.2	13	-3000	25	-1	424	-1	56	5	89	-1	6	42	6	-0.1	43	1895	-1	4	1	-1	591	31	14	2
Original Values																															
SU 012197-01	**20**	**C**	**2282**	**-0.1**	**182**	**114**	**1.2**	**7**	**16590**	**19**	**-1**	**607**	**-1**	**64**	**5**	**19**	**-1**	**6**	**44**	**11**	**-0.1**	**29**	**1068**	**-1**	**8**	**-1**	**-1**	**275**	**42**	**47**	**3**
SU 031797-03A	4	C	1020	-0.1	192	133	1.4	18	11524	27	2	771	-1	44	9	22	3	11	71	8	-0.1	25	581	-1	5	3	-1	242	4	98	7
SU 031797-03B	8		237	-0.1	113	242	0.2	8	-3000	26	-1	269	-1	61	4	15	-1	5	45	4	-0.1	7	520	-1	-1	1	-1	235	4	24	9
SU 031797-03C	12		299	-0.1	133	171	-0.2	5	9116	22	-1	621	-1	40	4	6	-1	5	46	6	-0.1	13	614	-1	3	-1	-1	230	10	72	7
Original Values																															
SU 012197-04	**10**	**D**	**4918**	**0.2**	**205**	**37**	**5.9**	**30**	**14783**	**21**	**2**	**7747**	**-1**	**40**	**16**	**11**	**3**	**17**	**33**	**124**	**-0.1**	**182**	**337**	**-1**	**50**	**5**	**-1**	**151**	**140**	**466**	**19**
SU 031797-04A	4	D	3631	0.5	247	170	1.9	14	19794	14	-1	4455	-1	54	8	-1	-1	13	25	64	-0.1	270	442	-1	35	3	1	106	60	91	2
SU 031797-04B	8		3324	0.6	213	231	2.1	13	20128	13	-1	4033	-1	54	8	13	-1	11	26	60	-0.1	138	463	-1	40	2	2	110	46	86	7
SU 031797-04C	11		3757	1.2	212	261	1.9	16	5970	14	-1	4174	-1	54	11	16	-1	7	21	67	-0.1	145	560	-1	39	3	-1	110	67	119	5
SU 031797-04D	15		4493	0.5	245	165	2.1	14	6212	15	-1	3891	-1	65	8	7	-1	11	26	48	-0.1	171	715	-1	39	2	-1	159	129	81	7
Original Values																															
PM 011697-15	**17**	**E**	**745**	**-0.1**	**571**	**356**	**2.8**	**22**	**12885**	**53**	**-1**	**168**	**-1**	**99**	**17**	**135**	**2**	**12**	**67**	**33**	**0.3**	**68**	**789**	**-1**	**-1**	**1**	**-1**	**184**	**44**	**114**	**19**
PM 031797-1A	4	E	211	-0.1	344	101	1.4	13	-3000	36	-1	461	-1	51	6	111	2	7	48	21	-0.1	23	1240	-1	5	1	-1	196	59	33	4
PM 031797-1B	8		572	-0.1	259	187	2.8	25	11775	38	-1	365	-1	83	12	118	2	18	72	25	-0.1	80	629	-1	10	2	-1	307	107	25	9
PM 031797-1C	12		163	-0.1	239	85	3.8	20	-3000	30	-1	66	-1	77	13	219	3	15	55	18	-0.1	35	741	-1	3	2	-1	273	77	34	4
PM 031797-1D	17		41	-0.1	180	207	3.1	16	27724	29	-1	42	-1	70	11	156	1	15	53	12	-0.1	21	858	-1	-1	2	-1	243	57	-10	3
PM 031797-1E	23		23	-0.1	206	199	3.3	15	21787	26	-1	27	-1	52	12	154	3	13	49	9	-0.1	18	870	-1	-1	2	-1	229	59	13	4
PM 031797-1F	27		79	-0.1	161	154	1.9	18	16891	31	-1	68	-1	55	12	139	3	19	60	12	-0.1	21	816	-1	-1	2	1	189	57	17	5

LOCAL GEOLOGY

1. Sedimentary Rock Units.

Sedimentary rocks of middle and late Cretaceous age crop out in the San Martin District. A general lithologic description is presented in this chapter. The stratigraphic units have not been measured and described in detail as the intensity of structural deformation and contact metamorphism has rendered such work impractical (Figs. 21 and 15).

The Cretaceous rocks at San Martin were mapped as two formations: the Albian-early Cenomanian Cuesta del Cura Limestone, and the middle Cenomanian-Turonian Indidura Formation. Younger sedimentary rocks have not been described in the immediate vicinity of the mine, but they have been observed in several localities in the region (Castillo, et al, 1976, p.18).

A. Cuesta del Cura Limestone (Albian-early Cenomanian).

The Cuesta del Cura Limestone was described by Imlay in 1936 (p.1125). The type locality is on the Cuesta del Cura, about 6.5 km west of Parras, Coah., and 275 km northeast of San Martin. In the type locality this formation consists of thin bedded, dark gray to black limestones with gray shaly partings and numerous bands and lenses of black chert. Some of its more prominent features are wavy bedding and abun-

L. CLARK ARNOLD
CONSULTING GEOLOGIST Ariz. Reg. #8883

May 13, 1997

MEMORANDUM

To: J.D. Lowell
Dave Brown
Jim Sell

Regarding: Evaluation of possible smelter contamination of EZL samples collected in the Superior, Arizona Project Area.

Please find enclosed a tabulation and map overlay showing the locations and results of our recent sample checks performed in the Superior area. The results are much less dramatic than those obtained from similar tests in the Ajo, Arizona area and suggest to me that smelter effects seem to be negligible in the Superior area.

As always your comments are suggestions are appreciated.

Clark

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dance of chert.

The Cuesta del Cura Limestone in the San Martin area consists of dark gray to black, thinly-bedded, finely laminated, lime mudstones and wackestones interbedded with gray, calcareous shales. Black chert is present as bands or nodules. Intense deformation is commonly displayed by small folds produced during the Laramide orogeny and intrusion of the Cerro de la Gloria stock. In some places small-scale, chaotic folds (Fig. 3) suggest the possibility of soft-sediment deformation. The unit is, in general, devoid of fossils, and only a few poorly preserved ammonites were observed.

In the immediate vicinity of the intrusive body, several lithologic variations were observed, especially drastic reduction or absence of chert in the limestones, color changes, and a decrease in the content of shaly beds. These variations may suggest the presence of some other sedimentary units, such as the Aptian La Peña Formation, which usually exhibits similar lithologic characteristics to the Cuesta del Cura Limestone. The amount of structural deformation and intensity of the metamorphism in the mapped area prevented any attempt to subdivide the calcareous sequence.

The contact with the overlying Indidura Formation is conformable and transitional. In the western portion of the

Check Assays

	Northing	Easting	Depth
SU 031797-1A	3682874	489914	4
(≅ SU 011797-2A) 1B	"	"	8
SU 011797-2 1C	"	"	12
1D	"	"	16
SU 031797-2A	3683394	488444	4
(≅ SU 011797-4) 2B	"	"	8
SU 011797-4 2C	"	"	13
2D	"	"	17
2E	"	"	22
2E	"	"	26
SU 031797-3A	3684286	488901	4
(≅ SU 012197-1B) 3B	"	"	8
SU 012197-1 3C	"	"	12
SU 031797-4A	3683842	489112	4
(≅ SU 012197-4B) 4B	"	"	8
SU 012197-4 4C	"	"	11
4D	"	"	15
PM 031797-1A	3681499	488274	4
1B	"	"	8
PM 011697-15 1C	"	"	12
1D	"	"	17
1E	"	"	23
1F	"	"	27

SU = Superior

PM = Picketpost Mtn

Samples collected by C.R.

Faxed 5/2/97

mapped area the contact is marked by the disappearance of black chert and an increase in the amount of black shale. It was also noted that the grain size in the limestones increased, and that the limestones were of the wackestone type.

B. Indidura Formation (middle Cenomanian-Turonian).

The Indidura Formation was first recognized in the area by Castillo and others (1976), who observed several outcrops in the vicinity of the town of La Noria de San Pantaleon. The shales of this unit are commonly covered by abundant limestone float, making identification of the Indidura Formation difficult. It is easily recognized only in stream beds and in road cuts.

The Indidura Formation was defined by Kelly in 1936 (p.1029). The type locality is at the southern end of the Sierra de Santa Ana, about 18 km west-southwest of Las Delicias, Coah., and 330 km northeast of San Martin. The unit is 33 m thick and rests on top of the Aurora Limestone. It is composed of platy limestones interbedded with light brown calcareous shales. In the middle portion it consists of interbedded, rubbly, gray-pink and red argillaceous limestones and calcareous shales.

The Indidura Formation comformably rests on the Cuesta

CAP II
Assay Check - EZL Samples
Superior variable depth

Mn	Mo	Nb	Nd	Ni	Os	Pb	Pd	Pr	Pt	Rb	Re	Rh	Ru	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
2028	**8**	**-1**	**15**	**39**	**-1**	**9**	**-1**	**4**	**-1**	**11**	**0.4**	**-1**	**-1**	**5**	**16**	**67**	**3**	**-1**	**1103**	**-1**	**-1**	**4**	**2**	**-100**	**-1**	**-1**	**-1**	**404**	**28**	**11**	**-1**	**42**	**9**
1576	47	2	32	35	-1	61	-1	19	-1	8	0.9	-1	-1	36	-100	-30	8	-1	1623	-1	7	62	4	132	-1	4	-1	338	32	37	6	58	17
838	26	1	35	57	-1	14	-1	10	-1	9	0.5	-1	-1	16	-100	48	6	-1	1465	-1	2	6	3	-100	-1	-1	2	660	36	20	2	-10	6
1177	19	1	21	59	-1	9	-1	8	-1	10	0.7	-1	-1	8	-100	-30	5	-1	1324	-1	1	-1	3	-100	-1	-1	4	672	43	15	2	15	6
3000	54	-1	15	59	-1	48	-1	3	-1	7	0.9	-1	-1	14	-100	58	4	-1	1296	-1	1	6	3	-100	-1	-1	3	523	175	9	1	51	9
5066	**17**	**2**	**13**	**74**	**-1**	**12**	**-1**	**3**	**-1**	**21**	**-0.1**	**-1**	**-1**	**15**	**-10**	**-30**	**3**	**-1**	**845**	**-1**	**-1**	**9**	**2**	**-100**	**-1**	**-1**	**-1**	**426**	**9**	**14**	**1**	**52**	**20**
2008	14	-1	12	37	-1	52	-1	4	-1	27	-0.1	-1	-1	298	-100	42	3	-1	1028	-1	-1	21	5	-100	-1	-1	-1	218	96	11	-1	99	8
1933	33	-1	12	44	-1	22	-1	2	-1	31	0.3	-1	-1	197	-100	66	-1	-1	899	-1	-1	13	2	-100	-1	-1	-1	463	43	9	-1	33	4
1973	42	-1	12	44	-1	13	-1	3	-1	39	0.3	-1	-1	70	-100	39	-1	-1	1252	-1	-1	-1	1	-100	-1	-1	-1	717	37	10	-1	15	6
1635	73	-1	9	38	-1	16	-1	3	-1	34	-0.1	-1	-1	80	-100	31	2	-1	1382	-1	-1	13	1	-100	-1	-1	-1	579	38	8	-1	46	4
1494	150	-1	5	44	-1	6	-1	2	-1	39	-0.1	-1	-1	33	-100	43	-1	-1	1590	-1	-1	-1	-1	-100	-1	-1	-1	763	31	5	-1	11	3
1622	89	-1	6	42	-1	6	-1	3	-1	38	-0.1	-1	-1	43	-100	33	2	-1	1895	-1	-1	4	1	-100	-1	-1	-1	591	31	9	-1	14	2
636	**19**	**-1**	**6**	**44**	**-1**	**11**	**-1**	**2**	**-1**	**8**	**-0.1**	**-1**	**-1**	**29**	**11**	**105**	**1**	**-1**	**1068**	**-1**	**-1**	**8**	**-1**	**-100**	**-1**	**-1**	**-1**	**275**	**42**	**10**	**-1**	**47**	**3**
1382	22	3	11	71	-1	8	1	3	-1	8	-0.1	-1	-1	25	-100	-30	2	-1	581	-1	-1	5	3	-100	-1	-1	-1	242	4	14	-1	98	7
1350	15	-1	5	45	-1	4	-1	1	-1	12	-0.1	-1	-1	7	-100	-30	2	-1	520	-1	-1	-1	1	-100	-1	-1	-1	235	4	6	-1	24	9
1234	6	-1	5	46	-1	6	-1	-1	-1	12	-0.1	-1	-1	13	-100	31	-1	-1	614	-1	-1	3	-1	-100	-1	-1	-1	230	10	8	-1	72	7
754	**11**	**3**	**17**	**33**	**-1**	**124**	**-1**	**5**	**-1**	**32**	**-0.1**	**-1**	**-1**	**182**	**29**	**103**	**3**	**21**	**337**	**-1**	**-1**	**50**	**5**	**101**	**-1**	**-1**	**-1**	**151**	**140**	**20**	**2**	**466**	**19**
1063	-1	-1	13	25	-1	64	-1	3	-1	17	-0.1	-1	-1	270	-100	-30	2	5	442	-1	-1	35	3	-100	-1	-1	1	106	60	14	-1	91	2
1086	13	-1	11	26	-1	60	-1	3	-1	10	-0.1	-1	-1	138	-100	64	-1	5	463	-1	-1	40	2	-100	-1	-1	2	110	46	9	-1	86	7
1157	16	-1	7	21	-1	67	-1	3	-1	10	-0.1	-1	-1	145	-100	50	3	3	560	-1	-1	39	3	-100	-1	-1	-1	110	67	10	1	119	5
1252	7	-1	11	26	-1	48	-1	2	-1	13	-0.1	-1	-1	171	-100	40	2	-1	715	-1	-1	39	2	-100	-1	-1	-1	159	129	10	-1	81	7
11946	**135**	**2**	**12**	**67**	**-1**	**33**	**-1**	**3**	**-1**	**41**	**0.3**	**-1**	**-1**	**68**	**-10**	**73**	**2**	**1**	**789**	**-1**	**-1**	**-1**	**1**	**-100**	**-1**	**-1**	**-1**	**184**	**44**	**10**	**-1**	**114**	**19**
3958	111	2	7	48	-1	21	-1	2	-1	30	-0.1	-1	-1	23	-100	-30	-1	-1	1240	-1	-1	5	1	101	-1	-1	-1	196	59	8	-1	33	4
5215	118	2	18	72	-1	25	-1	3	-1	27	-0.1	-1	-1	80	-100	45	2	-1	629	-1	-1	10	2	-100	-1	-1	-1	307	107	11	1	25	9
4293	219	3	15	55	-1	18	-1	4	-1	53	-0.1	-1	-1	35	-100	-30	3	-1	741	-1	1	3	2	-100	-1	-1	-1	273	77	16	-1	34	4
3894	156	1	15	53	-1	12	-1	3	-1	37	-0.1	-1	-1	21	-100	44	-1	-1	858	-1	-1	-1	2	-100	-1	-1	-1	243	57	13	-1	-10	3
3661	154	3	13	49	-1	9	-1	4	-1	44	-0.1	-1	-1	18	-100	34	3	-1	870	-1	-1	-1	2	-100	-1	-1	-1	229	59	15	-1	13	4
3822	139	3	19	60	-1	12	-1	3	-1	38	-0.1	-1	-1	21	-100	-30	3	-1	816	-1	-1	-1	2	-100	-1	-1	1	189	57	14	1	17	5

del Cura Limestone in the San Martin area. It is composed of thin-bedded dark gray to black limestones weathering light yellowish gray, interbedded with dark gray to black shales that weather to reddish yellow (Fig. 4). The amount of calcareous shales increases upward. Castillo and others (1976) have estimated that the thickness of this unit in the area is in excess of 280 m. This rock unit does not show any metamorphic effect, and it was observed that the contact between the Cuesta del Cura limestone and the Indidura Formation coincides with the western-most outcrop of the metasomatic aureole.

2. Igneous Rocks (Oligocene?).

The quartz monzonite Cerro de la Gloria stock is the largest intrusive body exposed in the region. The stock has a roughly elliptical form with its long axis oriented N-S. The length of the intrusion is 2.5 km and its width is 1.8 km. The exposed area is approximately five square kilometers.

Castillo and others (1976) mapped two small, isolated, intrusive bodies in the surroundings of San Antonio de Belem 2.5 km northeast of the San Martin Mine. Based on the similar texture and mineralogy of these rocks they considered them as small apophyses of the Cerro de la Gloria stock.

CAP II
Assay Check - EZL Samples
Superior variable depth

Enzyme Leach Assay Check
Arizona-New Mexico Recon
Superior Check
May-~~95~~ 97

Elements presently in use for EZL interpretation are shown in bold

Sample ID:	Samp Depth (inches)	Map Ref.	Easting	Northing	Ag	As	Au	Ba	Be	Bi	Br	Cd	Ce	Cl	Co	Cs	Cu	Dy	Er	Eu	Ga	Gd	Ge	Hf	Hg	Ho	I	In	Ir	La	Li	Lu
Original Values																																
SU 011797-02	**16**		**489902**	**3682950**	**-0.2**	**498**	**-0.1**	**353**	**-20**	**-1**	**217**	**0.5**	**20**	**45851**	**29**	**-1**	**576**	**2**	**-1**	**-1**	**-1**	**3**	**-1**	**-1**	**-1**	**-1**	**90**	**-0.2**	**-1**	**14**	**19**	**-1**
SU 031797-01A	4		489914	3682874	0.5	357	0.3	567	-20	-1	262	2.8	34	22315	25	1	3574	7	4	6	6	11	-1	-1	1.1	4	23	0.6	-1	26	20	6
SU 031797-01B	8		489914	3682874	-0.2	621	-0.1	264	-20	-1	257	0.5	23	45885	16	-1	405	5	-1	2	9	9	1	-1	2	1	38	0.3	-1	24	23	1
SU 031797-01C	12		489914	3682874	-0.2	528	-0.1	168	-20	-1	300	0.2	17	56517	16	-1	295	3	1	2	4	6	2	-1	-1	1	51	-0.2	-1	20	23	-1
SU 031797-01D	16		489914	3682874	-0.2	673	0.3	266	-20	-1	239	2.4	14	42837	18	-1	1090	3	-1	-1	5	4	-1	-1	-1	-1	73	-0.2	-1	13	25	-1
Original Values																																
SU 011797-04	**15**		**488411**	**3683392**	**-0.2**	**1150**	**-0.1**	**657**	**-20**	**2**	**283**	**0.8**	**16**	**9819**	**58**	**2**	**648**	**2**	**-1**	**-1**	**11**	**3**	**4**	**-1**	**-1**	**-1**	**102**	**-0.2**	**-1**	**10**	**63**	**-1**
SU 031797-02A	4		488444	3683394	0.5	3463	0.3	241	-20	5	159	1.7	19	4900	21	-1	3576	2	-1	-1	5	4	10	-1	-1	-1	38	0.3	-1	11	18	-1
SU 031797-02B	8		488444	3683394	0.2	5285	-0.1	239	-20	1	231	0.9	10	6580	20	-1	1475	1	-1	-1	3	3	8	-1	-1	-1	75	-0.2	-1	8	16	-1
SU 031797-02C	13		488444	3683394	-0.2	7094	-0.1	198	-20	-1	417	0.7	19	8827	24	-1	521	2	-1	1	2	4	5	-1	-1	-1	70	-0.2	-1	9	26	-1
SU 031797-02D	17		488444	3683394	-0.2	5829	-0.1	190	-20	-1	259	0.9	17	4421	22	-1	1214	2	-1	-1	2	3	6	-1	-1	-1	59	-0.2	-1	8	23	-1
SU 031797-02E	22		488444	3683394	0.2	5218	-0.1	233	-20	-1	319	1.4	10	17775	25	-1	176	-1	-1	-1	2	2	3	-1	-1	-1	61	-0.2	-1	6	26	-1
SU 031797-02F	26		488444	3683394	-0.2	3918	0.3	257	-20	-1	187	1.2	13	-3000	25	-1	424	1	-1	-1	2	2	4	-1	-1	-1	56	-0.2	-1	5	37	-1
Original Values																																
SU 012197-01	**20**		**488900**	**3684285**	**-0.2**	**2282**	**-0.1**	**182**	**-20**	**1**	**114**	**1.2**	**7**	**16590**	**19**	**-1**	**607**	**1**	**-1**	**-1**	**-1**	**2**	**-1**	**-1**	**-1**	**-1**	**64**	**-0.2**	**-1**	**5**	**15**	**-1**
SU 031797-03A	4		488901	3684286	0.5	1020	-0.1	192	-20	-1	133	1.4	18	11524	27	2	771	1	1	-1	11	3	1	-1	-1	-1	44	0.3	-1	9	49	-1
SU 031797-03B	8		488901	3684286	0.2	237	-0.1	113	-20	-1	242	0.2	8	-3000	26	-1	269	-1	-1	-1	6	2	-1	-1	-1	-1	61	-0.2	-1	4	24	-1
SU 031797-03C	12		488901	3684286	-0.2	299	-0.1	133	-20	-1	171	-0.2	5	9116	22	-1	621	1	-1	-1	5	1	-1	-1	-1	-1	40	-0.2	-1	4	28	-1
Original Values																																
SU 012197-04	**10**		**489109**	**3683812**	**3.9**	**4918**	**0.2**	**205**	**-20**	**33**	**37**	**5.9**	**30**	**14783**	**21**	**2**	**7747**	**4**	**1**	**1**	**6**	**4**	**9**	**-1**	**-1**	**-1**	**40**	**0.4**	**-1**	**16**	**23**	**-1**
SU 031797-04A	4		489112	3683842	0.8	3631	0.5	247	-20	16	170	1.9	14	19794	14	-1	4455	2	-1	-1	3	3	5	-1	-1	-1	54	0.3	-1	8	19	-1
SU 031797-04B	8		489112	3683842	0.8	3324	0.6	213	-20	15	231	2.1	13	20128	13	-1	4033	3	-1	1	4	3	6	-1	-1	-1	54	0.3	-1	8	15	-1
SU 031797-04C	11		489112	3683842	1.6	3757	1.2	212	-20	19	261	1.9	16	5970	14	-1	4174	2	-1	1	6	3	6	-1	-1	-1	54	0.3	-1	11	14	-1
SU 031797-04D	15		489112	3683842	0.4	4493	0.5	245	-20	8	165	2.1	14	6212	15	-1	3891	-1	-1	-1	3	4	2	-1	-1	-1	65	0.3	-1	8	19	-1
Original Values																																
PM 011697-15	**17**		**488280**	**3681522**	**-0.2**	**745**	**-0.1**	**571**	**-20**	**-1**	**356**	**2.8**	**22**	**12885**	**53**	**-1**	**168**	**2**	**-1**	**-1**	**4**	**3**	**1**	**-1**	**-1**	**-1**	**99**	**-0.2**	**-1**	**17**	**21**	**-1**
PM 031797-1A	4		488274	3681499	0.2	211	-0.1	344	-20	-1	101	1.4	13	-3000	36	-1	461	1	-1	-1	6	3	-1	-1	-1	-1	51	0.3	-1	6	28	-1
PM 031797-1B	8		488274	3681499	-0.2	572	-0.1	259	-20	-1	187	2.8	25	11775	38	-1	365	3	-1	-1	8	6	-1	-1	-1	-1	83	-0.2	-1	12	19	-1
PM 031797-1C	12		488274	3681499	-0.2	163	-0.1	239	-20	-1	85	3.8	20	-3000	30	-1	66	3	-1	1	7	3	-1	-1	-1	-1	77	-0.2	-1	13	28	-1
PM 031797-1D	17		488274	3681499	-0.2	41	-0.1	180	-20	-1	207	3.1	16	27724	29	-1	42	2	-1	1	6	4	-1	-1	-1	-1	70	-0.2	-1	11	36	-1
PM 031797-1E	23		488274	3681499	-0.2	23	-0.1	206	-20	-1	199	3.3	15	21787	26	-1	27	1	-1	-1	6	3	-1	-1	1.2	-1	52	-0.2	-1	12	35	-1
PM 031797-1F	27		488274	3681499	-0.2	79	-0.1	161	-20	-1	154	1.9	18	16891	31	-1	68	2	-1	-1	6	5	-1	-1	-1	-1	55	-0.2	-1	12	29	-1

The contact between the quartz monzonite and the adjacent metasedimentary rocks is steeply inclined and discordant (Figs. 6 and 7). The strike of the beds in the host rock is roughly parallel to the contact, and the beds generally dip outwards. The domical structure developed (Figs. 5 and 6) strongly suggests that the intrusive body was forcefully injected into the Cretaceous limestones.

Experimental studies of Wyllie and Tuttle (1960) in the system albite-H_2O-CO_2 have shown that the reaction between a hydrous granitic magma and the CO_2 released by the thermal metamorphism of the carbonates may produce an increase in the CO_2 content of the melt, which in turn causes dehydration of the liquid and result in isothermal crystallization near the contact. The formation of a hard shell over and around the pluton combined with the pressure of the rising magma can cause the doming and faulting of the country rock.

The average quartz monzonite in the intrusion has a ratio of orthoclase to plagioclase slightly in excess of 1:1. Two contrasting textures and mineralogies were observed between the rocks on the surface and those observed on the 8th level of the San Martin mine. The quartz monzonite on the surface is holocrystalline, inequigranular, porphyritic-phaneritic, and has a significant amount of biotite and horn-

Superior Project

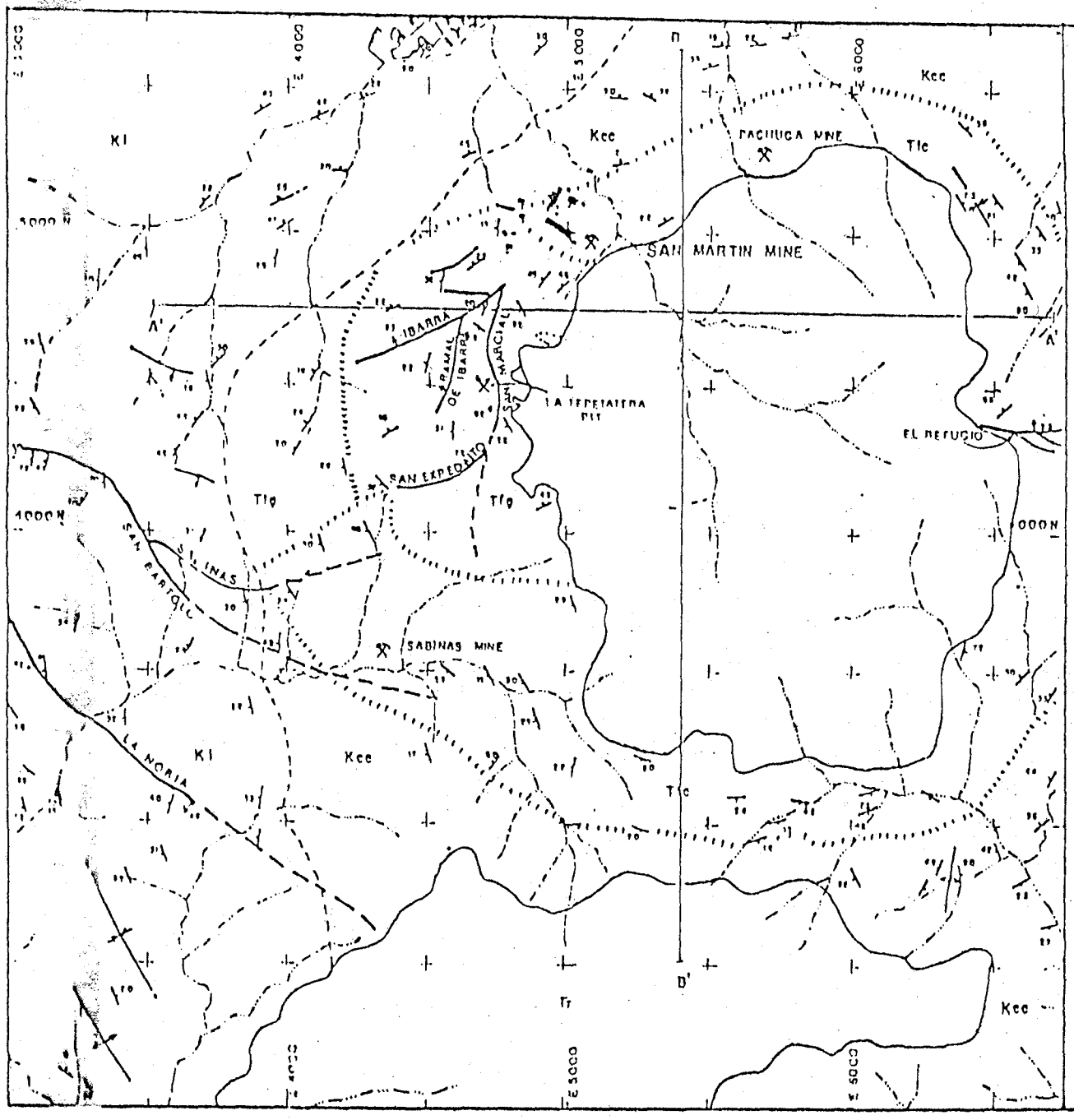
Depth Sample Study

Superior 7½' Quad.

Enzyme Leach Job #: 1878
Trace Element Values Are in Part
Values = 999999 are greater than

Sample ID:	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.G.	Hg	Tl	Pb	Bi	Th	U
SU031797-1A 2A	-1	36	62	23	1	567	26	34	19	32	8	6	11	7	7	4	4	4	6	6	-1	-1	32	0.9	-1	-1	-1	0.3	1.1	-1	61	-1	4	-1
SU031797-1B on map	-1	15	6	38	-1	264	24	23	10	36	6	2	8	2	5	1	1	-1	2	1	-1	-1	36	0.6	-1	-1	-1	-0.1	2.0	-1	14	-1	3	2
SU031797-1C	-1	9	-1	51	-1	168	20	17	8	21	5	2	6	1	3	1	1	-1	2	-1	-1	-1	43	0.7	-1	-1	-1	-0.1	-1.0	-1	9	-1	3	4
SU031797-1D	-1	14	6	73	-1	266	13	14	3	15	4	-1	4	1	3	-1	-1	-1	1	-1	-1	-1	175	0.9	-1	-1	-1	0.3	-1.0	-1	48	-1	3	3
SU031797-2A	-1	298	21	38	-1	241	11	19	4	12	3	-1	4	-1	2	-1	-1	-1	-1	-1	-1	-1	96	-0.1	-1	-1	-1	0.3	-1.0	-1	52	5	5	-1
SU031797-2B 4A	-1	197	13	75	-1	239	6	10	2	12	-1	-1	3	-1	1	-1	-1	-1	-1	-1	-1	-1	43	0.3	-1	-1	-1	-0.1	-1.0	-1	22	1	2	-1
SU031797-2C	-1	70	-1	70	-1	198	9	19	3	12	-1	1	4	-1	2	-1	-1	-1	-1	-1	-1	-1	37	0.3	-1	-1	-1	-0.1	-1.0	-1	10	-1	1	-1
SU031797-2D on map	-1	80	13	59	-1	180	8	17	3	9	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	38	-0.1	1	-1	-1	-0.1	-1.0	-1	16	-1	1	-1
SU031797-2E	-1	33	-1	61	-1	233	6	10	2	5	-1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	31	-0.1	-1	-1	-1	-0.1	-1.0	-1	6	-1	-1	-1
SU031797-2F	-1	43	4	96	-1	257	5	13	3	6	2	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	31	-0.1	-1	-1	-1	0.3	-1.0	-1	8	-1	1	-1
SU031797-3A 1B	-1	25	5	44	2	192	9	18	3	11	2	-1	3	-1	1	-1	1	-1	-1	-1	-1	-1	4	-0.1	-1	-1	-1	-0.1	-1.0	-1	8	-1	3	-1
SU031797-3B on map	-1	7	-1	61	-1	113	4	8	1	5	2	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	4	-0.1	-1	-1	-1	-0.1	-1.0	-1	4	-1	1	-1
SU031797-3C	-1	13	3	40	-1	103	4	5	-1	5	-1	-1	1	-1	1	-1	-1	-1	-1	-1	-1	-1	10	-0.1	-1	-1	-1	-0.1	-1.0	-1	6	-1	-1	-1
SU031797-4A 4B	5	270	35	54	-1	247	8	14	3	13	2	-1	3	-1	2	1	-1	-1	-1	-1	-1	-1	60	-0.1	-1	-1	-1	0.5	-1.0	-1	84	16	3	1
SU031797-4B on map	5	138	40	54	-1	213	8	13	3	11	-1	1	3	-1	3	-1	-1	-1	-1	-1	-1	-1	46	-0.1	-1	-1	-1	0.6	-1.0	-1	60	15	2	2
SU031797-4C	3	145	39	94	-1	212	11	16	3	7	3	1	3	-1	2	-1	-1	-1	1	-1	-1	-1	67	-0.1	-1	-1	-1	1.2	-1.0	-1	67	19	3	-1
SU031797-4D	-1	171	38	65	-1	245	8	14	2	11	2	-1	4	-1	-1	-1	-1	-1	-1	-1	-1	-1	129	-0.1	-1	-1	-1	0.5	-1.0	-1	48	8	2	-1
PM031797-1A	-1	23	5	51	-1	344	8	13	2	7	-1	-1	3	-1	1	-1	-1	-1	-1	-1	-1	-1	59	-0.1	-1	-1	-1	-0.1	-1.0	-1	21	-1	1	-1
PM031797-1B 15C	-1	80	10	83	-1	258	12	25	3	18	2	-1	8	-1	3	-1	-1	-1	1	-1	-1	-1	107	-0.1	-1	-1	-1	-0.1	-1.0	-1	25	-1	2	-1
PM031797-1C	-1	25	3	77	1	239	13	20	4	15	3	1	3	1	3	-1	1	-1	-1	1	-1	-1	77	-0.1	-1	-1	-1	-0.1	-1.0	-1	18	1	2	-1
PM031797-1D on map.	-1	21	-1	79	-1	180	11	16	3	15	-1	1	4	-1	2	-1	-1	-1	-1	-1	-1	-1	57	-0.1	-1	-1	-1	-0.1	-1.0	-1	12	-1	2	-1
PM031797-1E	-1	18	-1	52	-1	206	12	15	4	13	3	-1	3	-1	1	-1	-1	-1	-1	-1	-1	-1	59	-0.1	-1	-1	-1	-0.1	1.2	-1	9	-1	2	-1
PM031797-1F	-1	21	-1	55	-1	161	12	18	3	19	3	-1	5	-1	2	-1	-1	-1	1	-1	-1	-1	57	-0.1	-1	-1	-1	-0.1	-1.0	-1	12	-1	2	1

Pickhandport, Mtn 7½ Quad.



LEGEND

TERTIARY (MIOCENE-OLIGOCENE ?)

Tr Ash flow tuff: reddish pink, partially welded and devitrified rhyolitic ash flow tuffs

Tqm **Tlc** **Tlg** **Tfg** **Tsq**

Tqm: Cerro de la Gloria quartz monzonite: porphyritic phaneritic-grained, with orthoclase phenocrysts up to 10 mm

Tlc: Tremolite calcite zone: dark gray slightly recrystallized tremolite-bearing limestones

Tlg Tremolite garnet zone: calc-silicates are very fine-grained, tremolite occurs as small radial groups in recrystallized limestones

Tfg Ferrosalite-garnet zone: dominated by ferrosalite hornfels, grandite-ferrosalite skarn, jasperoid and recrystallized limestones

Tsq Saccharoidal quartz zone: monomineralic rock with granoblastic polygonal, very fine-grained texture

CRETACEOUS

Kl Indidura Formation: thin bedded, dark gray to black shaly limestones interbedded with shale

Kcc Cuesta del Cura Limestone: limestone, dark gray, thinly bedded with shaly partings and abundant black chert

87 Strike and dip of sedimentary rocks or relict bedding

Contact, observed and approximated

Contact, gradational

78 Vein, observed and approximated with dip

Anticline

Syncline

Intermittent stream

0 250 500 1000m

COLORADO SCHOOL OF MINES

GEOLOGY OF THE SAN MARTIN DISTRICT ZACATECAS, MEXICO

JOSE JORGE ARANDA-GOMEZ | 1978

Fig 5

JDL

Superior Project
Depth Sample Study

1878RPT.XLS

Superior 7½' Grant

Dickstead Mtn 7½' Grant

Enzyme Leach Job #: 1878 **Customer: Skyline Tucson** **Geologist: Clark Arnold** **Customer's Job #: TEV 771**

Trace Element Values Are in Parts Per Million Negative Values Equal Not Detected at That Lower Limit

Values = 999999 are greater than working range of instrument. S.Q.=That element is determined SEMIQUANTITATIVELY.

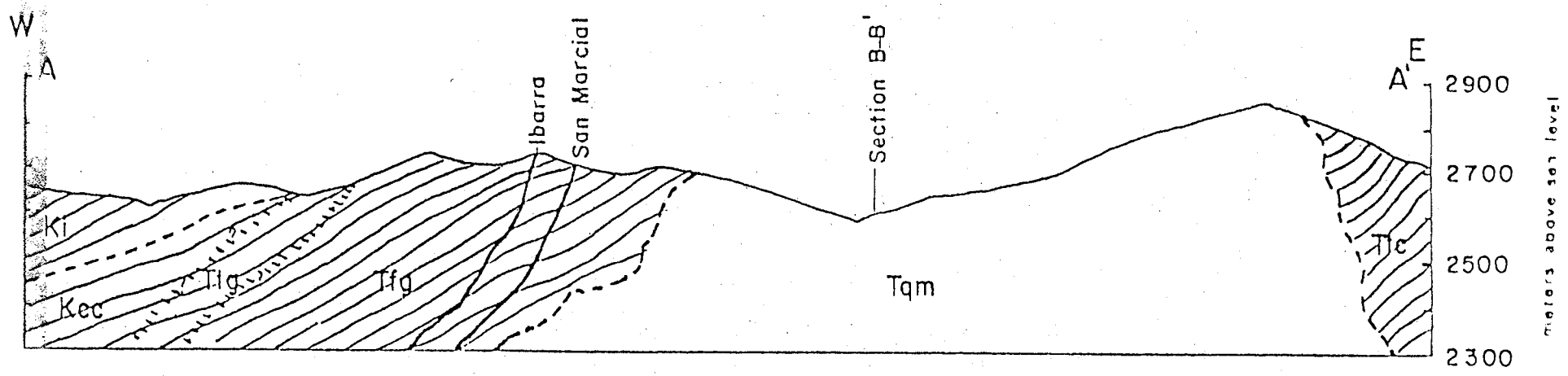
Sample ID:		S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In
SU031797-1A		20	-20	22313	-100	132	338	1676	25	35	3574	58	8	-1	357	-30	282	8	1623	37	17	2	47	-1	-1	-1	0.5	2.8	0.6
SU031797-1B	2A on map	23	-20	45885	100	100	680	838	16	57	405	-10	9	1	621	48	257	9	1465	20	6	1	26	1	-1	-1	-0.2	0.5	0.3
SU031797-1C		22	-20	56517	-100	-100	672	1177	16	59	295	15	4	2	528	-30	300	10	1324	15	6	1	19	-1	-1	-1	-0.2	0.2	-0.2
SU031797-1D		25	-20	42837	-100	-100	523	3000	18	59	1090	51	5	-1	673	58	239	7	1296	9	9	-1	54	-1	-1	-1	-0.2	2.4	-0.2
SU031797-2A		18	-20	4900	-100	-100	218	2008	21	37	3576	99	5	10	3463	42	158	27	1028	11	8	-1	14	-1	-1	-1	0.5	1.7	0.3
SU031797-2B	4A on map	16	-20	6580	-100	-100	403	1933	20	44	1475	33	3	8	5285	66	231	31	999	9	4	-1	33	-1	-1	-1	0.2	0.9	-0.2
SU031797-2C		26	-20	8827	-100	-100	717	1973	24	44	521	15	2	5	7094	39	417	39	1252	10	6	-1	42	-1	-1	-1	-0.2	0.7	-0.2
SU031797-2D		23	-20	4421	100	-100	578	1635	22	38	1214	46	2	6	6829	31	259	34	1382	8	4	-1	73	-1	-1	-1	0.2	0.9	-0.2
SU031797-2E		28	-20	17775	-100	-100	763	1494	25	44	175	11	2	3	6278	43	319	39	1590	5	3	-1	150	-1	-1	-1	0.2	1.4	-0.2
SU031797-2F		37	-20	-3000	-100	-100	581	1622	25	42	424	14	2	4	3918	33	187	38	1395	9	2	-1	89	-1	-1	-1	-0.2	1.2	-0.2
SU031797-3A		49	-20	11524	-100	-100	242	1382	27	71	771	96	11	1	1020	-30	133	8	581	14	7	3	22	-1	-1	1	0.5	1.4	0.3
SU031797-3B	1B on map	24	-20	-3000	-100	-100	235	1350	26	45	259	24	6	-1	237	-30	242	12	520	6	9	-1	15	-1	-1	-1	0.2	0.2	-0.2
SU031797-3C		28	-20	9116	-100	-100	230	1234	22	46	621	72	5	-1	289	31	171	12	614	8	7	-1	6	-1	-1	-1	-0.2	-0.2	-0.2
SU031797-4A		19	-20	19794	100	-100	106	1063	14	25	4455	91	3	5	3631	-30	170	17	442	14	2	-1	-1	-1	-1	-1	0.8	1.9	0.3
SU031797-4B	4B on map	16	-20	20128	-100	-100	110	1086	13	26	4039	86	4	6	3324	64	231	10	463	9	7	-1	13	-1	-1	-1	0.8	2.1	0.3
SU031797-4C		14	-20	5970	-100	-100	110	1157	14	21	4174	119	6	6	3797	60	261	10	560	10	5	-1	16	-1	-1	-1	1.6	1.9	0.3
SU031797-4D		19	-20	6212	-100	-100	158	1252	15	26	3891	81	3	2	4493	40	165	13	715	10	7	-1	7	-1	-1	-1	0.4	2.1	0.3
PM031797-1A		28	-20	-3000	-100	101	195	3958	36	48	461	33	8	-1	211	-30	101	30	1240	8	4	2	111	-1	-1	1	0.2	1.4	0.3
PM031797-1B	15 c on map	19	-20	11775	-100	-100	307	5215	38	72	365	25	8	-1	572	45	187	27	629	11	9	2	118	-1	-1	-1	-0.2	2.8	-0.2
PM031797-1C		28	-20	-3000	-100	-100	273	4293	30	55	66	34	7	-1	163	-30	85	53	741	16	4	3	219	-1	-1	-1	-0.2	3.8	-0.2
PM031797-1D		38	-20	27724	-100	-100	243	3894	29	53	42	-10	6	-1	41	44	207	37	858	13	3	1	156	-1	-1	-1	-0.2	3.1	-0.2
PM031797-1E		35	-20	21787	-100	-100	229	3661	26	49	27	13	6	-1	23	34	199	44	870	15	4	3	154	-1	-1	-1	-0.2	3.3	-0.2
PM031797-1F		29	-20	16891	-100	-100	188	3822	31	60	68	17	6	-1	79	-30	154	38	816	14	5	3	139	-1	-1	-1	-0.2	1.9	-0.2

Certified By:

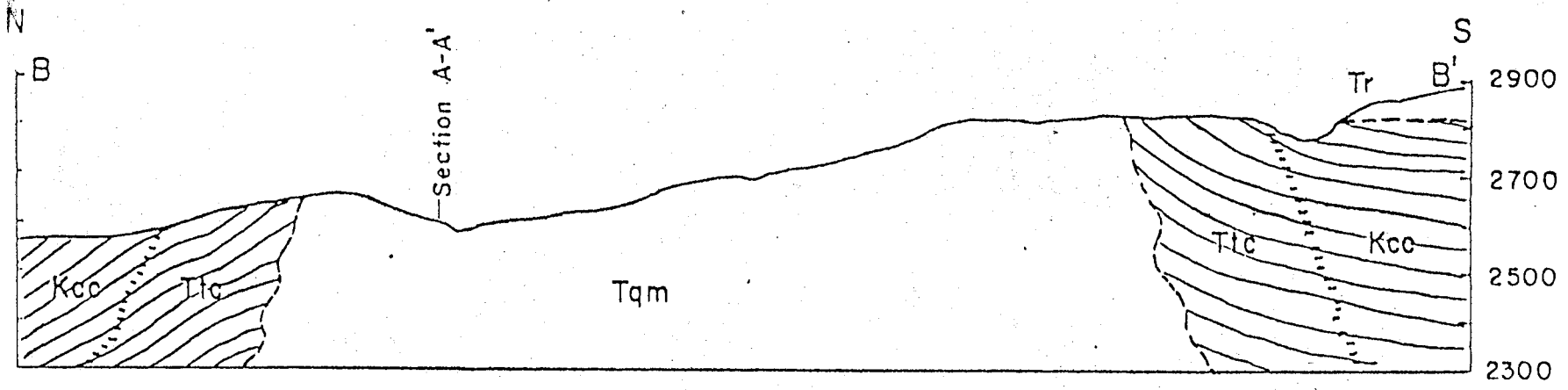
D. D'Alna, Dipl. T.
ICPMS Technical Manager, Actlabs Ltd. Date: _____

This report shall not be reproduced except in full without the written approval of the laboratory.
Unless otherwise instructed, samples will be disposed of 90 days from the date of this report.

fwd to JDL 4/2/97



SECTION A-A'



SECTION B-B'

0 200 600 m

Scale 1:15,000

H=V

Figure 6. Geologic Sections A-A' and B-B'.
(See location of sections on figure 5).

DEXTER.WPT

	SOFTW	ARE N	AME & VER	SION						
	PCX5	2.04								
	R DAT	UM		IDX DA			DF		DX	DY
	G NAD	27 CO	NUS	061 -6	.940000e+		01 -3.726	4.64E+02	5 -8.00000	0e+00 +1.600
	COORD	INATE	SYSTEM							
	UTM U	PS								
SAMPLE NO.	IDNT	ZON	E EASTING	NORTHING	DAY	DATE	TIME	SAMP DEPTH	DESCRIPTI	ON
SU 041497-01	1	12S	488362	3682100	Monday	4/14/97 12:15	12:15 PM	14	14-Apr-97	19:15
SU 041497-02	2	12S	488539	3681718	Monday	4/14/97 12:49	12:49 PM	15	14-Apr-97	19:49
SU 041497-03	3	12S	488448	3681104	Monday	4/14/97 13:36	1:36 PM	12	14-Apr-97	20:36
SU 041497-04	4	12S	489270	3680768	Monday	4/14/97 14:20	2:20 PM	12	14-Apr-97	21:20
SU 041497-05	5	12S	489750	3680921	Monday	4/14/97 14:38	2:38 PM	14	14-Apr-97	21:38
SU 041497-06	6	12S	489901	3681438	Monday	4/14/97 14:58	2:58 PM	22	14-Apr-97	21:58
SU 041497-07	7	12S	490427	3681357	Monday	4/14/97 15:17	3:17 PM	12	14-Apr-97	22:17
SU 041497-08	8	12S	490895	3681437	Monday	4/14/97 15:58	3:58 PM	13	14-Apr-97	22:58
SU 041497-09	9	12S	488565	3683324	Monday	4/14/97 16:40	4:40 PM	12	14-Apr-97	23:40
SU 041497-10	10	12S	488915	3683370	Monday	4/14/97 16:48	4:48 PM	12	14-Apr-97	23:48
SU 041597-01	11	12S	489369	3687025	Tuesday	4/15/97 6:53	6:53 AM	12	15-Apr-97	13:53
SU 041597-02	12	12S	488500	3687004	Tuesday	4/15/97 7:49	7:49 AM	14	15-Apr-97	14:49
SU 041597-03	13	12S	490102	3685775	Tuesday	4/15/97 9:10	9:10 AM	13	15-Apr-97	16:10
SU 041597-04	14	12S	489301	3685872	Tuesday	4/15/97 9:58	9:58 AM	12	15-Apr-97	16:58
SU 041597-05	15	12S	488249	3684615	Tuesday	4/15/97 10:55	10:55 AM	12	15-Apr-97	17:55
SU 041597-06	16	12S	488865	3683921	Tuesday	4/15/97 11:19	11:19 AM	16	15-Apr-97	18:19
SU 041597-07	17	12S	490095	3683052	Tuesday	4/15/97 11:50	11:50 AM	12	15-Apr-97	18:50
SU 041597-08	18	12S	489490	3682710	Tuesday	4/15/97 12:10	12:10 PM	13	15-Apr-97	19:10
SU 041597-09	19	12S	489004	3682748	Tuesday	4/15/97 12:24	12:24 PM	16	15-Apr-97	19:24
SU 041597-10	20	12S	489025	3682350	Tuesday	4/15/97 12:37	12:37 PM	12	15-Apr-97	19:37
SU 041597-11	21	12S	489100	3681613	Tuesday	4/15/97 13:13	1:13 PM	12	15-Apr-97	20:13
SU 041597-12	22	12S	490001	3682457	Tuesday	4/15/97 13:43	1:43 PM	12	15-Apr-97	20:43
SU 041597-13	23	12S	489458	3681689	Tuesday	4/15/97 13:58	1:58 PM		15-Apr-97	20:58
SU 041597-14	24	12S	489868	3682220	Tuesday	4/15/97 14:37	2:37 PM	12	15-Apr-97	21:37
SU 041597-15	25	12S	491007	3682579	Tuesday	4/15/97 14:47	2:47 PM	14	15-Apr-97	21:47
SU 041597-16	26	12S	491590	3682405	Tuesday	4/15/97 15:50	3:50 PM	11	4/15/97 0:00	22:50
SU 041597-17	27	12S	492459	3683068	Tuesday	4/15/97 17:05	5:55 AM	14	4/16/97 0:00	0:05
SU 041697-01	28	12S	492119	3684000	Wednesday	4/16/97 6:01	6:01 AM	13	16-Apr-97	11:01
SU 041697-02	29	12S	491710	3683180	Wednesday	4/16/97 6:49	6:49 AM	12	16-Apr-97	13:49
SU 041697-03	30	12S	492740	3682448	Wednesday	4/16/97 8:27	8:27 AM	14	16-Apr-97	15:27
SU 041697-04	31	12S	492301	3682484	Wednesday	4/16/97 8:53	8:53 AM	11	16-Apr-97	15:53
SU 041697-05	32	12S	492030	3684720	Wednesday	4/16/97 10:47	10:47 AM	12	16-Apr-97	17:47
SU 041697-06	33	12S	492012	3684595	Wednesday	4/16/97 11:04	11:04 AM	12	16-Apr-97	18:04
SU 041697-07	34	12S	491837	3684387	Wednesday	4/16/97 11:16	11:16 AM	12	16-Apr-97	18:16
PP 041897-01	35	12S	535085	3608128	Friday	4/18/97 6:44	6:44 AM	12	18-Apr-97	13:44
PP 041897-02	36	12S	535765	3607249	Friday	4/18/97 6:52	6:52 AM	16	18-Apr-97	13:52
PP 041897-03	37	12S	535796	3605795	Friday	4/18/97 7:14	7:14 AM	18	18-Apr-97	14:14
PP 041897-04	38	12S	535325	3606770	Friday	4/18/97 7:38	7:38 AM	18	18-Apr-97	14:38
PP 041897-05	39	12S	536335	3606443	Friday	4/18/97 7:47	7:47 AM	13	18-Apr-97	14:47
PP 041897-06	40	12S	537008	3605818	Friday	4/18/97 7:49	7:49 AM	14	18-Apr-97	14:49
PP 041897-07	41	12S	537645	3605175	Friday	4/18/97 7:59	7:59 AM	14	18-Apr-97	14:59
PP 041897-08	42	12S	536078	3604650	Friday	4/18/97 8:13	8:13 AM	13	18-Apr-97	15:13
PP 041897-09	43	12S	538695	3604283	Friday	4/18/97 8:32	8:32 AM	12	18-Apr-97	15:32
PP 041897-10	44	12S	537955	3604045	Friday	4/18/97 9:06	9:06 AM	12	18-Apr-97	16:06
PP 041897-11	45	12S	536981	3604450	Friday	4/18/97 9:26	9:26 AM	16	18-Apr-97	16:26
PP 041897-12	46	12S	538605	3605236	Friday	4/18/97 9:46	9:46 AM	12	18-Apr-97	16:46
PP 041897-13	47	12S	536116	3604302	Friday	4/18/97 10:03	10:03 AM		18-Apr-97	17:03
PP 041897-14	48	12S	535260	3604285	Friday	4/18/97 10:27	10:27 AM	18	18-Apr-97	17:27
PP 041897-15	49	12S	537396	3603595	Friday	4/18/97 10:58	10:58 AM	17	18-Apr-97	17:58
PP 041897-16	50	12S	536670	3603537	Friday	4/18/97 11:09	11:09 AM	14	18-Apr-97	18:09
PP 041897-17	51	12S	535746	3603345	Friday	4/18/97 11:21	11:21 AM	15	18-Apr-97	18:21
PP 041897-18	52	12S	537405	3602820	Friday	4/18/97 11:50	11:50 AM	13	18-Apr-97	18:50
PP 041897-19	53	12S	536910	3601923	Friday	4/18/97 12:16	12:16 PM	13	18-Apr-97	19:16
PP 041897-20	54	12S	536211	3601411	Friday	4/18/97 12:37	12:37 PM	12	18-Apr-97	19:37
PP 041897-21	55	12S	535943	3600742	Friday	4/18/97 13:02	1:02 PM	13	18-Apr-97	20:02
PP 041897-22	56	12S	535268	3599700	Friday	4/18/97 13:28	1:28 PM	15	18-Apr-97	20:28
PP 041897-23	57	12S	535520	3600180	Friday	4/18/97 13:48	1:48 PM	14	18-Apr-97	20:48
PP 041897-24	58	12S	536855	3600669	Friday	4/18/97 14:06	2:06 PM	14	18-Apr-97	21:06
PP 041897-25	59	12S	537705	3601015	Friday	4/18/97 14:20	2:20 PM	14	18-Apr-97	21:20
PP 041897-26	60	12S	538425	3601554	Friday	4/18/97 14:41	2:41 PM	15	18-Apr-97	21:41
PP 041897-27	61	12S	539623	3602290	Friday	4/18/97 14:58	2:58 PM	12	18-Apr-97	21:58
PP 041897-28	62	12S	537886	3602806	Friday	4/18/97 15:12	3:12 PM	13	18-Apr-97	22:12

TEV-788

Sequoia

SU

TEV-794

Pepper-Sassy Wash

file: GPS Data: 1 clean w.XLS

entered in EXL Data 4-23-97 ERM

EZLDATA1.xls

TEV-788
Dexter Olsen

Area	Sample ID:		Easting (UTM)	Northing (UTM)	Samp Depth
Superior	SU 041497-01				
Superior	SU 041497-02				
Superior	SU 041497-03				
Superior	SU 041497-04				
Superior	SU 041497-05				
Superior	SU 041497-06				
Superior	SU 041497-07				
Superior	SU 041497-08				
Superior	SU 041497-09				
Superior	SU 041497-10				
Superior	SU 041597-01				
Superior	SU 041597-02				
Superior	SU 041597-03				
Superior	SU 041597-04				
Superior	SU 041597-05				
Superior	SU 041597-06				
Superior	SU 041597-07				
Superior	SU 041597-08				
Superior	SU 041597-09				
Superior	SU 041597-10				
Superior	SU 041597-11				
Superior	SU 041597-12				
Superior	SU 041597-13				
Superior	SU 041597-14				
Superior	SU 041597-15				
Superior	SU 041597-16				
Superior	SU 041597-17				
Superior	SU 041697-01				
Superior	SU 041697-02				
Superior	SU 041697-03				
Superior	SU 041697-04				
Superior	SU 041697-05				
Superior	SU 041697-06				
Superior	SU 041697-07				

need info

See your DEXTER.WPT file, attached

data entered 4-23-97 from Dexter.WPT

	Northing	Easting	Depth
SU 031797-1A	3682874	489914	4
1B	"	"	8
1C	"	"	12
1D	"	"	16
SU 031797-2A	3683394	488444	4
2B	"	"	8
2C	"	"	13
2D	"	"	17
2E	"	"	22
2F	"	"	26
SU 031797-3A	3684286	488901	4
3B	"	"	8
3C	"	"	12
SU 031797-4A	3683842	489112	4
4B	"	"	8
4C	"	"	11
4D	"	"	15
PM 031797-1A	3681499	488274	4
1B	"	"	8
1C	"	"	12
1D	"	"	17
1E	"	"	23
1F	"	"	27

SU = Superior

PM = Picketpost Mtn

Samples collected by CR

found [illegible] 2497

entered in [illegible] Data 3-27-97 [illegible]

blende (from 5-10%). The intrusive rocks in the 8th level of the mine, 600 m below the summit of the Cerro de la Gloria are hypidiomorphic-granular, fine to medium grained, and do not contain ferromagnesian minerals. These variations can be interpreted either as a normal change in the pluton with depth, or more likely, as an indication of more than one pulse of magma with slightly different composition. This matter remains for further investigation.

Surface samples are grayish-orange (10 YR 7/4)* on a fresh surface, and weather to grayish orange pink (5 YR 7/2) due to oxidation of the iron-bearing minerals. The rocks are composed of sodic andesine, quartz, orthoclase, biotite, and hornblende. The common accessory minerals are zircon, apatite, and magnetite.

The surface samples usually are composed of 20-25% phenocrysts and 80-75%, fine-grained, hypidiomorphic-granular groundmass (Fig. 8). The phenocrysts are euhedral orthoclase up to 10 mm, partially resorbed euhedral crystals of quartz with an average diameter of 2 to 3 mm, and euhedral sodic andesine. The plagioclase is sometimes weakly zoned and has a

*The colors are described according to the Rock Color Chart, Goddard, et al, 1963.

D PM 01 1797-P 1685/0.05 next to lid north of rr line

C PM 01 1697-15 745/0.3 along side road.

A SU 01 1797-02 498/0.4 1000 M S of Smelter alongside Hw

A SU 01 1797-04 1150/0.05 1400 M WSW of Smelter

B 01 2197 01 2282/0.05 1200 M NW of Smelter

B 02 1733/0.05 when 0.03 1100 M NNW of Smelter

B 04 4918/0.05 800 M west of Smelter

SE 01 03 96-17 478/0.7 on plateau

Take AZ 177 from Superior intersecting toward Roy approx 2500 meters south on west side of road is dirt road going west. Stay + straight ahead for 3000 meters just south of Queen Creek.

~~A SU 01 1797-02~~ 1000 M S of Smelter, ~~north~~ south west side of USGO where it crosses Queen Creek, Tres Hermanos Restaurant/Bar on East of location 498 As, 0.4 Re best Re 12" depth

~~A SU 01 1797 04~~ 1400 M WSW of Smelter alongside road north toward Silver King, near power line (substation on up road to north.) 1150 As, 0.05 Re 15" depth about 500 M north from USGO rd.

Not sure of location

~~B SU 012197-1~~ about 1900 meters on Silver King road from USGO. keep right at jct ±900 M; keep left at jct 1.3 km 1200 M NW of Smelter 2282 As, 0.05 Re 20" depth

~~B SU 012197-4~~ Go back to jct at 1.3 km & take right fork to east then cut back south at first fork. 4918 As & 0.05 Re 10" depth.

core with an An_{38} composition and an outermost zone composed of slightly more sodic andesine (An_{30}). Biotite and hornblende usually occur as euhedral to subhedral phenocrysts up to 2 mm long. The groundmass is composed of a subhedral to anhedral aggregate of orthoclase, plagioclase and quartz, with an average grain size of 0.5 mm. Zircon and apatite are poikilitically enclosed in the biotite phenocrysts, and the magnetite (1%) is disseminated throughout the rock.

Fine grained xenoliths are relatively abundant in several localities in the intrusive body. A sample collected on the western portion of the Cerro de la Gloria has the following characteristics: it is grayish olive (10 Y 4/2) and weathers to grayish brown (5 YR 3/2) through oxidation of the iron-bearing minerals. The mineralogy is essentially the same as in the quartz monzonite, but the amount of dark-colored minerals, especially biotite, increases. The texture is holocrystalline, hypidiomorphic-granular fine-grained. The calcic oligoclase (An_{29}) occurs as euhedral crystals, partially altered to sericite. Orthoclase is present as subhedral to euhedral, twinned crystals or as micrographic intergrowths with quartz (Fig. 9). Biotite may be fresh or partially altered to chlorite with subsequent liberation of small granules of sphene and "dusty" magnetite. These xeno-

Superior Data

UTM E	UTM N	Ag	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sc	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
480441	3681391	71	0.05	819	334	0.3	45	14779	62	10	164	0.5	105	17	14	2	18	66	10	0.05	4	1118	0.5	2	5	1	109	29	94	8	210	20	PM 011397-01	Picketpost Mtn
481139	3681253	13	0.05	553	15	0.5	44	4351	111	5	72	0.5	58	23	11	3	14	83	9	0.05	6	567	0.5	0.5	12	1	117	31	67	13	209	30	PM 011397-02	Picketpost Mtn
481979	3680550	39	0.05	395	421	0.3	101	1500	27	3	94	0.5	82	68	2	3	71	44	8	0.05	3	1087	2	0.5	17	2	110	93	39	8	207	21	PM 011397-03	Picketpost Mtn
481578	3679867	19	0.05	1409	82	0.8	19	5198	50	4	65	0.5	54	20	12	2	17	39	16	0.05	8	784	0.5	0.5	5	0.5	121	55	132	11	208	20	PM 011397-04	Picketpost Mtn
483248	3680850	47	0.05	747	65	1.3	60	1500	105	5	100	0.5	46	20	19	3	23	66	14	0.05	6	487	2	2	14	1	93	180	135	10	202	16	PM 011397-05	Picketpost Mtn
482909	3681234	28	0.05	269	196	0.5	10	6105	26	0.5	17	0.5	154	7	23	0.5	8	30	2	0.05	5	1516	0.5	0.5	1	1	166	14	28	7	203	37	PM 011397-06	Picketpost Mtn
482082	3681333	15	0.05	894	86	0.5	30	11155	118	4	46	0.5	76	14	12	3	13	93	9	0.05	6	616	0.5	2	6	1	159	30	69	18	206	22	PM 011397-07	Picketpost Mtn
482567	3682143	10	0.05	340	276	0.8	69	1500	26	3	42	0.5	43	36	2	2	34	26	7	0.05	3	605	0.5	0.5	8	1	71	51	59	18	205	20	PM 011397-08	Picketpost Mtn
483432	3681771	51	0.05	72	146	0.3	24	7448	39	0.5	54	0.5	43	18	0.5	3	31	46	6	0.2	2	366	0.5	0.5	7	3	223	14	43	41	199	13	PM 011397-09	Picketpost Mtn
483400	3682506	45	0.05	1144	563	1.3	13	4643	67	0.5	116	0.5	344	14	6	0.5	24	67	6	0.05	2	2438	0.5	0.5	3	0.5	269	44	53	17	200	17	PM 011397-11	Picketpost Mtn
482878	3683130	28	0.05	95	249	0.5	11	5913	43	0.5	20	0.5	408	19	0.5	1	21	37	2	0.05	3	730	0.5	0.5	3	0.5	236	28	24	8	204	23	PM 011497-01	Picketpost Mtn
483315	3685731	14	0.05	173	65	0.5	20	6871	46	2	54	0.5	108	14	0.5	3	12	89	9	0.05	1	378	0.5	1	2	0.5	248	53	41	30	201	16	PM 011497-04	Picketpost Mtn
484185	3686332	46	0.05	165	107	1	12	8537	55	2	148	0.5	54	7	0.5	1	9	50	6	0.05	3	362	0.5	0.5	3	0.5	143	12	42	17	195	10	PM 011497-05	Picketpost Mtn
486074	3680940	85	0.05	94	192	1	39	10290	40	3	101	1	57	13	65	7	14	58	7	0.05	10	249	2	1	5	0.5	137	25	69	39	185	24	PM 011597-01	Picketpost Mtn
486500	3681350	19	0.05	544	218	1	40	6904	48	3	56	2	130	26	16	11	14	48	16	0.05	6	841	4	0.5	7	2	187	39	84	55	184	13	PM 011597-02	Picketpost Mtn
485455	3681442	23	0.05	145	193	0.8	36	21028	42	4	44	1	56	13	24	8	12	50	10	0.05	16	201	2	1	6	1	115	20	72	52	190	15	PM 011597-03	Picketpost Mtn
487161	3681206	773	0.05	302	88	1.8	43	15344	42	2	172	2	101	14	53	21	17	50	23	0.05	25	676	5	7	5	2	245	104	81	76	178	10	PM 011597-04	Picketpost Mtn
485206	3680952	260	0.05	144	65	2	15	8614	59	0.5	129	0.5	67	6	29	3	7	21	15	0.05	11	309	0.5	3	0.5	1	109	11	42	15	191	7	PM 011597-05	Picketpost Mtn
486972	3682117	404	0.05	232	272	0.5	11	7742	20	0.5	37	0.5	340	7	14	1	6	32	16	0.05	33	1157	0.5	1	1	1	120	26	42	11	180	27	PM 011597-06	Picketpost Mtn
484521	3681453	154	0.05	96	217	1	45	14994	41	3	117	1	62	13	9	10	14	47	20	0.05	22	154	2	2	5	1	74	36	85	48	194	10	PM 011597-07	Picketpost Mtn
484141	3680996	130	0.05	36	223	0.8	13	3193	21	0.5	66	0.5	103	13	0.5	2	13	41	3	0.05	10	277	0.5	0.5	2	0.5	88	11	40	15	196	15	PM 011597-09	Picketpost Mtn
483737	3684582	60	0.05	420	80	0.5	11	1500	39	1	47	0.5	77	7	0.5	1	9	39	5	0.05	3	457	0.5	1	3	0.5	211	17	31	18	198	11	PM 011597-10	Picketpost Mtn
484115	3683301	271	0.05	260	247	1	17	12814	20	0.5	68	0.5	132	8	12	1	9	41	3	0.05	15	1040	0.5	0.5	2	0.5	87	27	31	13	197	13	PM 011597-11	Picketpost Mtn
484919	3682890	66	0.05	393	202	1.3	25	4976	55	2	65	0.5	230	21	0.5	4	18	74	14	0.05	8	665	2	1	5	0.5	392	7	74	46	193	12	PM 011597-12	Picketpost Mtn
485690	3683326	57	0.05	1232	37	1	14	8773	93	0.5	242	0.5	110	9	1	0.5	10	79	6	0.05	3	1288	0.5	5	0.5	0.5	341	75	31	9	188	20	PM 011697-01	Picketpost Mtn
487015	3685979	132	0.05	332	206	0.3	8	7469	14	0.5	8	0.5	322	3	6	2	5	3	1	0.05	3	1515	0.5	0.5	1	0.5	559	11	17	3	179	32	PM 011697-04	Picketpost Mtn
487219	3683170	578	0.05	630	95	1.3	15	3824	40	0.5	583	0.5	95	8	37	0.5	11	32	21	0.05	26	1138	0.5	10	2	0.5	322	53	47	6	177	12	PM 011697-09	Picketpost Mtn
487840	3679536	158	0.05	136	54	0.8	8	3311	37	0.5	96	0.5	89	6	15	10	5	15	12	0.05	9	394	2	7	2	1	93	22	36	17	170	13	PM 011697-10	Picketpost Mtn
487262	3679587	57	0.05	87	208	0.8	10	3261	18	0.5	51	0.5	111	5	0.5	6	6	31	11	0.05	4	629	2	4	1	0.5	266	20	32	15	176	12	PM 011697-11	Picketpost Mtn
485877	3687857	20	0.05	119	146	0.5	82	6341	22	6	35	3	136	23	1	27	21	34	22	0.05	8	190	7	0.5	12	3	146	18	100	104	181	20	PM 011697-12	Picketpost Mtn
488212	3680133	129	0.05	547	295	1	11	6037	30	1	66	0.5	169	8	5	5	7	23	19	0.2	9	667	2	5	2	0.5	296	6	43	26	164	13	PM 011697-13	Picketpost Mtn
487620	3680839	336	0.05	312	106	2	27	5080	76	1	143	0.5	133	7	15	5	7	47	27	0.05	9	582	0.5	7	1	1	183	7	71	27	172	12	PM 011697-14	Picketpost Mtn
488280	3681522	745	0.05	571	356	2.8	22	12885	53	0.5	168	0.5	99	17	135	2	12	67	33	0.3	68	789	0.5	0.5	1	0.5	184	44	114	19	162	17	PM 011697-15	Picketpost Mtn
487895	3682137	95	0.05	1848	138	0.8	9	1500	63	0.5	180	0.5	151	8	3	0.5	8	59	16	0.05	7	668	0.5	3	2	0.5	255	4	32	7	168	11	PM 011697-16	Picketpost Mtn
487885	3681665	500	0.05	267	221	1.5	18	13385	28	0.5	581	0.5	135	9	30	3	11	33	26	0.3	26	733	0.5	12	2	0.5	81	25	56	13	169	10	PM 011697-17	Picketpost Mtn
487436	3681753	569	0.05	352	192	0.5	13	8350	27	0.5	108	0.5	98	8	36	0.5	7	35	11	0.05	24	1170	0.5	1	1	0.5	304	42	57	8	174	16	PM 011697-18	Picketpost Mtn
486748	3681801	791	0.05	409	204	5.6	31	5178	38	2	304	1	88	15	82	12	15	50	262	0.05	86	792	3	4	4	1	127	14	378	47	182	12	PM 011697-19	Picketpost Mtn
486589	3682231	51	0.05	605	15	0.5	12	4335	82	0.5	128	0.5	51	6	3	0.5	7	79	29	0.05	6	641	0.5	1	1	0.5	140	5	35	21	183	12	PM 011697-20	Picketpost Mtn
485011	3682261	19	0.05	466	86	0.3	22	1500	46	2	98	0.5	76	11	6	0.5	12	40	7	0.05	5	414	0.5	0.5	3	0.5	120	33	26	11	192	16	PM 011797-01	Picketpost Mtn
485836	3682343	132	0.05	1188	95	0.5	18	1500	78	1	150	0.5	115	10	3	1	15	131	4	0.05	3	535	0.5	3	1	0.5	286	8	28	17	187	12	PM 011797-02	Picketpost Mtn
486052	3682643	40	0.05	869	79	0.3	9	4146	113	0.5	76	0.5	28	4	0.5	0.5	4	72	2	0.05	4	556	0.5	2	0.5	0.5	55	15	30	7	186	8	PM 011797-03	Picketpost Mtn
487455	3682538	23	0.05	496	152	0.8	8	7007	41	0.5	94	0.5	125	9	0.5	0.5	9	51	0.5	0.05	2	1648	0.5	0.5	0.5	0.5	139	12	11	8	173	17	PM 011797-04	Picketpost Mtn
488171	3682745	121	0.05	1277	131	1	31	3765	50	3	378	1	95	18	0.5	3	20	68	20	0.05	5	933	2	2	5	0.5	309	12	99	48	165	21	PM 011797-05	Picketpost Mtn
488088	3683108	1898	0.05	721	91	4.3	6	1500	53	0.5	3556	0.5	35	3	2	0.5	4	30	56	0.05	36	336	0.5	13	0.5	0.5	169	18	207	5	166	8	PM 011797-06	Picketpost Mtn
485594	3684640	204	0.05	317	134	1.5	21	1500	102	0.5	477	0.5	109	9	15	0.5	10	126	18	0.05	7	714	0.5	12	3	0.5	256	10	70	12	189	16	PM 011797-07	Picketpost Mtn
487728	3685072	220	0.05	295	92	0.8	12	1500	63	0.5	260	0.5	125	5	5	0.5	10	73	6	0.2	6	453	0.5	2	1	0.5	433	2	61	9	171	10	PM 011797-08	Picketpost Mtn
488260	3686170	615	0.05	217	74	2.3	7	1500	49	0.5	499	0.5	90	4	0.5	0.5	5	46	13	0.05	15	327	0.5	1	2	0.5	137	7	60	10	163	12	PM 011797-09	Picketpost Mtn
487988	3683047	1685	0.05	53	92	0.3	10	1500	7	0.5	39	0.5	169	11	0.5	18	12	12	3	0.05	4	1841	2	0.5	4	0.5	308	10	12	11	167	22	PM 011797-10	Picketpost Mtn
500343	3689299	26	0.05	703	216	0.7	40	1500	5	3	41	0.5	130	20	22	4	17	18	10	0.05	5	552	0.5	0.5	4	1	79	8	47	21	25	25	PR 013097-01	Pinal Ranch

liths may be the product of assimilation of some of the shales. The fact that these xenoliths and the quartz monzonite have the same mineralogical composition and only the proportions between the different phases vary indicates, according to Hyndman (1972), that equilibrium between the quartz monzonite and the xenoliths has been approached.

The stock in the immediate vicinity of the replacement ore bodies is light greenish gray (5 G 8/1) and show variable degrees of hydrothermal alteration and mineralization. It is composed of orthoclase, slightly microperthitic, sodic andesine (An_{30-34}) and quartz. The plagioclase is subhedral to euhedral, and sometimes is almost completely surrounded by orthoclase, which usually is subhedral to anhedral. Quartz occurs as anhedral crystals between the feldspars. Hydrothermal alteration and mineralization are fracture controlled; the most common alteration products are clays, sericite, calcite, and epidote. Thin veinlets filled with chalcopyrite, bornite, calcite, and purple fluorite were observed in the intrusive rocks in several localities within the mine.

Several dikes were recognized in the northwestern part of the metasomatic aureole close to the San Martin vein system in the vicinity of the locality known as La Tepetatera (Fig. 5). The dikes range in width from 0.5 to 1.5 m (Fig. 10)

Superior Data

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Rb	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
501044	3686735	45	0.05	632	35	1	11	5558	3	1	30	0.5	36	4	99	1	6	2.5	13	0.05	1	972	0.5	0.5	2	0.5	40	0.5	129	8	19	17	PR 013097-02	Pinal Ranch
501240	3688594	84	0.05	509	15	0.7	13	11251	8	1	109	0.5	44	9	15	1	13	6	10	0.05	5	1436	0.5	0.5	2	2	68	0.5	31	7	17	15	PR 013097-03	Pinal Ranch
500442	3688033	116	0.05	314	178	3	20	9684	68	0.5	479	0.5	33	10	9	0.5	17	75	19	0.4	8	539	0.5	1	2	0.5	117	0.5	87	14	24	9	PR 013097-04	Pinal Ranch
500539	3687641	329	0.05	1217	119	1.9	25	9589	29	2	161	0.5	155	13	70	2	14	7	21	0.05	17	1208	0.5	24	2	2	101	6	45	15	23	8	PR 013097-05	Pinal Ranch
500231	3687046	549	0.05	1173	122	3.3	23	11847	23	1	357	0.5	72	8	162	1	8	2.5	22	0.05	20	1516	0.5	34	2	0.5	58	11	177	12	26	7	PR 013097-06	Pinal Ranch
500739	3686455	390	0.05	1528	153	6.7	28	33829	51	1	361	0.5	63	12	86	2	12	29	34	0.05	12	1275	1	42	2	0.5	126	8	141	11	20	9	PR 013097-07	Pinal Ranch
501508	3687388	34	0.05	1084	228	0.1	20	11638	20	0.5	44	0.5	96	14	2	1	23	2.5	8	0.05	1	800	0.5	0.5	1	0.5	255	0.5	19	7	14	27	PR 013097-08	Pinal Ranch
501479	3688246	261	0.05	1304	125	0.7	19	10137	17	1	72	0.5	92	10	17	2	11	19	7	0.05	9	983	0.5	10	3	0.5	71	8	37	8	15	12	PR 013097-09	Pinal Ranch
505401	3680000	25	0.05	1218	15	0.1	34	1500	28	1	203	0.5	74	14	0.5	1	18	2.5	13	0.05	1	764	1	2	3	2	123	1	5	12	3	15	PR 013097-10	Pinal Ranch
504886	3680508	52	0.05	671	195	1	47	9107	23	0.5	140	0.5	84	53	13	2	54	66	7	0.2	5	1525	0.5	3	11	2	428	24	30	13	4	14	PR 013097-11	Pinal Ranch
505573	3680591	30	0.05	876	138	0.1	13	8163	112	0.5	35	0.5	115	6	4	0.5	8	45	11	0.05	3	711	0.5	0.5	2	0.5	229	41	16	7	2	15	PR 013097-12	Pinal Ranch
502519	3679931	30	0.05	599	166	1	17	8151	77	0.5	115	0.5	110	17	15	1	18	96	7	0.05	7	965	0.5	0.5	4	0.5	255	40	53	12	10	22	PR 013197-01	Pinal Ranch
501473	3679777	36	0.05	972	253	0.4	24	33795	25	7	42	1	57	14	21	5	16	16	7	0.05	7	964	0.5	0.5	4	0.5	80	42	54	26	16	8	PR 013197-02	Pinal Ranch
500572	3679937	127	0.05	1183	15	1.6	12	15325	46	1	45	0.5	40	3	42	1	5	19	6	0.05	6	720	0.5	10	1	0.5	67	27	5	6	22	8	PR 013197-03	Pinal Ranch
500191	3681343	229	0.05	978	165	4.8	30	11547	81	0.5	117	0.5	31	5	12	1	4	2.5	18	0.05	11	586	0.5	18	1	0.5	83	26	35	9	28	10	PR 013197-04	Pinal Ranch
500213	3683299	101	0.05	988	183	1	37	14431	51	1	71	0.5	161	12	32	2	3	30	8	0.05	6	1077	0.5	7	3	0.5	134	24	14	11	27	10	PR 013197-05	Pinal Ranch
500722	3684323	73	0.05	1245	129	1.3	38	1500	39	3	247	0.5	79	16	0.5	4	19	22	17	0.05	7	763	2	3	4	1	79	3	67	26	21	18	PR 013197-06	Pinal Ranch
501139	3684289	58	0.05	1158	120	0.1	24	10648	27	1	43	0.5	125	10	9	2	15	11	6	0.05	6	813	0.5	0.5	2	0.5	91	15	22	8	18	26	PR 013197-07	Pinal Ranch
501825	3682620	25	0.05	2297	199	1.9	105	1500	85	6	45	3	141	41	2	6	53	31	16	0.05	3	797	2	3	10	4	97	1	48	62	13	30	PR 013197-09	Pinal Ranch
502268	3681020	38	0.05	1299	223	0.4	34	7128	31	2	26	0.5	132	19	0.5	3	30	19	11	0.2	5	736	2	1	3	2	182	3	11	28	12	20	PR 013197-10	Pinal Ranch
503144	3681781	182	0.05	815	197	1	16	9094	17	3	95	0.5	68	11	36	4	13	15	9	0.05	9	749	1	3	2	0.5	51	36	41	20	7	13	PR 013197-11	Pinal Ranch
502762	3683171	11	0.05	149	33	0.1	7	8964	3	0.5	12	0.5	26	3	0.5	3	8	2.5	3	0.05	1	311	0.5	0.5	2	2	120	1	5	4	9	5	PR 013197-12	Pinal Ranch
502369	3684587	65	0.05	1138	533	0.1	37	31742	33	0.5	163	0.5	515	16	102	2	29	61	8	0.3	7	1996	0.5	0.5	2	1	835	85	160	14	11	16	PR 013197-13	Pinal Ranch
503191	3681016	64	0.05	194	118	0.4	21	1500	52	0.5	136	0.5	59	8	42	2	11	34	7	0.2	25	697	0.5	5	1	0.5	218	13	16	2	6	8	PR 013197-14	Pinal Ranch
502942	3679866	19	0.05	503	307	0.7	23	9572	69	1	74	0.5	91	14	120	0.5	19	68	6	0.2	8	1143	0.5	1	3	0.5	129	28	26	1	8	16	PR 013197-15	Pinal Ranch
504037	3679542	40	0.05	157	325	0.1	24	17917	12	1	92	0.5	279	8	9	0.5	12	28	4	0.2	4	814	0.5	2	4	2	508	7	5	3	5	36	PR 013197-16	Pinal Ranch
488861	3682170	103	0.05	214	194	0.5	12	4972	10	0.5	39	0.5	177	7	8	0.5	6	15	11	0.05	5	738	0.5	0.5	2	0.5	361	8	43	9	156	16	SU 011697-01	Superior
488491	3682672	108	0.05	1044	241	0.8	22	4947	50	2	606	0.5	112	12	9	3	14	61	30	0.05	6	552	0.5	26	3	0.5	195	37	82	29	159	12	SU 011797-01	Superior
489902	3682950	498	0.05	353	217	0.5	20	49851	29	0.5	576	0.5	90	14	8	0.5	15	39	9	0.4	5	1103	0.5	4	2	0.5	404	28	42	9	148	16	SU 011797-02	Superior
488471	3685304	136	0.05	132	43	0.3	6	4275	10	0.5	131	0.5	31	4	0.5	0.5	5	19	5	0.05	3	394	0.5	0.5	1	0.5	203	1	40	8	160	12	SU 011797-03	Superior
488411	3683392	1350	0.05	657	288	0.8	16	9819	58	2	648	0.5	102	10	17	2	13	74	12	0.05	15	845	0.5	9	2	0.5	426	9	52	20	161	15	SU 011797-04	Superior
488900	3684285	2282	0.05	182	114	1.2	7	16590	19	0.5	607	0.5	64	5	19	0.5	6	44	11	0.05	29	1068	0.5	8	0.5	0.5	275	42	47	3	155	20	SU 012197-01	Superior
489209	3684927	1233	0.05	234	52	7	33	17296	80	3	2793	2	36	17	11	9	21	84	31	0.05	29	971	2	58	5	1	333	16	448	46	150	8	SU 012197-02	Superior
489109	3683812	4918	0.2	205	37	5.9	30	14783	21	2	7747	0.5	40	16	11	3	17	33	124	0.05	182	337	0.5	50	5	0.5	151	140	466	19	152	10	SU 012197-04	Superior
489361	3681266	35	0.05	584	82	0.3	14	10008	19	2	73	0.5	123	7	18	3	7	61	15	0.05	12	1181	0.5	0.5	4	1	339	42	185	18	149	20	SU 012197-08	Superior
488791	3681403	260	0.05	397	114	0.9	63	17653	32	9	336	4	60	42	47	26	33	66	44	0.05	12	668	7	5	17	3	330	48	248	98	157	14	SU 012197-09	Superior
489140	3680421	71	0.05	188	80	0.3	42	8580	36	8	146	4	67	27	23	25	26	58	32	0.05	6	381	6	4	17	3	317	69	179	82	151	15	SU 012197-10	Superior
488569	3680495	143	0.05	87	276	1.2	25	5278	80	0.5	142	0.5	75	15	67	5	17	96	14	0.05	17	629	0.5	4	3	0.5	262	55	43	11	158	12	SU 012197-11	Superior
488937	3679572	661	0.05	835	941	1.5	49	162045	20	2	118	2	964	32	256	14	32	84	7	0.2	18	2568	2	0.5	34	7	7103	107	77	74	154	25	SU 012197-12	Superior
489000	3679143	27	0.05	184	57	0.1	48	9514	14	5	35	3	56	21	15	30	15	29	19	0.05	5	323	7	0.5	15	5	124	24	106	54	153	29	SU 012197-13	Superior
496171	3679294	35	0.05	822	40	0.3	165	5630	117	11	45	4	128	60	10	3	59	38	38	0.05	2	532	9	1	24	6	404	9	156	80	115	22	SU 012197-14	Superior
497093	3680735	25	0.05	525	15	0.9	28	4969	14	2	19	0.5	44	16	160	2	16	35	7	0.05	3	699	0.5	0.5	3	1	197	34	44	7	106	18	SU 012197-15	Superior
496305	3680370	28	0.05	643	143	0.3	55	13835	21	4	14	1	57	23	19	6	22	21	14	0.05	2	670	4	0.5	6	3	164	6	74	19	113	30	SU 012197-16	Superior
496331	3681163	59	0.05	672	15	0.6	39	9035	26	2	42	0.5	48	9	21	3	8	10	11	0.05	4	616	0.5	2	3	1	85	12	39	12	112	12	SU 012197-17	Superior
487315	3681884	74	0.05	1994	30	1.2	57	11757	33	4	70	2	40	22	8	8	14	16	26	0.05	3	578	3	1	10	3	78	5	95	33	175	15	SU 012197-18	Superior
495617	3681145	24	0.05	853	99	0.6	46	4829	17	6	24	1	104	22	17	9	20	29	13	0.05	2	623	2	0.5	6	3	184	13	86	27	120	22	SU 012197-19	Superior
495505	3680348	171	0.05	569	71	1.5	32	10343	23	4	221	0.5	101	16	40	4	13	27	23	0.05	10	730	2	10	2	1	95	14	96	21	122	8	SU 012197-20	Superior
495901	3681973	122	0.05	902	83	1.2	66	13190	13	4	67	2	41	21	28	11	21	14	18	0.05	5	512	3	2	9	2	43	16	53	42	117	8	SU 012197-21	Superior
490873	3681780	935	0.05	801	15	4.1	76	1500	81	9	2236	3	110	33	74	14	33	108	277	0.05	47	289	4	64	11	2	303	104	779	69	143	10	SU 012297-01	Superior

and are white to light olive gray (5 Y 6/1) holocrystalline, inequigranular, porphyritic-aphanitic leucocratic rhyodacites to rhyolites. The microphenocrysts make 10-15% of the rocks and range in size from 0.5 to 2 mm. Partially resorbed quartz, euhedral to subhedral sodic andesine (An_{33}) and kaolinitized orthoclase are set in an aphanitic, felsic groundmass composed of approximately equal volumes of quartz and feldspar. The feldspar phenocrysts are partly to completely argillized by hydrothermal alteration.

3. Geology of the Aureole Around the Stock.

A. General Statement.

One objective of this study was to deliniate the extent of the contact metamorphic aureole around the Cerro de la Gloria stock. As shown in figure 5, the aureole is assymmetrically shaped; that is, the areal extent of the contact zone is two times greater on the western side of the intrusion than along the other margins. The aureole is developed in the limestones and calcareous shales of the Cuesta del Cura Limestone.

Based on the mineralogy, the aureole is divided into four zones: 1. Tremolite-calcite; 2. Tremolite-garnet; 3. Ferrosalite-garnet; and 4. Saccharoidal quartz. The contacts

CER 3/15/97

Follow-up Resamples:

Superior Quad.:

1. SU 01 17 97-02 A. (12") A 4" B 8" C 12" D 16"
   SU 031797-1A thru 1D

2. SU 01 17 97-04 A. (15") A 4" B 8" C 13" D 17" E 22" F 26"
   SU 031797-2A thru 2F

3. SU 01 21 97-1 B. (20") A 4" B 8" C 12"
   SU 031797-3A thru 3C

4. SU 01 21 97-4 B. (10") A 4" B 8" C 11" D 15"
   SU 031797-4A thru 4D

Pickelpost Quad.:

5. PM 01 14 97-15 C. (17").
   PM 031797-1A thru 1F A 4" B 8" C 12" D 17" E 23" F 27"

Need to take incremental samples

A 0-4"
B 4-8"
C 8-12"
D 12-16"
E 16-20"
F 20-24"

FACSIMILE MESSAGE

DATE: 03/11/97

TO: Mr. Clark Arnold

FROM: JW Sell

PHONE/FAX:

SUBJECT: follow-up depth redo's

NUMBER OF PAGES INCLUDING COVER 2

(In case of finding point!)

3682874
485914

1. SU011797-02 UTMN 3682950 UTME 485902 — S side of US 60, ± in town, just before crossing Queen Creek bridge. The Hermanos Rest-Bar just to east.

12" depth.

(2A on map) 498 As, 0.4 Re (best in area)

1000m S of Smelter. 576 Cu

1 Mo
1 Pb
12 Zn

2. Three sites along Silver King Road which starts north from US 60 about at the airport building.

a. SU011797-04 UTMN 3683392 UTME 488411 — about 800 meters north along Silver King Road from US 60 intersection. West side of rd.

15" depth

(4A on map) 1150 As, 0.05 Re, 648 Cu

1600m WSW of Smelter

488444
3683294

17 Mo
12 Pb
52 Zn

b. SU012197-1 UTMN 3684285 UTME 488900 — continue north on Ag King Rd. Keep right at jct at ±900m; Keep left at jct at 1.3 km for US 60 intersection (to ±1900m

20" depth

(1B on map) 2282 As, 0.05 Re, 407 Cu

1200m NW of Smelter

note this intersection for next sample site

3684286
488901

19 Mo
11 Pb
47 Zn

page 2 of FAX
to LC Arnold
from J-D- Sell

3683842 2:15
489112

2 c. SU 01 2197-4
10" depth UTM N 3683812
UTM E 489109
(4B on map)

11 Mo
124 Pb
446 Zn

4918 As, 0.05 Re
(highest value 7747 Cu

Go back south on Ay King Rd to jct at ± 1.3 km, take "right" fork toward east, then cut back south at first jct toward point.

3. Take AZ 177 from Superior Interchange toward Ray, to Ray Road. Approx. 2500 meters South on west side of road is dirt road going westerly into valley. Stay ± straight ahead for total of 3000 meters, ending on south side of Queen Creek drainage before it enters canyon to west @ SW end of airstrip & road extensions.

PM 01 1497-15
17" depth UTM N 3681522
UTM E 488280

3681499
488274
3:30

135 Mo
33 Pb
114 Zn

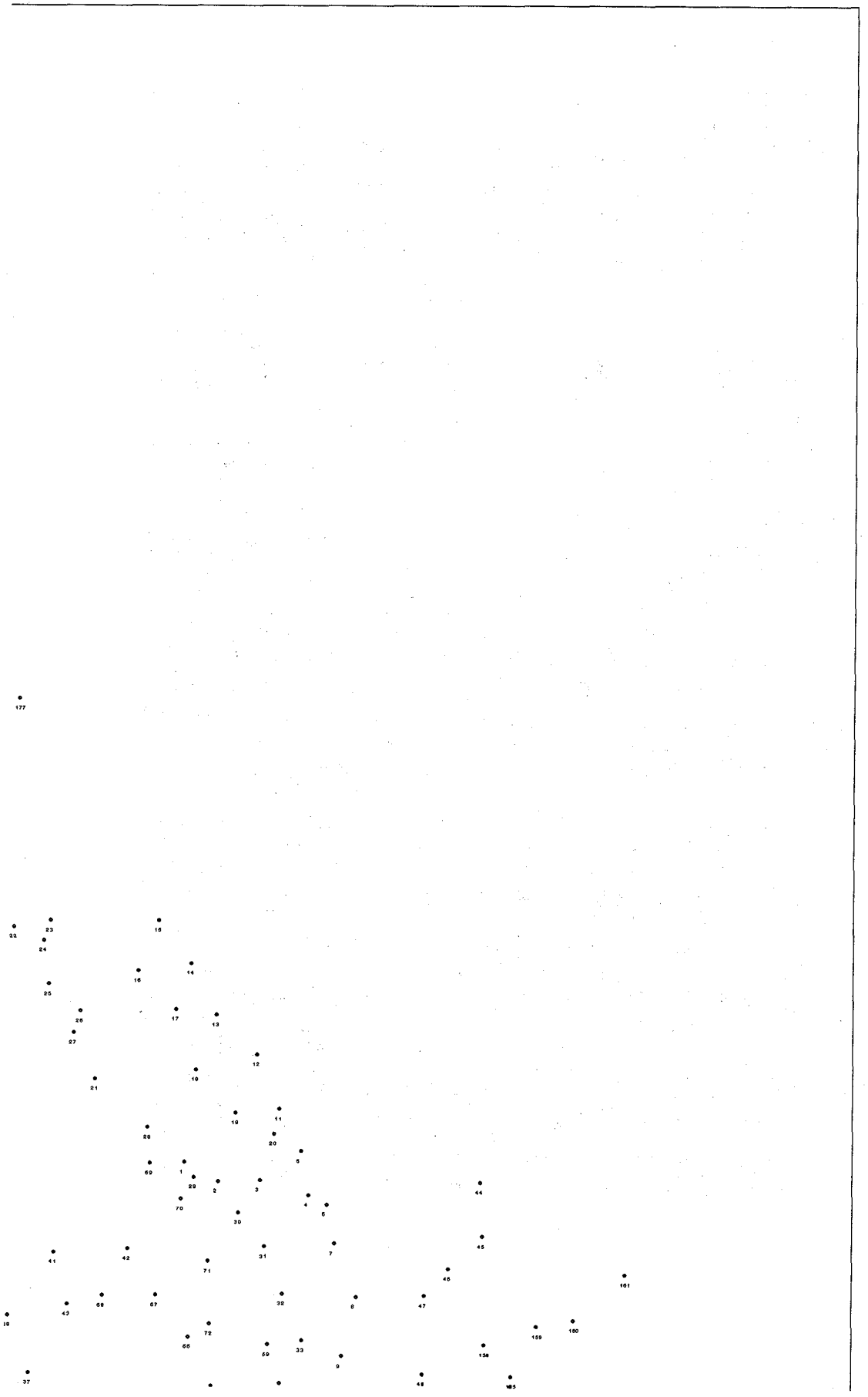
(15 C on map) 745 As, 0.3 Re, 168 Cu

The highest Re at 0.7 was at SE 01 0396-17 which is upon the Superior East drilling area, east of Devils canyon. All these samples were of dirt collected from beneath bushes in the dacite cover. 478 As. UTM N 3687730
1062 Cu UTM E 499240

Superior Project
Superior 7½ Quad.

UTME	UTMN	As	Au	Ba	Br	Cd	Ce	Ca	Co	Cr	Cu	Hf		La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
498213	3686299	522	0.09	792	160	1.6	34	9198	18	2	265	0.5	58	10	82	2	13	29	24	0.05	18	686	0.5	17	4	2	89	42	117	90	76	8	SU 012897-11	Superior
497903	3686265	1289	0.05	1077	79	1.6	108	11418	25	9	351	2	91	35	61	11	34	52	57	0.05	20	617	3	110	7	2	191	48	204	74	84	10	SU 012897-12	Superior
497805	3684650	245	0.06	659	83	0.7	56	3315	19	0.9	201	3	63	23	14	1	31	8	18	0.2	6	476	0.5	12	7	2	94	2	47	38	87	5	SU 012897-13	Superior
499169	3683478	187	0.06	739	67	1.9	22	4644	27	0.5	301	0.1	46	13	55	1	12	70	69	0.05	6	704	0.5	14	2	1	101	12	79	16	1	3	SU 012897-14	Superior
499517	3682600	55	0.05	916	98	0.1	72	1500	23	4	59	2	229	31	20	8	34	23	23	0.05	3	753	3	2	11	3	232	19	82	30	36	12	SU 012897-15	Superior
499034	3686399	231	0.05	993	46	1	44	1479	17	2	81	1	116	16	39	3	17	19	15	0.05	8	856	1	6	4	1	135	13	56	21	33	9	SU 012997-04	Superior
499734	3686167	320	0.05	716	142	1	38	12812	34	0.5	182	0.3	98	17	47	0.5	22	39	9	0.05	11	640	0.5	10	2	2	123	27	21	18	31	12	SU 012997-01	Superior
499352	3687161	255	0.05	968	161	1	28	14027	12	1	13	0.5	146	13	4	5	16	10	11	0.05	4	708	0.5	7	4	0.5	99	2	24	21	30	10	SU 012997-06	Superior
499384	3687789	548	0.05	703	141	5.4	50	7600	26	0.5	296	0.5	60	11	49	1	13	13	31	0.2	14	755	0.5	9	3	0.5	87	3	78	23	35	8	SU 012997-07	Superior
499323	3687472	505	0.05	770	38	5.1	32	7276	26	0.5	146	2	54	16	64	2	30	28	41	0.05	12	584	0.5	28	2	0.5	85	13	146	34	41	8	SU 012997-08	Superior
499903	3683447	21	0.03	930	195	0.7	20	4283	12	0.5	34	0.5	131	18	0.5	1	37	33	7	0.08	3	568	0.5	2	1	0.5	99	0.5	5	11	51	23	SU 012997-09	Superior
498367	3687279	400	0.05	413	72	1.6	21	10342	11	1	662	0.5	42	9	85	1	12	28	27	0.07	22	324	0.3	17	4	0.2	84	17	127	17	37	8	SU 012997-10	Superior
499135	3687169	62	0.05	1130	138	1.9	26	5208	22	0.5	168	1	62	16	0.5	3	19	14	11	0.03	3	395	0.5	3	4	0.3	51	0.5	45	29	45	10	SU 012997-11	Superior
499023	3686907	28	0.05	363	206	0.4	99	7405	17	7	41	2	166	18	34	9	37	41	19	0.05	4	627	3	1	10	2	194	19	75	61	50	24	SU 012997-12	Superior
499035	3686567	335	0.05	712	74	1	26	10039	33	0.5	288	0.3	43	13	35	1	17	18	19	0.05	7	530	0.5	8	5	0.5	78	3	20	25	49	9	SU 012997-13	Superior
498330	3686232	199	0.05	1179	139	1	96	7838	22	9	31	2	179	26	13	13	38	31	23	0.05	5	695	4	4	11	9	121	14	75	78	40	15	SU 012997-14	Superior
499437	3686695	38	0.05	1137	309	0.7	69	11707	31	1	46	1	213	32	32	8	29	27	22	0.05	5	991	2	3	6	2	208	18	119	98	38	14	SU 012997-15	Superior
499438	3687173	253	0.05	1133	90	1.6	105	9378	22	5	219	3	74	34	81	8	37	31	42	0.2	11	470	3	7	18	4	108	33	118	68	37	8	SU 012997-16	Superior
498610	3687540	291	0.05	630	13	1.9	43	9162	14	1	378	0.5	62	20	108	3	13	31	30	0.05	21	395	0.5	35	3	0.5	117	21	73	20	34	10	SU 012997-17	Superior
498115	3681587	37	0.05	314	140	1.7	24	3302	18	1	40	0.5	90	10	13	0.5	11	21	8	0.05	2	666	0.5	0.3	1	0.9	53	11	37	10	79	14	SU 012997-18	Superior
498222	3680562	24	0.03	492	108	0.1	20	17067	17	0.5	5	0.5	93	7	0.5	1	12	2.1	8	0.05	1	553	0.3	0.1	2	2	201	0.5	3	8	75	30	SU 012997-19	Superior
499212	3687940	15	0.05	1409	202	0.1	29	16067	59	0.5	13	0.5	121	11	2	1	33	24	9	0.05	2	554	0.5	1	1	2	473	0.5	77	4	45	33	SU 012997-20	Superior
499107	3688437	31	0.05	1341	77	0.1	142	5629	34	41	45	5	198	61	2	12	58	48	36	0.05	4	591	4.5	2	22	2	167	12	176	109	29	26	SU 012997-21	Superior
499725	3688172	69	0.05	1420	167	0.1	124	9023	27	10	56	4	100	43	27	16	51	50	27	0.05	5	670	4	3	24	1	163	27	181	18	32	17	SU 012997-22	Superior
499357	3688302	124	0.05	412	15	1	37	6222	8	1	27	0.5	73	8	0.5	2	15	2.1	3	0.05	24	531	0.5	3	1	0.3	47	8	5	16	39	13	SU 012997-23	Superior
499125	3689280	51	0.05	1044	33	1	33	16178	25	0.5	52	2	41	12	0.5	2	20	10	13	0.05	2	418	0.5	7	5	2	83	4	15	33	48	12	SU 012997-24	Superior
498471	3680237	360	0.05	1561	199	4.5	38	14968	32	1	180	0.5	69	13	17	2	18	24	17	0.05	12	512	0.5	17	1	0.5	79	3	10	26	66	13	SU 012997-25	Superior
499115	3688871	110	0.05	391	52	1	43	3624	42	2	171	0.5	37	12	12	5	14	41	36	0.05	7	457	1	10	8	1	135	24	83	27	47	30	SU 012997-26	Superior
497504	3688330	408	0.05	823	108	1.7	25	10126	17	0.5	384	0.5	54	9	48	0.5	9	20	38	0.05	74	715	0.5	95	2	0.5	79	9	96	11	97	8	SU 013097-01	Superior
497792	3688717	362	0.05	1177	35	3.1	49	4618	60	4	267	1	27	17	102	4	18	30	30	0.05	16	336	1	27	6	1	141	18	174	30	88	8	SU 013097-02	Superior
497498	3688500	366	0.05	779	90	3.3	46	12709	33	3	389	0.5	54	19	97	3	21	36	62	0.05	22	879	0.3	23	4	1	173	11	109	16	102	9	SU 013097-03	Superior
496816	3688943	332	0.05	1164	442	2.5	36	4643	87	8	265	1	47	17	35	2	14	23	27	0.05	16	699	0.3	24	3	0.5	67	5	102	24	15	9	SU 013097-04	Superior
498917	3688872	259	0.05	952	15	2.7	34	8893	34	1	157	0.5	46	18	40	3	14	21	20	0.05	11	711	0.5	11	5	2	72	7	57	17	52	11	SU 013097-05	Superior
498878	3688757	119	0.05	1146	57	1.1	25	5794	27	1	113	0.5	30	8	33	2	8	15	23	0.05	5	580	0.5	7	4	0.5	46	4	42	21	54	11	SU 013097-06	Superior
498291	3688530	47	0.05	992	252	0.1	111	1500	7	10	64	6	72	31	11	17	31	25	49	0.05	3	371	7	0.5	24	5	217	2	103	103	74	23	SU 013097-07	Superior
498603	3688331	924	0.05	1010	107	3.3	32	12660	17	7	356	2	80	24	52	6	17	92	70	0.03	27	788	1	23	8	3	115	13	127	58	63	9	SU 013097-08	Superior
498107	3688046	570	0.05	1066	117	6.6	82	3722	62	1	375	1	43	19	41	4	18	29	30	0.05	26	806	0.5	52	3	0.5	302	3	134	28	80	10	SU 013097-09	Superior
497699	3687980	653	0.05	1445	171	4.4	35	13910	30	4	430	2	36	17	112	5	13	25	81	0.03	24	758	1	38	5	5	155	11	240	16	91	18	SU 013097-10	Superior
497458	3687520	370	0.1	512	132	6.3	35	1500	37	0.5	1288	0.5	103	12	141	3	15	22	135	0.01	36	930	0.5	50	3	0.5	154	14	317	11	100	2	SE 010396-01	Superior East
495140	3687700	220	0.05	965	308	1.6	26	1500	53	0.5	219	0.5	317	13	34	2	17	18	22	0.05	11	965	0.5	7	3	2	222	5	63	14	77	2	SE 010396-02	Superior East
498694	3688100	410	0.05	1192	367	4.8	44	10979	62	0.3	817	0.5	172	17	163	2	24	40	73	0.1	33	1466	0.5	37	3	1	330	11	209	9	62	2	SE 010396-03	Superior East
498349	3688120	673	0.05	1073	15	7.4	17	1500	34	0.5	529	0.5	35	7	36	0.1	7	15	68	0.05	16	314	0.5	11	0.5	0.5	83	2	363	0.5	59	2	SE 010396-04	Superior East
498350	3687480	368	0.2	1032	173	3.1	24	1500	47	0.5	634	1	95	10	26	2	14	11	35	0.2	11	770	0.5	12	2	0.3	81	2	313	78	70	2	SE 010396-05	Superior East
498320	3687160	625	0.05	1047	51	3	17	1500	31	1	371	0.5	64	6	91	2	8	21	43	0.05	23	818	0.5	25	2	0.5	122	6	182	7	71	2	SE 010396-06	Superior East
498008	3686970	326	0.05	1183	200	4.2	31	1500	40	0.5	546	2	116	16	22	2	24	20	29	0.05	15	845	0.5	14	4	1	102	3	175	47	17	2	SE 010396-07	Superior East
497680	3686900	227	0.05	878	82	2.8	33	1500	28	4	431	1	40	16	15	3	11	17	53	0.05	14	826	0.5	34	11	1	158	8	214	23	92	2	SE 010396-08	Superior East
498530	3687040	435	0.01	1088	108	1.3	45	1500	69	3	184	2	87	25	19	6	20	20	30	0.05	12	483	0.5	12	7	2	185	3	90	52	65	2	SE 010396-09	Superior East
498680	3686900	555	0.01	1200	384	0.9	37	1700	15	3	289	1	76	16	68	3	14	29	32	0.05	20	1498	0.5	18	6	1	166	11	104	38	60	2	SE 010396-10	Superior East
498240	3686940	454	0.05	815	102	6.3	13	1503	31	0.5	835	0.5	14	5	91	2	3	19	80	0.2	29	858	0.5	38	2	0.5	91	6	386	15	71	2	SE 010396-11	Superior East

V Project Area
ations 10/14/96



Superior Project
Superior 7 1/2' Quad.

UTME	UTMN	As	Au	Ba	Br	Cd	Ca	C	Co	Cr	Cu	Hf	I	La	Mn	Mo	Nd	Ni	Pb	Ru	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Bal. Wt	Samp. ID	Area	
491071	3680067	105	0.05	322	5.1	1.8	35	11876	45	5	245	2	12	21	44	6	21	18	49	0.05	21	397	2	3	7	2	103	41	397	38	141	18	SU 012297-02	Superior
490144	3680939	92	0.05	543	63	2.1	49	6027	31	8	156	3	131	35	118	11	33	12	84	0.05	4	882	3	0.1	13	2	405	58	638	65	149	15	SU 012297-03	Superior
490174	3680582	105	0.05	688	130	0.9	12	5065	35	0.5	76	0.5	102	13	62	0.5	22	30	9	0.05	10	1332	0.5	3	2	0.5	340	90	22	7	146	18	SU 012297-04	Superior
490107	3679427	30	0.05	521	228	4.1	16	9280	19	0.5	25	0.5	134	16	42	4	17	12	4	0.05	11	916	2	0.5	2	0.5	238	49	38	8	147	28	SU 012297-05	Superior
490966	3678038	57	0.05	276	78	4.6	20	13049	30	2	36	0.5	134	12	41	3	14	40	11	0.05	12	866	0.5	0.5	3	1	412	41	121	15	142	18	SU 012297-06	Superior
490136	3677732	40	0.05	678	258	4.6	9	3488	29	0.5	53	0.5	128	7	14	3	8	33	25	0.05	4	610	0.5	0.5	2	0.5	138	48	64	8	144	15	SU 012297-07	Superior
495758	3684601	1009	0.05	320	119	1.2	31	12063	13	3	117	0.5	77	20	44	4	14	25	14	0.05	21	463	0.5	19	8	0.5	108	29	94	21	118	11	SU 012297-08	Superior
496176	3684787	114	0.05	929	63	2.4	21	11712	49	8	99	0.1	69	19	12	1	11	26	11	0.06	4	522	0.5	9	2	0.5	114	15	96	10	111	8	SU 012297-09	Superior
495876	3683882	115	0.09	117	13	1.5	30	5010	46	0.5	176	0.1	35	11	2	1	16	10	13	0.05	5	422	0.5	2	3	1	57	15	71	17	124	7	SU 012297-10	Superior
495924	3682719	174	0.05	694	67	1.5	42	10999	18	3	337	0.1	33	15	3	5	18	21	36	0.05	12	500	2	3	7	1	96	7	114	20	116	16	SU 012297-11	Superior
495513	3682430	83	0.05	385	85	0.9	27	16396	24	1	143	0.5	50	14	4	1	14	13	11	0.05	4	447	0.5	4	2	1	40	4	77	11	120	14	SU 012297-12	Superior
495247	3681296	174	0.05	521	245	0.9	43	21778	18	3	116	0.5	125	16	20	5	16	31	13	0.05	9	515	0.5	6	5	2	95	8	78	19	125	12	SU 012297-13	Superior
494752	3681517	30	0.05	1873	13	1.5	11	7733	86	0.5	18	0.5	34	3	1	0.5	4	39	27	0.05	3	1349	1	4	0.5	2	107	8	19	1	128	12	SU 012297-14	Superior
494867	3681166	184	0.05	1242	132	3.8	53	6816	58	3	221	0.5	174	19	39	5	24	26	44	0.05	3	301	2	6	7	3	135	5	102	20	132	8	SU 012227-15	Superior
494328	3680386	123	0.05	951	157	1.2	28	10433	22	3	76	0.5	143	14	35	4	12	28	17	0.05	11	758	2	12	3	0.5	130	9	70	14	134	9	SU 012297-16	Superior
495581	3680060	120	0.05	1415	165	1.2	76	11464	51	8	111	3	137	34	15	15	34	28	19	0.05	3	592	4	4	8	3	161	10	105	47	139	14	SU 012297-17	Superior
494341	3682210	95	0.05	1329	151	0.9	46	8095	32	4	22	1	117	16	15	7	17	23	17	0.05	7	681	2	2	3	2	162	5	40	19	133	17	SU 012297-18	Superior
495019	3682554	28	0.05	1258	73	0.6	25	15295	17	0.5	23	0.5	79	16	2	1	25	10	12	0.2	2	522	0.3	0.5	1	2	59	1	28	10	126	16	SU 012297-19	Superior
494149	3682788	928	0.05	1177	152	0.9	30	10560	15	2	61	0.5	79	18	0.5	4	18	15	11	0.05	14	574	2	6	4	1	87	5	36	22	129	12	SU 012297-20	Superior
494965	3683083	780	0.05	1122	13	3.9	43	3741	23	7	926	2	46	34	16	1	31	20	75	0.05	24	538	4	20	14	3	73	8	166	31	127	8	SU 012297-21	Superior
494489	3683156	103	0.05	970	60	4.1	31	11880	17	1	14	0.5	30	21	0.5	1	22	12	10	0.05	4	465	0.5	2	3	1	102	1	19	12	131	16	SU 012297-22	Superior
495464	3683634	318	0.05	1427	78	3.5	26	7836	65	0.5	487	0.5	39	14	19	3	14	17	27	0.05	30	400	0.5	15	3	0.5	50	17	125	11	123	14	SU 012397-01	Superior
496117	3683635	906	0.05	377	213	4.3	15	12059	5	2	183	0.5	73	7	39	2	6	22	31	0.05	31	446	0.5	14	3	0.5	52	17	47	15	114	8	SU 012397-02	Superior
494545	3684027	231	0.05	712	111	6.4	42	18891	59	1	713	0.5	33	13	6	2	19	45	36	0.05	17	371	0.5	11	2	1	99	2	231	10	128	14	SU 012397-05	Superior
494071	3683222	384	0.05	927	33	2	24	11012	21	1	263	0.5	55	13	9	1	18	17	16	0.05	15	448	0.5	25	2	0.5	109	4	81	9	135	10	SU 012397-07	Superior
493740	3681895	1123	0.05	787	198	4.9	39	19259	16	5	901	1	143	21	16	5	20	35	44	0.05	32	502	2	38	4	1	92	6	244	26	137	8	SU 012397-08	Superior
493284	3683282	896	0.05	1213	172	2.9	45	13374	38	2	625	0.5	97	20	19	2	32	36	25	0.05	26	456	1	40	3	1	113	7	141	18	140	8	SU 012397-09	Superior
493981	3681834	2515	0.05	921	560	9.9	36	11490	36	0.5	2204	0.5	39	15	21	1	19	29	112	0.05	73	523	0.5	74	2	0.5	115	9	378	17	118	10	SU 012397-10	Superior
493459	3684210	328	0.05	837	105	2.6	21	1580	35	2	173	0.5	59	10	14	2	16	22	19	0.05	9	408	0.5	13	4	0.5	78	3	60	13	136	10	SU 012397-11	Superior
496681	3688028	407	0.05	598	69	2	49	11664	13	5	497	2	85	18	59	5	15	29	51	0.05	18	525	2	17	6	1	93	9	164	28	58	5	SU 012497-01	Superior
497641	3687000	199	0.05	762	13	0.9	51	1900	23	3	429	1	45	16	45	3	19	17	51	0.05	17	464	2	17	7	2	83	6	108	21	94	5	SU 012497-03	Superior
497566	3687336	103	0.05	735	143	0.3	29	2425	5	0.5	43	1	48	15	2	2	17	12	8	0.05	4	416	0.5	1	4	1	68	7	13	21	99	14	SU 012497-05	Superior
497433	3687068	196	0.05	674	185	1.4	27	12898	42	3	79	0.5	50	13	1	2	13	24	16	0.05	4	432	0.5	4	3	0.5	67	8	34	30	101	8	SU 012497-06	Superior
497225	3686969	55	0.05	402	15	0.1	27	6357	21	0.5	83	0.5	31	22	8	0.1	19	14	9	0.05	3	420	0.5	8	0.5	1	124	10	17	6	103	13	SU 012497-07	Superior
497083	3686754	139	0.05	894	239	1.1	82	12717	38	8	91	2	282	53	25	10	33	44	29	0.05	13	607	3	7	8	2	156	13	19	44	107	10	SU 012497-08	Superior
497154	3686101	20	0.05	224	209	0.3	92	4395	5	0.5	46	0.5	405	24	0.5	1	95	2.5	7	0.05	4	192	0.5	2	8	12	119	5	5	21	105	14	SU 012497-10	Superior
496915	3683738	51	0.05	643	226	0.9	122	16345	11	6	21	2	173	53	7	11	74	20	13	0.05	3	418	3	1	8	3	130	13	61	29	108	22	SU 012497-11	Superior
496924	3685185	192	0.05	742	125	1.4	117	3318	30	14	311	2	167	44	61	10	39	49	62	0.05	23	507	4	31	11	3	208	25	179	57	110	8	SU 012497-12	Superior
496918	3684447	62	0.05	182	15	0.3	26	3394	6	2	28	0.5	11	14	12	4	10	10	30	0.05	4	325	1	2	4	0.5	49	11	41	15	109	21	SU 012497-13	Superior
498429	3686499	66	0.05	1750	157	0.1	30	22584	9	0.5	4	1	29	9	0.5	4	11	2.5	11	0.05	2	472	1	0.5	9	1	160	11	39	34	48	13	SU 012897-01	Superior
498019	3686690	648	0.05	837	89	1.1	28	11850	56	1	076	1	60	13	69	2	15	25	60	0.05	28	614	0.5	29	3	0.5	125	11	191	24	81	14	SU 012897-02	Superior
497777	3686517	196	0.05	534	97	0.4	25	8782	39	1	121	0.5	78	10	15	2	15	34	10	0.05	7	691	0.5	5	2	0.5	99	13	28	19	90	16	SU 012897-03	Superior
497517	3586602	327	0.05	799	214	2.3	39	7312	24	0.1	281	0.3	92	16	45	1	18	26	18	0.05	12	851	0.5	12	14	0.3	193	12	30	16	96	11	SU 012897-04	Superior
497179	3686207	442	0.05	880	194	1.3	30	5136	29	1	144	0.5	65	16	33	2	17	26	14	0.05	11	527	0.5	17	7	0.5	106	48	91	16	99	13	SU 012897-05	Superior
497588	3685802	517	0.05	680	89	3.4	36	1500	41	1	318	0.3	80	13	46	3	16	32	25	0.05	21	578	0.5	15	4	0.5	125	40	78	21	95	14	SU 012897-06	Superior
497486	3685403	51	0.05	1071	222	1.3	151	10533	23	11	99	3	180	62	33	12	52	33	25	0.05	3	690	3	2	17	4	217	30	118	140	98	10	SU 012897-07	Superior
497783	3685418	937	0.05	929	208	1.9	33	18406	22	1	144	0.5	93	13	22	2	15	23	12	0.05	14	674	0.5	15	2	0.5	104	11	49	18	99	12	SU 012897-08	Superior
498124	3685730	818	0.05	429	110	3.4	28	5510	12	0.5	768	0.5	34	8	108	0.5	8	35	43	0.05	46	868	0.5	61	2	0.5	87	34	115	9	74	8	SU 012897-09	Superior
498221	3686030	83	0.05	466	158	0.8	81	10997	4	4	195	2	397	38	6	9	80	18	20	0.05	4	453	2	4	28	7	302	4	32	104	72	21	SU 012897-10	Superior

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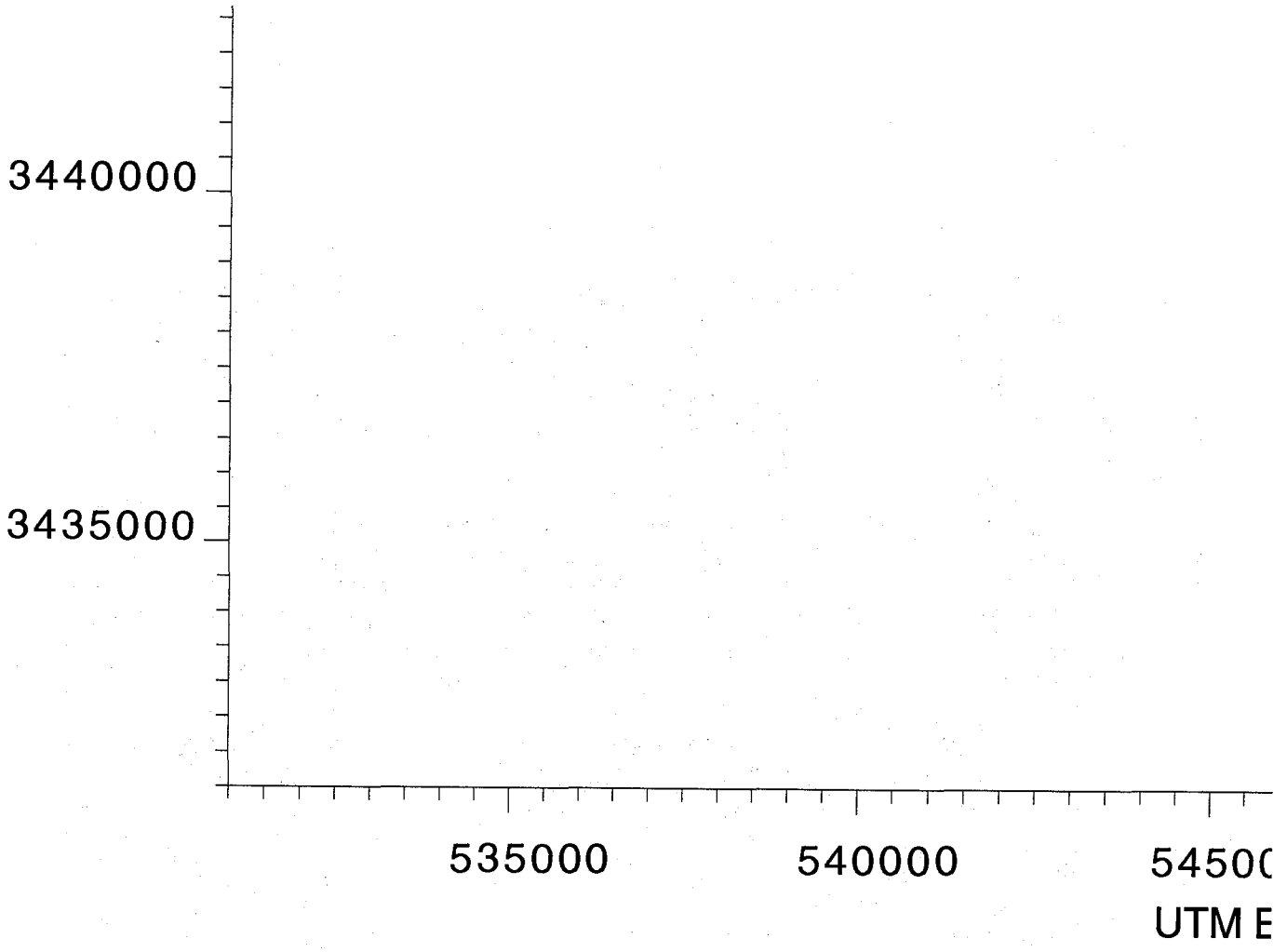
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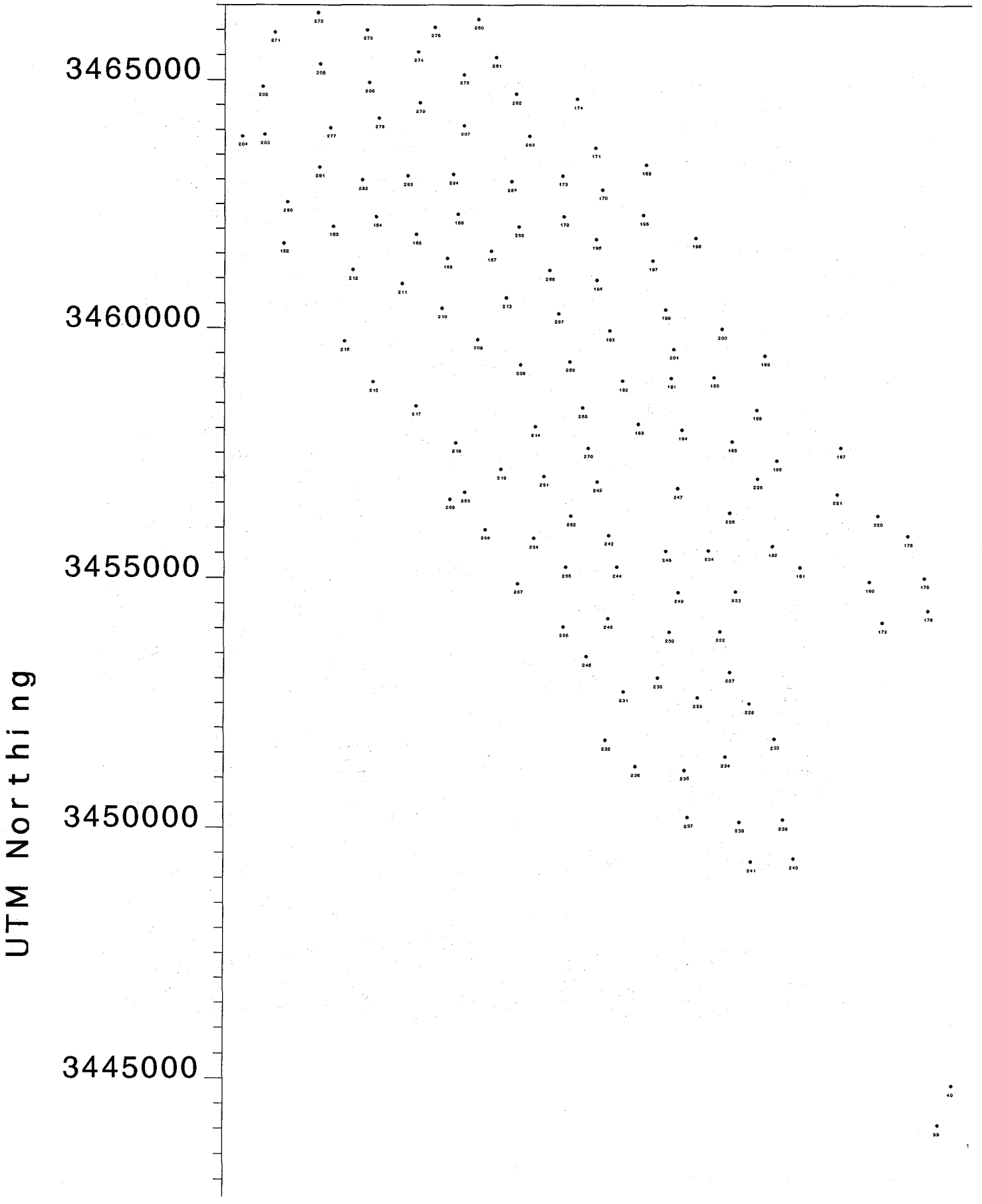
Superior Project
Superior 7½' Quad.

Superior Data

UTME	UTMN	As	Au	Ba	Bi	Cd	Co	Fe	Ga	Ge	Cu	Hg		La	Mo	Nb	Ni	Pb	Rb	Se	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
501044	3685735	45	0.05	632	35	1	11	3558	3	1	30	0.5	36	4	99	1	6	2.1	13	0.05	1	972	0.5	0.5	2	0.5	40	0.5	129	8	19	17	PR 013097-02	Pinal Ranch
501240	3688594	84	0.05	300	15	0.7	13	31131	8	1	186	0.5	44	9	15	1	12	6	10	0.05	5	1436	0.5	0.5	2	2	68	0.5	31	7	17	15	PR 013097-03	Pinal Ranch
500442	3680033	116	0.05	319	178	3	20	9484	68	0.5	479	0.5	33	10	9	0.5	17	73	19	0.4	8	330	0.5	1	2	0.5	117	0.5	47	14	24	9	PR 013097-04	Pinal Ranch
500339	3697641	329	0.05	1217	119	1.9	23	9139	29	2	161	0.5	155	13	70	2	14	7	21	0.05	17	1208	0.5	24	2	2	104	6	45	13	23	8	PR 013097-05	Pinal Ranch
500231	3687046	349	0.05	1173	122	3.3	23	11472	23	1	357	0.5	72	8	162	1	8	2.1	22	0.05	20	1516	0.5	34	2	0.5	58	11	177	12	26	3	PR 013097-06	Pinal Ranch
500759	3686455	300	0.05	1528	153	6.3	28	33129	31	1	361	0.5	63	12	86	2	12	24	34	0.05	12	1275	1	42	2	0.5	126	8	141	11	20	9	PR 013097-07	Pinal Ranch
501308	3687289	34	0.05	1034	228	0.1	70	11638	70	0.5	44	0.5	96	14	2	1	23	2.5	8	0.05	1	800	0.5	0.5	1	0.5	255	0.5	19	7	14	21	PR 013097-08	Pinal Ranch
501479	3618246	251	0.05	1304	125	0.7	19	10137	17	1	72	0.5	92	10	17	1	11	19	7	0.05	9	983	0.5	10	3	0.5	71	8	37	8	15	12	PR 013097-09	Pinal Ranch
505401	3610900	25	0.05	1218	13	0.1	14	1403	25	1	103	0.5	74	14	0.5	1	18	3.5	13	0.05	1	769	1	2	3	2	123	1	5	12	3	15	PR 013097-10	Pinal Ranch
504886	3680509	52	0.05	671	195	1	47	9109	21	0.5	140	0.5	84	50	13	2	34	66	7	0.2	3	1525	0.5	3	11	2	428	24	30	13	4	14	PR 013097-11	Pinal Ranch
505573	3690591	30	0.05	876	138	0.1	13	8163	112	0.5	35	4.3	115	6	4	0.5	8	45	11	0.05	3	711	0.5	0.5	2	0.5	229	41	16	7	2	15	PR 013097-12	Pinal Ranch
502519	3670931	30	0.05	599	166	1	17	8158	77	0.5	115	0.3	110	17	15	1	18	96	7	0.05	7	965	0.5	0.5	4	0.5	255	40	53	12	10	22	PR 013197-01	Pinal Ranch
501473	3670772	36	0.05	972	258	0.4	24	33195	25	7	42	1	57	14	21	2	16	16	7	0.05	7	964	0.5	0.5	4	0.5	80	42	54	20	16	8	PR 013197-02	Pinal Ranch
500172	3679947	177	0.05	1143	15	1.6	12	15925	44	1	45	4.3	40	3	40	1	3	19	6	0.05	6	770	0.5	60	1	0.5	67	27	5	6	22	8	PR 013197-03	Pinal Ranch
500191	3681349	220	0.05	978	163	4.8	30	11547	81	0.5	177	0.3	31	5	12	1	4	13	18	0.15	13	586	0.5	19	1	0.5	83	26	31	9	28	18	PR 013197-04	Pinal Ranch
500183	3683299	101	0.05	986	169	1	37	14431	51	1	71	0.9	161	12	32	2	3	30	8	0.05	6	1077	0.5	7	3	0.5	134	20	14	11	27	10	PR 013197-05	Pinal Ranch
500722	3684323	77	0.05	1245	129	1.3	38	1580	39	3	247	0.8	79	16	0.5	4	19	22	17	0.05	7	785	2	3	4	3	79	3	67	26	23	16	PR 013197-06	Pinal Ranch
501139	3684282	58	0.05	1358	120	0.1	24	10048	27	1	43	0.5	125	10	9	2	15	11	6	0.05	6	803	0.5	0.5	2	0.5	91	15	22	8	18	24	PR 013197-07	Pinal Ranch
501825	3682620	21	0.05	2297	199	1.9	103	1900	85	6	45	3	141	41	2	6	33	31	16	0.05	3	797	2	3	10	4	97	1	48	62	11	36	PR 013197-09	Pinal Ranch
502168	3681030	38	0.05	1290	223	0.4	34	7128	31	2	36	0.5	132	19	0.4	3	30	19	11	0.2	3	736	2	1	3	2	182	3	11	28	12	24	PR 013197-10	Pinal Ranch
503144	3681701	182	0.05	815	197	1	16	9894	17	3	99	0.5	68	12	36	4	13	15	9	0.05	9	749	1	3	2	0.5	51	36	41	20	7	13	PR 013197-11	Pinal Ranch
502782	3683171	11	0.05	149	33	0.1	7	8969	3	0.5	12	0.5	26	3	0.5	3	8	2.5	3	0.05	3	711	0.5	0.5	2	2	120	1	3	1	9	1	PR 013197-12	Pinal Ranch
502300	3684587	65	0.05	1138	533	0.1	37	31742	33	0.5	163	0.5	115	16	102	2	28	61	8	0.3	7	1206	0.5	0.5	2	1	835	85	160	14	11	16	PR 013197-13	Pinal Ranch
503192	3681026	64	0.05	154	188	0.4	31	1900	32	0.3	116	0.5	59	8	42	2	11	34	7	0.2	25	427	0.5	1	1	0.5	218	13	18	2	6	8	PR 013197-14	Pinal Ranch
502942	3619869	19	0.05	503	307	0.7	21	9572	60	1	74	0.5	91	34	120	0.5	19	58	6	0.2	8	1143	0.5	1	3	0.5	120	28	26	8	8	16	PR 013197-15	Pinal Ranch
504407	3675542	40	0.05	157	325	0.1	21	17917	12	1	92	0.5	279	8	9	0.5	12	28	4	0.2	4	814	0.5	2	4	2	308	7	3	3	3	36	PR 013197-16	Pinal Ranch
488851	3682130	103	0.05	214	194	0.3	12	4972	10	0.5	39	0.5	177	7	8	0.5	6	13	11	0.05	5	738	0.5	0.5	2	0.5	361	8	47	9	136	36	SU 011697-01	Superior
488691	3682674	108	0.05	1044	241	0.5	22	4947	30	2	606	0.5	112	12	9	1	14	61	30	0.05	6	532	0.5	28	3	0.5	195	37	821	29	139	32	SU 011797-01	Superior
489002	3682980	498	0.05	353	317	0.5	20	45851	29	0.5	576	0.5	99	14	8	0.5	15	39	9	0.4	5	1103	0.5	4	2	0.5	404	29	42	9	148	46	SU 011797-02	Superior
488471	3685304	136	0.05	132	43	0.3	6	4275	10	0.5	131	0.5	31	4	0.5	0.5	5	19	5	0.05	3	394	0.5	0.5	1	0.5	209	1	40	8	160	12	SU 011797-03	Superior
488411	3683392	1158	0.05	457	283	0.9	16	9819	58	2	648	0.5	163	10	17	2	13	74	12	0.05	15	845	0.5	9	2	0.5	426	9	52	20	161	35	SU 011797-04	Superior
488900	3684285	2263	0.05	182	114	1.2	7	16190	19	0.3	637	0.5	64	5	19	0.5	6	41	12	0.05	29	1668	0.5	8	0.5	0.5	275	12	47	3	153	20	SU 012197-01	Superior
489201	3684927	1733	0.05	234	52	1	33	17296	80	5	2793	2	36	17	11	9	21	84	31	0.05	29	371	1	58	5	1	333	16	448	40	159	8	SU 012197-02	Superior
489109	3682812	4948	0.2	205	37	3.9	36	14780	28	2	7747	0.5	40	16	11	9	17	33	124	0.09	187	337	0.1	50	5	0.5	151	140	466	19	152	10	SU 012197-04	Superior
489361	3684265	55	0.05	584	82	0.3	14	10008	19	2	73	0.5	123	7	18	3	7	61	13	0.05	12	1181	0.1	0.5	4	1	330	42	185	38	149	26	SU 012197-08	Superior
488791	3684408	260	0.05	397	114	0.9	63	17650	32	9	336	4	60	42	47	26	32	66	44	0.05	12	606	7	3	17	3	330	48	248	98	151	14	SU 012197-09	Superior
489144	3680421	71	0.05	188	80	0.3	42	8580	36	8	244	4	67	27	23	25	26	58	32	0.05	6	381	4	4	17	3	317	69	179	82	151	15	SU 012197-10	Superior
488569	3680495	142	0.05	87	236	1.2	25	9271	80	0.5	842	0.5	75	15	47	5	17	96	14	0.05	17	679	0.5	4	3	0.5	262	15	45	11	158	12	SU 012197-11	Superior
488977	3679512	661	0.05	835	941	1.5	49	162745	28	2	118	2	964	32	256	14	32	84	7	6.4	18	2369	2	0.5	34	7	1103	107	77	74	154	25	SU 012197-12	Superior
489000	3679143	27	0.05	184	37	0.1	48	9514	14	5	35	3	56	21	15	30	15	29	19	0.05	5	323	7	0.5	15	5	124	24	106	54	151	29	SU 012197-13	Superior
496171	3679294	35	0.05	322	40	4.1	165	5630	119	15	43	4	128	60	16	31	39	38	38	0.05	2	552	9	1	24	6	404	9	156	80	515	22	SU 012197-14	Superior
497093	3680215	25	0.05	325	15	0.5	28	4169	14	2	19	0.5	44	16	169	2	16	39	7	0.05	3	694	0.3	0.5	3	1	197	34	44	7	106	18	SU 012197-15	Superior
496294	3680370	38	0.05	643	142	0.3	35	10835	21	4	14	1	57	23	19	6	72	21	14	0.05	2	670	4	0.5	6	3	164	6	74	19	133	30	SU 012197-16	Superior
496311	3681169	39	0.05	672	15	0.6	39	9035	25	2	42	0.5	48	9	21	3	8	10	11	0.05	4	616	0.5	2	3	1	85	12	39	12	112	12	SU 012197-17	Superior
487315	3681864	74	0.05	1094	30	1.2	57	12757	33	4	78	2	40	22	6	8	14	16	26	0.05	3	578	3	1	10	3	78	5	95	33	175	15	SU 012197-18	Superior
495013	3681145	24	0.05	853	99	1.6	46	4829	17	6	24	1	304	22	17	9	20	29	13	0.05	2	677	2	0.5	6	3	184	13	86	27	175	22	SU 012197-19	Superior
495501	3680748	171	0.05	307	71	1.1	32	10045	23	4	221	0.5	301	16	40	4	13	27	28	0.05	10	730	2	10	2	1	95	14	96	21	152	8	SU 012197-20	Superior
495901	3681973	122	0.05	902	83	1.1	61	13190	13	4	67	2	41	23	28	11	21	64	18	0.05	5	587	3	2	9	2	43	14	33	42	111	8	SU 012197-21	Superior
490671	3681780	235	0.05	801	15	4.1	76	1500	81	9	2226	3	110	93	71	14	33	168	277	0.05	47	289	4	64	11	2	303	104	775	69	143	14	SU 012297-01	Superior

Superior Project

Cananea NW
Sample Loca

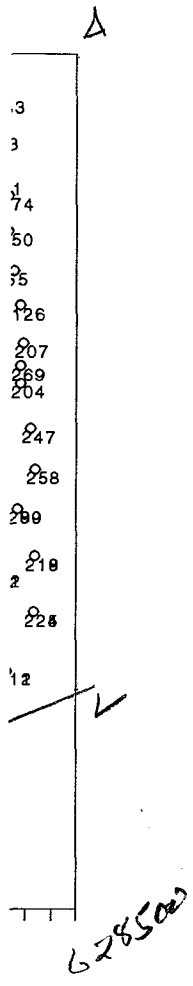


Superior Project
Picketpost Mtn 7½' Quad

Superior Data

UTME	UTMN	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cr	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Tb	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
480441	3681391	71	0.05	819	334	0.3	45	14779	61	10	164	0.5	103	17	11	2	17	66	10	0.05	4	1118	0.5	2	3	1	109	39	94	8	210	20	PM 01 1397-01	Picketpost Mtn
481159	3681351	11	0.05	553	15	0.1	44	4351	111	5	72	0.1	58	73	11	3	14	83	9	0.05	4	267	0.5	0.5	12	1	117	31	67	8	209	30	PM 01 1397-02	Picketpost Mtn
441919	3680550	39	0.05	398	424	0.3	101	1900	37	3	94	0.1	82	68	2	3	71	40	9	0.05	3	1087	2	0.5	17	2	110	93	59	8	207	21	PM 01 1397-03	Picketpost Mtn
441378	3679847	19	0.05	1409	82	0.8	19	1190	50	6	45	0.1	54	20	12	2	17	39	16	0.05	4	784	0.5	0.5	5	0.5	121	55	132	11	208	20	PM 01 1397-04	Picketpost Mtn
443246	3680850	47	0.05	747	65	1.1	60	1900	109	5	100	0.1	46	20	19	3	23	68	14	0.05	6	487	2	2	14	1	93	180	135	10	202	16	PM 01 1397-05	Picketpost Mtn
482006	3681234	24	0.05	309	196	0.4	10	6109	26	0.5	17	0.1	154	7	23	0.5	8	30	2	0.05	5	1516	0.5	0.5	1	1	166	14	28	7	203	37	PM 01 1397-06	Picketpost Mtn
482012	3681333	11	0.05	894	46	0.5	30	11155	118	4	46	0.1	76	14	12	3	13	99	9	0.05	6	616	0.5	2	6	1	159	30	69	8	206	22	PM 01 1397-07	Picketpost Mtn
482587	3682143	19	0.05	340	276	0.4	69	1900	28	1	42	0.1	43	36	2	3	34	26	7	0.05	3	685	0.5	0.5	8	1	71	51	59	8	205	20	PM 01 1397-08	Picketpost Mtn
481472	3681771	11	0.05	72	146	0.3	24	7448	39	0.5	54	0.5	43	18	0.5	1	31	46	6	0.2	2	366	0.5	0.5	7	3	223	14	43	40	199	13	PM 01 1397-09	Picketpost Mtn
481490	3682506	45	0.05	1344	563	0.3	13	4643	67	0.5	116	0.5	344	14	6	0.5	24	67	4	0.05	2	2438	0.5	0.5	3	0.5	269	40	53	17	200	17	PM 01 1397-11	Picketpost Mtn
481878	3683130	28	0.05	95	249	0.5	11	3913	43	0.5	20	0.5	488	19	0.5	1	21	37	3	0.05	3	710	0.5	0.5	3	0.5	236	28	24	8	204	23	PM 01 1497-01	Picketpost Mtn
481315	3685731	14	0.05	173	65	0.3	20	6871	46	2	54	0.5	188	14	0.5	3	12	89	9	0.05	1	378	0.5	1	2	0.5	240	53	41	30	201	16	PM 01 1497-04	Picketpost Mtn
484185	3686331	46	0.05	165	107	1	17	6537	15	2	148	0.5	34	7	0.5	1	9	58	6	0.05	3	362	0.5	0.5	3	0.5	141	12	42	17	195	10	PM 01 1497-05	Picketpost Mtn
486174	3680940	85	0.05	94	192	1	39	10190	40	3	101	1	57	13	65	7	14	58	7	0.05	10	249	2	1	5	0.5	137	23	69	30	185	24	PM 01 1597-01	Picketpost Mtn
486500	3681350	19	0.05	144	318	1	40	6904	48	3	36	2	130	26	16	11	14	48	16	0.01	6	841	4	0.5	7	2	187	39	84	25	184	13	PM 01 1597-02	Picketpost Mtn
485455	3684442	23	0.05	145	393	0.8	36	21028	42	4	44	1	56	11	24	8	12	50	10	0.05	16	201	2	1	6	1	115	20	72	52	190	15	PM 01 1597-03	Picketpost Mtn
487161	3681206	773	0.05	302	88	1.3	43	15344	42	2	172	2	101	11	53	21	17	50	23	0.05	23	676	5	7	5	2	245	104	81	76	178	10	PM 01 1597-04	Picketpost Mtn
485206	3680932	260	0.05	144	65	2	19	8614	59	0.5	129	0.5	67	6	29	3	7	21	15	0.05	11	309	0.5	9	0.5	1	107	11	42	15	191	7	PM 01 1597-05	Picketpost Mtn
486972	3682147	404	0.05	232	272	0.5	11	7782	20	0.5	37	0.5	340	7	14	1	6	32	16	0.05	30	1197	0.5	1	1	1	120	26	42	11	180	27	PM 01 1597-06	Picketpost Mtn
484521	3681433	154	0.05	96	217	1	45	14994	41	3	117	1	62	13	9	10	14	47	20	0.05	22	154	2	2	5	1	74	36	85	48	194	10	PM 01 1597-07	Picketpost Mtn
484141	3680086	130	0.05	36	223	0.8	13	3193	21	0.5	66	0.5	103	13	0.5	2	13	41	3	0.05	14	273	0.5	0.5	2	0.5	88	11	40	15	196	13	PM 01 1597-09	Picketpost Mtn
483737	3684582	60	0.05	410	80	0.5	11	1105	39	1	47	0.5	77	7	0.5	1	9	39	5	0.05	3	457	0.5	1	3	0.5	211	17	31	8	198	13	PM 01 1597-10	Picketpost Mtn
484115	3683301	271	0.05	340	247	1	17	32814	20	0.5	68	0.5	132	3	12	1	9	41	3	0.05	15	1040	0.5	0.5	2	0.5	87	27	31	8	197	13	PM 01 1597-11	Picketpost Mtn
484919	3682890	66	0.05	593	302	1.3	25	4976	53	2	65	0.5	230	21	0.5	4	18	74	14	0.05	8	665	2	1	5	0.5	392	3	34	46	193	12	PM 01 1597-12	Picketpost Mtn
485090	3683326	37	0.05	1232	37	1	14	8773	93	0.5	242	0.5	110	9	1	0.5	18	70	6	0.05	1	1288	0.5	3	0.5	0.5	341	75	31	3	188	20	PM 01 1697-01	Picketpost Mtn
487015	3685970	132	0.05	372	206	0.3	9	7460	14	0.5	8	0.5	322	3	6	2	3	3	1	0.15	3	1515	0.5	0.5	1	0.5	559	11	17	3	179	32	PM 01 1697-04	Picketpost Mtn
487219	3683170	378	0.05	610	95	1.3	15	3824	40	0.5	183	0.5	95	8	37	0.5	11	38	21	0.05	26	1138	4.5	10	2	0.5	322	53	47	5	172	12	PM 01 1697-09	Picketpost Mtn
487840	3679536	158	0.05	110	14	0.8	8	3713	37	0.5	96	0.5	89	6	15	10	5	15	18	0.05	9	304	2	7	2	1	93	22	36	17	170	13	PM 01 1697-10	Picketpost Mtn
487262	3679580	37	0.05	67	208	0.8	10	3761	18	0.5	11	0.3	313	3	0.5	4	6	31	14	0.05	4	629	2	4	1	0.5	266	20	37	15	116	12	PM 01 1697-11	Picketpost Mtn
486877	3687817	20	0.05	119	146	0.5	97	6343	72	6	35	3	136	24	1	23	23	34	22	0.05	8	100	7	0.5	12	3	146	18	108	104	181	20	PM 01 1697-12	Picketpost Mtn
488212	3680133	129	0.05	517	295	1	11	6487	30	1	46	0.5	160	8	3	1	7	73	19	0.2	9	667	3	5	2	0.5	294	6	43	25	164	13	PM 01 1697-13	Picketpost Mtn
487620	3680839	336	0.05	312	106	2	27	5480	76	1	143	0.5	133	7	15	1	7	47	27	0.05	9	382	0.5	7	1	1	183	7	71	27	172	12	PM 01 1697-14	Picketpost Mtn
488286	3681322	745	0.05	571	356	2.8	23	13485	53	0.5	168	0.5	99	17	135	2	12	67	33	0.3	68	789	0.5	0.5	1	0.5	184	44	114	19	162	17	PM 01 1697-15	Picketpost Mtn
487194	3682137	95	0.05	1848	138	0.8	9	1100	63	0.5	180	0.5	151	8	3	0.5	8	39	16	0.05	7	668	0.5	8	2	0.5	255	4	32	7	168	11	PM 01 1697-16	Picketpost Mtn
487185	3681661	500	0.05	247	221	1.5	18	13385	28	0.5	381	0.5	135	9	39	1	11	33	25	0.5	26	755	0.5	12	2	0.5	81	25	56	13	169	10	PM 01 1697-17	Picketpost Mtn
487136	3681753	509	0.05	312	192	0.5	13	8150	27	0.5	108	0.5	98	8	36	0.5	7	35	11	0.05	24	1070	0.5	1	1	0.5	304	42	57	8	174	16	PM 01 1697-18	Picketpost Mtn
486748	3681861	391	0.05	409	304	5.6	31	5138	38	2	304	1	88	15	87	12	15	30	262	0.05	86	392	3	4	4	1	127	14	378	40	182	12	PM 01 1697-19	Picketpost Mtn
486989	3682251	51	0.05	645	13	0.5	12	4855	82	0.5	128	0.5	33	6	3	0.5	7	79	20	0.05	6	541	0.5	1	1	0.5	140	3	35	24	183	12	PM 01 1697-20	Picketpost Mtn
485015	3682261	19	0.05	466	86	0.3	22	1500	46	2	98	0.5	76	11	6	0.5	12	40	7	0.05	5	414	0.5	0.5	3	0.5	170	30	26	11	171	16	PM 01 1797-01	Picketpost Mtn
485436	3681348	132	0.05	1118	95	3.5	18	1500	78	1	150	0.5	115	10	3	1	15	131	4	0.05	3	535	0.5	3	1	0.5	286	8	28	[illegible]	187	17	PM 01 1797-02	Picketpost Mtn
486051	3683648	40	0.05	869	79	3.3	9	4146	113	0.5	76	0.5	28	4	0.5	0.5	4	72	2	0.05	4	556	0.5	2	0.5	0.5	55	13	30	7	184	8	PM 01 1797-03	Picketpost Mtn
487455	3682958	27	0.05	406	152	0.8	8	7007	41	0.5	94	0.5	123	9	0.5	0.5	9	51	0.5	0.05	2	1640	0.5	0.5	0.5	0.5	139	12	17	9	173	17	PM 01 1797-04	Picketpost Mtn
488171	3682765	121	0.05	1277	131	1	31	3785	50	3	378	1	95	15	0.5	3	20	68	20	0.05	5	933	2	2	3	0.5	309	12	99	48	165	21	PM 01 1797-05	Picketpost Mtn
486088	3683108	1998	0.05	721	91	4.3	6	1540	53	0.5	3556	0.5	35	3	2	0.5	4	30	58	0.05	36	336	0.5	13	1.1	0.5	169	18	287	5	166	8	PM 01 1797-06	Picketpost Mtn
485594	3684640	204	0.05	317	134	1.5	21	1540	102	0.5	477	0.5	105	9	15	0.5	10	126	18	0.05	7	714	0.5	12	3	0.5	156	10	70	12	169	16	PM 01 1797-07	Picketpost Mtn
487728	3685072	2204	0.05	295	92	0.8	12	1500	63	0.5	260	0.5	123	5	3	0.5	10	73	6	0.2	6	453	0.5	3	1	0.5	432	2	61	9	171	10	PM 01 1797-08	Picketpost Mtn
488260	3684150	615	0.05	217	74	2.3	7	1500	49	0.5	499	0.5	90	4	0.5	0.5	5	46	13	0.05	15	327	0.5	1	2	0.5	137	7	60	14	163	12	PM 01 1797-09	Picketpost Mtn
487988	3683047	1685	0.05	53	92	0.3	10	1500	7	0.5	39	0.5	169	18	0.5	18	12	12	9	0.05	4	1841	2	0.5	4	0.5	308	10	12	21	167	22	PM 01 1797-10	Picketpost Mtn
500343	3689298	76	0.05	703	216	0.7	10	1500	5	3	43	0.5	130	20	27	4	17	16	10	0.05	5	352	0.5	0.5	4	1	79	8	47	21	25	25	PR 01 3097-01	Pinal Ranch

A
B
C
D
Superior Project



POINT	E	N
A	628500	3520000
B	615500	3520000
C	613000	3515500
D	607250	3515500
E	607250	3509250
F	613000	3509250
G	617500	3507250
H	617500	3504000
I	620750	3504000
J	620750	3506250
K	624000	3505500
L	628500	3507500

~~320~~

rearfix = 313 line

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CG text

D	SU 012397-3	3583212
D	SU 012397-4	3582673
D	SU 012397-6	3583506
E	SU 012497-2	3585273
E	SU 012497-4	3582682
E	SU 012497-9	3586327
G	SU 012997-1	3585545
G	SU 012997-2	3585216
G	SU 012997-3	3586149

No all are 3 6 8

If all of the above samples belong with the Superior Data, then the range of coordinates will need to be modified so that they will be incorporated. With the UTMs I had used, 210 samples were selected and the Summary Sheets, PST Plots, and Contours were all based on the 210 samples. Please let me know what needs to be done.

Thanks,

Evelyn

The Copper Industry's Impact on the Arizona Economy 1988

by

George F. Leaming

Western Economic Analysis Center
Marana, Arizona

March, 1989

Evelyn K. McLenna

No. 97- 29
Date: March 19, 1997

FACSIMILE TRANSMISSION

To:	Jim Sell	Fax No.	578-7198
CC:	L. Clark Arnold		
From:	Evelyn McLenna	Fax No.	(520) 546-9534
	Total number of pages, including this cover letter:		6

If you do not receive all the pages or clear copies, please contact Evelyn McLenna immediately at (520) 885-6006.

Subject: Questions Regarding Superior

Jim:

Regarding your questions about the missing sample number on the set of Superior Data, the reason each of the "missing numbers" did not occur is that each of those samples falls out of the UTM ranges that I have for Superior as listed below.

Easting		Northing	
From	To	From	To
480000	510000	3676000	3700000

Missing samples northings are:

A	PM 011497-2	3583235	missing, 3 68	see listing
A	PM 011497-3	3584083	" , 3 68	" "
C	PM 011697-2	3583909	" , 3 68	" "
C	PM 011697-3	3584915	" , 3 68	" "
C	PM 011697-5	3587104	" , 3 68	" "
C	PM 011697-6	3585215	" , 3 68	" "
C	PM 011697-7	3584144	" , 3 68	" "
C	PM 011697-8	3583833	" , 3 68	" "
B	SU 012197-3	3586405	" , 3 68	" "
B	SU 012197-5	3582417	" , 3 68	" "
B	SU 012197-6	3582156	" ,	
B	SU 012197-7	3581658	" , 3 68	" "

HIGHLIGHTS

ARIZONA COPPER INDUSTRY

CONTRIBUTIONS TO THE ARIZONA ECONOMY

	1988	1987	Percent Increase
TOTAL DIRECT IMPACT ON ARIZONA	$1,081,072,000	$ 956,535,000	13.0
INDUSTRY SALES	$2,655,983,000	$1,791,515,000	48.3
COPPER PRODUCTION (tons)	950,000	847,000	12.2
AVERAGE PRODUCER PRICE (Per lb. - Copper Cathode)	$1.21	$0.83	45.8
PERSONAL INCOME - ARIZONANS	$414,830,000	$292,433,000	41.9
NUMBER OF EMPLOYEES	9,500	8,900	6.7
STATE AND LOCAL TAXES PAID			
Severance	$24,816,000	$14,244,000	74.2
Property	24,302,000	18,700,000	30.0
Sales and Use	16,825,000	13,533,000	24.3
Payroll and Other	12,669,000	9,604,000	31.9
Totals	$78,612,000	$56,081,000	40.2

FACSIMILE MESSAGE

DATE: 03 15 97

TO: EKMcL & LCA

FROM: G

PHONE/FAX:

SUBJECT: Missing Superior Project Numbers

NUMBER OF PAGES INCLUDING COVER 5

On the recent "Superior Data", pages 1 thru 4, which I received, I note the following missing numbers:

NORTHINGS

PM 01 14 97 - 2 and 3 { 2 - 3583235, 3 - 3584083

PM 01 16 97 - 2, 3, 5, 6, 7, 8. { 2 - 3583909, 3 - 3584915, 5 - 3587104, 6 - 3585215, 7 - 3584144, 8 - 3583833

SU 01 21 97 - 3, 5, 6, 7. { 3 - 3586405, 5 - 3582417, 6 - 3582156, 7 - 3581658

SU 01 23 97 - 3, 4, 6 { 3 - 3583212, 4 - 3582673, 6 - 3582506

SU 01 29 97 - ~~2, 4, 9.~~ { 2 - 3585273, 4 - 3582682, 9 - 3586327

SU 01 29 97 - 1, 2, 3. { 1 - 3585545, 2 - 3585216, 3 - 3586149

Should they not be added to the list?

Do the new entries change any of the patterns/anomalies. (which I do not have a print-out of.).

Cheers

G

THE COPPER INDUSTRY'S IMPACT

ON THE

ARIZONA ECONOMY

IN

1988

A REPORT ON THE CONTRIBUTIONS OF THE COPPER INDUSTRY TO PERSONAL, BUSINESS, AND GOVERNMENT INCOME IN ARIZONA IN 1988

Prepared by

George F. Leaming, Ph.D.

WESTERN ECONOMIC ANALYSIS CENTER

Marana, Arizona

March, 1989

03 19 97

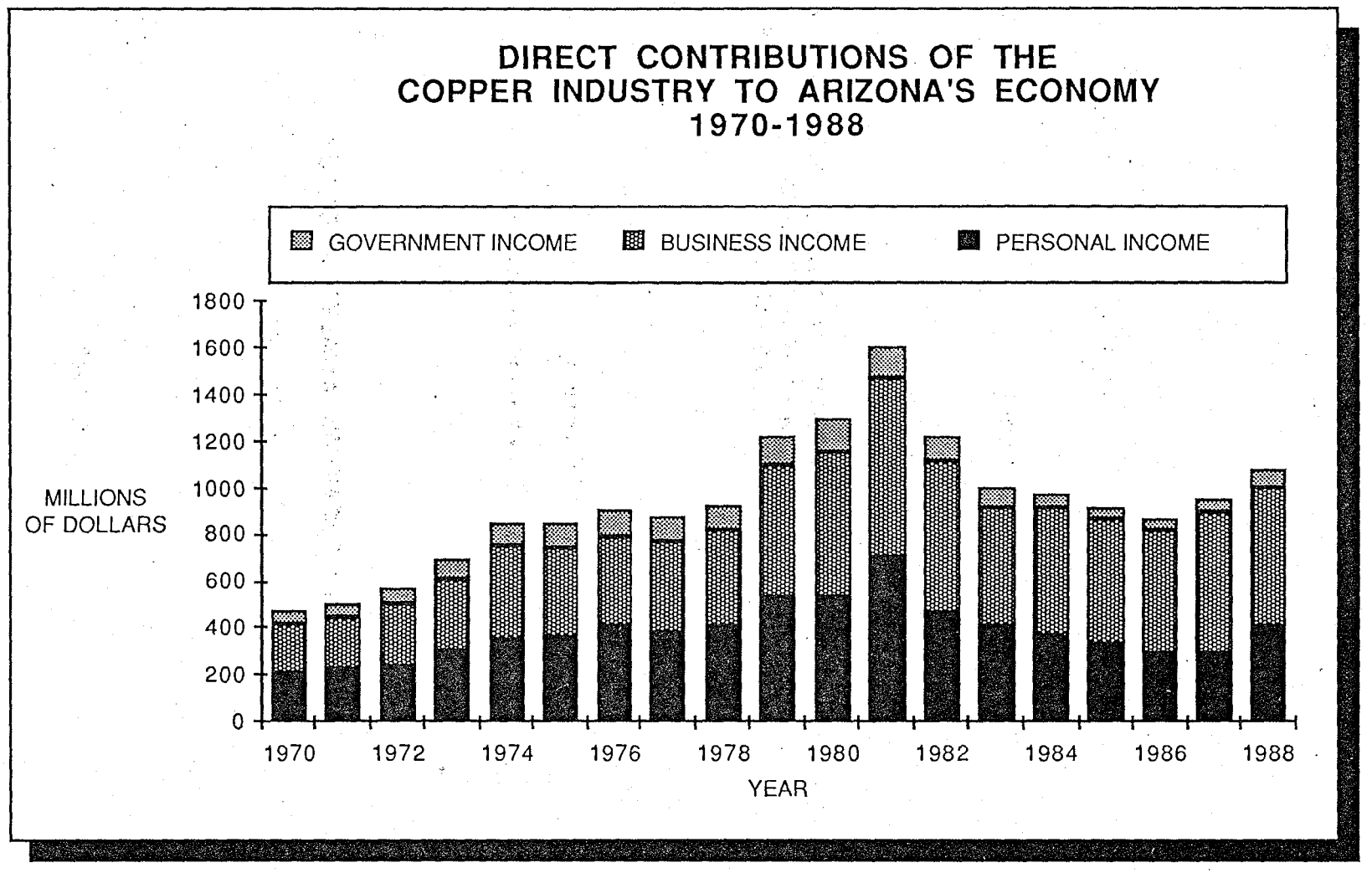
Hi EKMcL !

Back to work, after being in Mexico, & what do I find !

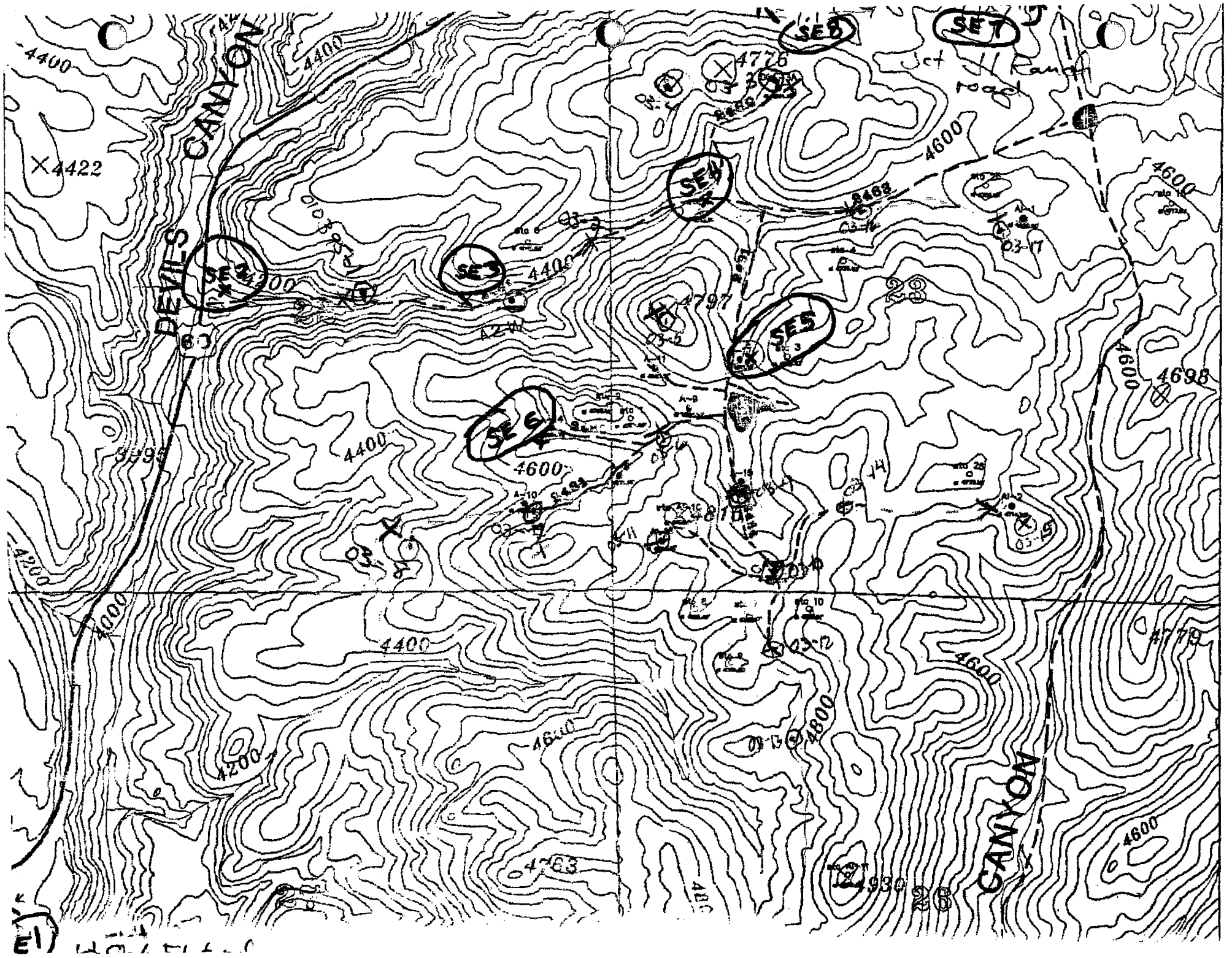
1) The TEV 771 from CRoske
2) You note about the "missing" PM & SO samples; well, I checked it out & it seems the 368 UTM got changed to 358 in your sample tally-Summary sheet, so that was the problem.

I enclose (fax) 9 sheets to you for your IFO & correction.

:)



Source: Western Economic Analysis Center


DEVILS CANYON
CANYON
SE1
SE2
SE3
SE4
SE5
SE6
SE7
SE8
Jct of Ranch road
4400
4422
4775
4600
4797
4698
4779
4995
4200
4800
4763
4930
28
14
26

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Superior East Enzyme Survey

Sample SE1 At junction hwy and Oak Flat access road

SE2 " " " " Drill Access road

SE3 0.5 miles E of SE2 200' from Hole A2N

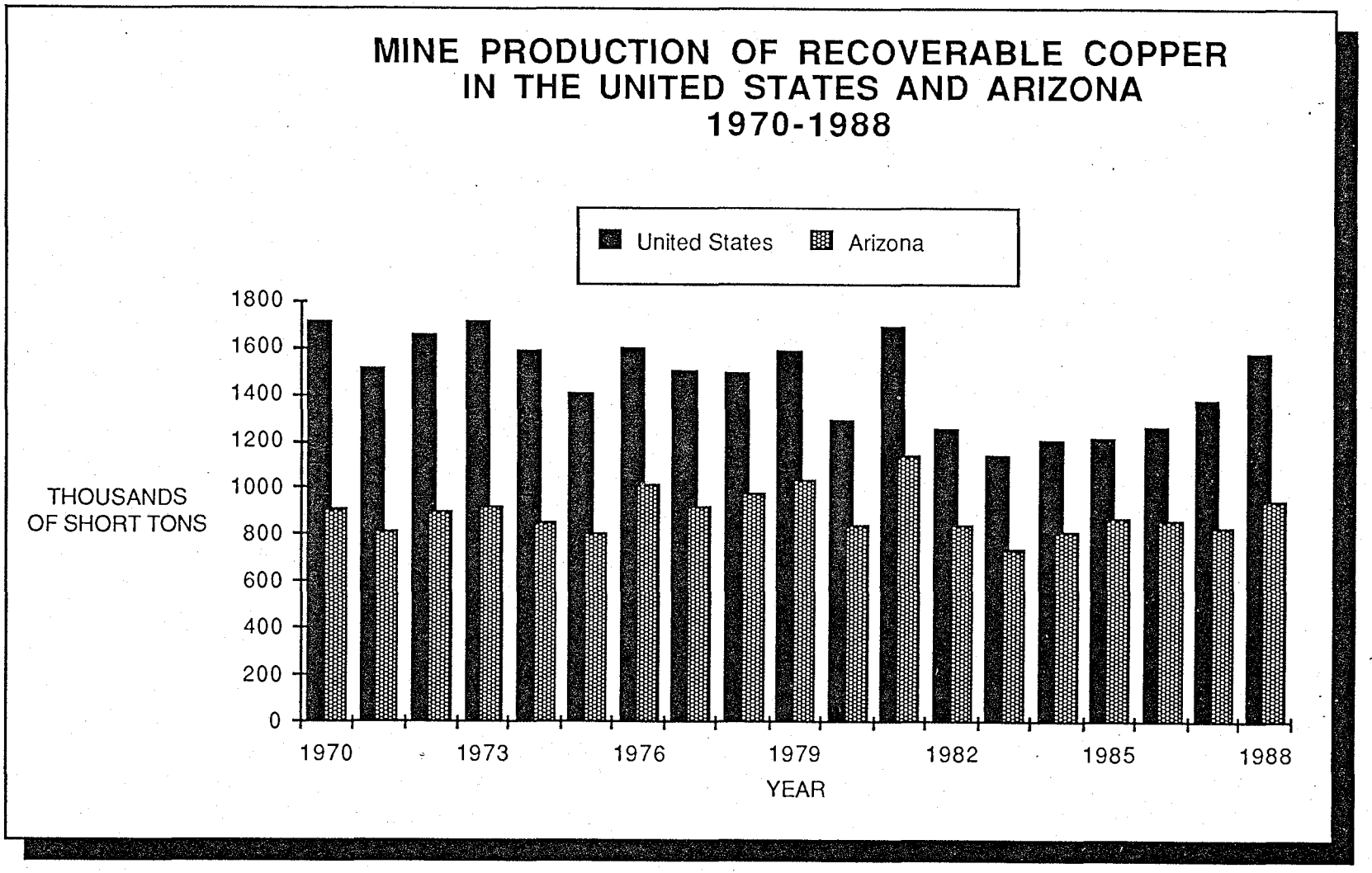
SE4 0.5 miles E of SE3 at road junction

SE5 At drill site ±1000' N. of stock tank

SE6 Just S of Hole A14

SE7 Near Jct of JI Ranch access road and Hwy 60

SE8 1.1 miles SE of SE7 along Hwy 60



Source: Western Economic Analysis Center

K & K MINING, INC.
P.O. Box 2706
Nogales, Arizona 85628

2/26/96

Noranda ca 1976.
"Michelle Group"

± N½ Sec 20; E½E½ Sec 20,
E½E½ Sec. 29
in T2S, R13E.

Abundant whitetail outcrop in section ~~1~~ N½N½, Sec 2
with more in W½ of Sec 21 & 28 (State Lease land!).

Jay Fuller probably has the minerals in the 40 acre plots of:

NW¼ NW¼ Sec 21
SE¼ SE¼ Sec 21
± NW¼ SW¼ Sec 28

) JI Ranch has surface ownership

(faxed 11:35 Am

see Land Status Map Jan '77, #2990
in "Summary of Mineral Interest" (1977)

No mineral plats @ 2742 W Holliday Annex

SUMMARY

Arizona's economy gained $5.7 billion in 1988 as a result of the combined direct and indirect contributions of the copper industry to personal, business, and government income in the state. That total economic benefit was more than double the value of Arizona copper mine production last year.

The greatest benefit from the copper industry's contributions to the Arizona economy in 1988 were realized by other Arizona businesses. The $3.5 billion in sales revenues obtained by Arizona businesses directly and indirectly as a result of copper industry activity comprised 60% of the industry's total impact on the state. The 1988 figure was 11% lower than the previous year and 45% below the high reached during the copper boom of 1981, but it was still comparable to levels achieved in the late 1970's before the copper boom of 1979-1981.The reduction from 1987 came largely as a result of reduced spending for new construction and in-state transportation as well as increased buying directly from out-of-state manufacturers by both copper producers and other Arizona businesses.

Arizona residents gained a substantial increase in personal income in 1988 as a result of the copper industry's direct and indirect contributions to the state's economy in 1988. The nearly $1.7 billion in personal income received by Arizona residents directly and indirectly from the copper industry last year was over 16% more than in 1987 and the highest since 1982. It was even more than in 1978, when the Arizona copper industry had twice as many employees as in 1988. The $1.7 billion received by Arizona residents as a result of copper industry activity in 1988 was almost 3.5% of all personal income received by the state's residents from all sources last year.

Arizona's state and local governments also shared substantially in the economic gain generated by the copper industry in 1988. Almost $482 million in revenues received by state and local governments in Arizona in 1988 were generated either directly or indirectly by the copper industry. That was 12% more than the year before and more than in any year since 1982. It was also substantially more than in 1978 when the volume of copper produced by Arizona's mines was about the same as in 1988. The share of the copper industry's total contribution to the Arizona economy that went to state and local government in 1988 was 8.5%, up sharply over 1987, and even higher than in the boom year of 1981 when it comprised 7.4% of the industry's combined impact on the state's economy.

The $5.7 billion overall impact of the copper industry on the Arizona economy in 1988 was made by a copper industry that was much smaller than in the boom years of the late 1970s and early 1980s. In 1988, that smaller Arizona copper industry consisted of only four major producers, operating at only 11 mining properties (including three very small ones), and with only three smelters. That was an industry that had lost eight producers (two-thirds of the 1981 number), reduced the number of active major mines by two-thirds, and cut the number of smelters by more than half of the 1981 figure. Nevertheless the copper produced by those remaining mines and plants exceeded 950,000 tons, 13% over the year before, only 3% less than a decade earlier and only 17% less than the production peak reached in the high metal price year of 1981. The 1988 increase in output came as a smaller and leaner copper industry struggled to further increase productivity in the face of steadily rising costs.

FACSIMILE MESSAGE

DATE: 03 15 97

TO: EKMcL & LCA

FROM: ☺

PHONE/FAX:

SUBJECT: Missing Superior Project Numbers

NUMBER OF PAGES INCLUDING COVER 5

On the recent "Superior Data", pages 1 thru 4, which I received, I note the following missing numbers:

PM 01 14 97 - 2 and 3

PM 01 14 97 - 2, 3, 5, 6, 7, 8.

SU 01 21 97 - 3, 5, 6, 7.

SU 01 23 97 - 3, 4, 6.

SU 01 24 97 - 2, 4, 9.

SU 01 29 97 - 1, 2, 3.

Should they not be added to the list.?

Do the new entries change any of the patterns/anomalies. (which I do not have a print-out of.).

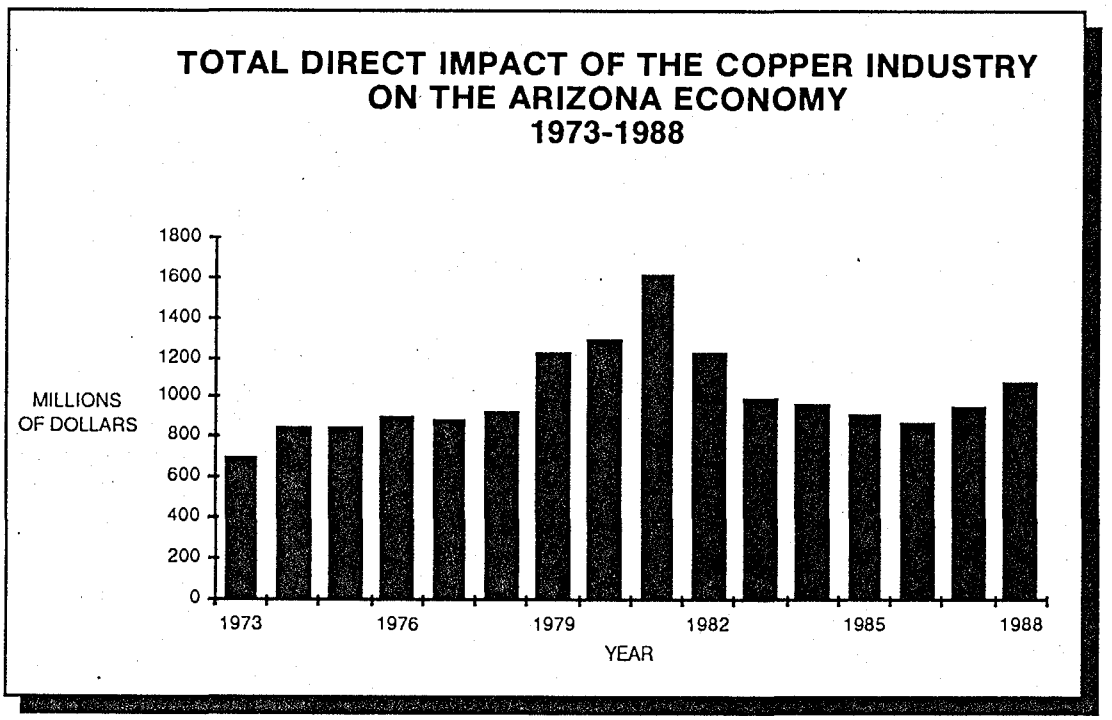
Cheers

☺

The copper industry's total $5.7 billion impact on the Arizona economy in 1988 was the result of the circulation and recirculation through the state's economy of the industry's direct payroll, purchase, and tax payment dollars to create a ripple or multiplier effect. Those direct payments to Arizona residents, businesses, and governments totalled almost $1.1 billion, up 13% over 1987, but one-third under the total for 1981 when the industry had more than twice as many firms, mines, smelters, and workers. Of that $1.1 billion total in 1988, the industry paid almost $415 million (more than 38%) directly to Arizona residents as personal income. That was 42% more than in the year before but still 41% less than in 1981 as the industry shared its prosperity mostly with its workers but continued to keep a downward pressure on costs.

The biggest share (54%) of the copper industry's direct contribution to the Arizona economy in 1988 went to other Arizona businesses to pay for products and services used in producing the copper and other metals found in Arizona copper mines. The total of almost $588 million paid directly to other Arizona business firms in 1988 was about 3% lower than in 1987 and 24% below the 1981 peak. The drop from 1987 came as a result of cutbacks in construction and in-state transportation costs as purchases from most other Arizona suppliers actually increased.

The copper industry's direct payments to state and local governments in Arizona in 1988 climbed sharply over 1987. The almost $79 million paid by the copper industry directly as state and local taxes and fees in 1988 was 40% higher than in the year before, although it was still 43% below the peak reached in 1981 when the booming copper industry enjoyed record sales and profits and paid record taxes.



Source: Western Economic Analysis Center

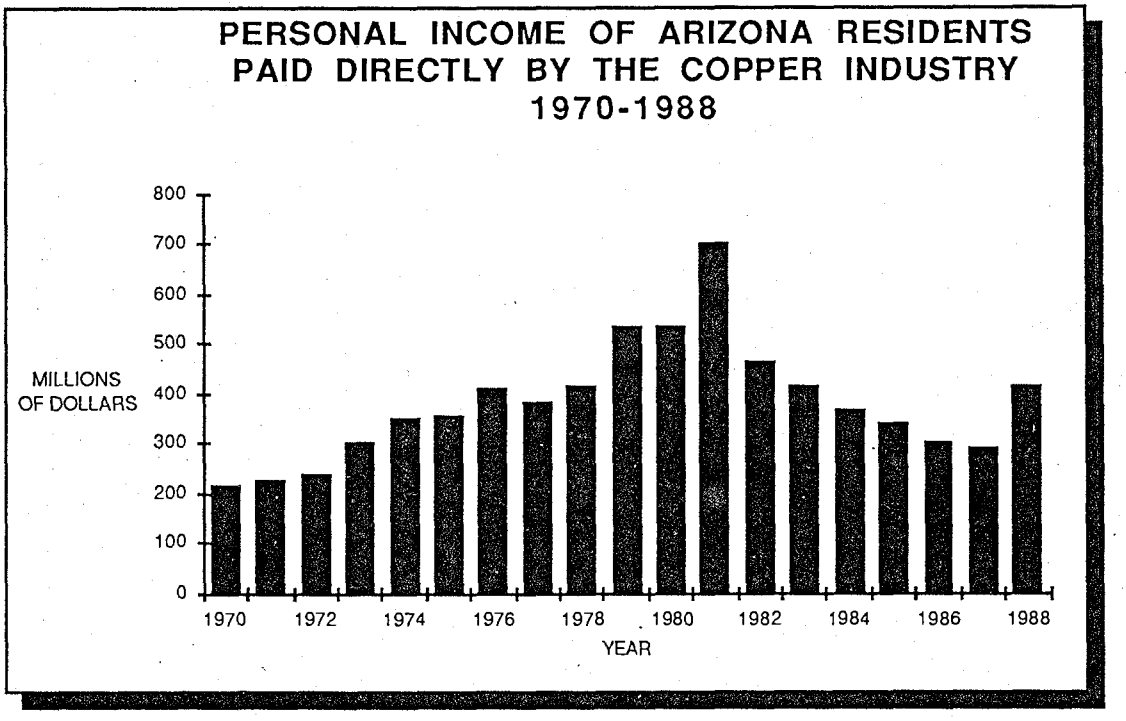
Superior Data

Superior Project
Superior 7 1/2' Quad.

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
498670	3686650	476	0.05	847	76	4.9	16	3071	26	0.5	376	0.5	33	6	57	2	6	19	43	0.05	18	930	0.5	34	2	0.5	99	5	322	13	61	2	SE 010396-12	Superior East
498680	3686370	444	0.05	909	225	2.3	21	17607	23	0.5	604	0.5	94	10	70	2	13	27	28	0.05	19	1423	0.5	31	3	1	140	8	165	18	59	2	SE 010396-13	Superior East
498800	3687000	274	0.05	852	144	6.3	18	10287	32	0.5	676	0.5	28	6	86	1	8	31	34	0.05	15	854	0.5	50	3	0.5	94	6	365	9	56	2	SE 010396-14	Superior East
499300	3686980	836	0.05	1261	76	9	18	1500	47	0.5	1458	0.5	28	8	38	1	10	21	91	0.05	32	601	0.5	30	2	0.5	93	2	417	12	43	2	SE 010396-15	Superior East
498890	3687750	243	0.05	1112	203	0.5	25	7365	27	0.5	234	1	63	13	12	0.5	17	49	15	0.05	7	1042	0.5	11	2	0.5	104	1	65	23	53	2	SE 010396-16	Superior East
499240	3687730	478	0.05	873	237	1.7	22	41918	23	0.5	1062	0.5	57	8	109	0.5	9	33	50	0.7	30	1217	0.5	28	3	2	100	9	99	21	44	2	SE 010396-17	Superior East
495540	3685740	1676	0.6	108	243	2.1	20	9569	27	0.5	925	0.5	68	11	53	6	12	28	31	0.05	37	319	1	49	6	1	195	12	156	29	121	22	SE-1	Superior East
497200	3687550	117	0.05	675	163	1.8	37	4710	57	0.5	414	0.5	80	9	65	3	13	20	48	0.05	7	947	0.5	7	3	3	225	7	49	10	104	2	SE-2	Superior East
497830	3687540	336	0.05	988	98	3.3	14	1500	34	0.5	432	0.5	78	7	71	2	8	20	17	0.05	18	925	0.5	43	3	1	95	12	182	12	86	2	SE-3	Superior East
498450	3687800	447	0.3	965	15	5.2	9	1500	37	0.5	438	0.5	74	5	99	2	6	16	17	0.05	15	769	0.5	25	2	0.5	83	7	197	11	67	2	SE-4	Superior East
498560	3687380	502	0.3	766	197	5.1	15	7144	29	0.5	945	0.5	64	7	223	2	7	22	35	0.05	34	1108	0.5	67	4	1	109	15	233	13	64	2	SE-5	Superior East
497990	3687150	243	0.05	2902	94	21.8	23	3997	73	0.5	1103	0.5	34	11	20	2	10	47	19	0.05	7	609	1	13	3	1	41	0.5	499	18	83	2	SE-6	Superior East
499310	3688910	341	0.1	822	47	3.5	7	15588	12	0.5	341	0.5	31	3	48	1	4	21	18	0.05	12	1187	0.5	25	2	1	78	6	654	10	42	2	SE-7	Superior East
497900	3688350	96	0.05	701	134	2.5	19	4388	40	0.5	182	0.5	26	5	55	3	7	15	10	0.05	6	898	0.5	9	3	1	247	16	88	10	85	2	SE-8	Superior East

Although most of Arizona's copper mines are located in the non-metropolitan areas of the state, major economic gains from those operations are realized in Phoenix Metropolitan Area. In 1988, almost 38% of the copper industry's direct purchases from other Arizona businesses were made from firms located in Maricopa County. That resulted in a direct payment of nearly $222 million to firms in the Phoenix Metropolitan Area. State and local government units in Maricopa County got an even bigger share (54%) of the copper industry's direct payments to government, picking up more than $42 million directly from the copper industry in 1988. Maricopa County residents received relatively little in the way of personal income directly from the copper industry, but they gained more than half of the indirect personal income created by the circulation of the copper industry's direct payments to persons, businesses, and governments both in the Phoenix Metropolitan Area and elsewhere in the state.

Arizona's other metropolitan area, Tucson, also shared substantially in both the direct and indirect contributions of the copper industry to Arizona's economy in 1988. Copper producers bought more than $195 million worth of products and services from firms in Pima County last year. That was one-third of the total of copper industry purchases made in the state. Local governments in the Tucson Metropolitan Area received almost $8 million in tax payments directly from the copper industry in 1988. That was one tenth of the industry's total direct contribution to state and local governments in all of Arizona. Residents of Pima County gained almost $108 million in personal income directly from the copper industry in 1988. That was about 26% of the industry's total direct contribution to personal income in Arizona and reflected both employment at Pima County mines and the Tucson residence of many copper workers employed in nearby areas of Pinal County. Because of its role as a regional trade center, the Tucson Metropolitan Area's share of indirect personal and business income generated by the copper industry was proportionally greater than its share of direct income.

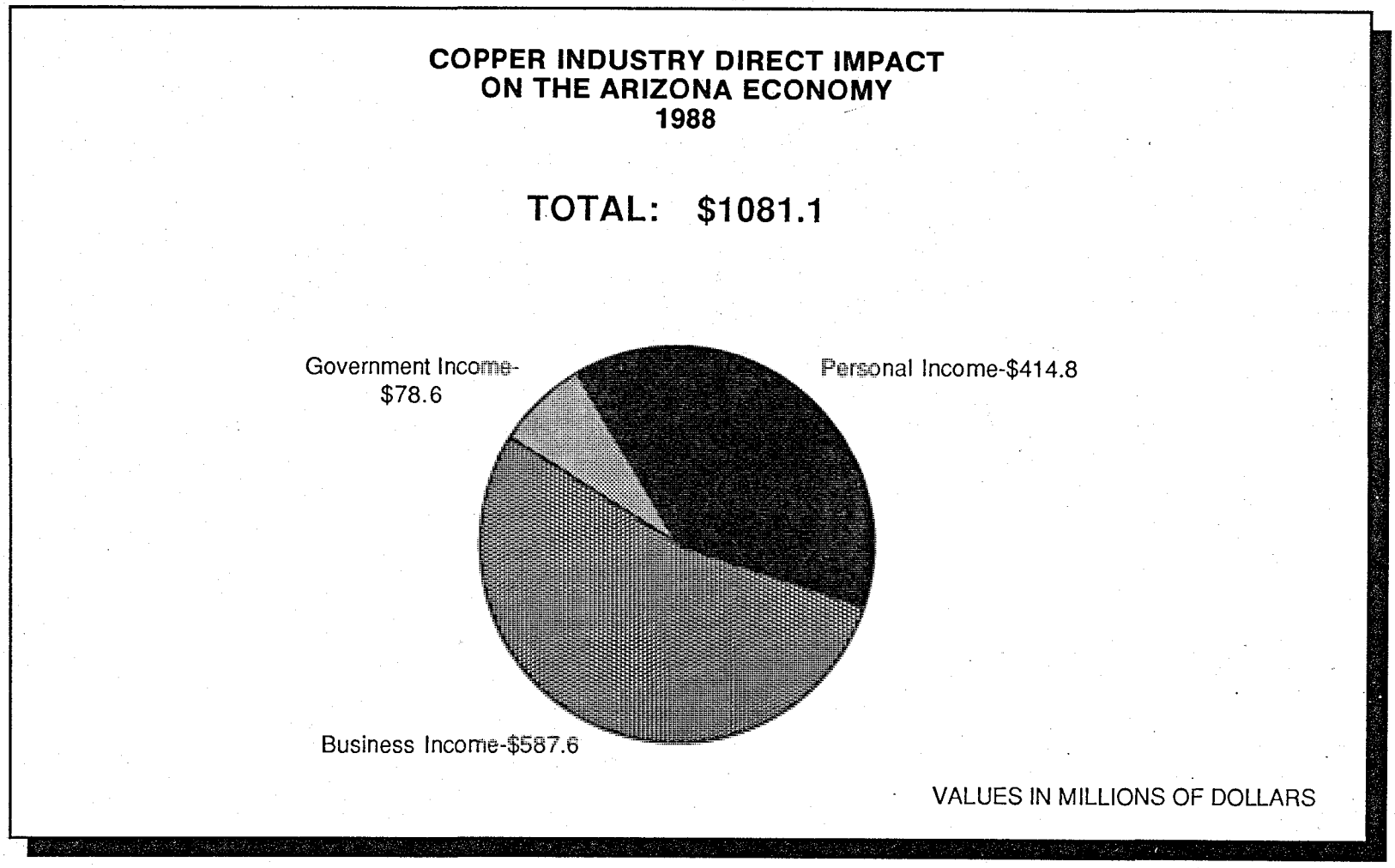


Source: Western Economic Analysis Center

Superior Data

Superior Project
Superior 7½ Quad.

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
498212	3686298	522	0.05	792	168	1.6	24	9198	18	2	265	0.5	58	10	82	2	13	29	24	0.05	18	686	0.5	27	4	2	89	12	117	30	76	8	SU 012897-11	Superior
497901	3686265	1239	0.05	1077	79	1.6	108	11418	25	9	351	2	91	35	61	11	34	52	52	0.05	20	617	3	31	9	2	191	18	204	74	84	10	SU 012897-12	Superior
497804	3684650	245	0.05	659	85	0.7	56	3315	19	0.5	291	3	63	23	14	1	31	8	18	0.2	6	476	0.5	12	7	2	94	2	47	38	87	5	SU 012897-13	Superior
499183	3683478	187	0.05	739	67	1.9	22	4641	29	0.5	301	0.5	46	13	55	1	12	20	19	0.05	6	704	0.5	14	2	1	101	12	79	16	1	5	SU 012897-14	Superior
499517	3682600	55	0.05	916	98	0.7	72	1500	23	4	59	2	229	38	20	8	34	23	23	0.05	3	753	3	2	11	3	252	19	82	30	36	12	SU 012897-15	Superior
499634	3686399	228	0.05	993	46	1	44	5479	17	2	81	1	116	16	39	3	17	19	15	0.05	8	836	1	6	4	1	135	13	56	21	33	9	SU 012997-04	Superior
499734	3686867	320	0.05	716	142	1	38	12912	34	0.5	182	0.5	98	17	47	0.5	22	39	9	0.05	11	640	0.5	10	2	2	123	27	21	18	31	12	SU 012997-05	Superior
499752	3687161	255	0.05	968	161	1	28	14627	12	1	53	0.5	146	13	4	5	16	10	11	0.05	4	708	0.5	2	4	0.5	99	2	24	21	30	10	SU 012997-06	Superior
499584	3687789	548	0.05	703	143	5.4	50	7600	26	0.5	296	0.5	60	11	49	1	13	13	33	0.2	14	755	0.5	9	2	0.5	82	3	78	23	35	8	SU 012997-07	Superior
499323	3687472	505	0.05	770	58	5.1	32	7276	26	0.5	446	2	54	16	64	2	20	20	45	0.05	12	584	0.5	21	2	0.5	85	13	146	34	41	8	SU 012997-08	Superior
498993	3687447	25	0.05	930	193	0.7	20	4283	12	0.5	34	0.5	131	18	0.5	1	17	33	7	0.05	3	560	0.5	2	1	0.5	99	0.5	5	11	51	23	SU 012997-09	Superior
498767	3687279	400	0.05	475	72	1.6	21	8032	11	1	662	0.5	42	9	85	1	12	21	27	0.05	22	524	0.5	17	4	0.5	84	17	127	17	57	8	SU 012997-10	Superior
499135	3687169	62	0.05	1130	135	1.9	26	5208	22	0.5	168	1	62	16	0.5	2	19	14	11	0.05	3	395	0.5	3	4	0.5	55	0.5	45	29	46	10	SU 012997-11	Superior
499023	3686907	28	0.05	863	206	0.4	89	7405	17	7	41	2	166	38	34	9	37	41	19	0.05	4	627	3	1	10	2	198	19	75	61	50	24	SU 012997-12	Superior
499035	3686567	335	0.05	712	74	1	26	10039	33	0.5	203	0.5	43	13	35	1	17	18	19	0.05	7	539	0.5	8	3	0.5	78	3	20	25	49	9	SU 012997-13	Superior
499330	3686232	199	0.05	1179	139	1	96	7838	22	9	51	2	179	34	13	13	38	31	23	0.05	5	695	4	4	11	3	173	14	75	78	40	15	SU 012997-14	Superior
499437	3686635	78	0.05	1137	300	0.7	89	11707	31	5	46	1	213	32	32	8	29	27	22	0.05	5	951	2	3	6	2	208	18	119	58	38	14	SU 012997-15	Superior
499488	3687173	253	0.05	1135	90	1.6	105	9378	22	5	239	3	74	34	81	8	37	31	42	0.2	11	470	3	7	18	4	108	33	118	68	37	8	SU 012997-16	Superior
499610	3687540	291	0.05	670	15	1.9	43	9182	14	1	378	0.5	62	20	108	3	13	21	36	0.05	21	895	0.5	35	3	0.5	117	21	75	20	34	10	SU 012997-17	Superior
498115	3681587	37	0.05	814	140	0.7	24	3302	18	1	40	0.5	90	10	13	0.5	11	21	8	0.05	2	666	0.5	0.5	1	0.5	61	11	32	10	79	14	SU 012997-18	Superior
498222	3680562	24	0.05	492	108	0.1	20	17067	17	0.5	5	0.5	93	7	0.5	1	12	2.5	8	0.05	1	553	0.5	0.5	2	2	201	0.5	5	8	75	30	SU 012997-19	Superior
499212	3687940	15	0.05	1409	202	0.4	29	16067	59	0.5	12	0.5	221	18	2	1	33	24	9	0.05	3	554	0.5	1	1	2	173	0.5	27	8	45	33	SU 012997-20	Superior
499807	3688437	31	0.05	1341	77	0.4	142	5629	34	11	45	3	156	62	2	12	58	48	26	0.05	4	591	4	2	22	2	167	12	176	109	29	26	SU 012997-21	Superior
499725	3688172	69	0.05	1428	167	0.1	124	9023	27	10	56	4	100	43	27	16	51	50	27	0.05	5	670	4	3	24	4	163	27	131	18	32	17	SU 012997-22	Superior
499357	3688302	124	0.05	432	15	1	37	6222	8	1	27	0.5	75	8	0.5	2	13	2.5	5	0.05	3	531	0.5	3	1	0.5	47	8	5	16	39	13	SU 012997-23	Superior
499125	3689280	51	0.05	1044	73	1	33	16178	25	0.5	52	2	41	12	0.5	2	20	10	13	0.05	2	418	0.5	2	5	2	83	4	15	33	48	12	SU 012997-24	Superior
498471	3689237	360	0.05	1561	199	4.5	28	16968	32	1	180	0.5	69	13	17	2	18	24	17	0.05	12	512	0.5	17	1	0.5	79	3	40	26	66	13	SU 012997-25	Superior
499129	3688871	110	0.05	394	52	1	47	3624	42	2	171	0.5	37	12	12	5	14	41	36	0.05	7	457	1	10	8	1	135	24	83	27	47	10	SU 012997-26	Superior
497504	3688330	408	0.05	827	108	2.7	25	10526	17	0.5	388	0.5	54	9	49	0.5	9	20	32	0.05	23	715	0.5	45	2	0.5	70	9	94	11	97	8	SU 013097-01	Superior
497792	3688717	303	0.05	1177	15	3.1	49	6618	60	4	267	1	27	17	102	4	18	30	70	0.05	16	556	1	27	6	1	141	18	174	30	88	8	SU 013097-02	Superior
497408	3688093	566	0.05	779	90	3.3	46	12709	33	2	389	0.5	84	19	97	3	21	36	62	0.05	22	871	0.5	23	4	1	173	11	100	16	102	8	SU 013097-03	Superior
498836	3688041	532	0.05	1164	142	2.5	36	4643	19	1	245	1	47	17	25	2	14	23	27	0.05	18	699	0.5	24	3	0.5	67	5	102	24	55	9	SU 013097-04	Superior
498937	3688372	259	0.05	952	15	2.7	34	8583	34	1	157	0.5	46	10	40	3	14	21	29	0.05	11	711	0.5	11	5	2	72	7	57	17	52	11	SU 013097-05	Superior
498878	3688757	119	0.05	1146	57	3.1	25	5795	27	1	113	0.5	30	8	33	2	8	15	23	0.05	5	589	0.5	7	4	0.5	46	4	42	21	54	13	SU 013097-06	Superior
498291	3688530	47	0.05	992	252	0.1	111	1500	7	10	64	6	72	31	11	17	31	25	48	0.05	3	571	7	0.5	24	5	217	2	103	103	74	23	SU 013097-07	Superior
498603	3688331	924	0.05	1050	167	3.3	52	12660	17	7	356	2	80	24	52	6	17	32	70	0.05	27	788	1	23	8	3	115	13	122	58	63	9	SU 013097-08	Superior
498101	3688046	570	0.05	1066	117	6.9	32	3222	62	1	375	1	43	19	41	4	18	29	50	0.05	26	806	0.5	52	3	0.5	102	3	134	28	80	10	SU 013097-09	Superior
497699	3687969	653	0.05	1445	171	5.4	56	13910	50	4	430	2	56	17	112	5	13	25	81	0.05	23	758	1	38	5	1	155	11	240	51	91	10	SU 013097-10	Superior
497450	3687550	570	0.1	512	132	6.5	35	1500	32	0.5	1288	0.5	105	12	141	3	15	22	135	0.05	36	933	0.5	50	3	0.5	154	14	317	11	100	2	SE 010396-01	Superior East
498140	3687700	220	0.05	965	308	1.6	26	1500	53	0.5	219	0.5	317	13	34	2	17	18	22	0.05	11	966	0.5	7	3	2	222	5	63	14	77	2	SE 010396-02	Superior East
498650	3688100	430	0.05	1192	367	4.8	44	10979	62	0.5	817	0.5	172	17	163	2	24	40	75	0.4	33	1486	0.5	37	3	1	330	11	209	9	62	2	SE 010396-03	Superior East
498360	3688120	673	0.05	1073	15	7.4	17	1500	34	0.5	929	0.5	35	7	36	0.5	7	15	68	0.05	16	514	0.5	11	0.5	0.5	89	2	363	0.5	69	2	SE 010396-04	Superior East
498350	3687480	368	0.2	1832	173	5.1	24	1500	47	0.5	654	1	95	10	26	2	14	11	35	0.2	11	770	0.5	12	2	0.5	81	2	313	23	70	2	SE 010396-05	Superior East
498320	3687160	425	0.05	1047	51	3	17	1500	31	1	371	0.5	64	6	91	2	8	21	43	0.05	23	818	0.5	25	2	0.5	122	6	182	7	73	2	SE 010396-06	Superior East
498000	3686970	326	0.05	1183	200	4.2	31	1500	40	0.5	546	2	116	16	22	2	24	20	29	0.05	15	845	0.5	14	4	1	102	3	175	47	82	2	SE 010396-07	Superior East
497680	3686900	227	0.05	878	82	2.8	33	1500	28	4	431	1	40	16	45	5	11	17	53	0.05	14	826	0.5	34	11	1	155	8	211	33	92	2	SE 010396-08	Superior East
498550	3687040	405	0.05	1088	108	1.3	45	1500	19	3	184	2	87	25	45	6	20	20	30	0.05	12	883	0.5	12	7	2	186	3	90	52	65	2	SE 010396-09	Superior East
498680	3686800	555	0.05	1200	184	0.9	37	8709	15	3	289	1	76	16	68	5	14	29	32	0.05	20	1430	0.5	18	6	1	166	11	104	38	60	2	SE 010396-10	Superior East
498340	3686940	455	0.05	815	102	6.3	13	8503	21	0.5	835	0.5	34	5	91	2	5	19	80	0.2	29	869	0.5	38	2	0.5	91	6	386	15	71	2	SE 010396-11	Superior East



Source: Western Economic Analysis Center

Superior Project
Superior 7 1/2' Quad.

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
491071	3680868	103	0.05	322	55	1.8	35	11876	45	5	245	2	52	21	44	6	21	58	49	0.05	21	397	2	3	7	2	193	41	307	38	141	18	SU 012297-02	Superior
490344	3680939	92	0.05	543	63	2.1	49	6827	38	8	156	3	131	35	118	10	33	82	84	0.05	4	882	3	0.5	13	2	405	58	638	68	145	15	SU 012297-03	Superior
490174	3680522	105	0.05	688	130	0.9	12	5065	35	0.5	76	0.5	102	13	62	0.5	22	50	9	0.05	10	1332	0.5	2	2	0.5	540	90	22	7	146	18	SU 012297-04	Superior
490107	3679427	30	0.05	521	228	0.1	16	9288	19	0.5	25	0.5	134	16	42	4	17	22	4	0.05	11	916	2	0.5	2	0.5	238	49	38	8	147	28	SU 012297-05	Superior
490966	3678838	57	0.05	276	78	0.6	20	13049	30	2	36	0.5	134	12	41	3	14	60	11	0.05	12	866	0.5	0.5	3	1	412	41	121	15	142	18	SU 012297-06	Superior
490836	3679752	45	0.05	678	258	0.6	9	3488	29	0.5	57	0.5	128	7	14	1	8	33	25	0.05	4	610	0.5	0.5	2	0.5	158	48	60	8	144	15	SU 012297-07	Superior
495758	3684681	1009	0.05	520	119	1.2	31	12065	15	3	117	0.5	77	20	44	4	14	25	14	0.05	21	465	0.5	19	6	0.5	108	23	94	21	118	11	SU 012297-08	Superior
496476	3684787	114	0.05	929	63	2.4	21	11712	49	1	99	0.5	69	19	12	1	11	26	11	0.05	4	522	0.5	9	2	0.5	84	13	96	10	111	8	SU 012297-09	Superior
495376	3683982	115	0.05	817	15	1.5	30	5080	46	0.5	126	0.5	35	11	2	1	16	10	13	0.05	5	422	0.5	2	3	1	57	13	73	17	124	7	SU 012297-10	Superior
495924	3682719	174	0.05	694	67	1.5	42	10999	18	3	337	0.5	33	16	3	5	18	25	26	0.05	12	500	2	3	7	1	96	7	114	20	116	16	SU 012297-11	Superior
495653	3682430	83	0.05	585	85	0.9	27	16396	24	1	143	0.5	50	14	4	1	14	13	11	0.05	4	447	0.5	4	2	1	40	4	77	11	119	14	SU 012297-12	Superior
495247	3681996	174	0.05	553	145	0.9	43	21778	14	3	156	0.5	125	16	20	5	16	31	13	0.05	9	515	0.5	6	5	2	95	8	78	19	125	12	SU 012297-13	Superior
494752	3681517	30	0.05	1875	15	1.5	11	7733	84	0.5	58	0.5	34	3	1	0.5	4	19	27	0.05	3	1349	1	4	0.5	2	187	8	19	1	128	12	SU 012297-14	Superior
494467	3681116	184	0.05	1242	132	3.8	53	9816	58	3	221	0.5	174	19	39	5	24	26	41	0.05	9	707	2	6	7	3	133	5	102	26	132	8	SU 012297-15	Superior
494328	3680386	123	0.05	951	157	1.2	28	10433	22	3	76	0.5	143	14	55	4	12	28	17	0.05	11	758	2	12	3	0.5	130	9	70	14	134	9	SU 012297-16	Superior
493581	3682060	120	0.05	1415	165	1.2	76	11464	51	8	111	3	137	34	15	15	34	28	19	0.05	5	592	4	4	8	3	161	10	105	47	139	14	SU 012297-17	Superior
494341	3682210	95	0.05	1029	156	0.9	46	8495	42	4	22	1	117	16	15	7	17	23	17	0.05	7	688	2	2	5	2	162	5	40	19	133	12	SU 012297-18	Superior
495013	3682554	28	0.05	1258	73	0.6	25	15295	17	0.5	23	0.5	75	16	2	1	25	10	12	0.2	2	522	0.5	0.5	1	2	59	1	28	10	126	16	SU 012297-19	Superior
494549	3682788	328	0.05	1177	152	0.9	30	10566	15	2	61	0.5	79	18	0.5	4	18	15	11	0.05	10	574	2	6	4	1	87	5	38	22	129	12	SU 012297-20	Superior
494965	3683083	780	0.05	1122	15	3.9	83	5741	23	7	926	2	46	34	16	7	31	20	75	0.05	28	538	4	20	14	3	73	8	166	33	127	8	SU 012297-21	Superior
494485	3683151	163	0.05	870	60	0.1	31	11880	12	1	24	0.5	76	21	0.5	1	22	12	10	0.05	4	465	0.5	2	3	1	102	1	19	12	131	16	SU 012297-22	Superior
495464	3683634	318	0.05	1427	78	3.5	36	7836	65	0.5	687	0.5	35	11	10	2	14	17	27	0.05	20	400	0.5	15	3	0.5	50	17	125	11	123	14	SU 012397-01	Superior
496187	3683635	706	0.05	377	213	0.3	15	15959	5	2	183	0.5	73	7	39	2	6	22	8	0.05	35	446	0.5	34	3	0.5	52	17	47	15	114	8	SU 012397-02	Superior
494545	3684027	231	0.05	712	111	6.4	42	18891	59	1	713	0.5	53	13	6	2	19	45	26	0.05	17	371	0.5	11	2	1	93	2	231	10	130	14	SU 012397-05	Superior
494071	3683225	384	0.05	927	33	2	24	11012	21	1	263	0.5	55	13	9	1	18	17	16	0.05	15	448	0.5	25	2	0.5	103	4	81	9	135	10	SU 012397-07	Superior
493730	3682886	1123	0.05	787	198	4.9	39	19299	16	5	901	1	143	21	16	5	20	35	44	0.05	32	502	2	28	4	1	92	6	244	26	137	8	SU 012397-08	Superior
493284	3683282	856	0.05	1211	172	2.9	45	13374	38	2	625	0.5	97	20	19	2	32	36	25	0.05	26	456	1	40	3	1	113	7	141	18	140	8	SU 012397-09	Superior
493585	3683834	2515	0.05	921	166	9.9	36	11406	36	0.5	2294	0.5	59	15	21	1	19	29	112	0.05	72	523	0.5	74	2	0.5	115	9	378	17	138	10	SU 012397-10	Superior
493959	3684280	328	0.05	853	103	2.6	28	1500	35	2	173	0.5	59	14	14	2	16	22	19	0.05	9	408	0.5	13	4	0.5	78	3	60	13	136	10	SU 012397-11	Superior
498686	3686028	407	0.05	599	69	2	49	11664	13	5	497	2	85	18	59	5	15	29	51	0.05	18	521	2	17	6	1	93	9	164	28	58	5	SU 012497-01	Superior
497641	3683809	199	0.05	762	15	0.9	51	1500	23	3	429	1	45	16	45	3	19	17	51	0.05	17	464	2	17	7	2	83	6	108	21	94	5	SU 012497-03	Superior
497666	3687336	103	0.05	755	143	0.3	29	3425	5	0.5	43	1	48	15	2	2	17	12	8	0.05	4	416	0.5	1	4	1	68	7	13	21	93	14	SU 012497-05	Superior
497433	3687068	198	0.05	674	185	1.4	27	12888	12	3	79	0.5	70	13	1	2	13	24	16	0.05	8	432	0.5	4	3	0.5	67	8	34	20	101	8	SU 012497-06	Superior
497225	3686960	55	0.05	402	15	0.1	27	6357	21	0.5	83	0.5	71	22	8	0.5	19	14	9	0.05	5	420	0.5	8	0.5	1	124	10	17	6	103	13	SU 012497-07	Superior
497083	3686754	359	0.05	894	239	1.1	82	12717	18	8	92	2	202	53	25	10	33	44	29	0.05	13	607	3	7	8	2	156	13	19	44	107	10	SU 012497-08	Superior
497154	3686104	20	0.05	224	219	0.3	92	4395	5	0.5	40	0.5	485	24	0.5	1	95	2.5	7	0.05	4	192	0.5	2	8	12	119	5	5	21	105	14	SU 012497-10	Superior
496985	3685738	51	0.05	643	226	0.9	122	16045	11	6	25	2	123	53	7	11	74	20	13	0.05	3	418	3	1	8	3	130	13	61	29	108	22	SU 012497-11	Superior
496924	3685185	552	0.05	742	125	1.4	117	3318	33	14	311	2	187	44	61	10	39	45	62	0.05	23	507	4	31	11	3	208	25	179	57	110	8	SU 012497-12	Superior
496958	3684447	62	0.05	182	15	0.3	26	3384	6	3	28	0.5	51	14	12	4	10	10	10	0.05	4	325	1	2	4	0.5	49	11	41	15	109	21	SU 012497-13	Superior
498429	3686499	66	0.05	1750	157	0.1	30	22584	9	0.5	6	1	29	9	0.5	4	11	2.5	11	0.05	2	472	1	0.5	8	1	160	11	20	34	68	13	SU 012897-01	Superior
498019	3686690	648	0.05	817	89	5.1	28	11850	56	1	678	1	60	13	69	2	15	25	60	0.05	22	614	0.5	29	3	0.5	125	11	191	24	81	14	SU 012897-02	Superior
497777	3686517	196	0.05	554	97	0.4	25	8782	39	1	121	0.5	78	10	15	2	15	34	10	0.05	7	691	0.5	5	2	0.5	98	13	28	19	90	10	SU 012897-03	Superior
497517	3686642	327	0.05	799	114	2.5	39	7312	24	0.5	281	0.5	92	16	41	1	18	26	18	0.05	12	851	0.5	12	14	0.5	133	12	30	16	96	11	SU 012897-04	Superior
497479	3686307	442	0.05	880	194	1.3	30	5136	29	2	144	0.5	65	16	33	2	17	26	14	0.05	11	627	0.5	12	2	0.5	106	48	91	16	99	13	SU 012897-05	Superior
497588	3685802	577	0.05	680	89	3.4	36	1500	41	1	318	0.5	80	13	46	2	16	32	25	0.05	21	578	0.5	45	4	0.5	125	40	78	21	95	16	SU 012897-06	Superior
497486	3685403	51	0.05	1071	222	1.3	151	10533	27	11	99	3	180	62	33	12	52	53	25	0.05	3	690	3	2	17	4	217	30	118	110	98	10	SU 012897-07	Superior
497783	3685438	937	0.05	929	208	1.9	33	18406	22	1	144	0.5	95	12	22	2	15	23	12	0.05	14	674	0.5	15	2	0.5	104	11	49	18	89	12	SU 012897-08	Superior
498124	3685736	818	0.05	429	110	3.4	20	5530	12	0.5	768	0.5	54	8	106	0.5	8	35	43	0.05	46	868	0.5	61	2	0.5	87	34	115	9	78	8	SU 012897-09	Superior
498321	3686032	63	0.05	466	158	0.1	81	10997	4	4	195	2	397	38	6	9	80	18	20	0.05	4	455	2	4	28	7	362	4	32	104	72	21	SU 012897-10	Superior

C

D, where 3,4,6

E where 3,4,9

F

Table 1

THE DISTRIBUTION OF COPPER INDUSTRY INCOME DIRECTLY TO THE ARIZONA ECONOMY 1988

INDUSTRY SALES OF $2,655,983,000

provided:
PERSONAL INCOME FOR ARIZONANS OF $414,830,000

including:
- Wages and Salaries for Arizona workers of ... $374,690,000
- Transfer Payments to Arizona residents of 40,008,000
- Dividends to Arizona investors of 132,000

and:
SALES FOR OTHER ARIZONA BUSINESSES OF $587,630,000

including sales to copper producers by:
- Public utilities of $183,635,000
- Wholesalers of 173,837,000
- Manufacturing firms of 79,310,000
- Construction contractors of 46,637,000
- Service businesses of 41,749,000
- Transportation firms of 32,838,000
- All other types of businesses of 29,624,000

and:
STATE AND LOCAL GOVERNMENT REVENUES OF $78,612,000

including amounts for:
- Public schools and junior colleges of $32,343,000
- Counties, cities, and towns of 23,622,000
- The State of Arizona of 22,495,000
- Special district governments of 152,000

with the net result for the Arizona economy being a:
TOTAL DIRECT CONTRIBUTION OF $1,081,072,000

But to do this, copper producers made:
EXPENDITURES OUTSIDE OF ARIZONA OF $1,574,911,000

to cover:
- Out-of-state business expenses of $898,501,000
- Amounts retained to cover previous losses 422,997,000
- Federal income and payroll taxes of 199,606,000
- Dividends to non-Arizona investors of 53,807,000

Source: Western Economic Analysis Center

Superior Data

Superior Project
Superior 7½' Quad.

UTME	UTMN	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area		
501044	3686735	45	0.05	632	35	1	11	5558	3	1	30	0.5	36	4	99	1	6	2.5	13	0.05	1	972	0.5	0.5	2	0.5	40	0.5	129	8	19	17	PR 013097-02	Pinal Ranch	
501240	3688594	84	0.05	509	15	0.7	13	11231	8	1	109	0.5	44	9	15	1	13	6	10	0.05	5	1436	0.5	0.5	2	2	68	0.5	31	7	17	15	PR 013097-03	Pinal Ranch	
500442	3688033	116	0.05	314	178	3	20	9684	68	0.5	479	0.5	33	10	9	0.5	17	75	19	0.4	8	539	0.5	1	2	0.5	117	0.5	87	14	24	9	PR 013097-04	Pinal Ranch	
500539	3687641	329	0.05	1217	119	1.9	25	9539	29	2	161	0.5	155	13	70	2	14	7	21	0.05	17	1208	0.5	24	2	2	101	6	45	15	23	8	PR 013097-05	Pinal Ranch	
500231	3687046	549	0.05	1173	122	3.3	23	11847	23	1	357	0.5	72	8	162	1	8	2.5	22	0.05	20	1516	0.5	34	2	0.5	58	11	177	12	26	7	PR 013097-06	Pinal Ranch	
500739	3686455	390	0.05	1528	153	6.7	28	33829	51	1	361	0.5	63	12	86	2	12	29	34	0.05	12	1275	1	42	2	0.5	126	8	141	11	20	9	PR 013097-07	Pinal Ranch	
501508	3687388	34	0.05	1084	228	0.1	20	11638	20	0.5	44	0.5	96	14	2	1	23	2.5	8	0.05	1	800	0.5	0.5	1	0.5	255	0.5	19	7	14	27	PR 013097-08	Pinal Ranch	
501479	3688246	261	0.05	1304	125	0.7	19	10137	17	1	72	0.5	92	10	17	2	11	19	7	0.05	9	983	0.5	10	3	0.5	71	8	37	8	15	12	PR 013097-09	Pinal Ranch	
505401	3680000	25	0.05	1218	15	0.1	34	1500	28	1	203	0.5	74	14	0.5	1	18	2.5	13	0.05	1	764	1	2	3	2	123	1	5	12	3	15	PR 013097-10	Pinal Ranch	
504886	3680508	52	0.05	671	195	1	47	9107	23	0.5	140	0.5	84	53	13	2	54	66	7	0.2	5	1525	0.5	3	11	2	428	24	30	13	4	14	PR 013097-11	Pinal Ranch	
505573	3680591	30	0.05	876	138	0.1	13	8163	112	0.5	35	0.5	115	6	4	0.5	8	45	11	0.05	3	711	0.5	0.5	2	0.5	229	41	16	7	2	15	PR 013097-12	Pinal Ranch	
502519	3679931	30	0.05	599	166	1	17	8151	77	0.5	115	0.5	110	17	15	1	18	96	7	0.05	7	965	0.5	0.5	4	0.5	255	40	53	12	10	22	PR 013197-01	Pinal Ranch	
501473	3679777	36	0.05	972	253	0.4	24	33795	25	7	42	1	57	14	21	5	16	16	7	0.05	7	964	0.5	0.5	4	0.5	80	42	54	26	16	8	PR 013197-02	Pinal Ranch	
500572	3679957	127	0.05	1183	15	1.6	12	15325	46	1	45	0.5	40	3	42	1	5	19	6	0.05	6	720	0.5	10	1	0.5	67	27	5	6	22	8	PR 013197-03	Pinal Ranch	
500191	3681343	229	0.05	978	165	4.8	30	11547	81	0.5	117	0.5	31	5	12	1	4	2.5	18	0.05	11	586	0.5	18	1	0.5	83	26	35	9	28	10	PR 013197-04	Pinal Ranch	
500213	3683299	101	0.05	988	183	1	37	14431	51	1	71	0.5	161	12	32	2	3	30	8	0.05	6	1077	0.5	7	3	0.5	134	24	14	11	27	10	PR 013197-05	Pinal Ranch	
500722	3684323	75	0.05	1245	129	1.3	38	1500	39	3	247	0.5	79	16	0.5	4	19	22	17	0.05	7	765	2	3	4	1	79	3	67	26	21	18	PR 013197-06	Pinal Ranch	
501139	3684289	58	0.05	1158	120	0.1	24	10648	27	1	43	0.5	125	10	9	2	15	11	6	0.05	6	813	0.5	0.5	2	0.5	91	15	22	8	18	26	PR 013197-07	Pinal Ranch	
501825	3682620	25	0.05	2297	199	1.9	105	1500	85	6	45	3	141	41	2	6	53	31	16	0.05	3	797	2	3	10	4	97	1	48	62	13	30	PR 013197-09	Pinal Ranch	
502268	3681020	38	0.05	1299	223	0.4	34	7128	31	2	26	0.5	132	19	0.5	3	30	19	11	0.2	5	736	2	1	3	2	182	3	11	28	12	20	PR 013197-10	Pinal Ranch	
503144	3681781	182	0.05	815	197	1	16	9094	17	3	95	0.5	68	11	36	4	13	15	9	0.05	9	749	1	3	2	0.5	51	36	41	20	7	13	PR 013197-11	Pinal Ranch	
502762	3683171	11	0.05	149	33	0.1	7	8964	3	0.5	12	0.5	26	3	0.5	3	8	2.5	3	0.05	1	311	0.5	0.5	2	2	120	1	5	4	9	5	PR 013197-12	Pinal Ranch	
502360	3684587	65	0.05	1138	533	0.1	37	31742	33	0.5	163	0.5	515	16	102	2	29	61	8	0.3	7	1996	0.5	0.5	2	1	835	85	160	14	11	16	PR 013197-13	Pinal Ranch	
503191	3681016	64	0.05	194	118	0.4	21	1500	52	0.5	136	0.5	59	8	42	2	11	34	7	0.2	25	697	0.5	5	1	0.5	218	13	16	2	6	8	PR 013197-14	Pinal Ranch	
502942	3679866	19	0.05	503	307	0.7	23	9572	69	1	74	0.5	91	14	120	0.5	19	68	6	0.2	8	1143	0.5	1	3	0.5	129	28	26	1	8	16	PR 013197-15	Pinal Ranch	
504037	3679542	40	0.05	157	325	0.1	24	17917	12	1	92	0.5	279	8	9	0.5	12	28	4	0.2	4	814	0.5	2	4	2	508	7	5	3	5	36	PR 013197-16	Pinal Ranch	
488861	3682170	103	0.05	214	194	0.5	12	4972	10	0.5	39	0.5	177	7	8	0.5	6	15	11	0.05	5	738	0.5	0.5	2	0.5	361	8	43	9	156	16	SU 011697-01	Superior	
488491	3682672	108	0.05	1044	241	0.8	22	4947	50	2	606	0.5	112	12	9	3	14	61	30	0.05	6	552	0.5	26	3	0.5	195	37	82	29	159	12	SU 011797-01	Superior	
489902	3682950	498	0.05	353	217	0.5	20	45851	29	0.5	576	0.5	90	14	8	0.5	15	39	9	0.4	5	1103	0.5	4	2	0.5	404	28	42	9	148	16	SU 011797-02	Superior	X
488471	3685304	136	0.05	132	43	0.3	6	4275	10	0.5	131	0.5	31	4	0.5	0.5	5	19	5	0.05	3	394	0.5	0.5	1	0.5	203	1	40	8	160	12	SU 011797-03	Superior	A
488411	3683392	1150	0.05	657	283	0.8	16	9819	58	2	648	0.5	102	10	17	2	13	74	12	0.05	15	845	0.5	9	2	0.5	426	9	52	20	161	15	SU 011797-04	Superior	X
488900	3684285	2282	0.05	182	114	1.2	7	16590	19	0.5	607	0.5	64	5	19	0.5	6	44	11	0.05	29	1068	0.5	8	0.5	0.5	275	42	47	3	155	20	SU 012197-01	Superior	X
489203	3684927	1733	0.05	234	52	7	33	17296	80	5	2793	2	36	17	11	9	21	84	31	0.05	29	571	2	58	5	1	333	16	448	46	150	8	SU 012197-02	Superior	
489109	3683812	4918	0.2	205	37	5.9	30	14783	21	2	7747	0.5	40	16	11	3	17	33	124	0.05	182	337	0.5	50	5	0.5	151	140	466	19	152	10	SU 012197-04	Superior	X
489361	3681266	55	0.05	584	82	0.3	14	10008	19	2	73	0.5	123	7	18	3	7	61	15	0.05	12	1181	0.5	0.5	4	1	339	42	185	18	149	20	SU 012197-08	Superior	
488791	3681403	260	0.05	397	114	0.9	63	17653	32	9	336	4	60	42	47	26	33	66	44	0.05	12	668	7	5	17	3	330	48	248	98	157	14	SU 012197-09	Superior	
489140	3680421	71	0.05	188	80	0.3	42	8580	36	8	146	4	67	27	23	25	26	58	32	0.05	6	381	6	4	17	3	317	69	179	82	151	15	SU 012197-10	Superior	
488569	3680495	143	0.05	87	276	1.2	25	5278	80	0.5	142	0.5	75	15	67	5	17	96	14	0.05	17	629	0.5	4	3	0.5	262	55	43	11	158	12	SU 012197-11	Superior	
488937	3679572	661	0.05	835	941	1.5	49	162045	20	2	118	2	964	32	256	14	32	84	7	0.2	18	2568	2	0.5	34	7	7103	107	77	74	154	25	SU 012197-12	Superior	B
489000	3679143	27	0.05	184	57	0.1	48	9514	14	5	35	3	56	21	15	30	15	29	19	0.05	5	323	7	0.5	15	5	124	24	106	54	153	29	SU 012197-13	Superior	
496171	3679294	35	0.05	822	40	0.3	165	5630	117	11	45	4	128	60	10	31	59	38	38	0.05	2	552	9	1	24	6	404	9	156	80	115	22	SU 012197-14	Superior	
497093	3680735	25	0.05	525	15	0.9	28	4969	14	2	19	0.5	44	16	160	2	16	35	7	0.05	3	699	0.5	0.5	3	1	197	34	44	7	106	18	SU 012197-15	Superior	
496305	3680370	28	0.05	643	143	0.3	55	13835	21	4	14	1	57	23	19	6	22	21	14	0.05	2	670	4	0.5	6	3	164	6	74	19	113	30	SU 012197-16	Superior	
496331	3681163	59	0.05	672	15	0.6	39	9035	26	2	42	0.5	48	9	21	3	8	10	11	0.05	4	616	0.5	2	3	1	85	12	39	12	112	12	SU 012197-17	Superior	
487315	3681884	74	0.05	1994	30	1.2	57	11757	33	4	70	2	40	22	8	8	14	16	26	0.05	3	578	3	1	10	3	78	5	95	33	175	15	SU 012197-18	Superior	
495617	3681145	24	0.05	853	99	0.6	46	4829	17	6	24	1	104	22	17	9	20	29	13	0.05	2	623	2	0.5	6	3	184	13	86	27	120	22	SU 012197-19	Superior	
495505	3680348	171	0.05	569	71	1.5	32	10343	23	4	221	0.5	101	16	40	4	13	27	23	0.05	10	730	2	10	2	1	95	14	96	21	122	8	SU 012197-20	Superior	
495901	3681973	122	0.05	902	83	1.2	66	13190	13	4	67	2	41	21	28	11	21	14	18	0.05	5	512	3	2	9	2	43	16	53	42	117	8	SU 012197-21	Superior	
490873	3681780	935	0.05	801	15	4.1	76	1500	81	9	2236	3	110	33	74	14	33	108	277	0.05	47	289	4	64	11	2	303	104	779	69	143	10	SU 012297-01	Superior	C

Superior Project

Table 2

COMBINED DIRECT AND INDIRECT IMPACT OF THE COPPER INDUSTRY ON THE ARIZONA ECONOMY 1988

In 1988, the Arizona copper industry had a:

DIRECT IMPACT ON THE ARIZONA ECONOMY OF ... $1,081,072,000

including direct payments to Arizonans for:

Personal Income of $414,830,000
Business Income of.....587,630,000
State and Local Government Revenues of.....78,612,000

which, by circulation and recirculation through the Arizona economy, resulted in an:

INDIRECT ECONOMIC IMPACT ON ARIZONA OF..... $4,590,728,000

including indirect gains in:

Personal Income of $1,274,306,000
Business Income of..... 2,913,063,000
State and Local Government Revenues of.....403,359,000

to create a:

TOTAL ECONOMIC IMPACT ON ARIZONA OF $5,671,800,000

including total gains in:

Personal Income of $1,689,136,000
Business Income of..... 3,500,693,000
State and Local Government Revenues of.....481,971,000

Source: Western Economic Analysis Center

Superior Project
Picketpost Mtn 7½' Quad.

UTM E	UTM N	As	Au	Ba	Br	Cd	Ce	Cl	Co	Cs	Cu	Hf	I	La	Mo	Nb	Nd	Ni	Pb	Re	Sb	Sr	Ta	Te	Th	U	V	W	Zn	Zr	Ref. No.	Samp. ID	Area	
480441	3681391	71	0.05	819	334	0.3	45	14779	62	10	164	0.5	105	17	14	2	18	66	10	0.05	4	1118	0.5	2	5	1	109	29	94	8	210	20	PM 011397-01	Picketpost Mtn
481139	3681253	13	0.05	553	15	0.5	44	4351	111	5	72	0.5	58	23	11	3	14	83	9	0.05	6	567	0.5	0.5	12	1	117	31	67	13	209	30	PM 011397-02	Picketpost Mtn
481979	3680550	39	0.05	395	421	0.3	101	1500	27	3	94	0.5	82	68	2	3	71	44	8	0.05	3	1087	2	0.5	17	2	110	93	59	8	207	21	PM 011397-03	Picketpost Mtn
481578	3679867	19	0.05	1409	82	0.8	19	5198	50	4	65	0.5	54	20	12	2	17	39	16	0.05	8	784	0.5	0.5	5	0.5	121	55	132	11	208	20	PM 011397-04	Picketpost Mtn
483248	3680850	47	0.05	747	65	1.3	60	1500	105	5	100	0.5	46	20	19	3	23	66	14	0.05	6	487	2	2	14	1	93	180	135	10	202	16	PM 011397-05	Picketpost Mtn
482909	3681234	28	0.05	269	196	0.5	10	6105	26	0.5	17	0.5	154	7	23	0.5	8	30	2	0.05	5	1516	0.5	0.5	1	1	166	14	28	7	203	37	PM 011397-06	Picketpost Mtn
482082	3681333	15	0.05	894	86	0.5	30	11155	118	4	46	0.5	76	14	12	3	13	93	9	0.05	6	616	0.5	2	6	1	159	30	69	18	206	22	PM 011397-07	Picketpost Mtn
482567	3682143	10	0.05	340	276	0.8	69	1500	26	3	42	0.5	43	36	2	2	34	26	7	0.05	3	605	0.5	0.5	8	1	71	51	59	18	205	20	PM 011397-08	Picketpost Mtn
483432	3681771	51	0.05	72	146	0.3	24	7448	39	0.5	54	0.5	43	18	0.5	3	31	46	6	0.2	2	366	0.5	0.5	7	3	223	14	43	41	199	13	PM 011397-09	Picketpost Mtn
483400	3682506	45	0.05	1144	563	1.3	13	4643	67	0.5	116	0.5	344	14	6	0.5	24	67	6	0.05	2	2438	0.5	0.5	3	0.5	269	44	53	17	200	17	PM 011397-11	Picketpost Mtn
482878	3683130	28	0.05	95	249	0.5	11	5913	43	0.5	20	0.5	408	19	0.5	1	21	37	2	0.05	3	730	0.5	0.5	3	0.5	236	28	24	8	204	23	PM 011497-01	Picketpost Mtn
483315	3685731	14	0.05	173	65	0.5	20	6871	46	2	54	0.5	108	14	0.5	3	12	89	9	0.05	1	378	0.5	1	2	0.5	248	53	41	30	201	16	PM 011497-04	Picketpost Mtn
484185	3686332	46	0.05	165	107	1	12	8537	55	2	148	0.5	54	7	0.5	1	9	50	6	0.05	3	362	0.5	0.5	3	0.5	143	12	42	17	195	10	PM 011497-05	Picketpost Mtn
486074	3680940	85	0.05	94	192	1	39	10290	40	3	101	1	57	13	65	7	14	58	7	0.05	10	249	2	1	5	0.5	137	25	69	39	185	24	PM 011597-01	Picketpost Mtn
486500	3681350	19	0.05	544	218	1	40	6904	48	3	56	2	130	26	16	11	14	48	16	0.05	6	841	4	0.5	7	2	187	39	84	55	184	13	PM 011597-02	Picketpost Mtn
485455	3681442	23	0.05	145	193	0.8	36	21028	42	4	44	1	56	13	24	8	12	50	10	0.05	16	201	2	1	6	1	115	20	72	52	190	15	PM 011597-03	Picketpost Mtn
487161	3681206	773	0.05	302	88	1.8	43	15344	42	2	172	2	101	14	53	21	17	50	23	0.05	25	676	5	7	5	2	245	104	81	76	178	10	PM 011597-04	Picketpost Mtn
485206	3680952	260	0.05	144	65	2	15	8614	59	0.5	129	0.5	67	6	29	3	7	21	15	0.05	11	309	0.5	3	0.5	1	109	11	42	15	191	7	PM 011597-05	Picketpost Mtn
486972	3682117	404	0.05	232	272	0.5	11	7742	20	0.5	37	0.5	340	7	14	1	6	32	16	0.05	33	1197	0.5	1	1	1	120	26	42	11	180	27	PM 011597-06	Picketpost Mtn
484521	3681453	154	0.05	96	217	1	45	14994	41	3	117	1	62	13	9	10	14	47	20	0.05	22	154	2	2	5	1	74	36	85	48	194	10	PM 011597-07	Picketpost Mtn
484141	3680996	130	0.05	36	223	0.8	13	3193	21	0.5	66	0.5	103	13	0.5	2	13	41	3	0.05	10	277	0.5	0.5	2	0.5	88	11	40	15	196	15	PM 011597-09	Picketpost Mtn
483737	3684582	60	0.05	420	80	0.5	11	1500	39	1	47	0.5	77	7	0.5	1	9	39	5	0.05	3	457	0.5	1	3	0.5	211	17	31	18	198	11	PM 011597-10	Picketpost Mtn
484115	3683301	271	0.05	260	247	1	17	12814	20	0.5	68	0.5	132	8	12	1	9	41	3	0.05	15	1040	0.5	0.5	2	0.5	87	27	31	13	197	13	PM 011597-11	Picketpost Mtn
484919	3682890	66	0.05	593	202	1.3	25	4976	55	2	65	0.5	230	21	0.5	4	18	74	14	0.05	8	665	2	1	5	0.5	392	7	74	46	193	12	PM 011597-12	Picketpost Mtn
485690	3683326	57	0.05	1232	37	1	14	8773	93	0.5	242	0.5	110	9	1	0.5	10	79	6	0.05	5	1288	0.5	5	0.5	0.5	341	75	31	9	188	20	PM 011697-01	Picketpost Mtn
487015	3685979	132	0.05	332	206	0.3	8	7469	14	0.5	8	0.5	322	3	6	2	5	5	1	0.05	3	1515	0.5	0.5	1	0.5	559	11	17	3	179	32	PM 011697-04	Picketpost Mtn
487219	3683170	578	0.05	630	95	1.3	15	3824	40	0.5	583	0.5	95	8	37	0.5	11	32	21	0.05	26	1138	0.5	10	2	0.5	322	53	47	6	177	12	PM 011697-09	Picketpost Mtn
487840	3679536	158	0.05	136	54	0.8	8	3311	37	0.5	96	0.5	89	6	15	10	5	15	12	0.05	9	394	2	7	2	1	93	22	36	17	170	13	PM 011697-10	Picketpost Mtn
487262	3679587	57	0.05	87	208	0.8	10	3261	18	0.5	51	0.5	111	5	0.5	6	6	31	11	0.05	4	629	2	4	1	0.5	266	20	32	15	176	12	PM 011697-11	Picketpost Mtn
486877	3687857	20	0.05	119	146	0.5	82	6341	22	6	35	3	136	23	1	27	21	34	22	0.05	8	190	7	0.5	12	3	146	18	100	104	181	20	PM 011697-12	Picketpost Mtn
488212	3680133	129	0.05	547	295	1	11	6037	30	1	66	0.5	169	8	5	5	7	23	19	0.2	9	667	2	5	2	0.5	296	6	43	26	164	13	PM 011697-13	Picketpost Mtn
487620	3680839	336	0.05	312	106	2	27	5080	76	1	143	0.5	133	7	15	5	7	47	27	0.05	9	582	0.5	7	1	1	183	7	71	27	172	12	PM 011697-14	Picketpost Mtn
488280	3681522	745	0.05	571	356	2.8	22	12885	53	0.5	168	0.5	99	17	135	2	12	67	33	0.3	68	789	0.5	0.5	1	0.5	184	44	114	19	162	17	PM 011697-15	Picketpost Mtn
487895	3682137	95	0.05	1848	138	0.8	9	1500	63	0.5	180	0.5	151	8	3	0.5	8	59	16	0.05	7	668	0.5	3	2	0.5	255	4	32	7	168	11	PM 011697-16	Picketpost Mtn
487885	3681665	500	0.05	267	221	1.5	18	13385	28	0.5	581	0.5	135	9	30	3	11	33	26	0.3	26	733	0.5	12	2	0.5	81	25	56	13	169	10	PM 011697-17	Picketpost Mtn
487436	3681753	569	0.05	352	192	0.5	13	8350	27	0.5	108	0.5	98	8	36	0.5	7	35	11	0.05	24	1170	0.5	1	1	0.5	304	42	57	8	174	16	PM 011697-18	Picketpost Mtn
486748	3681801	791	0.05	409	204	5.6	31	5178	38	2	304	1	88	15	82	12	15	50	262	0.05	86	792	3	4	4	1	127	14	378	47	182	12	PM 011697-19	Picketpost Mtn
486589	3682251	51	0.05	605	15	0.5	12	4335	82	0.5	128	0.5	51	6	3	0.5	7	79	29	0.05	6	641	0.5	1	1	0.5	140	5	35	21	183	12	PM 011697-20	Picketpost Mtn
485011	3682261	19	0.05	466	86	0.3	22	1500	46	2	98	0.5	76	11	6	0.5	12	40	7	0.05	5	414	0.5	0.5	3	0.5	120	33	26	11	192	16	PM 011797-01	Picketpost Mtn
485836	3682343	132	0.05	1188	95	0.5	18	1500	78	1	150	0.5	115	10	3	1	15	131	4	0.05	3	535	0.5	3	1	0.5	286	8	28	17	187	12	PM 011797-02	Picketpost Mtn
486052	3682643	40	0.05	869	79	0.3	9	4146	113	0.5	76	0.5	28	4	0.5	0.5	4	72	2	0.05	4	556	0.5	2	0.5	0.5	55	15	30	7	186	8	PM 011797-03	Picketpost Mtn
487455	3682558	23	0.05	496	152	0.8	8	7007	41	0.5	94	0.5	125	9	0.5	0.5	9	51	0.5	0.05	2	1648	0.5	0.5	0.5	0.5	139	12	11	8	173	17	PM 011797-04	Picketpost Mtn
488171	3682745	121	0.05	1277	131	. 1	31	3765	50	3	378	1	95	18	0.5	3	20	68	20	0.05	5	933	2	2	5	0.5	309	12	99	48	165	21	PM 011797-05	Picketpost Mtn
488088	3683108	1898	0.05	721	91	4.3	6	1500	53	0.5	3556	0.5	35	3	2	0.5	4	30	56	0.05	36	336	0.5	13	0.5	0.5	169	18	207	5	166	8	PM 011797-06	Picketpost Mtn
485594	3684640	204	0.05	317	134	1.5	21	1500	102	0.5	477	0.5	109	9	15	0.5	10	126	18	0.05	7	714	0.5	12	3	0.5	256	10	70	12	189	16	PM 011797-07	Picketpost Mtn
487728	3685072	220	0.05	295	92	0.8	12	1500	63	0.5	260	0.5	125	5	5	0.5	10	73	6	0.2	6	453	0.5	2	1	0.5	433	2	61	9	171	10	PM 011797-08	Picketpost Mtn
488260	3686170	615	0.05	217	74	2.3	7	1500	49	0.5	499	0.5	90	4	0.5	0.5	5	46	13	0.05	15	327	0.5	1	2	0.5	137	7	60	10	163	12	PM 011797-09	Picketpost Mtn
487988	3683047	1685	0.05	53	92	0.3	10	1500	7	0.5	39	0.5	169	11	0.5	18	12	12	3	0.05	4	1841	2	0.5	4	0.5	308	10	12	11	167	22	PM 011797-10	Picketpost Mtn
500343	3689299	26	0.05	703	216	0.7	40	1500	5	3	41	0.5	130	20	22	4	17	18	10	0.05	5	552	0.5	0.5	4	1	79	8	47	21	25	25	PR 013097-01	Pinal Ranch	

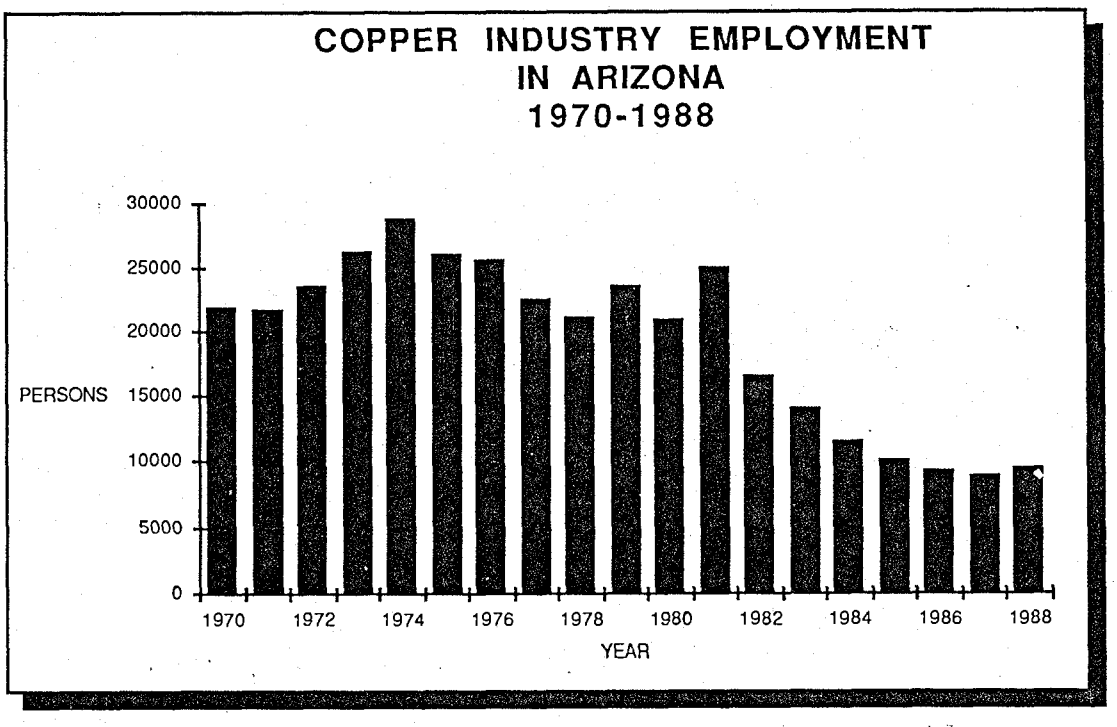
B
C
X
D
Superior Project

THE ARIZONA COPPER INDUSTRY AS A SOURCE OF JOBS AND PERSONAL INCOME

The importance of the Arizona copper industry as a direct source of jobs and personal income rose sharply in 1988. Higher copper prices and strong demand for the red metal during the entire year were the major causes of the increase. Total employment in the Arizona copper industry last year averaged 9,500, up 7% from the average of the year before.

The amount of personal income provided directly to Arizona residents by the Arizona copper industry climbed even more sharply than the industry's employment in 1988. The state's copper industry provided almost $415 million in direct income payments to Arizona residents last year. That was 42% more than in 1987. Of the 1988 total, $375 million were paid as wages and salaries directly to copper industry workers. Another $40 million were paid in pensions and supplemental unemployment benefits to current and former employees living in the state.

The $415 million in Arizona personal income provided directly by the state's copper industry in 1988 comprised less than one percent of the total personal income received by Arizona residents last year. Nevertheless, it formed more than 3% of the state's basic personal income. Basic personal income is that which comes into the state from outside, either in the form of direct payments such as social security benefits, or as the direct result of sales of products or services to non-Arizonans by such industries as agriculture, mining, manufacturing, and tourism. Federal government agencies, which receive their money directly from outside of the state, are also considered to be sources of basic personal income.



Source: Western Economic Analysis Center

Superior

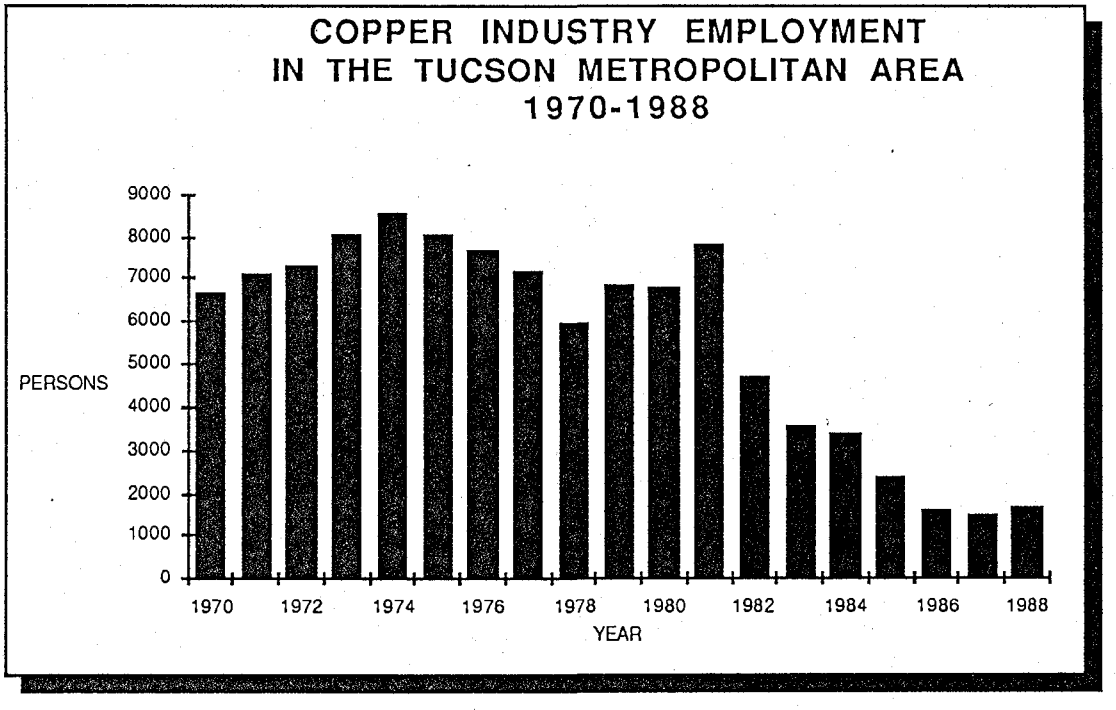
Bucklebuck

I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
46	1	952	10	34	4	14	2	-1	4	-1	2	-1	1	-1	1	-1	-1	-1	7	-0.1	-1	-1	-1	-0.1	-1	-1	29	2	5	2
30	1	1146	8	25	2	8	2	-1	3	-1	1	-1	-1	-1	-1	-1	-1	-1	4	-0.1	-1	-1	-1	-0.1	-1	-1	23	1	4	-1
72	10	992	31	111	10	31	8	1	11	2	7	2	4	-1	3	-1	6	7	2	-0.1	-1	-1	-1	-0.1	-1	1	48	3	24	5
80	7	1050	24	52	10	17	3	-1	4	-1	4	-1	1	-1	1	-1	2	1	13	-0.1	-1	-1	-1	-0.1	-1	-1	70	9	8	3
43	1	1066	19	32	5	18	3	-1	4	-1	3	-1	2	1	2	-1	1	-1	3	-0.1	-1	-1	-1	-0.1	-1	-1	50	2	3	-1
56	4	1445	17	56	5	13	2	1	4	-1	3	-1	1	-1	1	-1	2	1	11	-0.1	-1	-1	-1	-0.1	-1	-1	81	6	5	1
130	3	703	20	40	6	17	3	-1	5	-1	3	-1	1	-1	1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	4	1
36	1	632	4	11	4	6	-1	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	2	-1
44	1	509	9	13	3	13	3	1	4	-1	3	-1	-1	-1	2	-1	-1	-1	-1	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	2	2
33	-1	314	10	20	3	17	3	-1	5	-1	4	-1	1	-1	3	-1	-1	-1	-1	0.4	-1	-1	-1	-0.1	-1	-1	19	-1	2	-1
155	2	1217	13	25	4	14	4	1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	6	-0.1	-1	-1	-1	-0.1	-1	-1	21	2	2	2
72	1	1173	8	23	3	8	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	22	2	2	-1
83	1	1528	12	28	5	12	2	-1	2	-1	2	-1	-1	-1	1	-1	-1	1	8	-0.1	-1	-1	-1	-0.1	-1	-1	34	4	2	-1
96	-1	1084	14	20	6	23	5	1	7	1	5	1	2	-1	2	-1	-1	-1	-1	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	1	-1
92	1	1304	10	19	3	11	1	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1	-1	-1	7	1	3	-1
74	1	1218	14	34	7	18	4	1	4	-1	3	-1	1	-1	1	-1	-1	1	1	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	3	2
84	-1	671	53	47	15	54	8	2	12	1	7	2	3	-1	3	-1	-1	-1	24	0.2	-1	-1	-1	-0.1	-1	-1	7	-1	11	2
115	-1	876	6	13	2	8	-1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	41	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	2	-1
110	-1	599	17	17	4	18	3	-1	3	-1	2	-1	1	-1	1	-1	-1	-1	40	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	4	-1
57	7	972	14	24	4	16	2	-1	3	-1	3	-1	1	-1	1	-1	1	-1	42	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	4	-1
40	1	1183	3	12	1	5	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	27	-0.1	-1	-1	-1	-0.1	-1	-1	6	-1	1	-1
31	-1	978	5	30	2	4	-1	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	26	-0.1	-1	-1	-1	-0.1	-1	-1	18	-1	1	-1
161	1	986	12	37	4	3	2	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	24	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	3	-1
79	3	1245	16	38	4	19	2	-1	4	-1	3	-1	1	-1	1	-1	-1	2	3	-0.1	-1	-1	-1	-0.1	-1	-1	17	-1	4	1
125	1	1158	10	24	4	15	3	-1	4	-1	3	-1	1	-1	-1	-1	-1	-1	15	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	2	-1
79	2	1108	11	16	3	13	3	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	13	-0.1	-1	-1	-1	-0.1	-1	-1	5	-1	1	-1
141	6	2297	41	105	13	53	10	3	11	2	9	2	4	-1	4	-1	3	2	1	-0.1	-1	-1	-1	-0.1	-1	-1	16	-1	10	4
132	2	1299	19	34	6	30	6	2	8	-1	5	-1	2	-1	1	-1	-1	2	3	0.2	-1	-1	-1	-0.1	-1	-1	11	-1	3	2
68	3	815	11	16	3	13	3	-1	3	-1	2	-1	1	-1	1	-1	-1	1	36	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	2	-1
26	-1	149	3	7	3	8	2	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-0.1	-1	-1	-1	-0.1	-1	-1	3	-1	2	2
515	-1	1138	16	37	7	29	6	1	6	-1	3	-1	2	-1	2	-1	-1	-1	85	0.3	-1	-1	-1	-0.1	-1	-1	8	-1	2	1
59	-1	194	8	21	3	11	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	13	0.2	-1	-1	-1	-0.1	-1	-1	7	-1	1	-1
91	1	503	14	23	4	19	3	1	4	-1	3	-1	2	-1	1	-1	-1	-1	28	0.2	-1	-1	-1	-0.1	-1	-1	6	-1	3	-1
279	1	157	8	24	3	12	3	-1	4	-1	3	-1	2	-1	1	-1	-1	-1	7	0.2	-1	-1	-1	-0.1	-1	-1	4	-1	4	2

All other personal income, including most of that earned by workers in the trade, services, transportation, and public utility industries, is considered non-basic, derived from the circulation and recirculation of basic income dollars brought into the state's economy by the basic sectors.

Just as the relative importance of copper as a direct source of personal income for Arizonans increased last year, so also did its importance as an indirect source. The total impact of the copper industry on Arizona personal income in 1988 was not, of course, solely the result of the wages, salaries, pensions, dividends, and other payments made directly to Arizona residents by the copper industry. Additional personal income was generated for Arizona residents by the circulation and recirculation of the dollars paid by copper producers to other Arizona businesses that sold products and services to the copper industry. Still more personal income for Arizonans was generated by the circulation and recirculation of the dollars that the copper industry paid in state and local taxes. The overall impact of the resultant ripple effect on personal icome was to multiply the industry's direct contribution of personal income to a total combined direct and indirect impact of almost $1.7 billion in personal income for Arizona residents. That was 17% higher than in 1987 and made the copper industry directly and indirectly responsible for more than 3% of the personal income received by Arizona residents in 1988.

Most of the direct impact of the copper industry as a source of jobs and personal income in Arizona has been felt in the non-metropolitan mining counties, but the Tucson Metropolitan Area also has felt a significant amount of the industry's impact. Last year, about one out of every three Arizona copper



Source: Western Economic Analysis Center

Suspension 7½' Quench

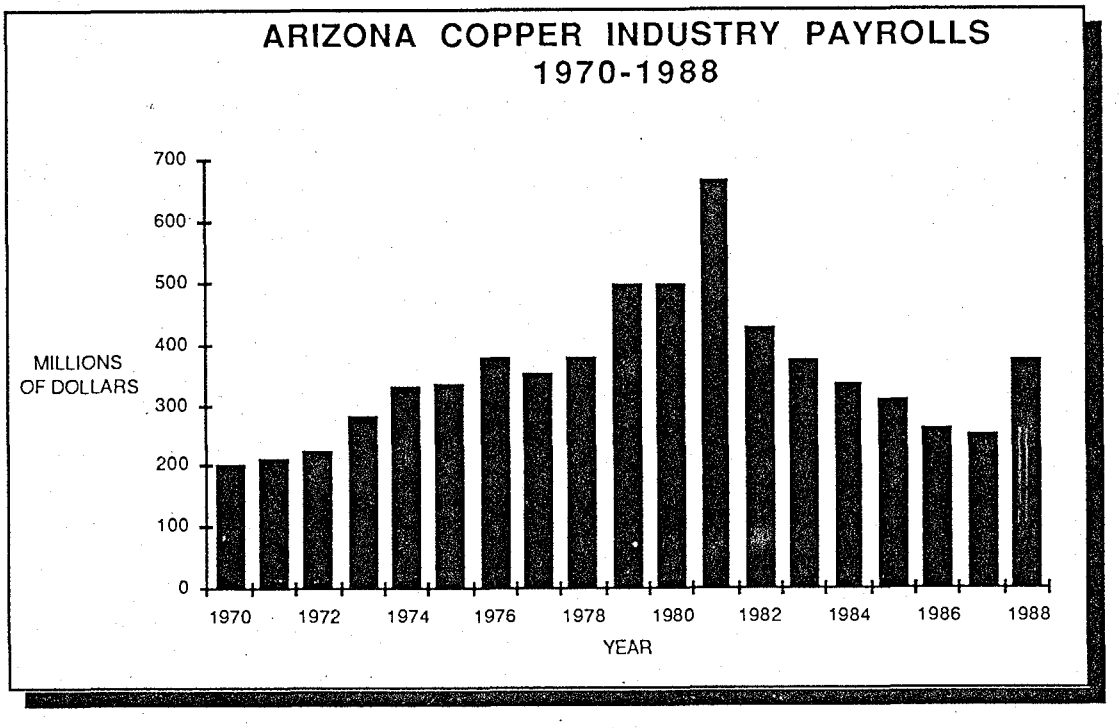
Pinch Reach 7½' Quench

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te
SU 013097-5	27	-20	8583	-10	-100	72	9871	34	21	157	57	9	1	259	-30	-30	54	711	13	17	3	40	-1	-1	-1	-0.2	2.7	-0.2	-1	11	11
SU 013097-6	28	-20	5795	-10	-100	46	7450	27	15	113	42	11	1	119	-30	57	40	589	7	21	2	33	-1	-1	-1	-0.2	3.1	-0.2	-1	5	7
SU 013097-7	176	-20	-3000	115	295	217	351	7	25	64	103	19	3	47	-30	252	133	571	34	103	17	11	-1	-1	3	0.9	-0.2	-0.2	4	3	-1
SU 013097-8	61	-20	12660	74	139	115	7897	17	32	356	122	19	3	924	-30	167	104	788	16	58	6	52	-1	-1	2	0.6	3.3	-0.2	2	27	23
SU 013097-9	58	-20	3222	-10	-100	102	18619	62	29	375	134	10	-1	570	47	117	38	806	15	28	4	41	-1	-1	-1	-0.2	6.9	-0.2	-1	26	52
SU 013097-10	54	-20	13910	24	-100	155	16850	50	25	430	240	22	1	653	60	171	83	758	12	51	5	112	-1	-1	1	0.3	5.4	-0.2	2	23	38
PR 013097-1	43	-20	-3000	38	-100	79	3092	5	18	41	47	11	-1	26	-30	216	30	552	18	21	4	22	-1	-1	1	-0.2	0.7	-0.2	-1	5	-1
PR 013097-2	27	-20	5558	23	-100	40	235	3	-5	30	129	8	-1	45	-30	35	15	972	11	8	1	99	-1	-1	-1	-0.2	1	-0.2	-1	1	-1
PR 013097-3	72	-20	11231	-10	-100	68	2438	8	6	109	31	5	3	84	-30	-30	36	1436	17	7	1	15	-1	-1	-1	-0.2	0.7	-0.2	-1	5	-1
PR 013097-4	46	-20	9684	10	-100	117	4144	68	75	479	87	6	-1	116	-30	178	24	539	18	14	-1	9	-1	-1	-1	-0.2	3	-0.2	-1	8	1
PR 013097-5	38	-20	9539	-10	-100	101	15316	29	7	161	45	3	1	329	-30	119	34	1208	12	15	2	70	-1	-1	-1	-0.2	1.9	-0.2	-1	17	24
PR 013097-6	18	-20	11847	-10	-100	58	11122	23	-5	357	177	13	-1	549	-30	122	45	1516	7	12	1	162	-1	-1	-1	0.3	3.3	-0.2	-1	20	34
PR 013097-7	29	-20	33829	12	-100	126	18898	51	29	361	141	10	1	390	-30	153	56	1275	11	11	2	86	-1	-1	-1	-0.2	6.7	-0.2	-1	12	42
PR 013097-8	-10	-20	11838	-10	-100	255	1509	20	-5	44	19	5	-1	34	-30	228	13	800	23	7	1	2	-1	-1	-1	-0.2	-0.2	-0.2	-1	1	-1
PR 013097-9	21	-20	10137	21	-100	71	8826	17	19	72	37	5	-1	261	-30	125	32	983	7	8	2	17	-1	-1	-1	-0.2	0.7	-0.2	-1	9	10
PR 013097-10	25	-20	-3000	-10	-100	123	965	28	-5	203	-10	3	1	25	44	-30	22	764	12	12	1	-1	-1	-1	-1	-0.2	-0.2	-0.2	-1	1	2
PR 013097-11	20	-20	9107	38	-100	428	2337	23	66	140	30	9	-1	52	-30	195	8	1525	28	13	2	13	-1	-1	-1	-0.2	1	-0.2	-1	5	3
PR 013097-12	21	-20	8163	-10	-100	229	14392	112	45	35	16	9	-1	30	58	138	14	711	6	7	-1	4	-1	-1	-1	-0.2	-0.2	-0.2	-1	3	-1
PR 013197-1	39	-20	8151	24	-100	255	7285	77	96	115	53	9	-1	30	-30	166	11	965	12	12	1	15	-1	-1	-1	-0.2	1	-0.2	-1	7	-1
PR 013197-2	39	-20	33795	66	-100	80	8447	25	16	42	54	19	2	36	-30	253	46	964	10	26	5	21	-1	-1	-1	-0.2	0.4	-0.2	-1	7	-1
PR 013197-3	46	-20	15325	-10	-100	67	11519	46	19	45	-10	6	-1	127	-30	-30	27	720	4	6	1	42	-1	-1	-1	-0.2	1.6	-0.2	-1	6	10
PR 013197-4	26	-20	11547	13	-100	83	17114	81	-5	117	35	4	-1	229	-30	165	32	586	6	9	1	12	-1	-1	-1	-0.2	4.8	-0.2	-1	11	18
PR 013197-5	19	-20	14431	30	-100	134	11289	51	30	71	14	6	-1	101	-30	183	30	1077	10	11	2	32	-1	-1	-1	-0.2	1	-0.2	-1	6	7
PR 013197-6	25	-20	-3000	13	-100	79	3747	39	22	247	67	9	1	75	-30	129	48	765	15	26	4	-1	-1	-1	-1	-0.2	1.3	-0.2	-1	7	3
PR 013197-7	22	-20	10548	12	-100	91	8961	27	11	43	22	3	-1	58	-30	120	28	813	12	8	2	9	-1	-1	-1	-0.2	-0.2	-0.2	-1	6	-1
PR 013197-8	20	-20	3725	13	-100	164	9270	24	21	19	13	11	-1	26	-30	236	33	834	10	5	2	6	-1	-1	-1	-0.2	0.4	-0.2	-1	3	-1
PR 013197-9	64	-20	-3000	44	102	97	8540	85	31	45	48	19	1	25	-30	199	100	797	30	62	6	2	-1	-1	2	0.6	1.9	-0.2	-1	3	3
PR 013197-10	29	-20	7128	23	-100	182	2998	31	19	26	11	6	-1	38	-30	223	46	736	22	28	3	-1	-1	-1	-1	-0.2	0.4	-0.2	-1	5	1
PR 013197-11	32	-20	9094	30	-100	51	8927	17	15	95	41	12	1	182	-30	197	40	749	11	20	4	36	-1	-1	-1	-0.2	1	-0.2	-1	9	3
PR 013197-12	49	-20	8964	-10	-100	120	348	3	-5	12	-10	-1	-1	11	-30	33	1	311	3	4	3	-1	-1	-1	-1	-0.2	-0.2	-0.2	-1	1	-1
PR 013197-13	20	-20	31742	24	-100	835	1973	33	61	163	160	2	1	65	-30	533	13	1996	15	14	2	102	-1	-1	1	-0.2	-0.2	-0.2	-1	7	-1
PR 013197-14	20	-20	-3000	31	-100	218	4600	52	34	136	16	3	1	64	-30	118	7	697	11	2	2	42	-1	-1	-1	-0.2	0.4	-0.2	-1	25	5
PR 013197-15	14	-20	9572	31	-100	129	8524	69	68	74	26	1	-1	19	-30	307	8	1143	12	1	-1	120	-1	-1	-1	-0.2	0.7	-0.2	-1	8	1
PR 013197-16	40	-20	17917	-10	-100	508	659	12	28	92	-10	3	-1	40	-30	325	4	814	15	3	-1	9	-1	-1	-1	-0.2	-0.2	-0.2	-1	4	2

workers lived in the Tucson Metropolitan Area. This included many who worked at copper producing facilities in nearby non-metropolitan Pinal County, but who lived in the greater Tucson area of eastern Pima County. In 1988, copper production accounted directly and indirectly for one out of every $25 of personal income received by Pima County residents. That put copper production behind welfare, the federal and state governments, manufacturing, and tourism as a source of employment and personal income in the Tucson Metropolitan Area, but kept copper still more important than agriculture as a basic income supplier.

Non-productive activity remained the largest single source of basic personal income in both Pima County and Arizona in 1988. Pensions, social security benefits, direct welfare payments, and other transfer payments provided more than 39% of total basic personal income in both Pima County and the state. High levels of productive activity in electronics and defense-related manufacturing in Maricopa County last year kept export manufacturing in a strong second position in the state, providing more than one of every $4 of basic personal income in Arizona. In Tucson, however, cutbacks in both defense-related business and electronics weakened manufacturing's relative position. Factory jobs provided only one of every $6 of personal income in Pima County in 1988. In both the Tucson Metropolitan Area and the state, government was third as a source of basic personal income in 1988. It was followed in both areas by tourism.

Detailed data on the role of the copper industry as a source of jobs and personal income in Arizona and the Tucson Metropolitan Area are shown in Table 4 through 10.



Source: Western Economic Analysis Center

I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
29	-1	1750	9	30	2	11	-1	-1	3	-1	2	-1	-1	-1	1	-1	1	1	11	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	8	1
60	1	817	13	28	4	15	2	-1	3	-1	3	-1	1	-1	2	-1	1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	60	2	3	-1
78	1	554	10	25	4	15	2	-1	3	-1	3	-1	1	-1	2	-1	-1	-1	13	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	2	-1
92	-1	799	16	39	5	18	4	-1	5	1	4	-1	2	-1	2	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	18	-1	14	-1
65	2	880	16	30	4	17	2	-1	3	-1	3	-1	-1	-1	1	-1	-1	-1	48	-0.1	-1	-1	-1	-0.1	-1	-1	14	-1	2	-1
80	1	680	13	36	4	16	3	-1	3	-1	3	-1	1	-1	2	-1	-1	-1	40	-0.1	-1	-1	-1	-0.1	-1	-1	25	2	4	-1
180	11	1071	62	151	17	52	6	2	12	2	11	2	4	-1	4	-1	3	3	30	-0.1	-1	-1	-1	-0.1	-1	-1	25	-1	17	4
95	1	929	12	33	4	15	3	-1	4	-1	3	-1	-1	-1	1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	12	-1	2	-1
54	-1	429	8	20	3	8	1	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	34	-0.1	-1	-1	-1	-0.1	-1	-1	43	3	2	-1
397	4	466	36	81	17	80	19	3	18	2	14	3	6	1	8	1	2	2	4	-0.1	-1	-1	-1	-0.1	-1	-1	20	-1	28	7
58	2	792	10	24	3	13	3	-1	3	-1	2	-1	1	-1	-1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	24	1	4	2
91	9	1077	35	108	9	34	6	1	8	1	6	-1	2	-1	3	-1	2	3	18	-0.1	-1	-1	-1	-0.1	-1	-1	52	5	9	2
63	-1	659	23	56	11	31	7	1	7	1	7	-1	3	-1	2	-1	3	-1	2	0.2	-1	-1	-1	-0.1	-1	-1	18	-1	7	2
46	-1	739	13	22	3	12	2	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	2	1
229	4	916	38	72	8	34	7	1	8	-1	6	1	2	-1	3	-1	2	3	19	-0.1	-1	-1	-1	-0.1	-1	-1	23	-1	11	3
220	-1	871	28	18	9	35	8	2	9	1	7	1	3	-1	4	-1	-1	-1	3	-0.1	-1	-1	-1	-0.1	-1	-1	5	-1	-1	1
55	1	410	16	33	5	18	3	-1	4	-1	3	-1	1	-1	1	-1	-1	-1	47	-0.1	-1	-1	-1	-0.1	-1	-1	30	2	3	-1
82	-1	1231	13	36	4	14	1	-1	3	-1	2	-1	1	-1	-1	-1	-1	-1	7	-0.1	-1	-1	-1	-0.1	-1	-1	15	-1	5	1
116	2	993	16	44	5	17	4	1	5	-1	3	-1	2	-1	2	-1	1	1	13	-0.1	-1	-1	-1	-0.1	-1	-1	15	-1	4	1
98	-1	716	17	38	7	22	5	1	7	-1	5	-1	2	-1	2	-1	-1	-1	27	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	2	2
146	1	968	13	28	4	16	3	1	4	-1	3	-1	-1	-1	2	-1	-1	-1	2	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	4	-1
60	-1	703	11	50	4	13	3	-1	3	-1	2	-1	1	-1	1	-1	-1	-1	3	0.2	-1	-1	-1	-0.1	-1	-1	33	1	2	-1
54	-1	770	16	32	5	20	4	-1	5	-1	4	-1	2	-1	1	-1	2	-1	13	-0.1	-1	-1	-1	-0.1	-1	-1	45	3	2	-1
131	-1	930	18	20	4	17	4	-1	4	-1	2	-1	1	-1	2	-1	-1	-1	-1	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	1	-1
42	1	475	9	21	3	12	1	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	17	-0.1	-1	-1	-1	-0.1	-1	-1	27	3	4	-1
62	-1	1130	16	26	4	19	4	1	4	-1	3	-1	1	-1	2	-1	1	-1	-1	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	4	-1
166	7	863	38	89	9	37	7	2	8	1	7	1	3	-1	3	-1	2	3	19	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	10	2
43	-1	712	13	26	4	17	3	-1	3	-1	3	-1	1	-1	1	-1	-1	-1	3	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	3	-1
179	9	1179	34	96	12	38	6	2	10	1	7	1	3	-1	3	-1	2	4	14	-0.1	-1	-1	-1	-0.1	-1	-1	23	-1	11	3
213	5	1137	32	89	8	29	7	1	8	-1	5	1	3	-1	3	-1	1	2	18	-0.1	-1	-1	-1	-0.1	-1	-1	22	-1	6	2
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90	1	814	10	24	3	11	1	-1	3	-1	3	-1	-1	-1	1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	1	-1
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221	-1	1409	18	29	9	33	8	2	8	1	6	1	2	-1	4	-1	-1	-1	-1	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	1	2
156	11	1341	62	142	13	58	9	2	11	2	9	2	4	-1	4	-1	3	4	12	-0.1	-1	-1	-1	-0.1	-1	-1	26	-1	22	2
100	10	1428	43	124	14	51	9	2	10	2	7	1	3	-1	4	-1	4	4	27	-0.1	-1	-1	-1	-0.1	-1	-1	27	-1	24	4
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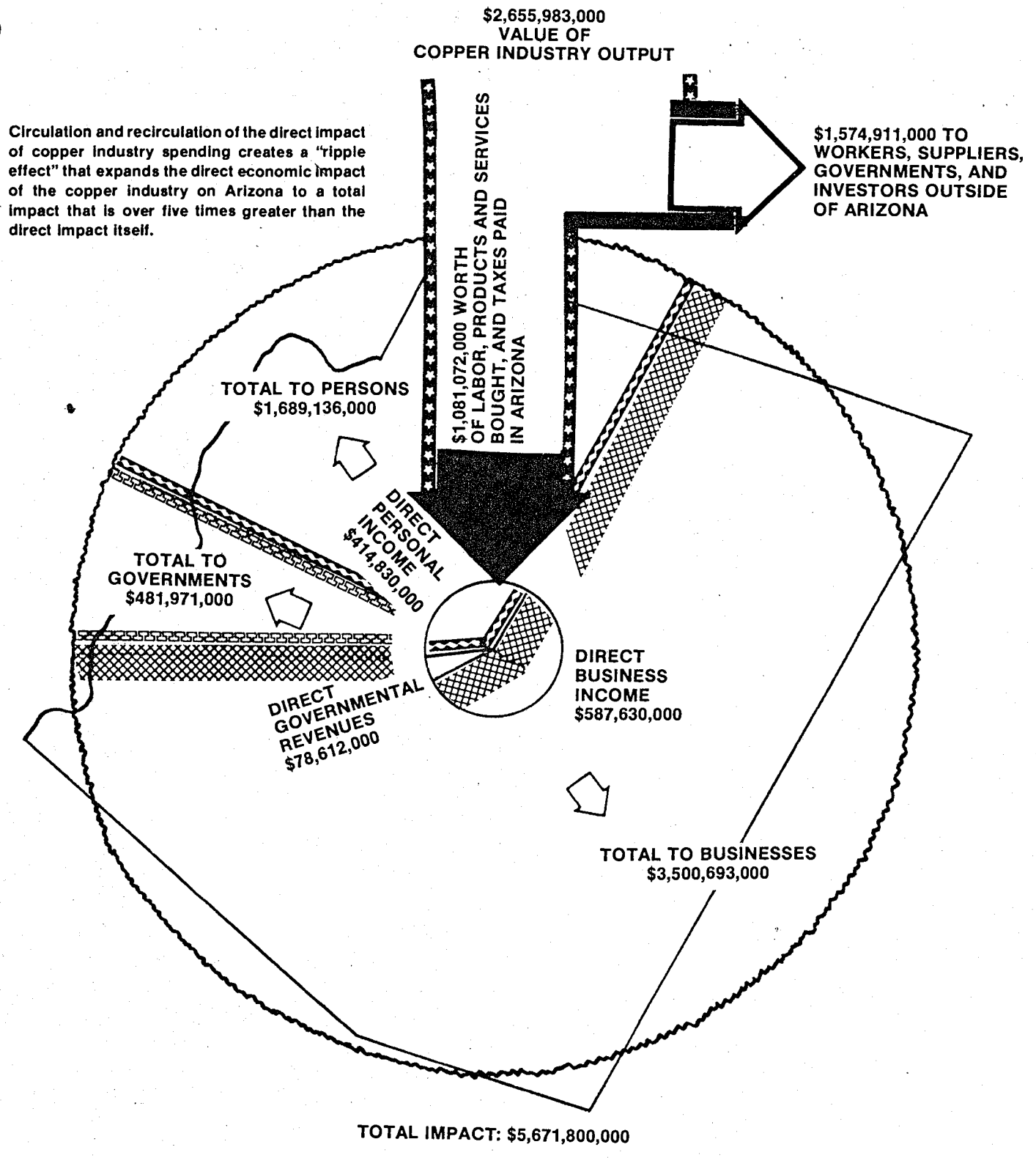
41	-1	1044	12	33	5	20	6	1	4	-1	4	-1	2	-1	1	-1	2	-1	4	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	5	2
69	1	1561	13	28	4	18	3	1	4	-1	3	-1	-1	-1	1	-1	-1	-1	3	-0.1	-1	-1	-1	-0.1	-1	-1	17	-1	1	-1
37	2	394	12	47	5	14	-1	-1	5	-1	3	-1	1	-1	1	-1	-1	1	24	-0.1	-1	-1	-1	-0.1	-1	-1	36	1	8	1
54	-1	827	9	25	2	9	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1	-1	-1	32	2	2	-1
27	4	1177	17	49	7	18	5	1	4	-1	3	-1	1	-1	1	-1	1	1	18	-0.1	-1	-1	-1	-0.1	-1	-1	70	3	6	1
84	2	779	19	46	10	21	4	-1	3	4	2	-1	1	-1	4	3	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	62	3	4	1
47	1	1164	17	36	6	14	3	-1	4	2	2	-1	-1	-1	2	1	1	-1	5	-0.1	-1	-1	-1	-0.1	-1	-1	27	2	3	-1

all superior



DIRECT AND INDIRECT IMPACTS OF THE COPPER INDUSTRY ON THE ARIZONA ECONOMY 1988

Enzyme Leach Job #: 1853 | Customer: Skyline Tucson | Geologist:Clark Arnold | Customer's Job #:TEV 762

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q.=That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te
SU 012897-1	25	-20	22584	30	-100	160	650	9	-5	6	20	5	-1	66	74	157	32	472	14	34	4	-1	-1	-1	-1	-0.2	-0.2	-0.2	-1	2	-1
SU 012897-2	29	-20	11850	-10	-100	125	10444	56	25	678	191	4	-1	648	-30	89	43	614	18	24	2	69	-1	-1	-1	-0.2	5.1	0.2	-1	22	29
SU 012897-3	35	-20	8782	15	-100	98	2469	39	34	121	28	3	-1	196	-30	97	30	691	21	19	2	15	-1	-1	-1	-0.2	0.4	-0.2	-1	7	5
SU 012897-4	25	-20	7312	-10	-100	133	4835	24	26	281	30	7	-1	327	-30	114	33	851	22	16	1	41	-1	-1	-1	-0.2	2.5	-0.2	-1	12	12
SU 012897-5	33	-20	5136	18	-100	106	7974	28	26	144	91	9	1	442	-30	194	43	627	19	16	2	33	-1	-1	-1	-0.2	1.3	-0.2	-1	11	12
SU 012897-6	14	-20	-3000	-10	-100	125	9394	41	32	318	78	5	-1	577	-30	89	40	578	16	21	2	46	-1	-1	-1	-0.2	3.4	-0.2	-1	21	45
SU 012897-7	55	-20	10533	133	308	217	4671	27	53	99	118	26	3	51	-30	222	175	690	59	110	12	33	-1	-1	2	0.9	1.3	-0.2	-1	3	2
SU 012897-8	41	-20	18406	11	-100	104	6158	22	23	144	49	2	2	937	-30	208	55	674	20	18	2	22	-1	-1	-1	-0.2	1.9	-0.2	-1	14	15
SU 012897-9	13	-20	5530	10	-100	87	6992	12	35	768	115	3	1	818	-30	110	31	868	9	9	-1	106	-1	-1	-1	-0.2	3.4	-0.2	-1	46	61
SU 012897-10	76	-20	10997	81	168	362	227	4	18	195	32	21	1	63	-30	158	40	455	62	104	9	6	-1	-1	2	0.6	-0.2	-0.2	-1	4	4
SU 012897-11	31	-20	9198	14	-100	89	4500	18	29	265	117	6	-1	522	-30	168	62	686	12	30	2	82	-1	-1	-1	-0.2	1.6	-0.2	-1	18	27
SU 012897-12	48	-20	11418	67	206	191	8057	25	52	351	204	20	5	1239	-30	79	140	617	33	74	11	61	-1	-1	2	0.6	1.6	-0.2	2	20	31
SU 012897-13	11	-20	3315	-10	-100	94	2284	19	8	291	47	4	1	245	-30	85	25	476	28	38	1	14	-1	-1	2	-0.2	0.7	-0.2	-1	6	12
SU 012897-14	14	-20	4641	-10	-100	101	6545	29	20	301	79	2	-1	187	-30	67	28	704	13	16	1	55	-1	-1	-1	-0.2	1.9	-0.2	-1	6	14
SU 012897-15	25	-20	-3000	51	136	252	4216	23	23	59	82	13	1	55	-30	98	110	753	30	30	6	20	-1	-1	-1	-0.2	0.7	-0.2	-1	3	2
SU 012997-1	28	-20	8936	-10	-100	200	2735	21	11	16	-10	2	-1	26	-30	173	31	572	40	8	-1	3	-1	-1	-1	-0.2	0.4	-0.2	-1	2	-1
SU 012997-2	-10	-20	-3000	14	-100	97	4536	18	21	441	62	3	1	1158	-30	51	39	1199	18	9	1	90	-1	-1	-1	0.3	2.5	-0.2	-1	30	18
SU 012997-3	15	-20	7071	-10	-100	103	3607	19	12	87	19	8	2	149	-30	135	30	679	12	17	5	17	-1	-1	-1	-0.2	0.4	-0.2	-1	5	2
SU 012997-4	29	-20	5479	36	-100	135	4386	17	19	81	56	9	1	228	-30	46	48	836	20	21	3	39	-1	-1	-1	-0.2	1	-0.2	-1	8	6
SU 012997-5	20	-20	12912	12	-100	123	5188	34	39	182	21	4	-1	320	-30	142	40	640	32	18	-1	47	-1	-1	-1	-0.2	1	-0.2	-1	11	10
SU 012997-6	26	-20	14627	21	-100	99	1938	12	10	53	24	10	-1	255	-30	161	47	706	20	21	5	4	-1	-1	-1	-0.2	1	-0.2	-1	4	2
SU 012997-7	15	-20	7600	-10	-100	82	4861	26	13	296	78	3	-1	548	-30	143	39	755	12	23	1	49	-1	-1	-1	-0.2	5.4	-0.2	-1	14	9
SU 012997-8	25	-20	7276	-10	-100	85	5130	26	20	446	148	1	1	505	-30	58	44	584	15	34	2	64	-1	-1	-1	-0.2	5.1	-0.2	-1	12	21
SU 012997-9	45	-20	4283	-10	-100	99	2380	12	33	34	-10	7	-1	25	-30	193	28	560	16	11	1	-1	-1	-1	-1	-0.2	0.7	-0.2	-1	3	2
SU 012997-10	-10	-20	8032	-10	-100	84	4005	11	21	862	127	8	2	400	-30	72	58	524	8	17	1	85	-1	-1	-1	0.6	1.6	-0.2	-1	22	17
SU 012997-11	20	-20	5208	39	-100	55	1206	22	14	168	45	3	-1	82	67	135	44	395	17	29	2	-1	-1	-1	-1	-0.2	1.9	-0.2	-1	3	3
SU 012997-12	38	-20	7405	62	169	198	6663	17	41	41	75	20	2	28	-30	206	134	627	35	61	9	34	-1	-1	2	0.3	0.4	-0.2	-1	4	1
SU 012997-13	21	-20	10039	-10	-100	78	4199	33	18	203	20	11	-1	335	-30	74	39	539	16	25	1	35	-1	-1	-1	-0.2	1	-0.2	-1	7	8
SU 012997-14	45	-20	7838	102	220	173	4321	22	31	51	75	27	-1	199	-30	139	120	695	66	78	13	13	-1	-1	1	0.3	1	-0.2	-1	5	4
SU 012997-15	33	-20	11707	60	161	208	6932	31	27	46	119	18	2	78	-30	300	70	951	33	58	8	32	-1	-1	1	-0.2	0.7	-0.2	-1	5	3
SU 012997-16	26	-20	9378	65	136	108	4792	22	31	239	118	31	2	253	-30	90	137	470	29	68	8	81	-1	-1	3	0.3	1.6	-0.2	1	11	7
SU 012997-17	15	-20	9182	12	-100	117	5380	14	21	378	75	6	-1	291	-30	-30	54	895	11	20	3	108	-1	-1	-1	0.3	1.9	-0.2	-1	21	35
SU 012997-18	19	-20	3302	-10	-100	61	7492	18	21	40	32	9	-1	37	-30	140	18	666	12	10	-1	13	-1	-1	-1	-0.2	0.7	-0.2	-1	2	-1
SU 012997-19	15	-20	17067	-10	-100	201	1061	17	-5	5	-10	1	-1	24	79	108	17	553	12	8	1	-1	-1	-1	-1	-0.2	-0.2	-0.2	-1	1	-1
SU 012997-20	30	-20	16067	-10	-100	173	4933	59	24	12	27	5	-1	15	-30	202	35	554	29	8	1	2	-1	-1	-1	-0.2	0.4	-0.2	-1	3	1
SU 012997-21	60	-20	5629	96	293	167	8320	34	48	45	176	28	4	31	-30	77	184	591	49	109	12	2	-1	-1	2	0.9	0.4	-0.2	2	4	2
SU 012997-22	43	-20	9023	111	248	163	11194	27	50	56	131	32	2	69	-30	167	170	670	57	18	16	27	-1	-1	2	0.6	-0.2	-0.2	-1	5	3
SU 012997-23	31	-20	6222	-10	-100	47	2485	8	-5	27	-10	5	-1	124	-30	-30	22	531	16	16	2	-1	-1	-1	-1	-0.2	1	-0.2	-1	3	3
SU 012997-24	21	-20	16178	-10	-100	83	2235	25	10	52	15	2	1	51	-30	73	32	418	17	33	2	-1	-1	-1	1	-0.2	1	-0.2	-1	2	2
SU 012997-25	24	-20	16968	-10	-100	79	8810	32	24	180	40	5	1	360	-30	199	34	512	18	26	2	17	-1	-1	-1	-0.2	4.5	-0.2	-1	12	17
SU 012997-26	23	-20	3624	29	-100	135	4212	42	41	171	83	13	1	110	-30	52	32	457	15	27	5	12	-1	-1	-1	-0.2	1	-0.2	-1	7	10
SU 013097-1	17	-20	10526	-10	-100	70	8291	17	20	388	94	12	1	408	-30	108	42	715	8	11	-1	49	-1	-1	-1	-0.2	2.7	-0.2	-1	23	45
SU 013097-2	47	-20	6618	24	-100	141	13352	60	30	267	174	10	-1	303	-30	-30	60	556	17	30	4	102	-1	-1	1	-0.2	3.1	-0.2	-1	16	27
SU 013097-3	49	-20	12709	35	-100	173	13676	33	36	389	100	12	2	566	-30	90	51	871	18	16	3	97	-1	-1	1	-0.2	3.3	0.2	-1	22	23
SU 013097-4	25	-20	4643	20	-100	67	10435	19	23	245	102	18	1	532	-30	142	51	699	12	24	2	25	-1	-1	1	-0.2	2.5	-0.2	-1	18	24

all on Superior 7½' panel.

THE COPPER INDUSTRY AS A SOURCE OF BUSINESS INCOME

Arizona's copper industry provided more than $588 million in income directly to other Arizona businesses in 1988 through the purchase of products and services for use in the search for and production of copper and its byproducts. The total represented a decrease of 3% below the 1987 level, a sharp contrast to the increase experienced last year in the industry's direct contributions to personal income and state and local government revenues. The drop in Arizona purchases was partly the result of reductions in in-state transportation costs and the winding down of several major construction projects during the year.

The biggest share of copper industry purchases in Arizona in 1988 went to the state's electric, gas, and water utilities. They sold energy and services worth almost $184 million to the copper industry last year, accounting for 31% of the copper industry's Arizona buying.

The second biggest share of copper industry purchases in Arizona in 1988 ($174 million) was accounted for by wholesale firms that supplied the copper industry with equipment and parts, the fuel to run that equipment, and the hardware and many other industrial products needed to mine, concentrate, smelt, and refine copper. Many of the products bought by the copper industry from Arizona wholesalers were manufactured outside of Arizona, but the state's own factories and shops also shared in the business income provided directly by the copper industry. In 1988, Arizona industrial plants making items that ranged from cement, lumber, and explosives to newspapers and computers, received $79 million directly from the state's copper producers. This was 6% more than in 1987, reflecting a returning reliance by Arizona's copper producers on Arizona manufacturers despite a growing intensity of competition between Arizona firms and manufacturers in other states and nations.

Other Arizona industries also received significant amounts of sales revenue from the Arizona copper industry in 1988 in return for the services they rendered and the products they provided for use in copper production. Truck, rail, and air transportation firms got almost $33 million from the Arizona copper industry last year for hauling materials and supplies to copper operations and for taking ores, concentrates, and metal to other sites for further processing or sale. The 1988 total was significantly below the 1987 level as a shrunken copper industry had less need to ship ores between mines and smelters in the state.

Arizona's service industries gained almost $42 million in sales to the copper industry in 1988. A large portion of this amount went to the health care industry, while the legal and engineering professions, as well as firms providing specialized business and repair services also shared significantly in the growing market provided by copper producers.

Contract construction firms earned over $46 million from Arizona copper producers in 1988 as a number of copper firms completed installing environmental control facilities and also continued major work to make less costly production technologies more important than they have been in the past.

TEV 760

I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
167	13	868	56	96	17	42	8	1	8	1	9	2	3	-1	4	-1	4	5	19	0.2	-1	-1	-1	-0.1	-1	-1	23	-1	16	4
81	6	1459	30	84	9	35	6	1	8	1	8	2	3	-1	4	-1	3	4	9	0.2	-1	-1	-1	-0.1	-1	-1	22	-1	14	3
53	1	712	13	42	5	19	4	-1	5	-1	4	-1	2	-1	2	-1	-1	-1	2	-0.1	-1	-1	-1	-0.1	-1	-1	26	2	2	1
72	1	642	8	18	3	11	2	-1	3	-1	2	-1	1	-1	-1	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	1	-1
55	1	927	13	24	4	18	4	1	5	-1	3	-1	2	-1	2	-1	-1	-1	4	-0.1	-1	-1	-1	-0.1	-1	-1	16	-1	2	-1
143	5	787	21	39	6	20	3	-1	5	-1	4	-1	1	-1	1	-1	1	2	6	-0.1	-1	-1	-1	-0.1	-1	-1	44	6	4	1
97	2	1211	20	45	7	32	6	2	9	1	6	1	3	-1	3	-1	-1	1	7	-0.1	-1	-1	-1	-0.1	-1	-1	25	2	3	1
59	-1	921	15	36	6	19	4	-1	5	-1	4	-1	2	-1	2	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1	-1	-1	112	9	2	-1
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85	5	599	18	49	5	15	3	-1	5	-1	3	-1	2	-1	1	-1	2	2	9	-0.1	-1	-1	-1	-0.1	-1	-1	51	7	6	1
55	-1	1177	18	32	5	21	4	1	5	-1	4	-1	2	-1	2	-1	1	-1	5	-0.1	-1	-1	-1	-0.1	-1	-1	35	2	2	-1
45	3	762	16	51	5	19	3	-1	4	-1	3	-1	2	-1	2	-1	1	2	6	-0.1	-1	-1	-1	-0.1	-1	-1	51	3	7	2
31	2	1047	40	104	15	36	8	2	13	1	9	1	4	-1	3	-1	1	2	14	-0.1	-1	-1	-1	-0.1	-1	-1	27	2	8	2
48	-1	755	15	29	5	17	3	-1	5	-1	3	-1	2	-1	2	-1	1	-1	7	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	4	1
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71	-1	402	22	27	5	19	4	-1	5	-1	3	-1	2	-1	2	-1	-1	-1	10	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	-1	1
202	8	894	53	82	10	33	6	2	8	1	5	1	2	-1	3	-1	2	3	13	-0.1	-1	-1	-1	-0.1	-1	-1	29	2	8	2
36	-1	202	17	24	3	13	2	-1	4	-1	2	-1	1	-1	1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	3	1
485	-1	224	24	92	18	95	22	4	25	3	15	3	7	1	9	2	-1	-1	5	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	8	12
123	6	643	53	122	15	74	8	2	16	2	14	3	5	1	7	1	2	3	13	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	8	3
187	14	742	44	117	13	39	8	1	9	1	7	1	4	-1	4	-1	2	4	25	-0.1	-1	-1	-1	-0.1	-1	-1	62	5	11	3
51	3	182	14	26	3	10	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	1	11	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	4	-1
441	6	976	13	31	3	15	3	-1	4	-1	3	-1	1	-1	-1	-1	-1	-1	51	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	4	3
120	5	1283	22	29	5	23	4	1	4	-1	3	-1	1	-1	-1	-1	1	1	72	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	8	1
252	3	1043	21	23	6	21	3	-1	4	-1	3	-1	1	-1	-1	-1	-1	-1	62	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	3	2
168	7	1000	35	41	10	37	8	2	9	1	5	1	2	-1	2	-1	1	1	67	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	7	2
114	6	673	22	33	6	21	4	-1	4	-1	3	-1	1	-1	1	-1	1	-1	42	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	4	2
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91	6	827	25	46	8	27	5	1	6	-1	4	-1	2	-1	2	-1	-1	1	48	-0.1	-1	-1	-1	-0.1	-1	-1	14	-1	6	1
178	8	1064	25	33	7	27	5	1	6	-1	4	-1	2	-1	1	-1	1	2	41	-0.1	-1	-1	-1	-0.1	-1	-1	15	-1	7	2
241	1	843	17	12	7	27	5	1	6	-1	4	-1	2	-1	-1	-1	-1	-1	54	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	2	-1
74	14	716	34	68	9	29	6	1	7	-1	4	-1	2	-1	2	-1	2	2	63	-0.1	-1	-1	-1	-0.1	-1	-1	34	-1	11	2
144	7	717	22	35	7	22	3	1	4	-1	4	-1	2	-1	-1	-1	1	-1	55	-0.1	-1	-1	-1	-0.1	-1	-1	14	-1	4	2
168	10	841	38	51	9	35	6	2	6	-1	5	-1	2	-1	2	-1	2	1	39	-0.1	-1	-1	-1	-0.1	-1	-1	21	-1	7	2
207	17	617	33	74	10	29	5	1	5	-1	4	-1	2	-1	3	-1	3	2	77	0.2	-1	-1	-1	-0.1	-1	-1	44	-1	11	2
423	11	623	25	56	7	23	3	1	6	-1	4	-1	2	-1	1	-1	1	2	85	0.2	-1	-1	-1	-0.1	-1	-1	16	-1	15	3
220	5	742	27	26	8	25	5	1	6	-1	3	-1	1	-1	1	-1	-1	-1	41	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	4	1
156	10	901	30	47	7	28	6	1	6	-1	4	-1	1	-1	2	-1	2	2	45	0.2	-1	-1	-1	-0.1	-1	-1	24	-1	19	2
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184	7	701	23	40	6	25	4	1	5	-1	3	-1	1	-1	1	-1	1	1	112	-0.1	-1	-1	-1	-0.1	-1	-1	12	-1	4	1
324	6	906	18	41	9	21	3	-1	4	-1	3	-1	1	-1	1	-1	-1	1	90	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	4	1
257	3	414	12	23	4	10	1	-1	2	2	1	-1	-1	-1	2	2	-1	-1	79	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	2	-1
211	3	962	20	27	4	15	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	47	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	2	-1
603	5	642	15	24	4	15	2	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	63	-0.1	-1	-1	-1	-0.1	-1	-1	12	-1	3	1
652	5	1076	14	25	4	12	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	59	-0.1	-1	-1	-1	-0.1	-1	-1	8	-1	3	2
702	6	1211	15	22	4	13	2	1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	63	-0.1	-1	-1	-1	-0.1	-1	-1	12	-1	3	3
569	2	428	9	18	3	10	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	51	-0.1	-1	-1	-1	-0.1	-1	-1	7	-1	2	1
289	3	826	13	15	3	12	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	61	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	3	2

D

E

Superior 7½' Quad

Waterman Peak J
7½' Quad

West of Avra Valley

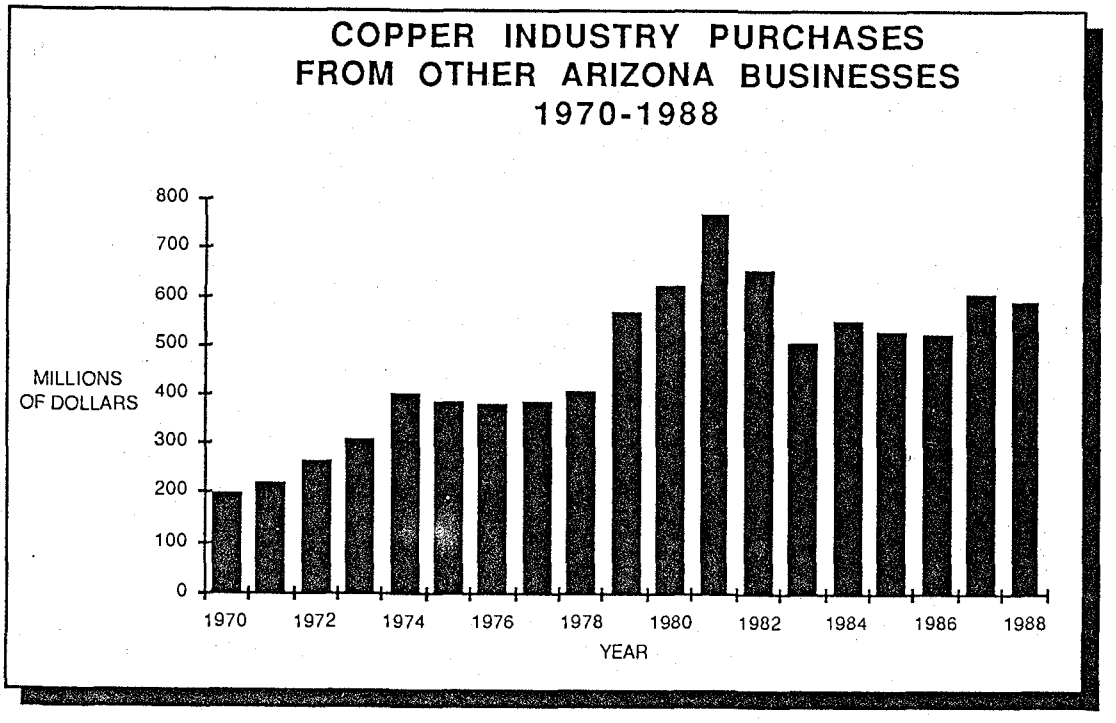
West of Avra Valley
A

Sabino Basin East Project

Other segments of the Arizona business community also gained directly from copper industry buying in 1988. Arizona retailers got over $12 million directly from the state's copper producers last year. Most of that came from selling a variety of automobiles and light trucks to copper companies. The state's finance, insurance, and real estate businesses were paid about $9 million by the copper industry. Other mining firms got about $3 million, largely for selling non-metallic minerals such as limestone, silica, sand, and gravel to copper producers. Arizona's farmers and ranchers gained less than $200,000 from the state's copper industry last year, primarily for providing land and water rather than crops or livestock.

More than a third of the copper industry's payments to other Arizona businesses in 1988 went to firms located in the Phoenix Metropolitan Area. The $222 million paid to Maricopa County firms represented a sharp increase from the 1987 level as the general shift to buying from wholesalers and manufacturers in the Phoenix area continued. The second biggest share (about 33%) was paid directly to firms situated in the Tucson Metropolitan Area. About 22% of the copper industry's payments to other Arizona businesses in 1988 went to firms located in the state's non-metropolitan mining counties, while less than 7% went to suppliers in non-mining counties.

Detailed data on the copper industry as a direct source of sales revenues for other Arizona businesses are shown in Tables 11 and 12.



Source: Western Economic Analysis Center

1848RPT

TEV 760

Superior 7½' Quad

	Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb
D	SU012397-3	72	-20	13448	80	286	188	2256	13	51	77	136	35	3	163	-30	445	163	485	36	89	15	16	-1	-1	2	1.2	0.6	-0.2	2	7
	SU012397-4	37	-20	5128	22	144	108	3885	21	23	52	66	10	2	59	-30	155	97	480	32	50	12	8	-1	-1	1	-0.2	0.9	-0.2	-1	4
	SU012397-5	43	-20	18891	-10	-100	93	14657	59	45	713	231	2	-1	231	-30	111	36	371	20	10	2	6	-1	-1	-1	-0.2	6.4	-0.2	-1	17
	SU012397-6	18	-20	21060	-10	-100	91	5029	15	18	166	44	-1	1	756	-30	167	27	519	12	7	-1	17	-1	-1	-1	-0.2	0.6	-0.2	-1	23
	SU012397-7	32	-20	11012	-10	-100	103	3902	21	17	263	81	-1	-1	384	-30	33	36	448	17	9	1	9	-1	-1	-1	-0.2	2	-0.2	-1	15
	SU012397-8	37	-20	19299	24	-100	92	3425	16	35	901	244	14	3	1123	-30	198	66	502	19	26	5	16	-1	-1	-1	0.3	4.9	-0.2	-1	32
	SU012397-9	36	-20	13374	-10	-100	113	8741	38	36	625	141	24	-1	856	66	172	41	456	28	18	2	19	-1	-1	-1	-0.2	2.9	-0.2	-1	26
	SU012397-10	39	-20	11406	-10	-100	115	8273	36	29	2294	378	-1	3	2515	-30	166	42	523	18	17	1	21	-1	-1	-1	-0.2	9.9	-0.2	-1	72
	SU012397-11	32	-20	-3000	-10	-100	78	5421	35	22	173	60	-1	-1	328	-30	105	58	408	16	13	2	14	-1	-1	-1	-0.2	2.6	-0.2	-1	9
E	SU012497-1	53	-20	11664	12	111	93	3294	13	29	497	164	7	2	407	-30	69	80	521	15	26	5	59	-1	-1	-1	0.6	2	-0.2	-1	18
	SU012497-2	42	-20	7830	-10	-100	71	6652	24	39	707	72	-1	2	594	-30	235	43	465	20	23	1	21	-1	-1	1	-0.2	2.9	-0.2	-1	15
	SU012497-3	25	-20	-3000	-10	-100	83	5729	23	17	429	108	-1	-1	199	-30	-30	55	464	17	21	3	45	-1	-1	-1	-0.2	0.9	-0.2	-1	17
	SU012497-4	19	-20	12805	15	-100	74	6556	16	22	220	66	8	1	147	-30	74	54	429	33	24	4	33	-1	-1	-1	0.6	1.4	-0.2	-1	6
	SU012497-5	31	-20	3425	-10	-100	68	503	5	12	43	13	-1	-1	103	-30	143	26	416	15	21	2	2	-1	-1	-1	-0.2	0.3	-0.2	-1	4
	SU012497-6	40	-20	12888	-10	-100	67	3481	12	24	79	34	3	-1	198	-30	185	45	432	11	20	2	1	-1	-1	-1	-0.2	1.4	-0.2	-1	8
	SU012497-7	39	-20	6357	-10	-100	124	2986	21	14	83	17	-1	-1	55	-30	-30	24	420	16	6	-1	8	-1	-1	-1	-0.2	-0.2	-0.2	-1	5
	SU012497-8	87	-20	12717	25	207	156	6387	18	44	92	19	-1	2	359	-30	239	148	607	31	44	10	25	-1	-1	-1	0.9	1.1	-0.2	-1	13
	SU012497-9	31	-20	3197	-10	-100	148	197	1	-5	22	19	-1	-1	27	-30	101	13	251	8	5	2	-1	-1	-1	-1	-0.2	0.3	-0.2	-1	1
	SU012497-10	89	-20	4395	-10	-100	119	40	5	-5	40	-10	-1	-1	20	-30	219	6	192	42	21	1	-1	-1	-1	-1	-0.2	0.3	-0.2	-1	4
	SU012497-11	44	-20	16045	25	151	130	1231	11	20	25	61	11	1	51	-30	226	88	418	64	29	11	7	-1	-1	1	-0.2	0.9	-0.2	-1	3
	SU012497-12	113	-20	3318	29	242	208	11351	33	45	311	179	26	3	552	-30	125	147	507	39	57	10	61	-1	-1	1	0.6	1.4	-0.2	2	23
	SU012497-13	32	-20	3384	-10	-100	49	2344	6	10	28	41	-1	-1	62	-30	-30	49	325	11	15	4	12	-1	-1	-1	-0.2	0.3	-0.2	-1	4
J	WP012597-1	59	-20	-3000	-10	-100	356	1717	16	39	47	46	-1	-1	63	-30	100	30	2532	10	16	1	20	-1	-1	-1	-0.2	0.9	-0.2	-1	5
	WP012597-2	43	-20	19749	17	111	144	1428	15	26	71	41	11	-1	53	-30	229	45	1284	13	28	3	33	-1	-1	-1	-0.2	0.9	-0.2	-1	20
	WP012597-3	67	-20	11638	10	-100	366	1032	13	15	67	38	4	-1	43	70	141	22	2741	13	8	1	13	-1	-1	-1	-0.2	-0.2	-0.2	-1	14
	WP012597-4	61	-20	-3000	30	178	338	2225	30	54	76	69	5	2	65	-30	165	63	1799	29	25	7	27	-1	-1	-1	0.3	0.9	-0.2	-1	15
	WP012597-5	38	-20	5484	19	129	178	2045	18	20	61	57	2	-1	30	-30	94	49	1729	17	22	4	24	-1	-1	-1	0.3	0.9	-0.2	-1	16
	WP012597-6	68	-20	7648	37	170	505	2000	19	38	121	132	23	2	76	-30	99	98	1647	23	49	6	-1	-1	-1	2	0.9	0.6	-0.2	-1	17
	WP012597-7	68	-20	3639	24	-100	295	1934	17	29	69	83	5	-1	39	-30	102	51	1600	17	24	3	13	-1	-1	-1	0.3	0.6	-0.2	-1	5
	WP012597-8	63	-20	3227	37	-100	258	1819	16	49	73	74	6	5	53	-30	128	64	2316	18	32	4	13	-1	-1	1	0.3	0.9	-0.2	-1	9
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	WP012597-10	45	-20	3868	42	186	161	3180	27	37	140	149	19	1	31	-30	93	98	946	19	45	6	23	-1	-1	2	0.6	1.5	-0.2	-1	30
	WP012597-11	47	-20	5088	19	-100	236	2555	19	35	43	55	3	-1	32	-30	193	49	2741	15	28	3	2	-1	-1	-1	-0.2	0.9	-0.2	-1	13
	WP012597-12	51	-20	3540	36	149	207	2453	18	45	272	81	21	-1	45	-30	192	70	2319	22	39	5	49	-1	-1	1	0.6	0.6	-0.2	-1	12
	WP012597-13	78	-20	41799	25	164	265	5729	43	50	144	146	13	2	48	-30	1055	122	2068	20	54	6	98	-1	-1	1	0.6	0.9	-0.2	-1	7
A	WA012597-1	104	-20	24577	30	156	415	2631	24	58	62	103	5	1	47	-30	363	73	2072	18	32	4	41	-1	-1	-1	-0.2	1.2	-0.2	-1	6
	WA012597-2	42	-20	5892	24	-100	179	1610	14	21	30	37	9	-1	33	-30	253	39	2035	17	17	3	14	-1	-1	1	-0.2	0.3	-0.2	-1	14
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	WA012597-4	74	-20	10385	20	138	432	1587	13	32	63	40	9	-1	60	-30	199	44	2877	12	21	3	16	-1	-1	-1	-0.2	0.3	-0.2	-1	14
	WA012597-5	49	-20	5577	21	-100	202	1924	22	36	51	57	7	-1	81	-30	287	51	3280	14	25	3	58	-1	-1	-1	-0.2	0.9	-0.2	-1	12
	WA012597-6	44	-20	12949	31	-100	254	1709	19	42	56	43	11	-1	67	-30	315	53	2233	15	19	4	56	-1	-1	-1	0.3	0.8	-0.2	-1	11
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	WA012797-2	35	-20	6053	29	108	234	1402	19	29	33	40	17	-1	56	-30	103	31	2191	12	12	2	32	-1	-1	-1	-0.2	1	-0.2	-1	15
	WA012797-3	63	-20	16756	19	120	498	2052	28	48	39	49	3	-1	70	-30	63	40	5033	12	12	2	41	-1	-1	-1	-0.2	0.5	-0.2	-1	6
	WA012797-4	69	-20	-3000	48	110	650	1730	20	38	32	35	11	-1	93	-30	255	43	3777	12	24	4	12	-1	-1	-1	-0.2	0.4	-0.2	-1	15
	WA012797-5	104	-20	11148	52	166	633	2403	28	68	53	16	5	2	111	-30	253	60	5736	15	25	3	24	-1	-1	1	-0.2	0.4	-0.2	-1	9
	WA012797-6	112	-20	51701	11	-100	991	1316	19	44	20	26	2	2	83	-30	150	13	3785	9	7	-1	35	-1	-1	-1	-0.2	0.4	-0.2	-1	6
	WA012797-7	58	-20	-3000	14	-100	862	1646	23	34	26	40	-1	-1	84	-30	39	23	3101	8	6	1	12	-1	-1	-1	-0.2	1.1	-0.2	-1	12

Superior

Wallerman Lake

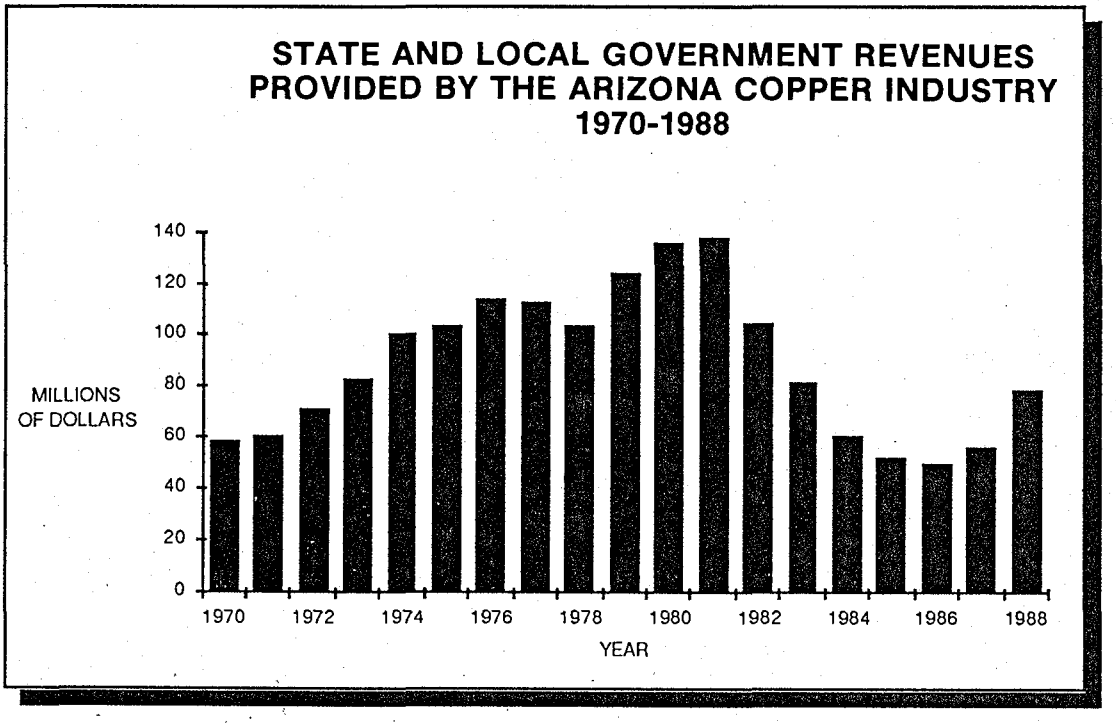
West of Dora Lake

THE COPPER INDUSTRY AS A SOURCE OF STATE AND LOCAL GOVERNMENT REVENUES

The Arizona copper industry paid almost $79 million in 1988 in direct support of state, county, municipal, school district, and other local governments in the state. This was 40% more than in the previous year. The $79 million total was paid in the form of property taxes, severance taxes, payroll taxes, sales taxes on Arizona purchases, rents, and royalties for the use of state land, and a variety of other taxes and fees.

The copper industry's largest direct payments to state and local government in Arizona last year were made in the form of severance taxes, a type of tax paid only by mining and timbering firms. The severance tax levied on the net value of the state's copper mine output in 1988 made up almost 32% of the industry's total tribute to state and local governments in Arizona last year. The nearly $25 million of severance taxes paid by the industry, while collected by the State of Arizona, went partly to the State and partly to the state's 15 counties and 83 cities and towns. In addition, a fifth of the severance tax total was distributed to the state's more than 200 operationg school districts as appropriated stated aid to education.

The copper industry's second largest direct payments to state and local governments in Arizona last year were made in the form of property taxes levied on the industry's land, ore reserves, production facilities, and equipment by the State of Arizona, nine of the state's 15 counties, seven community college districts, six of the state's 83 municipalities, 21 school districts, the Central Arizona Water Conservation District, flood control districts, and a variety of other local jurisdictions, including fire districts. The $24 million in property taxes paid in 1988 by the Arizona copper industry accounted for 31% of the industry's total direct contribution to government revenues in Arizona.



Source: Western Economic Analysis Center

1848RPT

Superior 7½' Quad

TEV 760

I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
64	-1	182	5	7	2	6	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	42	-0.1	-1	-1	-1	-0.1	-1	-1	11	1	-1	-1
36	5	234	17	33	6	21	4	-1	5	-1	5	-1	2	-1	3	-1	2	2	16	-0.1	-1	-1	-1	-0.1	-1	-1	31	3	5	1
73	4	242	23	33	6	24	4	1	6	-1	5	-1	2	-1	3	-1	2	2	24	-0.1	-1	-1	-1	-0.1	-1	-1	15	-1	7	1
40	2	205	16	30	5	17	3	1	4	-1	4	-1	1	-1	2	-1	-1	-1	140	-0.1	-1	-1	-1	0.2	-1	-1	124	33	5	-1
125	-1	581	8	21	3	13	2	-1	4	-1	2	-1	1	-1	1	-1	-1	-1	434	0.2	-1	-1	-1	-0.1	-1	-1	186	1	1	-1
50	10	683	36	78	10	31	5	1	8	-1	5	-1	3	-1	2	-1	3	6	126	-0.1	-1	-1	-1	-0.1	-1	-1	267	25	18	3
194	2	301	19	14	4	17	3	-1	4	-1	3	-1	-1	-1	1	-1	-1	-1	121	-0.1	-1	-1	-1	-0.1	-1	-1	12	-1	3	-1
123	2	584	7	14	2	7	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	42	-0.1	-1	-1	-1	-0.1	-1	-1	15	-1	4	1
60	9	397	42	63	9	33	6	1	7	1	5	1	3	-1	2	-1	4	7	48	-0.1	-1	-1	-1	-0.1	-1	-1	44	2	17	3
67	8	188	27	42	7	26	5	1	5	-1	4	-1	2	-1	3	-1	4	6	69	-0.1	-1	-1	-1	-0.1	-1	-1	32	1	17	3
75	-1	87	15	25	5	17	3	-1	4	-1	3	-1	1	-1	2	-1	-1	-1	55	-0.1	-1	-1	-1	-0.1	-1	-1	14	-1	3	-1
964	2	835	32	49	8	32	5	1	7	1	5	1	2	-1	2	-1	2	2	107	0.2	-1	-1	-1	-0.1	-1	-1	7	-1	34	7
56	5	184	21	48	5	15	3	-1	3	-1	3	-1	1	-1	2	-1	3	7	24	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	15	5
128	11	822	60	165	15	59	11	2	11	2	10	2	5	-1	4	-1	4	9	9	-0.1	-1	-1	-1	-0.1	-1	-1	38	-1	24	6
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57	4	643	23	55	7	22	4	1	6	-1	5	2	2	-1	2	-1	1	4	6	-0.1	-1	-1	-1	-0.1	-1	-1	14	-1	6	3
48	2	672	9	39	3	8	2	-1	2	-1	2	-1	1	-1	1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	3	1
40	4	1994	22	57	5	14	3	1	4	-1	4	-1	1	-1	2	-1	2	3	5	-0.1	-1	-1	-1	-0.1	-1	-1	26	1	10	3
104	8	853	22	46	6	20	4	1	4	-1	4	-1	2	-1	1	-1	1	2	13	-0.1	-1	-1	-1	-0.1	-1	-1	13	-1	6	3
101	4	569	16	32	4	13	3	-1	4	-1	3	-1	-1	-1	1	-1	-1	2	14	-0.1	-1	-1	-1	-0.1	-1	-1	23	3	2	1
41	4	902	21	66	7	21	4	1	7	1	5	1	2	-1	2	-1	2	3	16	-0.1	-1	-1	-1	-0.1	-1	-1	18	-1	9	2
110	9	801	33	76	10	33	5	1	6	-1	5	-1	2	-1	3	-1	3	4	104	-0.1	-1	-1	-1	-0.1	-1	-1	277	36	11	2
52	5	322	21	35	7	21	4	1	5	-1	5	-1	1	-1	2	-1	2	2	41	-0.1	-1	-1	-1	-0.1	-1	-1	49	2	7	2
131	8	543	35	49	8	33	6	1	8	-1	7	1	2	-1	3	-1	3	3	58	-0.1	-1	-1	-1	-0.1	-1	-1	84	1	13	2
102	-1	688	13	12	5	22	4	-1	4	-1	4	-1	1	-1	1	-1	-1	-1	90	-0.1	-1	-1	-1	-0.1	-1	-1	9	-1	2	-1
134	-1	521	16	16	5	17	4	-1	4	-1	2	-1	1	-1	1	-1	-1	2	49	-0.1	-1	-1	-1	-0.1	-1	-1	4	-1	2	-1
134	2	276	12	20	3	14	2	-1	4	-1	2	-1	-1	-1	1	-1	-1	-1	41	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	3	1
128	-1	678	7	9	2	8	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	48	-0.1	-1	-1	-1	-0.1	-1	-1	25	-1	2	-1
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33	3	694	16	42	5	18	3	-1	4	-1	3	-1	1	-1	1	-1	-1	2	7	-0.1	-1	-1	-1	-0.1	-1	-1	26	3	7	1
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174	3	1242	19	53	6	24	4	1	5	-1	3	-1	2	-1	2	-1	-1	2	5	-0.1	-1	-1	-1	-0.1	-1	-1	41	1	7	3
143	3	951	14	28	3	12	3	-1	3	-1	2	-1	-1	-1	-1	-1	-1	2	9	-0.1	-1	-1	-1	-0.1	-1	-1	17	-1	3	-1
137	8	1415	34	76	9	34	8	1	9	1	7	2	3	-1	3	-1	3	4	10	-0.1	-1	-1	-1	-0.1	-1	-1	19	-1	8	3
117	4	1029	16	46	5	17	3	1	5	-1	4	-1	1	-1	1	-1	1	2	5	-0.1	-1	-1	-1	-0.1	-1	-1	17	-1	5	2
75	-1	1258	16	25	6	25	4	1	5	-1	5	-1	2	-1	2	-1	-1	-1	1	0.2	-1	-1	-1	-0.1	-1	-1	12	-1	1	2
79	2	1177	18	30	4	18	3	-1	4	-1	3	-1	1	-1	1	-1	-1	2	5	-0.1	-1	-1	-1	-0.1	-1	-1	11	-1	4	1
46	7	1122	34	83	7	31	4	-1	6	-1	5	1	2	-1	2	-1	2	4	8	-0.1	-1	-1	-1	-0.1	-1	-1	75	16	14	3
76	1	870	21	31	7	22	5	1	6	-1	5	-1	2	-1	3	-1	-1	-1	1	-0.1	-1	-1	-1	-0.1	-1	-1	10	-1	3	1
35	-1	1427	11	36	5	14	3	-1	3	1	2	-1	1	-1	2	1	-1	-1	17	-0.1	-1	-1	-1	-0.1	-1	-1	27	2	3	-1
73	2	377	7	15	2	6	1	-1	1	-1	2	-1	-1	-1	-1	-1	-1	-1	17	-0.1	-1	-1	-1	-0.1	-1	-1	8	1	3	-1

B

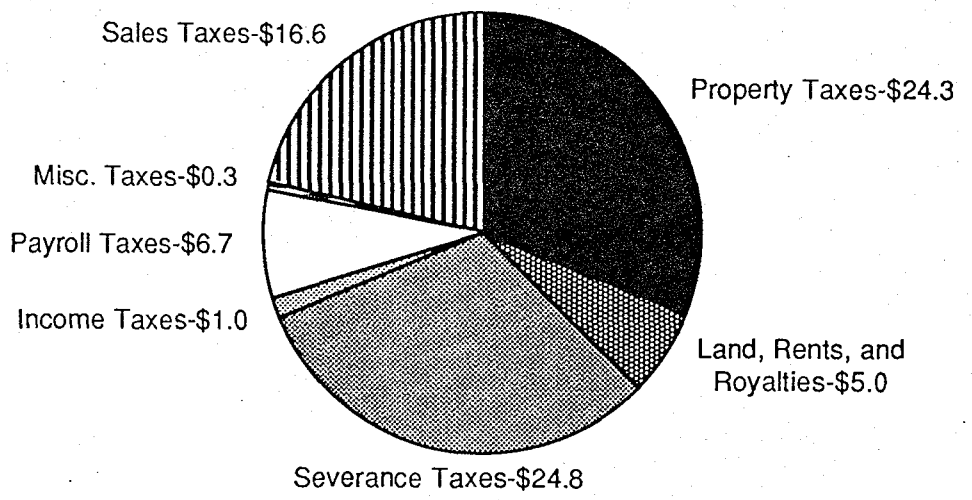
C

D

Superior

STATE AND LOCAL GOVERNMENT REVENUES PROVIDED BY THE ARIZONA COPPER INDUSTRY BY TYPE OF PAYMENT 1988

TOTAL: $78.7



VALUES IN MILLIONS OF DOLLARS

Source: Western Economic Analysis Center

1848RPT

Superior 7½' Quad.

Enzyme Leach Job #: 1848 | Customer:Skyline Tucson | Geologist:Clark Arnold | Customer's Job #:TEV 760

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q.=That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te
SU012197-1	15	-20	16590	11	-100	275	636	19	44	607	47	-1	-1	2282	105	114	8	1068	10	3	-1	19	-1	-1	-1	-0.2	1.2	-0.2	-1	29	8
SU012197-2	120	-20	17296	51	226	333	2927	80	84	2793	448	20	4	1733	-30	52	57	571	35	46	9	11	-1	-1	1	0.6	7	-0.2	2	29	58
SU012197-3	28	-20	7593	72	302	1094	867	43	43	246	118	20	2	50	117	-30	36	781	31	53	5	23	-1	-1	-1	-0.2	0.3	-0.2	-1	3	-1
SU012197-4	23	-20	14783	29	101	151	754	21	33	7747	466	6	9	4918	103	37	32	337	20	19	3	11	-1	-1	-1	3.9	5.9	0.4	21	182	50
SU012197-5	16	-20	17680	-10	-100	330	4355	63	111	882	371	-1	-1	720	-30	284	24	1151	17	12	1	139	-1	-1	-1	-0.2	3.2	-0.2	-1	40	7
SU012197-6	100	-20	15106	63	449	380	7313	106	101	3080	1081	28	6	1580	-30	-30	179	577	51	79	16	116	-1	-1	2	3.2	5.6	-0.2	7	49	44
SU012197-7	38	-20	10706	14	-100	282	2008	38	46	125	43	-1	-1	121	-30	141	23	1566	18	11	2	88	-1	-1	-1	-0.2	0.9	-0.2	-1	15	-1
SU012197-8	32	-20	10008	28	-100	339	1483	19	61	73	185	-1	-1	55	-30	82	30	1181	6	18	3	18	-1	-1	-1	-0.2	0.3	-0.2	-1	12	-1
SU012197-9	112	-20	17653	61	383	330	1185	32	66	336	248	27	2	260	-30	114	163	668	28	98	26	47	-1	-1	2	2	0.9	-0.2	2	12	5
SU012197-10	78	-20	8580	49	354	317	1261	36	58	146	179	25	6	71	-30	80	162	381	24	82	25	23	-1	-1	1	1.2	0.3	-0.2	2	6	4
SU012197-11	39	-20	5278	-10	-100	262	1365	80	96	142	43	-1	-1	143	-30	276	28	629	18	11	5	67	-1	-1	-1	-0.2	1.2	-0.2	-1	17	4
SU012197-12	43	-20	162045	36	136	7103	909	20	84	118	77	15	1	661	-30	941	51	2568	37	74	14	256	-1	-1	2	0.3	1.5	-0.2	-1	18	-1
SU012197-13	55	-20	9514	28	158	124	1265	14	29	35	106	17	2	27	-30	57	176	323	21	54	30	15	-1	-1	-1	0.9	-0.2	-0.2	-1	5	-1
SU012197-14	85	-20	5630	57	380	404	1339	117	38	45	156	33	2	35	-30	40	198	552	48	80	31	10	-1	-1	2	0.3	0.3	-0.2	2	2	1
SU012197-15	22	-20	4969	-10	-100	197	4643	14	35	19	44	4	-1	25	-30	-30	19	699	20	7	2	160	-1	-1	-1	-0.2	0.9	-0.2	-1	3	-1
SU012197-16	46	-20	13835	15	117	164	1169	21	21	14	74	11	-1	28	-30	143	51	670	24	19	6	19	-1	-1	-1	-0.2	0.3	-0.2	-1	2	-1
SU012197-17	31	-20	9035	-10	-100	85	2605	26	10	42	39	1	-1	59	-30	-30	47	616	13	12	3	21	-1	-1	-1	-0.2	0.6	-0.2	-1	4	2
SU012197-18	26	-20	11757	12	-100	78	2526	33	16	70	95	6	1	74	-30	30	74	578	25	33	8	8	-1	-1	-1	-0.2	1.2	-0.2	-1	3	1
SU012197-19	47	-20	4829	26	163	184	2410	17	29	24	86	13	2	24	-30	99	83	623	24	27	9	17	-1	-1	-1	0.6	0.6	-0.2	-1	2	-1
SU012197-20	41	-20	10343	11	106	95	4376	23	27	221	96	4	1	171	-30	71	53	730	16	21	4	40	-1	-1	-1	-0.2	1.5	-0.2	-1	10	10
SU012197-21	22	-20	13190	19	-100	43	2039	13	14	67	53	11	1	122	-30	83	65	512	26	42	11	28	-1	-1	-1	-0.2	1.2	-0.2	-1	5	2
SU012297-1	99	-20	-3000	31	333	303	8761	81	108	2236	779	25	5	935	93	-30	115	289	34	69	14	74	-1	-1	1	2.9	4.1	0.4	6	47	64
SU012297-2	37	-20	11876	25	177	193	4372	45	58	245	307	11	1	103	-30	55	62	397	23	38	6	44	-1	-1	-1	0.9	1.8	-0.2	-1	21	3
SU012297-3	55	-20	6827	39	249	405	5662	38	82	156	638	20	1	92	-30	63	102	882	40	68	10	118	-1	-1	-1	2.9	2.1	-0.2	-1	4	-1
SU012297-4	90	-20	5065	-10	-100	540	1965	35	50	78	22	-1	-1	105	-30	130	16	1332	18	7	-1	62	-1	-1	-1	-0.2	0.9	-0.2	-1	10	2
SU012297-5	22	-20	9288	31	-100	238	1303	19	22	25	38	-1	-1	30	-30	228	12	916	18	8	4	42	-1	-1	-1	-0.2	-0.2	-0.2	-1	11	-1
SU012297-6	34	-20	13049	14	-100	412	2728	30	60	36	121	2	-1	57	-30	78	31	866	11	15	3	41	-1	-1	-1	-0.2	0.6	-0.2	-1	12	-1
SU012297-7	46	-20	3488	-10	-100	158	4011	29	33	57	60	-1	-1	45	-30	258	17	610	15	8	1	14	-1	-1	-1	-0.2	0.6	-0.2	-1	4	-1
SU012297-8	24	-20	12065	23	-100	108	2837	15	25	117	94	3	1	1009	109	119	71	465	17	21	4	44	-1	-1	-1	0.6	1.2	-0.2	-1	21	19
SU012297-9	55	-20	11712	-10	-100	84	6923	49	26	99	96	-1	-1	114	77	63	39	522	12	10	1	12	-1	-1	-1	-0.2	2.4	-0.2	-1	4	9
SU012297-10	13	-20	5080	-10	-100	57	1470	46	10	126	73	-1	-1	115	-30	-30	35	422	13	17	1	2	-1	-1	-1	-0.2	1.5	-0.2	-1	5	2
SU012297-11	35	-20	10999	11	-100	96	2980	18	25	337	114	6	-1	174	-30	67	56	500	17	20	5	3	-1	-1	-1	-0.2	1.5	-0.2	-1	12	3
SU012297-12	31	-20	16396	-10	-100	40	2499	24	13	143	77	10	-1	83	-30	85	37	447	13	11	1	4	-1	-1	-1	-0.2	0.9	-0.2	-1	4	4
SU012297-13	27	-20	21778	20	-100	95	2698	14	31	156	78	4	-1	174	-30	145	71	515	14	19	5	20	-1	-1	-1	0.9	0.9	-0.2	-1	9	8
SU012297-14	58	-20	7733	-10	-100	187	2288	84	19	58	19	-1	-1	30	-30	-30	31	1349	9	1	-1	1	-1	-1	-1	-0.2	1.5	-0.2	-1	3	4
SU012297-15	24	-20	9816	19	-100	133	8811	58	26	221	102	5	-1	184	-30	132	66	707	20	26	5	39	-1	-1	-1	-0.2	3.8	-0.2	-1	9	6
SU012297-16	53	-20	10433	14	-100	130	9369	22	28	76	70	-1	2	123	-30	157	56	758	12	14	4	55	-1	-1	-1	-0.2	1.2	-0.2	-1	11	12
SU012297-17	54	-20	11464	29	181	161	5600	51	28	111	105	14	2	120	-30	165	90	592	42	47	15	15	-1	-1	-1	0.3	1.2	-0.2	-1	5	4
SU012297-18	27	-20	8495	15	101	162	4568	42	23	22	40	5	-1	95	-30	156	66	688	18	19	7	15	-1	-1	-1	-0.2	0.9	-0.2	-1	7	[redacted]
SU012297-19	26	-20	15295	-10	-100	59	390	17	10	23	28	-1	-1	28	-30	73	23	522	30	10	1	2	-1	-1	-1	-0.2	0.6	-0.2	-1	[redacted]	
SU012297-20	21	-20	10566	-10	-100	67	2067	15	15	61	38	28	-1	328	-30	152	42	574	14	22	4	-1	-1	-1	-1	-0.2	0.9	-0.2	-1	[redacted]	
SU012297-21	57	-20	5741	17	-100	73	3580	23	20	926	166	11	2	780	-30	-30	89	536	29	33	7	16	-1	-1	1	0.3	3.9	-0.2	-1	[redacted]	
SU012297-22	27	-20	11880	-10	-100	102	332	12	12	24	19	-1	-1	163	-30	60	29	465	22	12	1	-1	-1	-1	-1	-0.2	-0.2	-0.2	-1	[redacted]	
SU012397-1	14	-20	7836	-10	-100	50	7617	65	17	687	125	-1	-1	318	-30	78	40	400	13	11	2	10	-1	-1	-1	-0.2	3.5	-0.2	-1	[redacted]	
SU012397-2	40	-20	15959	12	-100	52	3623	5	22	183	47	-1	1	706	-30	213	54	446	7	15	2	39	-1	-1	-1	0.6	0.3	-0.2	-1	[redacted]	

B Superior

Superior

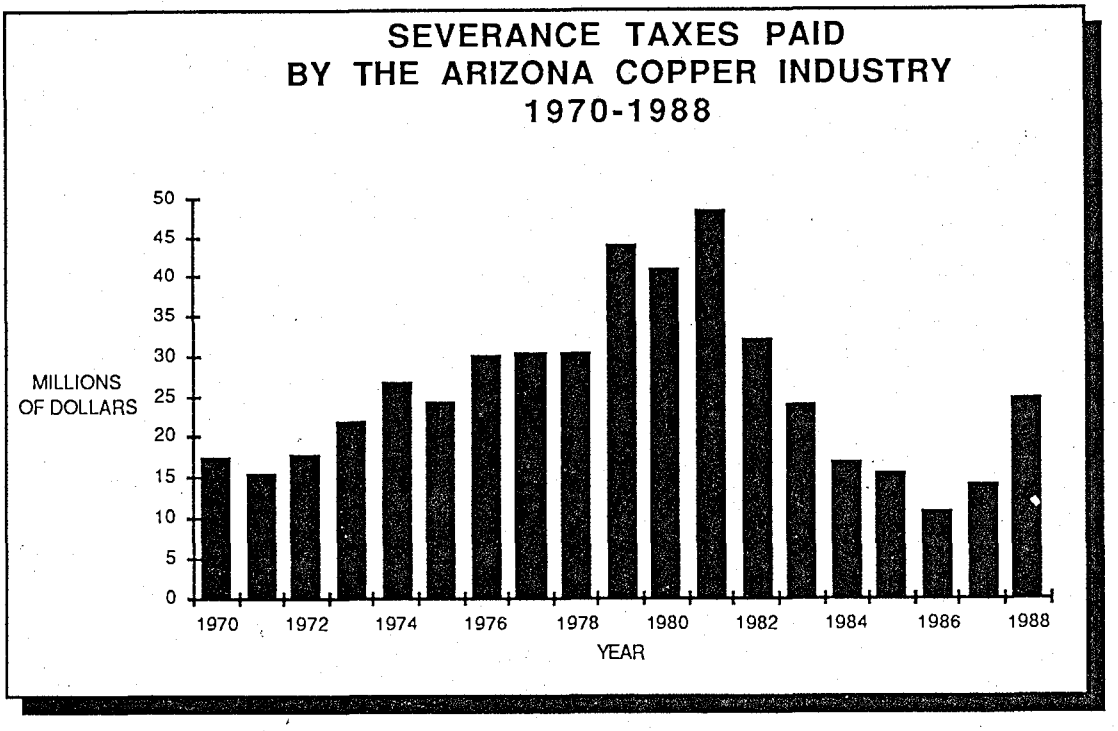
C

D

Sales taxes paid on Arizona purchases of products and services were responsible for about 21% of the copper industry's direct payments to state and local governments in Arizona in 1988. About 80 percent of the almost $17 million was distributed to the state's school districts, with the remainder going to the State, the counties, and the incorporated cities and towns. Most of the amount paid by the copper industry in this way was collected for the State of Arizona by transportation firms, construction contractors, and public utilities that sold their services and energy to the copper industry.

Payroll taxes, including both unemployment and workmen's compensation premiums, were responsible for about 8% of the copper industry's tribute to state and local government in Arizona last year. The almost $7 million total included only those payroll taxes paid to the State of Arizona or to private insurance carriers as required by state law. It did not include the total of federal payroll taxes, which are actually a leakage from the Arizona economy and not a contribution to it.

Although most copper producers showed some operating profit on their Arizona operations in 1988, most were still trying to recover from heavy losses incurred in previous years. Those losses tended to keep income tax liabilities in 1988 below $1 million. Rents and royalties paid for the use of lands owned by the State of Arizona last year were more than double the 1987 level. Such payments accounted for more than 6% of the copper industry's total tribute to state and local government in Arizona in 1988.



Source: Western Economic Analysis Center

[redacted]

1846RPT

TEV 757

Superior Project

Sample ID:	Bi	Th	U
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PM011697-14	-1	1	1
PM011697-15	-1	1	-1
PM011697-16	-1	2	-1
PM011697-17	-1	2	-1
PM011697-18	-1	1	-1
PM011697-19	-1	4	1
PM011697-20	-1	1	-1
SU011697-1	-1	2	-1
SU011797-1	2	3	-1
SU011797-2	-1	2	-1
SU011797-3	-1	1	-1
SU011797-4	2	2	-1
PM11797-1	-1	3	-1
PM11797-2	-1	1	-1
PM11797-3	-1	-1	-1
PM11797-4	-1	-1	-1
PM11797-5	2	5	-1
PM11797-6	3	-1	-1
PM11797-7	1	3	-1
PM11797-8	-1	1	-1
PM11797-9	-1	2	-1
PM11797-10	-1	4	-1

Picketpost Mtn 7½' Quad.

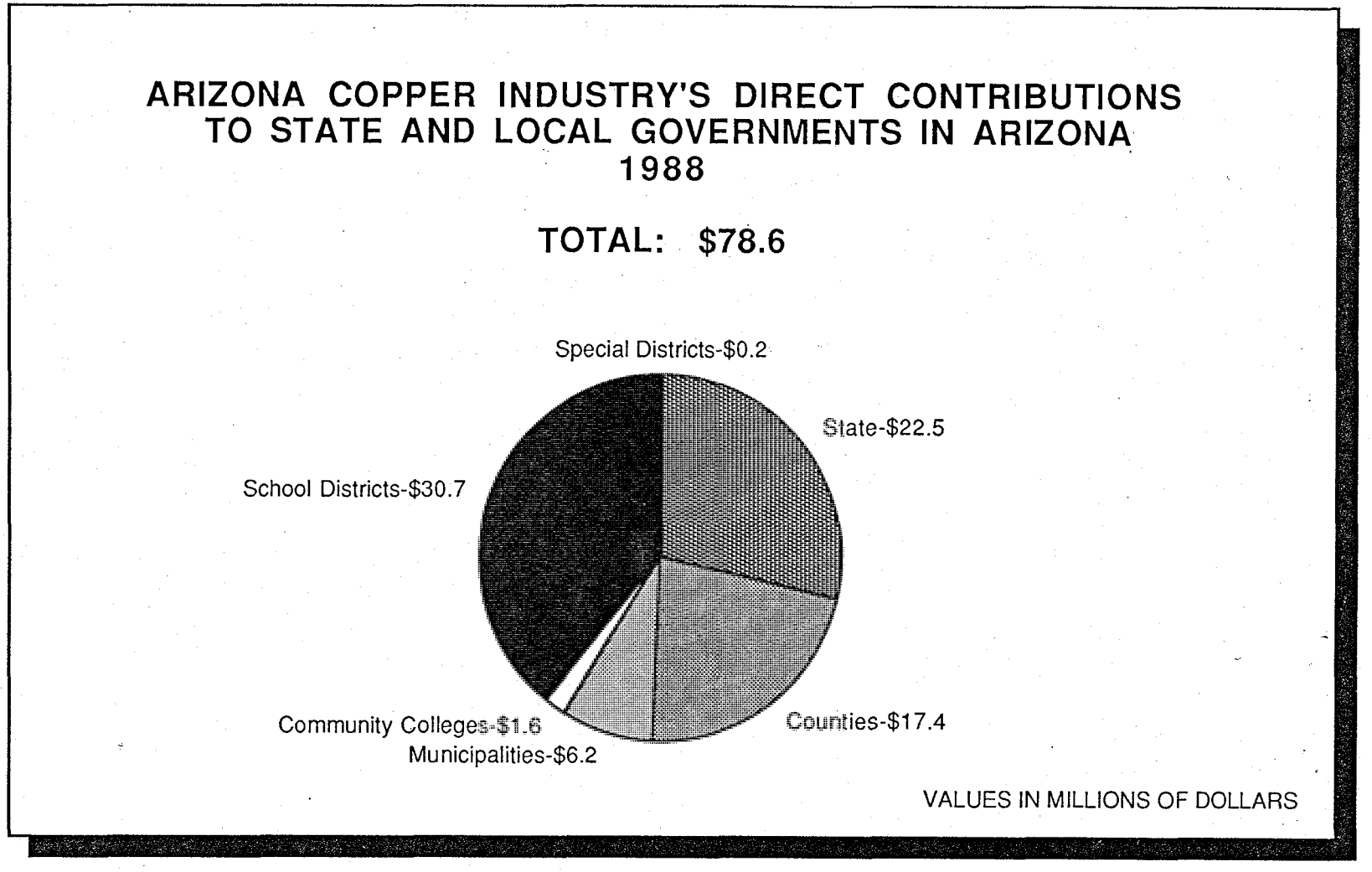
C

Superior 7½' Quad.

A

Picketpost Mtn 7½' Quad.

D.



Source: Western Economic Analysis Center

1846RPT

TEV 757

Sample ID:	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb
Picketpost mbr C																																				
PM011697-13	-1	-1	-0.2	1	-0.2	-1	9	5	169	1	547	8	11	2	7	2	-1	1	-1	1	-1	-1	-1	-1	-1	-1	2	6	0.2	-1	-1	-1	-0.1	-1	-1	19
PM011697-14	-1	-1	-0.2	2	-0.2	-1	9	7	133	1	312	7	27	3	7	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	7	-0.1	-1	-1	-1	-0.1	-1	-1	27
PM011697-15	-1	-1	-0.2	2.8	-0.2	1	68	-1	99	-1	571	17	22	3	12	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	44	0.3	-1	-1	-1	-0.1	-1	-1	33
PM011697-16	-1	-1	-0.2	0.8	-0.2	-1	7	3	151	-1	1848	8	9	2	8	2	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	4	-0.1	-1	-1	-1	-0.1	-1	-1	16
PM011697-17	-1	-1	-0.2	1.5	-0.2	-1	26	12	135	-1	267	9	18	4	11	2	-1	2	-1	1	-1	-1	-1	1	-1	-1	-1	25	0.3	-1	-1	-1	-0.1	-1	-1	26
PM011697-18	-1	-1	-0.2	0.5	-0.2	-1	24	1	98	-1	352	8	13	2	7	2	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	42	-0.1	-1	-1	-1	-0.1	-1	-1	11
PM011697-19	-1	-1	1	5.6	-0.2	1	86	4	88	2	409	15	31	4	15	2	-1	3	-1	2	-1	1	-1	2	-1	1	3	14	-0.1	-1	-1	-1	-0.1	-1	-1	262
PM011697-20	-1	-1	-0.2	0.5	-0.2	-1	6	1	51	-1	605	6	12	2	7	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	5	-0.1	-1	-1	-1	-0.1	-1	-1	29
Superior A																																				
SU011697-1	-1	-1	-0.2	0.5	-0.2	-1	5	-1	177	-1	214	7	12	2	6	2	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1	-1	-1	11
SU011797-1	-1	-1	0.2	0.8	-0.2	1	6	26	112	2	1044	12	22	4	14	3	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	37	-0.1	-1	-1	-1	-0.1	-1	-1	30
SU011797-2	-1	-1	-0.2	0.5	-0.2	-1	5	4	90	-1	353	14	20	4	15	3	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	28	0.4	-1	-1	-1	-0.1	-1	-1	9
SU011797-3	-1	-1	-0.2	0.3	-0.2	-1	3	-1	31	-1	132	4	6	1	5	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	1	-0.1	-1	-1	-1	-0.1	-1	-1	5
SU011797-4	-1	-1	-0.2	0.8	-0.2	-1	15	9	102	2	657	10	16	3	13	3	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1	-1	-1	12
Picketpost mbr D																																				
PM11797-1	-1	-1	-0.2	0.3	-0.2	-1	5	-1	76	2	466	11	22	3	12	3	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	33	-0.1	-1	-1	-1	-0.1	-1	-1	7
PM11797-2	-1	-1	-0.2	0.5	-0.2	-1	3	3	115	1	1188	10	18	3	15	3	1	3	-1	2	-1	1	-1	1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1	-1	-1	4
PM11797-3	-1	-1	-0.2	0.3	-0.2	-1	4	2	28	-1	869	4	9	-1	4	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	15	-0.1	-1	-1	-1	-0.1	-1	-1	2
PM11797-4	-1	-1	-0.2	0.8	-0.2	-1	2	-1	125	-1	496	9	8	2	9	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	-1
PM11797-5	-1	-1	-0.2	1	-0.2	-1	5	2	95	3	1277	18	31	5	20	3	1	4	-1	3	-1	1	-1	1	-1	1	2	12	-0.1	-1	-1	-1	-0.1	-1	-1	20
PM11797-6	-1	-1	-0.2	4.3	-0.2	-1	36	13	35	-1	721	3	6	1	4	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	18	-0.1	-1	-1	-1	-0.1	-1	-1	56
PM11797-7	-1	-1	-0.2	1.5	-0.2	-1	7	12	109	-1	317	9	21	3	10	2	-1	3	-1	3	-1	-1	-1	-1	-1	-1	-1	10	-0.1	-1	-1	-1	-0.1	-1	-1	18
PM11797-8	-1	-1	-0.2	0.8	-0.2	-1	6	2	125	-1	295	5	12	2	10	2	-1	2	-1	2	-1	1	-1	-1	-1	-1	-1	2	0.2	-1	-1	-1	-0.1	-1	-1	6
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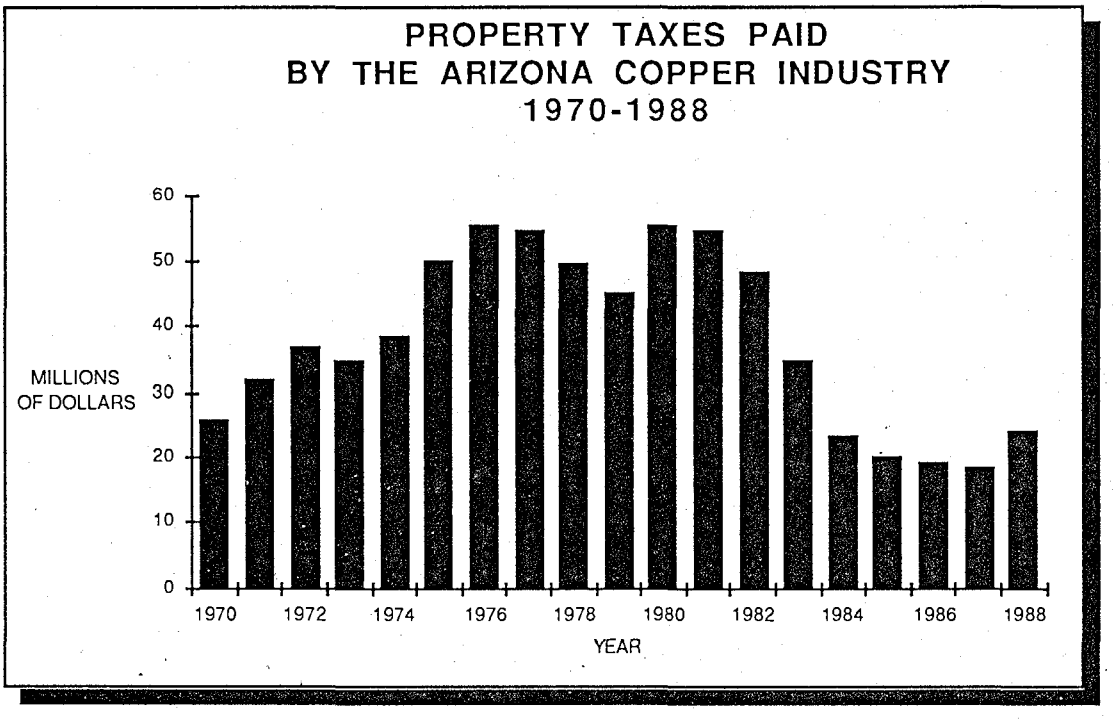
The major beneficiaries of copper industry taxes in 1988 were the state's school districts. They got nearly $31 million directly from the industry last year. That was more than 39% of the industry's total tribute to state and local governments in Arizona in 1988.

The State of Arizona received more than $22 million directly from the copper industry last year. That was almost 29% of the industry's direct tribute to state and local government in Arizona in 1988 and gave the State government the second biggest share of the total.

Arizona's 15 counties got more than $17 million in copper industry taxes in 1988. That was about 22% of the total paid by the state's copper producers to state and local government. Arizona's community colleges, cities, towns, and a variety of local jurisdictions, mostly fire departments, shared in the remainder.

When state and local government revenues that were created indirectly by the circulation and recirculation within the Arizona economy of the copper industry's direct payments to individuals, other businesses, and governments are counted, the copper industry's total impact on state and local government revenues increases dramatically. In 1988, the revenues received by Arizona's state and local governments indirectly as a result of copper industry activity amounted to $403 million, more than five times the amount received directly from the industry. The combined impact of both direct and indirect payments amounted to $482 million, about 9% of all tax revenues received by state and local governments in Arizona last year. The copper industry was thus responsible for approximately one out of every $11 of state and local government taxes collected in Arizona in 1988. This made the copper industry one of the biggest single business sources of of state and local government financial support in Arizona, despite its relatively smaller size as a provider of jobs and personal income.



Source: Western Economic Analysis Center

Superior Project

1846RPT

TEV 757

	Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru
Preliminary C	PM011697-13	32	-20	6037	-10	-100	296	2810	30	23	66	43	2	-1	129	-30	295	50	667	7	26	5	5	-1
	PM011697-14	37	-20	5080	-10	-100	183	11596	76	47	143	71	5	1	336	-30	106	32	582	7	27	5	15	-1
	PM011697-15	21	-20	12885	-10	-100	184	11946	53	67	168	114	4	1	745	73	356	41	789	10	19	2	135	-1
	PM011697-16	23	-20	-3000	-10	-100	255	3135	63	59	180	32	-1	-1	95	-30	138	8	668	8	7	-1	3	-1
	PM011697-17	27	-20	13385	-10	-100	81	4887	28	33	581	56	3	2	500	-30	221	44	733	11	13	3	30	-1
	PM011697-18	16	-20	8350	-10	-100	304	5336	27	35	108	57	3	2	569	-30	192	23	1170	7	8	-1	36	-1
	PM011697-19	34	-20	5178	22	-100	127	6754	38	50	304	378	8	-1	791	-30	204	62	792	13	47	12	82	-1
	PM011697-20	-10	-20	4335	18	-100	140	3256	82	79	128	35	1	-1	51	-30	-30	12	641	5	21	-1	3	-1
Superior A	SU011697-1	52	-20	4972	-10	-100	361	1160	10	15	39	43	2	1	103	-30	194	12	738	6	9	-1	8	-1
	SU011797-1	32	-20	4947	-10	-100	195	3914	50	61	606	82	7	1	108	-30	241	20	552	13	29	3	9	-1
	SU011797-2	19	-20	45851	16	-100	404	2028	29	39	576	42	-1	-1	498	67	217	11	1103	11	9	-1	8	-1
	SU011797-3	32	-20	4275	-10	-100	203	384	10	19	131	40	-1	-1	136	-30	43	8	394	4	8	-1	-1	-1
	SU011797-4	63	-20	9819	-10	-100	426	5066	58	74	648	52	11	4	1150	-30	283	21	845	14	20	2	17	-1
Preliminary Water D	PM11797-1	24	-20	-3000	-10	-100	120	2918	46	40	98	26	-1	-1	19	-30	86	16	414	9	11	-1	6	-1
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	PM11797-3	-10	-20	4146	-10	-100	55	4687	113	72	76	30	-1	-1	40	-30	79	2	556	2	7	-1	-1	-1
	PM11797-4	-10	-20	7007	-10	-100	139	2106	41	51	94	11	-1	-1	23	-30	152	6	1648	9	8	-1	-1	-1
	PM11797-5	24	-20	3765	45	120	309	4218	50	68	378	99	9	1	121	-30	131	28	933	14	48	3	-1	-1
	PM11797-6	29	-20	-3000	-10	-100	169	3017	53	30	3556	207	-1	3	1898	53	91	19	336	4	5	-1	2	-1
	PM11797-7	44	-20	-3000	-10	-100	256	6591	102	126	477	70	3	-1	204	-30	134	18	714	9	12	-1	15	-1
	PM11797-8	40	-20	-3000	11	-100	433	3665	63	73	260	61	2	-1	220	-30	92	9	453	10	9	-1	5	-1
	PM11797-9	35	-20	-3000	-10	-100	137	4065	49	46	499	60	1	1	615	-30	74	13	327	5	10	-1	-1	-1
	PM11797-10	56	-20	-3000	20	-100	308	370	7	12	39	12	-1	2	1685	63	92	20	1841	11	11	18	-1	-1

Certified By:

D. D'Anna, Dipl. T.
ICPMS Technical Manager, Actlabs Ltd.

Date: _____

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Unless otherwise instructed, samples will be disposed of 90 days from the date of this report.

DETAILED DATA TABLES

Table 3

TOTAL IMPACT OF THE COPPER INDUSTRY ON THE ARIZONA ECONOMY 1973-1988

Total Direct and Indirect Impact of the Copper Industry on Arizona's Economy

Year	Personal Income	Business Income(a)	State and Local Government Revenues	Total
1973	$1,137,388,000	$2,720,872,000	$333,283,000	$4,191,543,000
1974	1,380,833,000	3,369,285,000	410,181,000	5,160,299,000
1975	1,381,629,000	3,337,868,000	411,094,000	5,130,591,000
1976	1,493,178,000	3,519,489,000	440,406,000	5,453,073,000
1977	1,447,400,000	3,456,676,000	432,252,000	5,336,328,000
1978	1,521,623,000	3,632,504,000	438,721,000	5,592,848,000
1979	1,989,830,000	4,803,783,000	567,088,000	7,360,701,000
1980	2,084,926,000	5,121,765,000	606,356,000	7,813,047,000
1981	2,599,473,000	6,337,926,000	713,176,000	9,650,575,000
1982	1,925,219,000	4,894,166,000	544,529,000	7,363,914,000
1983	1,595,131,000	3,960,464,000	439,411,000	5,995,006,000
1984	1,524,858,000	3,921,619,000	411,653,000	5,858,130,000
1985	1,429,991,000	3,709,658,000	392,591,000	5,532,240,000
1986	1,339,986,000	3,537,151,000	373,426,000	5,250,563,000
1987	1,449,244,000	3,915,321,000	430,042,000	5,794,607,000
1988	1,689,136,000	3,500,693,000	481,971,000	5,671,800,000

(a) Excluding the copper industry itself.

Source: Western Economic Analysis Center

1846RPT
TEV 757

Superior Project
Picketpost Mtn 7½' Quad.

Enzyme Leach Jo			
Trace Element Va			
Values = 999999 :			
Sample ID:	Bi	Th	U
PM011397-1	-1	5	1
PM011397-2	-1	12	1
PM011397-3	-1	17	2
PM011397-4	-1	5	-1
PM011397-5	-1	14	1
PM011397-6	-1	1	1
PM011397-7	-1	6	1
PM011397-8	-1	8	1
PM011397-9	-1	7	3
PM011397-10	-1	3	-1
PM011397-11	-1	3	-1
PM011497-1	-1	3	-1
PM011497-2	-1	14	1
PM011497-3	-1	2	-1
PM011497-4	-1	2	-1
PM011497-5	-1	3	-1
PM011597-1	-1	5	-1
PM011597-2	-1	7	2
PM011597-3	-1	6	1
PM011597-4	-1	5	2
PM011597-5	-1	-1	1
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PM011597-7	-1	5	1
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PM011597-10	-1	3	-1
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PM011697-4	-1	1	-1
PM011697-5	-1	1	-1
PM011697-6	-1	-1	-1
PM011697-7	-1	4	-1
PM011697-8	4	1	-1
PM011697-9	1	2	-1
PM011697-10	-1	2	1
PM011697-11	-1	1	-1
PM011697-12	-1	12	3

Picketpost Mtn
7½' Quad.

Picketpost Mtn
A

Picketpost Mtn
B

Picketpost Mtn
C

Table 4

THE COPPER INDUSTRY AS A DIRECT SOURCE OF EMPLOYMENT IN ARIZONA 1988

Industry	Average Wage and Salary Employment in 1988
COPPER EXPLORATION AND PRODUCTION	9,500
Agriculture and Forestry	35,200
All Mining (a)	12,000
Contract Construction	95,200
All Manufacturing (a)	188,700
Transportation and Public Utilities	73,600
Wholesale and Retail Trade	347,100
Finance, Insurance, and Real Estate	92,800
Services (a)	358,300
Government	243,900
All Industries Total	**1,446,800**

(a)According to the indutrial classification system used by the Arizona Department of Economic Security, mining employment includes some smelter and refinery workers employed at integrated operations; manufacturing employment includes the remainder of the state's copper smelter and refinery workers; and services employment includes some workers employed by independent mineral exploration firms.

Source: Western Economic Analysis Center, based on data from the Arizona Department of Economic Security, the Arizona Department of Mines and Mineral Resources, the United States Bureau of the Census, the Arizona Mining Association, and individual copper producers.

Table 5

THE COPPER INDUSTRY AS A DIRECT SOURCE OF EMPLOYMENT IN THE TUCSON METROPOLITAN AREA 1988

Industry	Average Wage and Salary Employment in 1988
THE COPPER INDUSTRY	1,700
Agriculture	2,700
All Mining	1,800
Contract Construction	18,600
Manufacturing	30,300
Transportation and Public Utilities	9,600
Wholesale and Retail Trade	57,500
Finance, Insurance, and Real Estate	12,300
All Services (a)	67,200
Government	51,400
All Industries Total	**251,400**

(a)According to the industrial classification system used by the Arizona Department of Economic Security, services employment includes some workers employed by independent mineral exploration firms.

The Tucson Metropolitan Area is defined as Pima County, Arizona. Consequently, the above totals do not include the more than 1,200 copper workers who are employed at copper industry facilities in southeastern Pinal County but live in the Greater Tucson Area of Pima County.

Source: Western Economic Analysis Center, based on data from the Arizona Department of Economic Security, the Arizona Department of Mines and Mineral Resources, and individual mineral producers.

1846RPT

TEV 757

Superior Project
Picketpost Mtn 7½' Quad.

Picketpost Mtn 7½' Quad.

A

B

C

Enzyme Leach Jo																																				
Trace Element Va																																				
Values = 999999																																				
Sample ID:	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb
PM011397-1	-1	-1	-0.2	0.3	-0.2	-1	4	2	105	10	819	17	45	6	18	4	1	4	-1	3	-1	2	-1	2	-1	-1	-1	29	-0.1	-1	-1	-1	-0.1	-1	-1	10
PM011397-2	-1	-1	-0.2	0.5	-0.2	-1	6	-1	58	5	553	23	44	4	14	4	-1	3	-1	3	-1	-1	-1	-1	-1	-1	-1	31	-0.1	-1	-1	-1	-0.1	-1	-1	9
PM011397-3	-1	-1	-0.2	0.3	-0.2	-1	3	-1	82	3	395	68	101	19	71	12	3	16	2	10	2	3	-1	2	-1	-1	2	93	-0.1	-1	-1	-1	-0.1	-1	-1	8
PM011397-4	-1	-1	-0.2	0.8	-0.2	-1	8	-1	54	4	1409	20	19	7	17	3	1	4	-1	2	-1	-1	-1	1	-1	-1	-1	55	-0.1	-1	-1	-1	-0.1	-1	-1	16
PM011397-5	-1	-1	-0.2	1.3	-0.2	-1	6	2	46	5	747	20	60	7	23	5	-1	4	-1	3	-1	-1	-1	-1	-1	-1	2	180	-0.1	-1	-1	-1	-0.1	-1	-1	14
PM011397-6	-1	-1	-0.2	0.5	-0.2	-1	5	-1	154	-1	269	7	10	2	8	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	14	-0.1	-1	-1	-1	-0.1	-1	-1	2
PM011397-7	-1	-1	-0.2	0.5	-0.2	-1	6	2	76	4	894	14	30	5	13	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	30	-0.1	-1	-1	-1	-0.1	-1	-1	9
PM011397-8	-1	-1	-0.2	0.8	-0.2	1	3	-1	43	3	340	36	69	7	34	-1	1	5	-1	4	-1	1	-1	-1	-1	-1	-1	51	-0.1	-1	-1	-1	-0.1	-1	-1	7
PM011397-9	-1	-1	-0.2	0.3	-0.2	-1	2	-1	43	-1	72	18	24	8	31	5	2	6	-1	5	-1	2	-1	2	-1	-1	-1	14	0.2	-1	-1	-1	-0.1	-1	-1	6
PM011397-10	-1	-1	-0.2	-0.2	-0.2	-1	3	-1	61	-1	86	13	6	5	17	2	-1	4	-1	2	-1	-1	-1	-1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1	-1	-1	1
PM011397-11	-1	-1	-0.2	1.3	-0.2	-1	2	-1	344	-1	1144	14	13	6	24	4	1	5	-1	4	-1	2	-1	1	-1	-1	-1	44	-0.1	-1	-1	-1	-0.1	-1	-1	6
PM011497-1	-1	-1	-0.2	0.5	-0.2	-1	3	-1	408	-1	95	19	11	6	21	3	-1	4	-1	3	-1	-1	-1	-1	-1	-1	-1	28	-0.1	-1	-1	-1	-0.1	-1	-1	2
PM011497-2	-1	-1	-0.2	0.5	-0.2	-1	1	-1	72	-1	656	61	49	14	51	7	2	9	1	5	1	2	-1	1	-1	-1	-1	58	-0.1	-1	-1	-1	-0.1	-1	-1	11
PM011497-3	-1	-1	-0.2	0.3	-0.2	-1	6	-1	317	-1	346	11	12	3	12	2	-1	3	-1	2	-1	-1	-1	-1	-1	-1	-1	29	-0.1	-1	-1	-1	-0.1	-1	-1	4
PM011497-4	-1	-1	-0.2	0.5	-0.2	2	1	1	108	2	173	14	20	4	12	3	-1	4	-1	3	-1	-1	-1	1	-1	-1	-1	53	-0.1	-1	-1	-1	-0.1	-1	-1	9
PM011497-5	-1	-1	-0.2	1	-0.2	-1	3	-1	54	2	165	7	12	2	9	2	-1	3	-1	2	-1	-1	-1	1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	6
PM011597-1	-1	-1	0.2	1	-0.2	3	10	1	57	3	94	13	39	4	14	3	-1	5	-1	3	-1	1	-1	1	-1	1	2	25	-0.1	-1	-1	-1	-0.1	-1	-1	7
PM011597-2	-1	-1	-0.2	1	-0.2	1	6	-1	130	3	544	26	40	7	14	3	-1	3	-1	2	-1	-1	-1	-1	-1	2	4	39	-0.1	-1	-1	-1	-0.1	-1	-1	16
PM011597-3	-1	-1	-0.2	0.8	-0.2	-1	16	1	56	4	145	13	36	3	12	2	-1	3	-1	2	-1	1	-1	-1	-1	1	2	20	-0.1	-1	-1	-1	-0.1	-1	-1	10
PM011597-4	-1	-1	-0.2	1.8	-0.2	1	25	7	101	2	302	14	43	4	17	4	-1	3	-1	3	-1	1	-1	2	-1	2	5	104	-0.1	-1	-1	-1	-0.1	-1	-1	23
PM011597-5	-1	-1	-0.2	2	-0.2	-1	11	3	67	-1	144	6	15	2	7	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	15
PM011597-6	-1	-1	-0.2	0.5	-0.2	1	33	1	340	-1	232	7	11	2	6	1	-1	1	-1	1	-1	-1	-1	-1	-1	-1	-1	26	-0.1	-1	-1	-1	-0.1	-1	-1	16
PM011597-7	-1	-1	-0.2	1	-0.2	1	22	2	62	3	96	13	45	5	14	2	-1	3	-1	2	-1	-1	-1	1	-1	1	2	36	-0.1	-1	-1	-1	-0.1	-1	-1	20
PM011597-8	-1	-1	-0.2	0.5	-0.2	-1	5	-1	82	1	439	14	18	3	12	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	2	70	-0.1	-1	-1	-1	-0.1	-1	-1	7
PM011597-9	-1	-1	-0.2	0.8	-0.2	2	10	-1	103	-1	36	13	13	4	13	3	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	3
PM011597-10	-1	-1	-0.2	0.5	-0.2	-1	3	1	77	1	420	7	11	2	9	1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	17	-0.1	-1	-1	-1	-0.1	-1	-1	5
PM011597-11	-1	-1	-0.2	1	-0.2	-1	15	-1	132	-1	260	8	17	3	9	2	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	27	-0.1	-1	-1	-1	-0.1	-1	-1	3
PM011597-12	-1	-1	-0.2	1.3	-0.2	1	8	1	230	2	593	21	25	6	18	4	1	4	-1	3	-1	-1	-1	1	-1	-1	2	7	-0.1	-1	-1	-1	-0.1	-1	-1	14
PM011697-1	-1	-1	-0.2	1	-0.2	-1	5	5	110	-1	1232	9	14	3	10	1	-1	2	-1	2	-1	-1	-1	-1	-1	-1	-1	75	-0.1	-1	-1	-1	-0.1	-1	-1	6
PM011697-2	-1	1	-0.2	6.2	0.5	2	11	2	50	4	326	22	41	6	20	4	1	3	-1	4	-1	2	-1	2	-1	1	3	32	-0.1	-1	-1	-1	-0.1	-1	-1	19
PM011697-3	-1	-1	-0.2	0.8	-0.2	-1	4	-1	113	-1	245	10	25	3	11	2	-1	3	-1	2	-1	1	-1	-1	-1	-1	-1	34	-0.1	-1	-1	-1	-0.1	-1	-1	3
PM011697-4	-1	-1	-0.2	0.3	-0.2	-1	3	-1	322	-1	332	3	8	1	5	1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	11	-0.1	-1	-1	-1	-0.1	-1	-1	1
PM011697-5	-1	-1	-0.2	0.8	-0.2	-1	-1	-1	28	-1	260	2	5	-1	3	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	12	-0.1	-1	-1	-1	-0.1	-1	-1	3
PM011697-6	-1	-1	-0.2	0.3	-0.2	-1	18	2	193	-1	344	4	9	2	7	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	32	-0.1	-1	-1	-1	-0.1	-1	-1	4
PM011697-7	-1	-1	-0.2	0.5	-0.2	-1	4	-1	189	2	336	14	17	4	15	3	-1	2	-1	2	-1	-1	-1	1	-1	-1	1	10	-0.1	-1	-1	-1	-0.1	-1	-1	10
PM011697-8	-1	-1	-0.2	2.3	-0.2	-1	22	11	123	1	1255	6	10	2	7	1	-1	1	-1	2	-1	-1	-1	-1	-1	-1	-1	9	-0.1	-1	-1	-1	-0.1	-1	-1	73
PM011697-9	-1	-1	-0.2	1.3	-0.2	-1	26	10	95	-1	630	6	15	3	11	1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	53	-0.1	-1	-1	-1	-0.1	-1	-1	21
PM011697-10	-1	-1	-0.2	0.8	-0.2	-1	9	7	89	-1	136	6	8	2	5	-1	-1	1	-1	-1	-1	-1	-1	-1	-1	-1	2	22	-0.1	-1	-1	-1	-0.1	-1	-1	12
PM011697-11	-1	-1	-0.2	0.8	-0.2	-1	4	4	111	-1	87	5	10	2	6	2	-1	1	-1	1	-1	-1	-1	-1	-1	-1	2	20	-0.1	-1	-1	-1	-0.1	-1	-1	11
PM011697-12	-1	-1	0.5	0.5	-0.2	1	8	-1	136	6	119	23	82	8	21	3	-1	5	-1	3	-1	1	-1	1	-1	3	7	18	-0.1	-1	-1	-1	-0.1	-1	-1	22

Table 6

AVERAGE WEEKLY EARNINGS IN ARIZONA INDUSTRIES
1988

Industry	Average Weekly Earnings by Employees
COPPER INDUSTRY	$758
Agriculture and Forestry	224
All Mining	684
Contract Construction	401
All Manufacturing	578
Transportation and Public Utilities	474
Wholesale and Retail Trade	288
Finance, Insurance, and Real Estate	501
All Services	363
Government	483

Source: Western Economic Analysis Center, based on data from the Arizona Department of Economic Security, the United States Bureau of Labor Statistics, the United States Department of Commerce, and the Arizona Mining Association.

Table 7

PERSONAL INCOME OF ARIZONA RESIDENTS BY MAJOR SOURCES
1988

Direct Source of Personal Income		1988 Personal Income
EARNED INCOME(a)		$35,098,978,000
Agriculture and Forestry	$709,546,000	
All Mining(b)	498,717,000	
COPPER INDUSTRY PAYROLLS	**$374,690,000**	
Contract Construction	2,766,589,000	
All Manufacturing(b)	5,523,572,000	
Transportation and Public Utilities	2,148,666,000	
Wholesale and Retail Trade	5,540,889,000	
Finance, Insurance, and Real Estate	2,741,248,000	
All Services(b)	8,730,423,000	
Government	6,439,328,000	
DIVIDEND, INTEREST, AND RENT INCOME		8,837,988,000
FROM THE COPPER INDUSTRY	**$132,000**	
NET TRANSFER PAYMENTS(c)		5,010,108,000
FROM THE COPPER INDUSTRY	**$40,008,000**	
TOTAL PERSONAL INCOME		$48,947,074,000
COPPER INDUSTRY TOTAL	**$414,830,000**	

(a)Includes wages, salaries, other labor income, and proprietors' income.

(b)According to the industrial classification system used by the Arizona Department of Economic Security, the mining category includes some copper smelter and refinery workers employed at integrated operations; the manufacturing category includes all other copper smelter and refinery workers; and the services category includes some mineral exploration personnel employed by independent firms.

(c)Net Transfer Payments includes pensions, direct welfare payments, unemployment benefits, social security benefits, and other transfer payments less personal contributions for social insurance, including employee social security taxes and other employee contributions to pension funds.

Source: Western Economic Analysis Center, based on data from the Arizona Department of Economic Security, the United States Department of Commerce, and individual copper producers.

1846RPT

Superior Project
Picketpost Mtn 7½' Quad.

Enzyme Leach Job #: 1846 | Customer: Skyline Tucson | Geologist: Clark Arnold | Customer's Job #: TEV 757

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q.=That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo	Ru
PM011397-1	19	-20	14779	-10	-100	109	4237	62	66	164	94	5	-1	71	-30	334	29	1118	22	8	2	14	-1
PM011397-2	17	-20	4351	22	-100	117	8349	111	83	72	67	7	-1	13	-30	-30	31	567	13	13	3	11	-1
PM011397-3	-10	-20	-3000	-10	101	110	1289	27	44	94	59	11	-1	39	-30	421	28	1087	39	8	3	2	-1
PM011397-4	27	-20	5198	15	-100	121	11094	50	39	65	132	7	-1	19	-30	82	27	784	13	11	2	12	-1
PM011397-5	24	-20	-3000	30	-100	93	6884	105	66	100	135	7	-1	47	-30	65	40	487	18	10	3	19	-1
PM011397-6	21	-20	6105	30	-100	166	1955	26	30	17	28	-1	-1	28	-30	196	6	1516	5	7	-1	23	-1
PM011397-7	21	-20	11155	-10	-100	159	10572	118	93	46	69	4	1	15	-30	86	30	616	10	18	3	12	-1
PM011397-8	15	-20	-3000	21	-100	71	2649	26	26	42	59	5	2	10	-30	276	27	605	17	18	2	2	-1
PM011397-9	-10	-20	7448	-10	-100	223	1477	39	46	54	43	-1	-1	51	-30	146	14	366	20	41	3	-1	-1
PM011397-10	12	-20	3870	-10	-100	113	4212	48	55	15	21	-1	-1	8	-30	-30	13	398	11	12	1	-1	-1
PM011397-11	18	-20	4643	23	-100	269	2645	67	67	116	53	-1	-1	45	-30	563	10	2438	26	17	-1	6	-1
PM011497-1	32	-20	5913	21	-100	236	2276	43	37	20	24	-1	1	28	-30	249	5	730	18	8	1	-1	-1
PM011497-2	17	-20	-3000	13	-100	140	2134	40	26	33	63	1	-1	41	-30	142	14	458	21	7	-1	-1	-1
PM011497-3	32	-20	-3000	-10	-100	240	3528	47	40	22	29	3	-1	25	-30	162	10	931	10	9	-1	13	-1
PM011497-4	34	-20	6871	38	-100	248	2388	46	89	54	41	6	-1	14	-30	65	14	378	22	30	3	-1	-1
PM011497-5	29	-20	8537	21	-100	143	2114	55	50	148	42	10	-1	46	-30	107	11	362	9	17	1	-1	-1
PM011597-1	28	-20	10290	24	-100	137	5147	40	58	101	69	2	-1	85	-30	192	78	249	14	39	7	65	-1
PM011597-2	29	-20	6904	42	-100	187	5444	48	48	56	84	20	1	19	-30	218	64	841	12	55	11	16	-1
PM011597-3	29	-20	21028	22	-100	115	5007	42	50	44	72	7	1	23	-30	193	61	201	13	52	8	24	-1
PM011597-4	27	-20	15344	46	-100	245	6467	42	50	172	81	6	2	773	-30	88	87	676	17	76	21	53	-1
PM011597-5	14	-20	8614	-10	-100	109	8772	59	21	129	42	-1	-1	260	-30	65	44	309	7	15	3	29	-1
PM011597-6	19	-20	7742	11	-100	120	841	20	32	37	42	2	1	404	-30	272	34	1197	5	11	1	14	-1
PM011597-7	20	-20	14994	14	-100	74	6034	41	47	117	85	3	2	154	-30	217	111	154	9	48	10	9	-1
PM011597-8	32	-20	-3000	15	-100	184	3064	43	52	66	43	4	-1	32	-30	-30	18	481	11	23	1	9	-1
PM011597-9	17	-20	3193	13	-100	88	2061	21	41	66	40	-1	-1	130	55	223	29	277	10	15	2	-1	-1
PM011597-10	35	-20	-3000	16	-100	211	2491	39	39	47	31	5	-1	60	-30	80	12	457	11	18	1	-1	-1
PM011597-11	25	-20	12814	36	-100	87	1337	20	41	68	31	-1	1	271	-30	247	17	1040	8	13	1	12	-1
PM011597-12	46	-20	4976	29	127	392	2120	55	74	65	74	11	-1	66	-30	202	17	665	17	46	4	-1	-1
PM011697-1	17	-20	8773	-10	-100	341	8441	93	79	242	31	-1	-1	57	-30	37	9	1288	9	9	-1	1	-1
PM011697-2	49	-20	-3000	39	147	159	5389	58	52	150	156	9	2	94	-30	-30	39	342	14	63	5	11	-1
PM011697-3	16	-20	-3000	-10	-100	1441	6857	51	119	51	29	2	-1	98	-30	39	8	658	13	18	-1	-1	-1
PM011697-4	43	-20	7469	35	-100	559	489	14	5	8	17	-1	-1	132	61	206	3	1515	5	3	2	6	-1
PM011697-5	15	-20	-3000	-10	-100	146	3128	52	30	34	17	4	-1	6	-30	59	-1	345	5	4	-1	-1	-1
PM011697-6	24	-20	8488	14	-100	235	4076	25	28	94	21	-1	-1	183	-30	190	7	793	8	9	-1	19	-1
PM011697-7	53	-20	3651	39	-100	757	933	24	37	101	51	5	1	84	-30	307	11	638	11	41	5	-1	-1
PM011697-8	18	-20	5685	10	-100	415	3035	72	40	1992	147	1	3	1004	70	192	11	742	8	10	1	-1	-1
PM011697-9	23	-20	3824	19	-100	322	4820	40	32	583	47	14	-1	578	-30	95	12	1138	10	6	-1	37	-1
PM011697-10	14	-20	3311	-10	-100	93	5597	37	15	96	36	-1	-1	158	60	54	95	394	6	17	10	15	-1
PM011697-11	20	-20	3261	10	-100	266	3033	18	31	51	32	-1	-1	57	-30	208	36	629	5	15	6	-1	-1
PM011697-12	29	-20	6341	61	145	146	4934	22	34	35	100	19	2	20	-30	146	204	190	16	104	27	1	-1

Picketpost Mtn 7½' Quad.
A
B
C

Table 8

ARIZONA BASIC PERSONAL INCOME BY SOURCE
1988

Basic Personal Income Source (a)	Amount	Percent
Agriculture (b)	$ 709,546,000	05.6
Forest Industries	254,934,000	02.0
Mining(c)	498,717,000	04.0
Export Manufacturing(d)	3,314,143,000	26.4
Tourism	970,792,000	07.7
Federal Government(e)	1,826,767,000	14.5
Retirement and Welfare (Net)(f)	5,010,108,000	39.8
Total Basic Income	**$12,585,007,000**	**100.0**
THE COPPER INDUSTRY	**$414,830,000**	**03.3**

(a) Basic personal income is defined as that income which comes directly from outside of the state (such as social security benefits) or is derived directly from activities (such as copper mining and tourism) that sell their products and services to those who are not residents of Arizona.

(b)Agricultural income includes both farm labor and farm proprietors' income.

(c)Mining income includes the personal income received by workers at some copper smelting and refining operations that are part of vertically integrated copper producing operations, but it does not include the personal income received by workers at copper smelters and refineries that are classified as manufacturing operations by the Arizona Department of Economic Security.

(d)Export Manufacturing is defined to include all manufacturing establishments that export their products from the state.

(e)Federal Government income includes both civilian and military payrolls.

(f)Net Retirement and Welfare income consists of total retirement and other welfare benefits less personal contributions to retirement funds and social security taxes paid by employees.

Source: Western Economic Analysis Center, based in part on data from the Arizona Department of Economic Security, the United States Department of Commerce, and the United States Department of Defense.

Enzyme Leach Job #: 1583
Trace Element Values Are in Parts Per Billi
Values = 999999 are greater than workin

Sample ID:	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
SE 010395-9	-1	2	-1	2	-1	9	-0.1	-1	-1	-1	-0.1	-1.0	-1	30	2	7	2
SE 010395-10	-1	1	-1	1	-1	11	-0.1	-1	-1	-1	-0.1	-1.0	-1	32	3	6	1
SE 010395-11	-1	-1	-1	-1	-1	6	0.2	-1	-1	-1	-0.1	-1.0	-1	80	7	2	-1
SE 010395-12	-1	-1	-1	-1	-1	5	-0.1	-1	-1	-1	-0.1	-1.0	-1	43	3	2	-1
SE 010395-13	-1	1	-1	-1	-1	8	-0.1	-1	-1	-1	-0.1	-1.0	-1	28	3	3	1
SE 010395-14	-1	-1	-1	-1	-1	6	-0.1	-1	-1	-1	-0.1	-1.0	-1	34	4	3	-1
SE 010395-15	-1	1	-1	-1	-1	2	-0.1	-1	-1	-1	-0.1	-1.0	-1	91	3	2	-1
SE 010395-16	-1	2	-1	1	-1	1	-0.1	-1	-1	-1	-0.1	-1.0	-1	15	1	2	-1
SE 010395-17	-1	-1	-1	-1	-1	9	0.7	-1	-1	-1	-0.1	-1.0	-1	50	4	3	2
FL 122995-1	-1	2	-1	-1	-1	71	0.4	-1	-1	-1	0.3	-1.0	-1	23	-1	3	2
FL 122995-2	-1	2	-1	-1	-1	30	0.4	-1	-1	-1	0.7	1.2	-1	15	-1	2	-1
FL 122995-3	-1	1	-1	-1	-1	28	-0.1	-1	-1	-1	0.2	-1.0	-1	9	-1	4	-1
FL 122995-4	-1	2	-1	-1	-1	41	0.2	-1	-1	-1	-0.1	-1.0	-1	9	-1	3	-1
FL 122995-5	-1	1	-1	-1	-1	37	-0.1	-1	-1	-1	-0.1	-1.0	-1	7	-1	3	-1

Table 9

PERSONAL INCOME BY MAJOR SOURCE IN THE TUCSON METROPOLITAN AREA 1988

Source of Income		1988 Personal Income
EARNED INCOME(a)		$6,148,436,000
Agriculture	$ 54,425,000	
Mining	110,609,000	
Contract Construction	540,531,000	
Manufacturing	886,933,000	
Transportation and Public Utilities	280,261,000	
Wholesale and Retail Trade	917,894,000	
Finance, Insurance, and Real Estate	363,334,000	
Services	1,637,411,000	
Government	1,357,038,000	
DIVIDEND, RENT, AND INTEREST INCOME		1,548,176,000
NET TRANSFER PAYMENTS(b)		1,139,162,000
Total Personal Income		**$8,835,774,000**

(a)Earned income includes wages and salaries, other labor income, and both farm and non-farm proprietors' income.

(b)Net Transfer Payments equals gross transfer payments to Pima County residents less personal contributions for social insurance made by Pima County residents.

Source: Western Economic Analysis Center, based in part on data from the Arizona Department of Economic Security, the University of Arizona, the United States Department of Commerce, and the United States Department of Defense.

Table 10

BASIC PERSONAL INCOME BY SOURCE IN THE TUCSON METROPOLITAN AREA 1988

Source of Basic Income	Personal Income	Percent
Agriculture(b)	$ 54,425,000	02.0
Mining	110,609,000	04.1
Export Manufacturing(c)	470,074,000	17.4
Tourism	165,081,000	06.1
Federal Government(d)	303,873,000	11.3
State Government	454,020,000	16.8
Retirement and Welfare (Net)(e)	1,139,162,000	42.2
Total Basic Income	**$2,697,244,000**	**100.0**

(a)Basic personal income is defined as that income that comes directly to Pima County residents from outside of the county or is derived directly from activities that sell their products or services to those who reside outside of the Tucson Metropolitan Area. It includes the income of those who live in Pima County but work elsewhere.

(b)Agricultural income includes both farm labor and farm proprietors' income.

(c)Export manufacturing includes all firms that producer goods for export from Pima County.

(d)Federal government income includes both civilian and military payrolls.

(e)Net retirement and welfare income is defined as total retirement and other welfare benefits less personal contributions to retirement funds and employee social security taxes.

Source: Western Economic Analysis Center, based in part on data from the Arizona Department of Economic Security and the United States Departments of Commerce and Defense.

Enzyme Leach Job #: 1583
Trace Element Values Are In Parts Per Billi
Values = 999999 are greater than workin

Sample ID:	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er
SE 010395-9	52	6	45	-1	-1	-1	-0.2	1.3	-0.2	2	12	12	87	3	1088	25	45	6	20	3	-1	5	-1	3	-1	1
SE 010395-10	38	5	68	-1	-1	-1	-0.2	0.9	-0.2	2	20	18	76	3	1200	16	37	4	14	3	-1	3	-1	2	-1	1
SE 010395-11	15	2	91	-1	-1	-1	-0.2	6.3	-0.2	2	29	38	34	-1	815	5	13	2	5	-1	-1	1	-1	-1	-1	-1
SE 010395-12	13	2	57	-1	-1	-1	-0.2	4.9	-0.2	-1	18	34	33	-1	847	6	16	1	6	-1	-1	2	-1	1	-1	-1
SE 010395-13	18	2	70	-1	-1	-1	-0.2	2.3	-0.2	1	19	31	94	-1	909	10	21	4	13	3	-1	3	-1	3	-1	1
SE 010395-14	9	1	86	-1	-1	-1	-0.2	6.3	-0.2	2	15	50	28	-1	862	6	18	2	8	2	-1	2	-1	2	-1	-1
SE 010395-15	12	1	38	-1	-1	-1	-0.2	9.0	-0.2	-1	32	30	28	-1	1261	8	18	2	10	2	-1	2	-1	2	-1	-1
SE 010395-16	23	-1	12	-1	-1	-1	-0.2	0.5	-0.2	-1	7	11	83	-1	1112	13	26	4	17	2	-1	4	-1	3	-1	2
SE 010395-17	21	-1	109	-1	-1	-1	-0.2	1.7	-0.2	-1	30	28	57	-1	873	8	22	2	9	2	-1	3	-1	2	-1	-1
FL 122995-1	-1	-1	54	-1	-1	-1	-0.2	0.9	-0.2	-1	35	2	367	-1	961	26	39	8	34	5	1	8	-1	5	-1	2
FL 122995-2	-1	-1	75	-1	-1	-1	-0.2	1.3	-0.2	-1	31	-1	183	-1	866	18	28	5	20	4	-1	5	-1	3	-1	1
FL 122995-3	2	1	18	-1	-1	-1	-0.2	0.5	-0.2	-1	10	-1	108	-1	798	18	21	5	20	4	1	4	-1	3	-1	1
FL 122995-4	-1	-1	47	-1	-1	-1	-0.2	1.1	-0.2	-1	17	-1	131	-1	528	22	28	7	27	4	1	6	-1	4	-1	2
FL 122995-5	2	2	9	-1	-1	-1	-0.2	0.7	-0.2	-1	10	-1	183	-1	682	19	22	5	21	4	-1	5	-1	3	-1	1

Table 11

OTHER ARIZONA BUSINESSES RECEIVING INCOME DIRECTLY FROM THE ARIZONA COPPER INDUSTRY 1988

Business Sector		Sales to the Copper Industry in 1988
Agriculture and Forestry		$ 144,000
Other Mineral Industries		3,457,000
Contract Construction		46,637,000
Manufacturing		79,310,000
Lumber and wood products	$ 154,000	
Paper and allied products	712,000	
Printing and publishing	1,489,000	
Chemicals	25,939,000	
Rubber and plastics	2,547,000	
Stone, clay, and glass products	2,012,000	
Primary metals	24,688,000	
Fabricated metal products	5,117,000	
Non-electrical machinery	2,674,000	
Electrical machinery and equipment	2,627,000	
All other manufacturing	11,351,000	
Transportation		32,838,000
Communications		4,267,000
Public Utilities		183,635,000
Wholesale Trade		173,837,000
Automotive equipment	$55,102,000	
Drugs and chemicals	20,882,000	
Apparel	309,000	
Electrical goods	11,006,000	
Hardware, plumbing, and heating supplies	35,166,000	
Machinery and equipment	35,026,000	
Petroleum products	2,092,000	
All other wholesalers	14,254,000	
Retail Trade		12,334,000
Building materials and supplies	$ 618,000	
Automobile dealers and service stations	9,993,000	
All other retailers	1,723,000	
Finance, Insurance, and Real Estate		9,422,000
Services		41,749,000
Personal services	$ 286,000	
Business services	22,142,000	
Automotive repair services	6,018,000	
Other repair services	856,000	
Miscellaneous professional services	9,178,000	
All other services	3,269,000	
Total Arizona Purchases by Copper Firms		**$587,630,000**

Source: Western Economic Analysis Center, based on data from the Arizona Mining Association, the Arizona Department of Mines and Mineral Resources, individual copper producing firms, and specific suppliers of products and services to the copper industry.

Enzyme Leach Job #: 1583 Customer: Clark Arnold Geologist: Clark Arnold Customer's Job #: hand sieved by CER

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q. = That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y
SE 010395-9	88	-20	-3000	17	-100	186	6134	19	20	184	90	8	1	405	-30	108	92	883	20
SE 010395-10	39	-20	8709	62	-100	166	5798	15	29	289	104	7	1	555	-30	184	86	1430	17
SE 010395-11	38	-20	8503	39	-100	91	10671	21	19	*835	386	2	1	455	-30	102	47	869	6
SE 010395-12	44	-20	3071	32	-100	99	12880	26	19	376	322	2	1	476	-30	76	46	930	6
SE 010395-13	58	-20	17607	45	-100	140	12665	23	27	604	165	2	-1	444	-30	225	62	1423	14
SE 010395-14	29	-20	10287	42	-100	94	22717	32	31	676	365	2	1	274	-30	144	56	854	8
SE 010395-15	42	-20	-3000	25	-100	93	11927	47	21	*1458	417	2	-1	836	-30	76	39	601	10
SE 010395-16	65	-20	7365	25	-100	104	4246	27	49	234	65	1	-1	243	-30	203	42	1042	16
SE 010395-17	-10	-20	41918	58	-100	100	10348	23	33	*1062	99	1	-1	478	-30	237	145	1217	9
FL 122995-1	78	-20	40030	67	-100	345	2494	36	40	194	25	-1	1	108	-30	563	10	2220	26
FL 122995-2	34	-20	27535	44	-100	111	2108	35	43	191	31	1	-1	57	-30	614	14	1946	19
FL 122995-3	36	-20	15534	44	-100	133	3618	20	37	77	28	2	-1	16	-30	220	18	1714	17
FL 122995-4	45	-20	27386	48	-100	126	3490	30	42	152	23	2	-1	25	-30	371	16	1570	21
FL 122995-5	44	-20	19471	44	-100	163	3658	26	39	70	28	2	-1	20	-30	166	16	2146	19

Table 12

GEOGRAPHICAL DISTRIBUTION OF BUSINESS INCOME PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

Region	Copper Industry Purchases of Products and Services
Phoenix Metropolitan Area (a)	$221,530,000
Tucson Metropolitan Area (b)	195,074,000
Non-metropolitan Copper Mining Counties (c)	131,219,000
All Other Counties (d)	39,807,000
Arizona Total	**$587,630,000**
Outside of Arizona (e)	408,353,000
Total Purchases	**$995,983,000**

(a) Maricopa County

(b) Pima County

(c) Gila, Greenlee, Pinal, and Yavapai counties

(d) Apache, Cochise, Coconino, Graham, La Paz, Mohave, Navajo, Santa Cruz, and Yuma counties

(e) Includes only purchases of products and services made by Arizona copper producers outside of Arizona for use in Arizona. Does not include purchases made by Arizona copper producers outside of Arizona for use outside of Arizona. Such excluded external spending includes such items as smelting and refining charges paid in other states for processing Arizona copper and marketing and administrative expenses incurred outside of Arizona. Included are such items as purchases of equipment, supplies, and fuels in other states for use in Arizona.

Source: Western Economic Analysis Center, based on data from the Arizona Mining Association, the Arizona Department of Mines and Mineral Resources, individual copper producers, and specific suppliers of products and services to the copper industry.

Enzyme Leach Job #: 1583
Trace Element Values Are In Parts Per Billi
Values = 999999 are greater than workin

Sample ID:	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	S.G.Hg	Tl	Pb	Bi	Th	U
FL 122795-1	-1	2	-1	-1	-1	74	-0.1	-1	-1	-1	0.1	-1.0	-1	8	-1	2	-1
FL 122795-2	-1	3	-1	3	2	47	-0.1	-1	-1	-1	0.1	-1.0	-1	24	1	18	2
FL 122795-3	-1	3	-1	-1	-1	45	-0.1	-1	-1	-1	0.3	-1.0	-1	17	-1	8	1
FL 122795-4	-1	2	-1	-1	-1	90	-0.1	-1	-1	-1	0.1	-1.0	-1	12	-1	4	-1
FL 122795-5	-1	2	-1	-1	-1	46	0.2	-1	-1	-1	-0.1	-1.0	-1	9	-1	3	1
FL 122795-6	-1	6	1	3	2	44	-0.1	-1	-1	-1	0.1	-1.0	-1	46	2	31	5
FL 122795-7	2	11	2	-1	-1	87	-0.1	-1	-1	-1	0.1	3.2	-1	52	2	43	6
FL 122795-8	-1	2	-1	-1	-1	58	0.7	-1	-1	-1	0.8	1.2	-1	13	-1	2	2
FL 122895-1	-1	2	-1	-1	-1	84	0.2	-1	-1	-1	1.5	2.0	-1	9	-1	2	-1
FL 122895-2	-1	2	-1	-1	-1	51	0.2	-1	-1	-1	0.7	-1.0	-1	8	-1	3	1
FL 122895-3	-1	1	-1	-1	-1	29	-0.1	-1	-1	-1	0.4	-1.0	-1	9	-1	4	1
FL 122995-6	-1	1	-1	-1	-1	48	0.4	-1	-1	-1	-0.1	-1.0	-1	7	-1	4	2
FL 122995-7	-1	1	-1	-1	-1	44	0.2	-1	-1	-1	-0.1	-1.0	-1	4	-1	2	-1
FL 122995-8	-1	4	-1	-1	-1	74	0.8	-1	-1	-1	0.2	-1.0	-1	13	-1	3	2
FL 122995-9	-1	5	-1	-1	-1	110	0.5	-1	-1	-1	0.2	-1.0	-1	8	-1	7	5
GB 122895-1	1	9	2	1	-1	104	0.2	-1	-1	-1	0.2	1.8	-1	25	-1	32	4
GB 122895-2	-1	-1	-1	-1	-1	386	0.2	-1	-1	-1	-0.1	-1.0	-1	20	-1	3	1
GB 122895-3	-1	1	-1	-1	-1	179	-0.1	-1	-1	-1	-0.1	-1.0	-1	6	-1	3	1
CT 010496-1	-1	1	-1	-1	-1	44	-0.1	-1	-1	-1	0.8	-1.0	-1	27	1	8	2
CT 010496-2	-1	-1	-1	-1	-1	16	-0.1	-1	-1	-1	9.1	-1.0	-1	23	-1	1	2
CT 010496-3	-1	-1	-1	-1	-1	18	-0.1	-1	-1	-1	1.3	-1.0	-1	61	-1	-1	-1
CT 010496-4	-1	2	-1	3	-1	18	-0.1	-1	-1	-1	9.1	-1.0	1	105	3	20	5
CT 010496-5	-1	2	-1	1	-1	25	-0.1	-1	-1	-1	5.8	-1.0	1	100	1	20	4
CT 010496-6	-1	2	-1	2	-1	49	0.2	-1	-1	-1	4.2	-1.0	-1	46	2	17	2
CT 010496-7	-1	3	-1	2	-1	6	-0.1	-1	-1	-1	5.8	-1.0	1	50	3	15	5
CT 010496-8	-1	2	-1	1	-1	3	-0.1	-1	-1	-1	0.2	-1.0	-1	47	3	9	2
CT 010496-9	-1	2	-1	-1	-1	27	0.2	-1	-1	-1	0.7	-1.0	-1	30	1	10	2
CT 010496-10	-1	2	-1	2	-1	43	0.2	-1	-1	-1	0.9	-1.0	-1	38	1	14	3
CT 010496-11	-1	2	-1	1	-1	33	-0.1	-1	-1	-1	0.2	-1.0	-1	42	1	16	2
CT 010496-12	-1	2	-1	2	-1	6	-0.1	-1	-1	-1	0.2	-1.0	-1	54	1	13	2
CT 010496-13	-1	2	-1	1	-1	7	-0.1	-1	-1	-1	0.2	-1.0	1	69	1	14	2
CT 010496-14	-1	-1	-1	-1	-1	45	-0.1	-1	-1	-1	8.7	-1.0	-1	48	-1	-1	1
CT 010496-15	-1	2	-1	-1	-1	63	-0.1	-1	-1	-1	0.9	-1.0	-1	30	-1	1	-1
CT 010496-16	-1	3	-1	2	1	15	-0.1	-1	-1	-1	1.2	-1.0	1	63	3	18	3
SE 010395-1	-1	1	-1	-1	-1	14	-0.1	-1	-1	-1	0.1	-1.0	-1	135	11	3	-1
SE 010395-2	-1	2	-1	-1	-1	5	-0.1	-1	-1	-1	-0.1	-1.0	-1	22	-1	3	2
SE 010395-3	-1	2	-1	-1	-1	11	0.4	-1	-1	-1	-0.1	-1.0	-1	76	3	3	1
SE 010395-4	-1	-1	-1	-1	-1	2	-0.1	-1	-1	-1	-0.1	-1.0	-1	68	-1	-1	-1
SE 010395-5	-1	2	-1	1	-1	2	0.2	-1	-1	-1	0.2	-1.0	-1	35	2	2	-1
SE 010395-6	-1	1	-1	-1	-1	6	-0.1	-1	-1	-1	-0.1	-1.0	-1	43	4	2	-1
SE 010395-7	-1	2	-1	2	-1	3	-0.1	-1	-1	-1	-0.1	-1.0	-1	29	2	4	1
SE 010395-8	-1	1	-1	1	-1	8	-0.1	-1	-1	-1	-0.1	-1.0	-1	53	6	11	1

Table 13

PROPERTY TAXES PAID BY THE ARIZONA COPPER INDUSTRY 1969-1988

Year	Amount Paid to All Jurisdictions
1969	$21,566,000
1970	26,077,000
1971	32,184,000
1972	36,979,000
1973	34,998,000
1974	38,960,000
1975	50,048,000
1976	55,801,000
1977	54,928,000
1978	49,727,000
1979	45,113,000
1980	55,730,000
1981	54,749,000
1982	48,761,000
1983	35,096,000
1984	23,259,000
1985	20,002,000
1986	19,394,000
1987	18,700,000
1988	24,302,000

Source: Western Economic Analysis Center, based on data from the Arizona Mining Association, the Arizona Tax Research Association, the Arizona Department of Revenue, and individual copper producers.

Table 14

SEVERANCE TAXES PAID BY THE ARIZONA COPPER INDUSTRY 1969-1988

Year	Total Amount Paid
1969	$14,088,000
1970	17,606,000
1971	15,468,000
1972	18,086,000
1973	21,926,000
1974	26,674,000
1975	24,521,000
1976	30,125,000
1977	30,608,000
1978	30,424,000
1979	43,916,000
1980	40,902,000
1981	48,526,000
1982	32,030,000
1983	23,973,000
1984	16,974,000
1985	15,556,000
1986	10,737,000
1987	14,244,000
1988	24,816,000

Prior to 1983, severance taxes were defined as taxes paid on the value of mineral products produced and sold within the state or exported from the state. They included both privilege excise (sales) taxes and education excise taxes. Beginning in 1983, the severance tax for metal mining firms was defined explicitly by law as a tax on the value of mineral products mined in the state.

Source: Western Economic Analysis Center

Enzyme Leach Job #: 1583
Trace Element Values Are In Parts Per Billi
Values = 999999 are greater than workin

Sample ID:	Zr	Nb	Mo	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er
FL 122795-1	-1	1	13	-1	-1	-1	-0.2	0.5	-0.2	-1	17	1	158	-1	997	25	33	7	27	5	1	6	-1	4	-1	2
FL 122795-2	76	14	10	-1	-1	-1	-0.2	0.3	-0.2	3	5	-1	111	7	924	36	77	11	36	6	1	8	1	6	1	2
FL 122795-3	32	7	22	-1	-1	-1	-0.2	-0.2	-0.2	-1	5	1	509	3	899	24	35	5	30	5	1	7	-1	6	-1	3
FL 122795-4	-1	2	21	-1	-1	-1	-0.2	0.3	-0.2	-1	16	2	114	-1	595	16	22	5	18	3	-1	5	-1	3	-1	1
FL 122795-5	-1	-1	65	-1	-1	-1	-0.2	0.7	-0.2	-1	13	1	200	-1	407	30	23	8	34	7	1	8	-1	6	1	2
FL 122795-6	77	18	18	-1	-1	-1	0.4	1.1	-0.2	4	5	-1	124	7	752	70	106	18	57	10	2	14	2	11	2	5
FL 122795-7	-1	6	174	-1	-1	-1	-0.2	2.6	-0.2	10	5	3	80	4	522	289	278	68	306	49	8	62	7	44	7	13
FL 122795-8	-1	-1	116	-1	-1	-1	-0.2	0.7	-0.2	-1	6	-1	182	-1	493	22	31	5	20	4	-1	5	-1	4	-1	1
FL 122895-1	-1	2	17	-1	-1	-1	-0.2	0.3	-0.2	-1	7	-1	221	-1	336	36	18	9	37	7	-1	7	-1	5	-1	2
FL 122895-2	-1	-1	16	-1	-1	-1	-0.2	0.5	-0.2	-1	21	2	245	-1	560	24	23	7	32	6	1	7	-1	5	-1	2
FL 122895-3	3	3	19	-1	-1	-1	-0.2	0.5	-0.2	-1	14	7	160	1	694	14	22	4	17	3	-1	4	-1	3	-1	-1
FL 122995-6	-1	-1	70	-1	-1	-1	-0.2	0.7	-0.2	-1	12	-1	249	-1	452	15	24	5	18	3	-1	4	-1	3	-1	1
FL 122995-7	-1	1	5	-1	-1	-1	-0.2	-0.2	-0.2	-1	9	2	297	-1	728	10	13	3	11	2	-1	2	-1	2	-1	1
FL 122995-8	-1	-1	165	-1	-1	-1	-0.2	0.3	-0.2	-1	5	-1	218	-1	279	34	67	10	49	9	2	12	2	9	2	4
FL 122995-9	7	3	317	-1	-1	-1	-0.2	0.9	-0.2	-1	13	-1	175	-1	739	37	74	13	60	11	2	13	2	10	2	4
GB 122895-1	29	10	242	-1	-1	-1	-0.2	0.3	-0.2	4	7	3	193	10	389	218	366	50	181	27	4	33	4	22	4	9
GB 122895-2	-1	1	93	-1	-1	-1	-0.2	-0.2	-0.2	-1	11	1	165	-1	868	13	21	3	13	2	-1	3	-1	2	-1	1
GB 122895-3	-1	-1	8	-1	-1	-1	-0.2	-0.2	-0.2	-1	9	-1	440	-1	284	15	14	4	16	3	-1	3	-1	2	-1	-1
CT 010496-1	6	4	21	-1	-1	-1	0.5	0.5	-0.2	3	9	-1	134	7	281	24	43	5	18	3	-1	4	-1	2	-1	1
CT 010496-2	-1	-1	109	-1	-1	-1	-0.2	-0.2	-0.2	-1	8	-1	320	-1	156	8	7	2	10	1	-1	2	-1	1	-1	-1
CT 010496-3	-1	-1	46	-1	-1	-1	-0.2	1.1	-0.2	2	26	-1	172	-1	70	3	6	-1	3	-1	-1	-1	-1	-1	-1	-1
CT 010496-4	56	7	114	-1	-1	-1	2.7	3.6	0.3	5	4	5	176	18	430	49	82	12	43	7	2	8	-1	6	-1	2
CT 010496-5	15	3	82	-1	-1	-1	-0.2	1.3	-0.2	3	29	2	184	10	323	32	61	8	30	5	1	5	-1	4	-1	1
CT 010496-6	48	9	44	-1	-1	-1	0.9	0.3	-0.2	4	28	2	145	8	563	41	61	8	32	5	1	7	-1	5	-1	2
CT 010496-7	71	11	75	-1	-1	-1	0.5	0.9	-0.2	5	3	1	809	14	827	32	54	9	35	6	1	8	-1	6	1	3
CT 010496-8	52	7	36	-1	-1	-1	-0.2	4.5	-0.2	4	6	1	120	6	674	17	35	4	17	3	-1	3	-1	3	-1	1
CT 010496-9	13	5	12	-1	-1	-1	0.5	0.5	-0.2	1	6	-1	249	7	263	20	36	5	17	3	-1	3	-1	3	-1	2
CT 010496-10	50	8	66	-1	-1	-1	0.7	0.7	-0.2	3	7	3	415	11	500	32	60	8	29	4	-1	5	-1	5	-1	2
CT 010496-11	41	7	34	-1	-1	-1	0.4	2.0	-0.2	3	5	3	168	9	610	27	53	6	21	4	-1	4	-1	4	-1	2
CT 010496-12	45	10	20	-1	-1	-1	0.4	2.2	-0.2	2	4	3	310	9	865	33	70	9	34	5	1	7	-1	4	-1	2
CT 010496-13	34	10	22	-1	-1	-1	-0.2	3.2	-0.2	3	4	1	340	10	741	33	57	7	27	4	1	5	-1	4	-1	2
CT 010496-14	-1	-1	150	-1	-1	-1	-0.2	3.2	-0.2	-1	19	2	355	-1	146	6	11	1	6	-1	-1	2	-1	-1	-1	-1
CT 010496-15	-1	-1	18	-1	-1	-1	-0.2	0.5	-0.2	-1	3	-1	469	-1	970	19	16	6	25	4	1	6	-1	4	-1	2
CT 010496-16	54	16	8	-1	-1	-1	-0.2	0.9	-0.2	4	5	4	506	14	598	44	67	11	38	6	1	9	-1	6	1	3
SE 010395-1	11	3	141	-1	-1	-1	-0.2	6.5	-0.2	5	36	50	105	-1	512	12	35	4	15	2	-1	4	-1	3	-1	1
SE 010395-2	14	2	34	-1	-1	-1	-0.2	1.6	-0.2	-1	11	7	317	-1	965	13	26	4	17	3	-1	4	-1	4	-1	2
SE 010395-3	9	2	163	-1	-1	-1	-0.2	4.8	-0.2	1	33	37	172	-1	1192	17	44	6	24	4	-1	5	-1	5	-1	2
SE 010395-4	-1	-1	36	-1	-1	-1	-0.2	7.4	-0.2	-1	16	11	35	-1	1073	7	17	2	7	1	-1	2	-1	1	-1	-1
SE 010395-5	23	2	26	-1	-1	-1	-0.2	5.1	-0.2	1	11	12	95	-1	1832	10	24	3	14	3	-1	4	-1	3	-1	1
SE 010395-6	7	2	91	-1	-1	-1	-0.2	3.0	-0.2	2	23	25	64	1	1047	6	17	2	8	1	-1	2	-1	2	-1	-1
SE 010395-7	47	2	22	-1	-1	-1	-0.2	4.2	-0.2	-1	15	14	116	-1	1183	16	31	5	24	4	-1	6	-1	5	-1	2
SE 010395-8	33	5	46	-1	-1	-1	-0.2	2.8	-0.2	4	14	34	40	4	878	16	33	3	11	2	-1	2	-1	2	-1	-1

Table 15

ARIZONA CORPORATE INCOME TAXES PAID BY THE ARIZONA COPPER INDUSTRY 1988

Year	Amount Paid
1969	$4,202,000
1970	5,664,000
1971	3,764,000
1972	3,980,000
1973	5,901,000
1974	9,729,000
1975	1,005,000
1976	1,883,000
1977	-0-
1978	1,004,000
1979	8,224,000
1980	5,766,000
1981	260,000
1982	94,000
1983	196,000
1984	195,000
1985	-0-
1986	407,000
1987	-0-
1988	955,000

Source: Western Economic Analysis Center, based on data from the Arizona Mining Association, the Arizona Department of Revenue, and individual copper producers.

Table 16

STATE PAYROLL TAXES PAID BY THE ARIZONA COPPER INDUSTRY 1969-1988

Year	Unemployment Compensation	Workmen's Compensation	Total
1969	$1,351,000	$3,291,000	$ 4,642,000
1970	1,836,000	2,622,000	4,458,000
1971	1,972,000	2,968,000	4,940,000
1972	852,000	4,704,000	5,556,000
1973	1466,000	5,041,000	6,507,000
1974	1,716,000	5,901,000	7,617,000
1975	1,799,000	6,187,000	7,986,000
1976	2,047,000	6,871,000	8,918,000
1977	3,819,000	6,409,000	10,228,000
1978	4,288,000	6,628,000	10,916,000
1979	4,877,000	8,499,000	13,376,000
1980	5,478,000	7,384,000	12,862,000
1981	7,382,000	9,951,000	17,333,000
1982	5,304,000	7,149,000	12,453,000
1983	8,618,000	4,217,000	12,835,000
1984	7,006,000	3,787,000	10,793,000
1985	3,660,000	3,637,000	7,297,000
1986	3,062,000	4,401,000	7,463,000
1987	1,922,000	5,262,000	7,184,000
1988	2,150,000	4,519,000	6,669,000

The above payroll taxes include only those paid to the State of Arizona or paid as required by Arizona law to private insurance carriers. Federal social security taxes are excluded since they are a leakage from the Arizona economy and not a contribution to it. Federal social security taxes paid by copper industry employers are included in the leakage figures presented in Table I of this report as part of federal payroll and income taxes.

Source: Western Economic Analysis Center

1583RPT.XLS

Enzyme Leach Job #: 1583 Customer: Clark Arnold Geologist: Clark Arnold Customer's Job #: hand sieved by CER

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q. = That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y
FL 122795-1	55	-20	21937	15	-100	306	4722	30	47	79	23	1	-1	25	-30	221	14	1530	23
FL 122795-2	104	-20	6413	66	207	523	3140	31	50	119	93	11	2	34	-30	248	73	1011	33
FL 122795-3	122	-20	6003	39	103	676	2253	23	39	313	76	8	-1	45	-30	578	28	973	26
FL 122795-4	33	-20	10658	-10	-100	208	4586	27	39	305	38	2	-1	26	-30	174	20	895	17
FL 122795-5	33	-20	25582	-10	-100	154	5765	31	25	248	34	1	-1	35	-30	560	24	1104	27
FL 122795-6	148	-20	-3000	68	264	425	6127	55	53	352	125	13	2	47	-30	171	79	680	54
FL 122795-7	151	-20	4725	33	-100	192	14890	52	49	543	117	12	2	22	-30	124	40	851	178
FL 122795-8	93	-20	26151	-10	-100	168	10981	45	31	354	35	1	-1	21	-30	316	15	2916	28
FL 122895-1	25	-20	20905	11	-100	232	2215	22	24	142	30	1	-1	24	-30	311	14	3556	26
FL 122895-2	62	-20	20707	12	-100	380	1598	21	32	361	40	-1	-1	60	-30	313	11	2690	24
FL 122895-3	60	-20	6238	13	-100	316	2365	23	39	233	34	3	-1	47	-30	216	20	1481	17
FL 122995-6	51	-20	66620	-10	102	246	6052	49	79	293	26	1	-1	31	-30	579	12	3140	16
FL 122995-7	76	-20	11345	-10	-100	327	1871	28	47	108	22	-1	-1	27	-30	172	11	3026	10
FL 122995-8	193	-20	172426	16	-100	568	5491	56	91	135	28	2	-1	35	-30	346	14	2431	44
FL 122995-9	243	-20	144796	22	-100	943	4735	61	142	105	26	2	1	114	-30	302	27	1811	47
GB 122895-1	81	-20	-3000	58	131	242	2999	33	53	319	64	11	3	31	-30	444	51	1207	119
GB 122895-2	26	-20	12039	-10	-100	282	11321	20	18	283	35	2	-1	56	-30	257	5	1346	11
GB 122895-3	41	-20	14484	-10	-100	321	1210	13	37	354	39	-1	-1	73	-30	261	2	4466	11
CT 010496-1	57	-20	-3000	11	-100	174	9430	31	24	296	98	7	-1	15	-30	279	60	519	15
CT 010496-2	22	-20	8757	-10	-100	302	6704	11	14	363	60	1	-1	36	-30	383	17	1346	8
CT 010496-3	23	-20	11027	-10	-100	227	11544	11	16	201	57	1	-1	69	-30	167	14	801	2
CT 010496-4	109	-20	-3000	75	129	270	20494	39	35	585	431	23	3	26	-30	161	174	666	31
CT 010496-5	34	-20	8922	14	-100	246	15390	23	25	617	200	8	1	39	-30	262	85	570	19
CT 010496-6	61	-20	-3000	38	164	248	7430	37	41	325	161	13	2	33	-30	373	106	974	25
CT 010496-7	85	-20	-3000	41	173	142	2998	37	41	441	194	8	2	22	-30	429	188	585	30
CT 010496-8	99	-20	-3000	17	125	159	2301	24	27	329	159	6	1	66	-30	161	98	647	16
CT 010496-9	75	-20	-3000	-10	-100	237	6793	25	23	193	93	11	-1	20	-30	403	64	693	18
CT 010496-10	86	-20	-3000	35	149	463	5689	29	46	600	166	13	1	50	-30	365	107	1018	22
CT 010496-11	81	-20	-3000	20	140	269	17173	67	44	230	128	12	1	28	-30	245	103	786	24
CT 010496-12	72	-20	-3000	26	167	196	17040	107	31	113	134	18	1	21	-30	205	115	845	23
CT 010496-13	101	-20	-3000	26	169	222	23746	116	39	117	162	12	2	31	-30	185	117	742	22
CT 010496-14	42	-20	11861	-10	-100	358	17749	19	35	173	70	2	-1	93	-30	280	16	1040	7
CT 010496-15	39	-20	-3000	-10	-100	168	4629	18	36	396	68	1	-1	12	-30	1199	24	948	29
CT 010496-16	108	-20	-3000	49	183	186	11967	62	30	326	213	14	3	24	-30	412	161	721	33
SE 010395-1	63	-20	-3000	-10	-100	154	10113	32	22	*1288	317	3	1	570	-30	132	38	933	24
SE 010395-2	105	-20	-3000	-10	-100	222	11450	53	18	219	63	3	-1	220	-30	308	50	966	19
SE 010395-3	67	-20	10979	-10	-100	330	20267	62	40	*817	209	2	1	430	-30	367	46	1488	25
SE 010395-4	43	-20	-3000	-10	-100	89	9922	34	15	*929	363	1	-1	673	-30	-30	50	514	7
SE 010395-5	32	-20	-3000	-10	-100	81	11374	47	11	654	313	2	-1	368	-30	173	44	770	14
SE 010395-6	47	-20	-3000	-10	-100	122	11892	31	21	371	182	2	-1	425	-30	51	44	818	9
SE 010395-7	44	-20	-3000	-10	-100	102	9738	40	20	546	175	1	-1	326	-30	200	55	845	20
SE 010395-8	63	-20	-3000	-10	-100	155	11026	28	17	431	211	7	1	227	-30	82	83	826	12

Table 17

MISCELLANEOUS STATE AND LOCAL TAXES PAID BY THE ARIZONA COPPER INDUSTRY 1969-1988

Year	Sales Taxes on Arizona Purchases	Motor Vehicle and Other Taxes, Licenses, and Fees	Total
1969	$ 3,579,000	$128,000	$ 3,707,000
1970	4,288,000	141,000	4,429,000
1971	3,913,000	140,000	4,053,000
1972	5,825,000	151,000	5,976,000
1973	7,420,000	176,000	7,596,000
1974	11,260,000	185,000	11,445,000
1975	12,696,000	341,000	13,037,000
1976	11,456,000	180,000	11,636,000
1977	13,545,000	202,000	13,747,000
1978	11,065,000	186,000	11,251,000
1979	11,372,000	229,000	11,601,000
1980	12,403,000	321,000	12,724,000
1981	12,490,000	359,000	12,849,000
1982	10,244,000	334,000	10,578,000
1983	7,774,000	286,000	8,060,000
1984	7,297,000	241,000	7,538,000
1985	7,533,000	248,000	7,781,000
1986	10,267,000	304,000	10,571,000
1987	13,023,000	510,000	13,533,000
1988	16,572,000	253,000	16,825,000

Source: Western Economic Analysis Center, based on data from the Arizona Mining Association, the Arizona Department of Mines and Mineral Resources, and individual copper producers.

Table 18

STATE AND LOCAL GOVERNMENT REVENUES PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

Type of Payment	Amount Paid
Property Taxes	$24,302,000
Severance Tax	24,816,000
Corporate Income Tax	955,000
Payroll Taxes	
Unemployment Compensation Premiums	2,150,000
Workmen's Compensation Premiums	4,519,000
Other State and Local Taxes and Fees (a)	16,825,000
State Land Rents and Royalties (b)	5,045,000
Total	**$78,612,000**

(a)Other state and local taxes and fees include sales and use taxes paid on Arizona purchases as well as motor vehicle license fees and fees paid for miscellaneous permits, licenses, and other requirements.

(b)State land rents and royalties are those amounts paid to the State of Arizona for the use of State lease land and for the use of State-owned mineral resources lying beneath State-owned land.

Source: Western Economic Analysis Center, based on data from the Arizona Mining Association, the Arizona Department of Revenue, the Arizona Department of Economic Security, and the Arizona State Land Department, as well as individual copper producers.

Enzyme Leach Job #: 1496
Trace Element Values Are in Parts
Values = 999999 are greater tha

Sample ID:	Re	Os	Ir	Pt	Au	S.Q.Hg	Tl	Pb	Bi	Th	U
SE-1	-0.1	-1	-1	-1	0.6	-1.0	-1	31	4	6	1
SE-2	-0.1	-1	-1	-1	-0.1	-1.0	-1	48	-1	3	3
SE-3	-0.1	-1	-1	-1	-0.1	-1.0	-1	17	1	3	1
SE-4	-0.1	-1	-1	-1	0.3	-1.0	-1	17	2	2	-1
SE-5	-0.1	-1	-1	-1	0.3	-1.0	-1	35	3	4	1
SE-6	-0.1	-1	-1	-1	-0.1	-1.0	-1	19	-1	3	1
SE-7	-0.1	-1	-1	-1	0.1	-1.0	-1	18	2	2	1
SE-8	-0.1	-1	-1	-1	-0.1	-1.0	-1	10	-1	3	1

Table 19

ARIZONA STATE GOVERNMENT REVENUES PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

Type of Revenue	Amount of Revenue
State Property Tax	$ 1,019,000
Severance Tax (a)	7,330,000
Corporate Income Tax	955,000
Payroll Taxes	
Unemployment Compensation Premiums	2,150,000
Workmen's Compensation Premiums	4,519,000
Sales Taxes on Arizona Purchases (a)	1,224,000
Miscellaneous Taxes and Fees (b)	253,000
Land Rents and Royalties	5,045,000
Total	**$22,495,000**

(a)Excludes amounts collected by the State of Arizona but immediately distributed to county and municipal governments, as well as amounts subsequently distributed to school districts by appropriation.

(b)Includes motor vehicle license fees and other non-tax fees paid to State agencies.

Source: Western Economic Analysis Center

Table 20

COUNTY GOVERNMENT REVENUES PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

County	Amount of Revenue
Maricopa	$5,611,500
Pinal	4,110,400
Pima	2,630,400
Gila	2,187,400
Greenlee	908,000
Yavapai	754,400
Coconino	266,000
Mohave	201,100
Navajo	189,400
Cochise	170,700
Yuma	167,600
Apache	105,600
Santa Cruz	54,300
La Paz	37,600
Graham	29,700
Total	**$17,424,100**

The above amounts are contributed directly through the property taxes and fees collected by the respective counties and through the automatic aportionment of sales taxes and severance taxes collected by the State of Arizona.

Source: Western Economic Analysis Center

Enzyme Leach Job #: 1496
Trace Element Values Are in Parts
Values = 999999 are greater tha

Sample ID:	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W
SE-1	-1	-1	-1	-0.2	2.1	-0.2	1	37	49	68	-1	108	11	20	4	12	2	-1	2	-1	1	-1	-1	-1	1	-1	-1	1	12
SE-2	-1	-1	-1	-0.2	1.8	-0.2	-1	7	7	80	-1	675	9	37	3	13	3	-1	3	-1	3	-1	1	-1	2	-1	-1	-1	7
SE-3	-1	-1	-1	-0.2	3.3	-0.2	-1	18	43	78	-1	988	7	14	2	8	1	-1	2	-1	-1	-1	-1	-1	-1	-1	-1	-1	12
SE-4	-1	-1	-1	-0.2	5.2	-0.2	-1	15	25	74	-1	965	5	9	2	6	-1	-1	1	-1	1	-1	-1	-1	-1	-1	-1	-1	7
SE-5	-1	-1	-1	-0.2	5.1	-0.2	1	34	67	64	-1	766	7	15	2	7	-1	-1	2	-1	1	-1	-1	-1	-1	-1	-1	-1	15
SE-6	-1	-1	-1	-0.2	21.8	-0.2	-1	7	13	34	-1	2902	11	23	3	10	2	1	3	-1	1	-1	-1	-1	1	-1	-1	1	-1
SE-7	-1	-1	-1	-0.2	3.5	-0.2	1	12	25	31	-1	822	3	7	1	4	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	6
SE-8	-1	-1	-1	-0.2	2.5	-0.2	-1	6	9	26	-1	701	5	19	2	7	1	-1	1	-1	1	-1	-1	-1	-1	-1	-1	-1	16

Table 21

MUNICIPAL GOVERNMENT REVENUES PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

Municipality	Amount of Revenue
Phoenix	$2,106,200
Tucson	866,600
Mesa	569,200
Hayden	362,100
Tempe	315,800
Glendale	290,800
Scottsdale	257,600
Chandler	151,600
Yuma	111,200
Flagstaff	90,900
Sierra Vista	68,400
Peoria	65,600
Prescott	50,700
Lake Havasu City	42,200
Miami	41,100
Bullhead City	40,600
Nogales	37,300
Casa Grande	37,200
Apache Junction	33,900
Douglas	31,000
Gilbert	28,800
Paradise Valley	28,100
Kingman	24,900
Avondale	23,100
Winslow	18,800
Sedona	17,400
Bisbee	17,000
Safford	16,800
Payson	16,600
Globe	16,400
Coolidge	16,300
South Tucson	15,600
Page	15,400
Eloy	14,800
Florence	14,500
Camp Verde	13,900
Holbrook	13,700
Prescott Valley	13,000
Show Low	11,900
Cottonwood	11,900
Guadalupe	10,900
Superior	10,900
Goodyear	10,900
Tolleson	10,500
Somerton	10,400
El Mirage	10,200
Benson	10,100
Clifton	10,100
Surprise	9,600
Eagar	9,500
Wickenburg	9,300
Chino Valley	9,100
Buckeye	9,000
Litchfield Park	8,800
Snowflake	8,700
Thatcher	8,200
Saint Johns	8,000

1496RPT.XLS

Enzyme Leach Job #: 1496 Customer: Skyline Labs, Inc. Geologist: Bill Lehmbeck Customer's Job #: TEV 676

Trace Element Values Are in Parts Per Billion. Negative Values Equal Not Detected at That Lower Limit.

Values = 999999 are greater than working range of instrument. S.Q. = That element is determined SEMIQUANTITATIVELY.

Sample ID:	S.Q.Li	S.Q.Be	S.Q.Cl	S.Q.Sc	S.Q.Ti	V	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Rb	Sr	Y	Zr	Nb	Mo
SE-1	42	-10	9569	32	374	196	4149	27	28	* 926	156	3	2	1676	53	243	109	319	11	29	6	53
SE-2	31	-10	4710	-10	275	225	6143	57	20	414	49	2	-1	117	-30	163	26	947	14	10	3	65
SE-3	32	-10	-3000	-10	356	95	11901	34	20	432	182	3	-1	336	-30	98	32	925	8	12	2	71
SE-4	26	-10	-3000	-10	131	83	10241	37	16	438	197	3	-1	447	-30	-30	39	769	5	11	2	99
SE-5	16	-10	7144	-10	389	109	19371	29	22	* 945	233	5	-1	502	-30	197	71	1108	7	13	2	223
SE-6	25	-10	3997	-10	547	41	13610	73	47	*1103	499	4	-1	243	-30	94	89	609	12	18	2	20
SE-7	33	-10	15588	-10	349	78	7358	12	21	341	654	4	1	341	-30	47	35	1187	4	10	1	48
SE-8	24	-10	4388	15	340	247	7384	40	15	182	88	2	-1	96	-30	134	13	898	8	10	3	55

Table 21 (continued)

Municipality	Amount of Revenue
Willcox	$7,700
Oro Valley	7,400
San Luis	6,700
Kearny	6,300
Parker	6,000
Pinetop-Lakeside	5,700
Cave Creek	5,500
Youngtown	5,400
Williams	5,400
Colorado City	5,000
Taylor	4,800
Gila Bend	4,700
Mammoth	4,500
Springerville	4,500
Clarkdale	4,000
Marana	4,000
Huachuca City	3,900
Tombstone	3,900
Pima	3,800
Carefree	3,600
Winkelman	2,500
Fredonia	2,500
Patagonia	2,300
Wellton	2,200
Jerome	1,100
Total	**$6,198,300**

The above amounts are contributed directly through municipal property taxes and the automatic aportionment of sales and severance taxes collected by the State of Arizona.

Source: Western Economic Analysis Center

Table 22

COMMUNITY COLLEGE REVENUES PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

Community College District	Amount of Revenue
Central Arizona	$1,175,400
Yavapai	258,700
Pima	154,400
Cochise	10,200
Mohave	5,000
Maricopa	4,800
Eastern Arizona	700
Total	**$1,609,200**

The above amounts are contributed directly through the property tax. These and other community college districts also receive some state and county funds by appropriation that have been paid in part by the Arizona copper industry through county and state property taxes and the state severance and sales taxes.

Source: Western Economic Analysis Center

DEXTER.DAT

H		IDNT	ZON	SAMPLE #	E EASTIN(	NORTHING	DEPTH	DATE	TIME	ALT	DESCRIPT	ON	PROXIMITY	SYMBOL	;waypts
W		062	12S	PM 040797-01	484030	3683009	13	27-Mar-62	0:00:00	-9999	7-Apr-97	19:51	0.00E+00	0	
W		063	12S	PM 040797-02	483350	3684003	14	27-Mar-62	0:00:00	-9999	7-Apr-97	21:13	0.00E+00	0	
W	4	064	12S	PM 040797-03	483975	3684249	12	27-Mar-62	0:00:00	-9999	7-Apr-97	22:12	0.00E+00	0	TEU
W		065	12S	PM 040797-04	484700	3685104	13	27-Mar-62	0:00:00	-9999	7-Apr-97	22:36	0.00E+00	0	
W		066	12S	PM 040797-05	484027	3685340	12	27-Mar-62	0:00:00	-9999	7-Apr-97	23:07	0.00E+00	0	787
W		067	12S	PM 040897-01	484724	3683378	12	27-Mar-62	0:00:00	-9999	8-Apr-97	13:50	0.00E+00	0	
W		068	12S	PM 040897-02	485245	3683620	14	27-Mar-62	0:00:00	-9999	8-Apr-97	14:31	0.00E+00	0	
W		069	12S	PM 040897-03	485406	3683925	12	27-Mar-62	0:00:00	-9999	8-Apr-97	14:54	0.00E+00	0	
W		070	12S	PM 040897-04	484882	3684500	13	27-Mar-62	0:00:00	-9999	8-Apr-97	15:29	0.00E+00	0	
W		071	12S	PM 040897-05	484523	3684050		27-Mar-62	0:00:00	-9999	8-Apr-97	16:04	0.00E+00	0	
W		072	12S	PM 040897-06	485268	3683087	12	27-Mar-62	0:00:00	-9999	8-Apr-97	17:29	0.00E+00	0	
W		073	12S	PM 040897-07	485960	3683649	14	27-Mar-62	0:00:00	-9999	8-Apr-97	18:19	0.00E+00	0	
W		074	12S	PM 040897-08	486323	3683580	13	27-Mar-62	0:00:00	-9999	8-Apr-97	18:32	0.00E+00	0	
W		075	12S	PM 040897-09	486531	3684510	13	27-Mar-62	0:00:00	-9999	8-Apr-97	19:14	0.00E+00	0	
W	5	076	12S	PM 040897-10	486121	3684735	13	27-Mar-62	0:00:00	-9999	8-Apr-97	19:59	0.00E+00	0	
W		077	12S	PM 040897-11	485766	3684395	12	27-Mar-62	0:00:00	-9999	8-Apr-97	20:24	0.00E+00	0	
W		078	12S	PM 040897-12	486257	3685378	12	27-Mar-62	0:00:00	-9999	8-Apr-97	21:24	0.00E+00	0	Pickett Pass
W		079	12S	PM 040897-13	486877	3685413	12	27-Mar-62	0:00:00	-9999	8-Apr-97	22:22	0.00E+00	0	Mtn
W		080	12S	PM 040897-14	487224	3686501	12	27-Mar-62	0:00:00	-9999	8-Apr-97	22:47	0.00E+00	0	7½'
W		081	12S	PM 040897-15	487898	3686797	14	27-Mar-62	0:00:00	-9999	8-Apr-97	23:12	0.00E+00	0	Quad
W		082	12S	PM 040897-16	486250	3685918	22	27-Mar-62	0:00:00	-9999	9-Apr-97	0:21	0.00E+00	0	
W		083	12S	PM 040997-01	485304	3685593	14	27-Mar-62	0:00:00	-9999	9-Apr-97	13:08	0.00E+00	0	
W		084	12S	PM 040997-02	487725	3686230	14	27-Mar-62	0:00:00	-9999	9-Apr-97	14:58	0.00E+00	0	
W		085	12S	PM 040997-03	488308	3685707		27-Mar-62	0:00:00	-9999	9-Apr-97	15:45	0.00E+00	0	
W		086	12S	PM 040997-04	487975	3685552	13	27-Mar-62	0:00:00	-9999	9-Apr-97	16:17	0.00E+00	0	
W		087	12S	PM 040997-05	487529	3685711	13	27-Mar-62	0:00:00	-9999	9-Apr-97	16:44	0.00E+00	0	
W		088	12S	PM 040997-06	487121	3684501	13	27-Mar-62	0:00:00	-9999	9-Apr-97	18:27	0.00E+00	0	
W		089	12S	PM 040997-07	487254	3685001	13	27-Mar-62	0:00:00	-9999	9-Apr-97	18:55	0.00E+00	0	
W		090	12S	PM 040997-08	487550	3684729	13	27-Mar-62	0:00:00	-9999	9-Apr-97	19:25	0.00E+00	0	
W	6	091	12S	PM 040997-09	487309	3684300	12	27-Mar-62	0:00:00	-9999	9-Apr-97	19:56	0.00E+00	0	
W		092	12S	PM 040997-10	487751	3684342	13	27-Mar-62	0:00:00	-9999	9-Apr-97	20:49	0.00E+00	0	
W		093	12S	PM 040997-11	488129	3684300	13	27-Mar-62	0:00:00	-9999	9-Apr-97	21:20	0.00E+00	0	
W		094	12S	PM 040997-12	488302	3684656	12	27-Mar-62	0:00:00	-9999	9-Apr-97	21:38	0.00E+00	0	
W		095	12S	PM 040997-13	487680	3684038	14	27-Mar-62	0:00:00	-9999	9-Apr-97	22:50	0.00E+00	0	
W		096	12S	PM 040997-14	486680	3684130	13	27-Mar-62	0:00:00	-9999	9-Apr-97	23:06	0.00E+00	0	
W		097	12S	PM 040997-15	487040	3683899	16	27-Mar-62	0:00:00	-9999	10-Apr-97	0:18	0.00E+00	0	
W		098	12S	PM 041097-01	486750	3683750	14	27-Mar-62	0:00:00	-9999	10-Apr-97	13:17	0.00E+00	0	
W		099	12S	PM 041097-02	487400	3683697	13	27-Mar-62	0:00:00	-9999	10-Apr-97	14:11	0.00E+00	0	
W		100	12S	PM 041097-03	487001	3683552	15	27-Mar-62	0:00:00	-9999	10-Apr-97	14:35	0.00E+00	0	
W		101	12S	PM 041097-04	486650	3683347	13	27-Mar-62	0:00:00	-9999	10-Apr-97	14:55	0.00E+00	0	
W		102	12S	PM 041097-05	486403	3682952	14	27-Mar-62	0:00:00	-9999	10-Apr-97	15:33	0.00E+00	0	
W		103	12S	PM 041097-06	488247	3683700	12	27-Mar-62	0:00:00	-9999	10-Apr-97	17:14	0.00E+00	0	
W		104	12S	PM 041097-07	488150	3683404	16	27-Mar-62	0:00:00	-9999	10-Apr-97	17:37	0.00E+00	0	
W		105	12S	PM 041097-08	487850	3683553	13	27-Mar-62	0:00:00	-9999	10-Apr-97	18:03	0.00E+00	0	
W		106	12S	PM 041097-09	487629	3683302		27-Mar-62	0:00:00	-9999	10-Apr-97	18:23	0.00E+00	0	
W	7	107	12S	PM 041097-10	486402	3682598	12	27-Mar-62	0:00:00	-9999	10-Apr-97	19:05	0.00E+00	0	
W		108	12S	PM 041097-11	486145	3683204	12	27-Mar-62	0:00:00	-9999	10-Apr-97	19:50	0.00E+00	0	
W		109	12S	PM 041097-12	485599	3683046	12	27-Mar-62	0:00:00	-9999	10-Apr-97	20:51	0.00E+00	0	
W		110	12S	PM 041097-13	485403	3682705	14	27-Mar-62	0:00:00	-9999	10-Apr-97	21:06	0.00E+00	0	
W		111	12S	PM 041097-14	487302	3682054	13	27-Mar-62	0:00:00	-9999	10-Apr-97	22:26	0.00E+00	0	
W		112	12S	PM 041097-15	487648	3682303	12	27-Mar-62	0:00:00	-9999	10-Apr-97	22:51	0.00E+00	0	
W		113	12S	PM 041097-16	487246	3682300	12	27-Mar-62	0:00:00	-9999	10-Apr-97	23:26	0.00E+00	0	
W	8	114	12S	PM 041197-01	488197	3682452	12	27-Mar-62	0:00:00	-9999	11-Apr-97	14:00	0.00E+00	0	
W		115	12S	PM 041197-02	487851	3682523	12	27-Mar-62	0:00:00	-9999	11-Apr-97	14:20	0.00E+00	0	
W		116	12S	SU 041197-01	488453	3684002	13	27-Mar-62	0:00:00	-9999	11-Apr-97	15:09	0.00E+00	0	
W		117	12S	SU 041197-02	488499	3684509	18	27-Mar-62	0:00:00	-9999	11-Apr-97	15:41	0.00E+00	0	
W		118	12S	SU 041197-03	488799	3684602	17	27-Mar-62	0:00:00	-9999	11-Apr-97	15:59	0.00E+00	0	Sugarloaf
W		119	12S	SU 041197-04	488934	3685261	16	27-Mar-62	0:00:00	-9999	11-Apr-97	16:28	0.00E+00	0	7½' Quad
W	9	120	12S	SU 041197-05	488857	3685800	12	27-Mar-62	0:00:00	-9999	11-Apr-97	17:10	0.00E+00	0	
W		121	12S	SU 041197-06	488853	3686250	12	27-Mar-62	0:00:00	-9999	11-Apr-97	17:51	0.00E+00	0	
W		122	12S	SU 041197-07	489530	3685422	13	27-Mar-62	0:00:00	-9999	11-Apr-97	19:04	0.00E+00	0	
W		123	12S	SU 041197-08	489708	3685977	13	27-Mar-62	0:00:00	-9999	11-Apr-97	19:23	0.00E+00	0	
W		124	12S	SU 041197-09	490108	3687013	12	27-Mar-62	0:00:00	-9999	11-Apr-97	19:45	0.00E+00	0	

Table 23

SCHOOL DISTRICT REVENUES PROVIDED DIRECTLY BY THE ARIZONA COPPER INDUSTRY 1988

School District	Amount of Revenue
Morenci Unified	$3,344,900
Mammoth-San Manuel	3,073,800
Mesa Unified	1,815,400
Tucson Unified	1,707,600
Miami Unified	1,362,300
Hayden-Winkelman Unified	1,303,500
Bagdad Unified	1,254,500
Sahuarita Unified	1,114,700
Ray Unified	876,100
Paradise Valley Unified	763,400
Washington Elementary	656,100
Tempe Combined (a)	622,100
Phoenix Union High School	612,000
Scottsdale Unified	608,000
Peoria Unified	539,200
Glendale Union High School	455,000
Deer Valley Unified	446,900
Cartwright Elementary	403,100
Amphitheater Unified	394,300
Sunnyside Unified	372,300
Yuma Combined (a)	368,000
Marana Unified	353,000
Flagstaff Unified	334,200
Roosevelt Elementary	313,800
Chandler Unified	294,800
Phoenix Elementary	243,400
Glendale Elementary	243,300
Gilbert Unified	240,600
Kyrene Elementary	221,300
Casa Grande Combined (a)	217,100
Alhambra Elementary	213,700
Sierra Vista Unified	197,700
Isaac Elementary	163,900
Nogales Unified	162,700
Prescott Unified	157,100
Flowing Wells Unified	152,300
Clifton Unified	149,000
Creighton Elementary	131,500
Crane Elementary	126,900
Douglas Unified	126,400
Apache Junction Unified	113,200
Madison Elementary	112,000
Dysart Unified	109,600
Chinle Unified	108,900
Kingman Elementary	104,800
Page Unified	98,800
Lake Havasu Unified	97,800
Pendergast Elementary	97,500
Mohave Union High School	92,900
Tuba City Unified	91,000
Osborn Elementary	90,300
Tolleson Combined (a)	89,900
Window Rock Unified	86,300
Snowflake Unified	83,000
Safford Unified	78,000
Avondale Elementary	76,800

	Northing	Easting	Depth
SU 031797-1A	3682874	489914	4
1B	"	"	8
1C	"	"	12
1D	"	"	16
SU 031797-2A	3683394	488444	4
2B	"	"	8
2C	"	"	13
2D	"	"	17
2E	"	"	22
2F	"	"	26
SU 031797-3A	3684286	488901	4
3B	"	"	8
3C	"	"	12
SU 031797-4A	3683842	489112	4
4B	"	"	8
4C	"	"	11
4D	"	"	15
PM 031797-1A	3681499	488274	4
1B	"	"	8
1C	"	"	12
1D	"	"	17
1E	"	"	23
1F	"	"	27

SU = Superior

PM = Picketpost Mtn

Samples collected by CR

Faxed to EKM 0 2497

Table 23 (continued)

School District	Amount of Revenue
Coolidge Unified	$75,300
Globe Unified	74,600
Murphy Elementary	73,200
Winslow Unified	73,000
Cottonwood-Oak Creek Elementary	71,400
Kayenta Unified	68,500
Humboldt Unified	66,000
Balsz Elementary	63,600
Catalina Foothills Unified	61,600
Round Valley Unified	61,300
Parker Unified	60,900
Show Low Unified	59,800
Holbrook Unified	58,400
Buckeye Combined (a)	55,900
Blue Ridge Unified	54,900
Bullhead City Elementary	54,600
Payson Unified	54,500
Eloy Combined (a)	53,600
Ganado Unified	53,600
Bisbee Unified	53,400
Laveen Elementary	53,000
Whiteriver Unified	51,700
Benson Combined (a)	50,400
Somerton Elementary	48,200
Agua Fria Union High School	47,800
Fort Huachuca Accomodation	45,300
Saint Johns Unified	43,700
Litchfield Park Elementary	42,400
Willcox Unified	41,100
Thatcher Unified	40,600
Florence Unified	39,800
Cave Creek Unified	38,900
Camp Verde Unified	37,400
Littleton Elementary	37,300
Wickenburg Unified	35,400
Tanque Verde Unified	35,100
Mingus Union High School	34,000
Gadsden Elementary	32,900
Tombstone Unified	32,900
Fowler Elementary	31,700
Indian Oasis-Baboquivari Unified	31,000
Colorado City Unified	29,300
Superior Unified	29,300
Chino Valley Unified	28,600
Fountain Hills Unified	27,400
All Other School Districts	852,600
Total	**$30,733,400**

(a)Combined elementary and high school districts

The above amounts are contributed directly through the property taxes levied by the respective school districts and collected by the counties as well as through the aportionment of the sales and severance taxes collected by the State of Arizona and appropriated by the Legislature.

Source: Western Economic Analysis Center

		Northing	Easting	Depth
SU 013097	-1	3688330	497504	8
	2	3688717	497792	8
	3	3688093	497408	8
H's	4	3688041	498836	9
	5	3688372	498937	11
on	6	3688757	498878	13
	7	3688530	498291	23
maps	8	3688331	498603	9
	9	3688046	498101	10
	10	3687969	497699	10

SU = Superior

Samples collected by DW

faxed to EKMcL
02/01/97

Optimizer Report

Elapsed time for optimizing drive c: was 00:00:37

Optimization not completed due to:
Lost clusters were found.
Mirror Was Run

Options Used:

Optimization Method:	Full Optimization
Directory Order:	Standard
Clear Option:	Do Not Clear
File Sort:	No Sorting
Sort Order:	Ascending

Disk Statistics:

Total Clusters:	32911
Used Cluster(s):	30359
Free Cluster(s):	2552
Bad Cluster(s):	0

Mr Johnson USB
Home Cable Access
Work 417-2426 ext 7312

575
602/ 343 4

	Northing	Easting	Depth
SU 012997-1	3685545	499078	13
2	3685216	499554	10
G's 3	3686149	499888	10
on 4	3686399	499634	9
maps 5	3686867	499734	12
6	3687161	499752	10
7	3687789	499584	8
8	3687472	499323	8
9	3687447	498993	23
10	3687279	498767	8
11	3687169	499135	10
12	3686907	499023	24
13	3686567	499035	9
14	3686232	499330	15
15	3686635	499437	14
16	3687173	499488	8
17	3687540	499610	10
18	3681587	498115	14
19	3680562	498222	30
20	3687940	499212	33
21	3688437	499807	26
22	3688172	499725	17
23	3688302	499357	13
24	3689280	499125	12
25	3689237	498471	13
26	3688871	499129	10

Samples 1-17 collected by DW & CR
" 18-26 " " Superior
SU = Superior

Field ID EKMcL 02/01/97

Antonio Alvarez
Y ASOCIADOS

VICTORIA 114 DESP. 114 • 31000 CHIHUAHUA, CHIH. MEXICO
TEL. (14) 15-85-59
FAX (14) 16-12-00

TELEFAX

FECHA: Oct. 22 '96
PARA: Ing. Jaime Seel
COMPAÑIA: Seel de Co
NO. TELEFAX: (520) 578-7196
DE: ANTONIO ALVAREZ

ESTAMOS TRANSMITIENDO 01 PAGINAS
(INCLUYENDO ESTA)

Querido Jaime:

Mil gracias por toda la información que me enviaste, es de más, ¡Gracias Mil!

Antonio.

Menera Kenneth Hermosillo
011-52-62-107-29

	Northing	Easting	Depth
SU 012897-1	3686499	498429	13
2	3686690	498019	14
3	3686517	497777	10
4	3686642	497517	11
F's 5	3686307	497479	13
6	3685802	497588	16
on 7	3685403	497486	10
8	3685438	497783	12
maps 9	3685736	498124	8
10	3686032	498321	21
11	3686298	498212	8
12	3686265	497901	10
13	3684650	497804	5
14	3683478	499183	5
15	3682600	499517	12

SU = Superior

Samples 1-12 collected by DW
" 13-15 " " CR

faxed to EKWL
02/01/97

HOW COPPER INDUSTRY PURCHASES SPREAD THROUGH THE ARIZONA ECONOMY

DIRECT IMPACT — *1*

INDIRECT IMPACTS — *2* — *3*

COPPER FIRMS PAY $100,000,000 TO OTHER ARIZONA BUSINESS FIRMS FOR GOODS AND SERVICES BOUGHT

THOSE ARIZONA BUSINESS FIRMS PAY $24,000,000 TO THEIR EMPLOYEES

- **BUSINESS EMPLOYEES PAY $1,440,000 IN STATE AND LOCAL TAXES**
- **BUSINESS EMPLOYEES SPEND $18,240,000 WITH ARIZONA BUSINESS FIRMS**
- **STATE AND LOCAL GOVERNMENTS PAY $4,340,000 TO THEIR EMPLOYEES**

THOSE ARIZONA BUSINESS FIRMS PAY $7,000,000 IN STATE AND LOCAL TAXES

- **STATE AND LOCAL GOVERNMENTS SPEND $2,380,000 WITH ARIZONA BUSINESS FIRMS**

THOSE ARIZONA BUSINESS FIRMS SPEND $55,000,000 WITH OTHER ARIZONA FIRMS

- **ARIZONA BUSINESSES PAY $13,200,000 TO THEIR EMPLOYEES**
- **ARIZONA BUSINESSES PAY $3,850,000 IN STATE AND LOCAL TAXES**
- **ARIZONA BUSINESSES SPEND $30,250,000 WITH OTHER ARIZONA BUSINESS FIRMS**

And so on, until as a result of this circulation of money through the Arizona economy, the original $100 million in copper industry buying generates a total benefit to the Arizona economy of:

$125,000,000 of personal income,

$340,000,000 of additional business income,

and

$38,000,000 of state and local government revenues.

Injections of money into the Arizona economy by copper industry payrolls, pensions, and taxes create similar patterns of circulation within the state's economy. When the results of those added impacts are combined with the total impact of purchases shown above, they create a total economic impact on the state that in 1988 amounted to almost $5.7 billion, more than double the value of minerals produced by the Arizona copper industry last year.

Source: Western Economic Analysis Center

		Northing	Easting	Depth
SU 012497-1		3686028	498686	5
	2	3685273	498425	5
	3	3683809	497641	5
	4	3682682	498203	6
E's	5	3687336	497666	14
	6	3687068	497433	8
on	7	3686960	497225	13
	8	3686754	497083	10
map	9	3686327	497026	20
	10	3686104	497154	14
	11	3685738	496985	22
	12	3685185	~~498~~ 496924	8
	13	3684447	496958	21

SU = Superior

Samples 1-4 collected by CR
" 5-13 " " DW

Scaned to EXCEL
1/27/97

		Northing	Easting	Depth
SU 012397-1		3683634	495464	14
	2	3683635	496187	8
	3	3683212	496671	20
d's	4	3682673	496795	13
	5	3684027	494545	14
on	6	3683506	494511	11
	7	3683225	494071	10
map	8	3682886	493730	8
	9	3683282	493284	8
	10	3683834	493585	10
	11	3684280	493959	10

SU = Superior

Samples 1-4 collected by CR
" 5-11 " " DW

faxed to EKMCL
1/28/97

Explanation:

ap-cp-sp/cp:

shows the apparent mineral paragenesis and means that arsenopyrite is replaced by chalcopyrite which is replaced by sphalerite with blebs of exsolved chalcopyrite.

sp/cp + po:

means sphalerite with exsolved chalcopyrite and pyrrhotite.

Sample	Mineralogy & Paragenesis	Loc. Fig.	Remarks
M1	ap-cp-sph/cp	7	Ramal de Ibarra v.
M2	ap-bn-cp	7	bn rich manto
M3	po-cp-sph-gn	7	po vein
M4	ap-cp-sph	7	ap rich manto
M5	ap-po-cp-sph/cp-gn	7	Ibarra vein
M6	ap-bn-cp-sph/cp-tt-gn-Ag	7	Ibarra vein
M7	ap-bn-cp-sph/cp-Ag + pyg	7	Ibarra vein
M8	ap-sph	7	sph in gr sakrn
M9	ap + py-po-sph	7	coarse grained sph
M10	ap-bn-cp-sph/cp-tt-gn-Ag	7	Ibarra vein
M11	gn-po-cp-sph/cp + po	23	magnetic po

		Northing	Easting	Depth
SU 012297-1		3681780	490873	10
	2	3680868	491071	18
	3	3680939	490344	15
C's	4	3680522	490174	18
	5	3679427	490107	28
on	6	3678838	490966	18
	7	3679752	490836	15
map	8	3684681	495758	11
	9	3684787	496476	8
	10	3683982	495376	7
	11	3682719	495924	16
	12	3682430	495653	14
	13	3681996	495247	12
	14	3681517	494752	12
	15	3681116	494467	8
	16	3680386	494328	9
	17	3682060	493581	14
	18	3682210	494341	12
	19	3682554	495013	16
	20	3682788	494549	12
	21	3683083	494965	8
	22	3683151	494485	16

SU = Superior

Entered to EXCEL 1/25/97

Samples 1-10 collected by CR

" 14-22 " " DW

Sample	Mineralogy & Paragenesis	Loc. Fig.	Remarks
M12	gn-po-sph/cp + po	23	non magnetic po
M13	ap-po	23	non magnetic po
M14	gn-po-cp-sph/cp + po	23	magnetic po
M15	ap-cp-sph-po	23	
M16	gn-po-sph/cp + po	23	
M17	ap-cp-po	23	non magnetic po
M18	po-sph/cp + po	22	non magnetic po
M19	gn-po-sph/cp + po	22	non magnetic po

		Northing	Easting	Depth
SU 012197-1		3684285	488900	20
	2	3684927	489203	8
B's	3	3686405	489423	25
	4	3683812	489109	10
on	5	3682417	489440	14
	6	3682156	490442	12
map	7	3681658	489871	17
	8	3681266	489361	20
	9	3681403	488791	14
	10	3680421	489140	15
	11	3680495	488569	12
	12	3679572	488937	25
	13	3679143	489000	29
	14	3679294	496171	22
	15	3680735	497093	18
	16	3680370	496305	30
	17	3681163	496331	12
	18	3681884	487315	15
	19	3681145	495617	22
	20	3680348	495505	8
	21	3681973	495901	8

SU = Superior

Samples 1-13 collected by CR
" 14-21 " " DW

Jared Ekwall
1/27/97

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		Northing	Easting	Depth
PM 011797-1		3682261	485011	16
	2	3682343	485836	12
	3	3682643	486052	8
d's	4	3682558	487455	17
	5	3682745	488171	21
on	6	3683108	488088	8
	7	3684640	485594	16
map	8	3685072	487728	10
	9	3686170	488260	12
	10	3683047	487988	22
SU 011797-1		3682672	488491	12
A's	2	3682950	489902	16
on	3	3685304	488471	12
map	4	3683392	488411	15

PM = Picketpost Mtn SU = Superior

Samples PM 011797-1 thru 6 collected by CR
" PM 011797-7 " 10 " " DW
" SU 011797-1 + 2 " " CR
" SU 011797-3 + 4 " " DW

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11/20/97

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		Northing	Easting	Depth
PM	011697-1	3683326	485690	20
	2	3683909	486246	26
	3	3684915	486735	33
	4	3685979	487015	32
	5	3687014	487345	25
C's	6	3686215	485688	13
	7	3684144	487047	17
on	8	3683833	487954	13
	9	3683170	487219	12
map	10	3679536	487840	13
	11	3679587	487262	12
	12	3678857	486877	20
	13	3680133	488212	13
	14	3680839	487620	12
	15	3681522	488280	17
	16	3682137	487895	11
	17	3681665	487885	10
	18	3681753	487436	16
	19	3681801	486748	12
	20	3682251	486589	12
SU	011697-1	3682170	488861	16

Fernald & EKMcL 1/20/97

PM = Picketpost Mtn SU = Superior

Samples PM 011697-1 thru 9 collected by CR
" PM 011697-10 thru 20 " " DW
" SU 011697-1 collected by Derek White

		Northing	Easting	Depth
PM	011597-1	3680940	486074	24
	2	3681350	486500	13
	3	3681442	485455	15
B's	4	3681206	487161	10
	5	3680952	485206	7
on	6	3682117	486972	27
	7	3681453	484521	10
map	8	3682625	486800	13
	9	3680996	484141	15
	10	3684582	483737	11
	11	3683301	484115	13
	12	3682890	484919	12

PM = Picketpost Mtn

Samples 1, 3, 5, 7 + 9 collected by Derek White
" 2, 4, 6, 8 " " CR
" 10, 11 + 12 " " CR + DW

faxed to EKWL
1/20/97

		Northing	Easting	Depth
PM	011397-1	3681391	480441	20
	2	3681253	481139	30
	3	3680550	481979	21
	4	3679867	481578	20
	5	3680850	483248	16
	6	3681234	482909	37
	7	3681333	482082	22
	8	3682143	482567	20
	9	3681771	483432	13
	10	3682230	484091	22
	11	3682506	483400	17
PM	011497-1	3683130	482878	23
	2	3683235	482003	18
A's	3	3684083	482495	28
on	4	3685731	483315	16
map	5	3686332	484185	10

PM = Picketpost Mtn

Samples collected by CR + Derek White

Faxed to EKWeL
1/20/97

	Northing	Depth inches	Easting
E010396-1	3687550	3"	497540
2	3687700	3	498140
3	3688100	3	498650
4	3688120	3	498360
5	3687480	3	498350
6	3687160	3	498320
7	3686970	3	498000
8	3686900	3	497680
9	3687040	3	498550
10	3686800	3	498680
11	3686940	3	498340
12	3686650	3	498670
13	3686370	3	498680
14	3687000	3	498800
15	3686980	3	499300
16	3687760	3	498890
17	3687730	3"	499240

Superior East

Superior East

Sample	Northing	Easting	Depth Inches
SE-1	3685 760	495 640	3"
SE-2	3687 550	497 190	3
SE-3	3687 560	497 830	3
SE-4	3687 800	498 450	3
SE-5	3687 380	498 580	3
SE-6	3687 150	497 990	3
SE-7	3688 910	499 300	3
SE-8	3688 340	497 900	3"

Superior Project 2 of

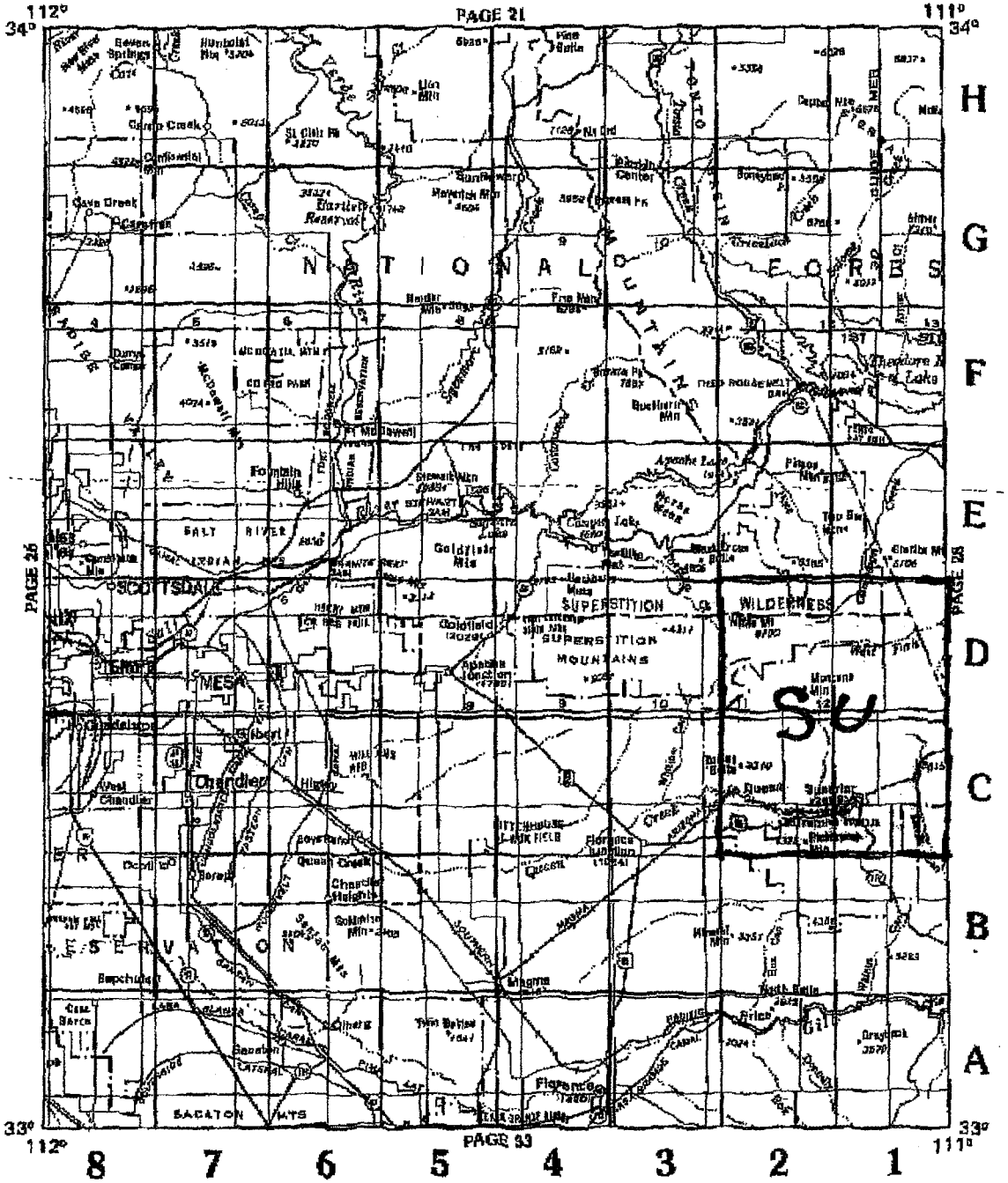
EV / Not Lab		Sample Sequence	7½' Quad	OTM	Data
✓ 787	1894✓	PM041097-1 thru 16 (H)	Pickettpost Mtn	✓	✓
✓ 787	1894✓	PM041197-1 and 2 (J)	Pickettpost Mtn	✓	✓
✓ 787	1894✓	SU041197-1 thru 9 (J)	Superior	✓	✓
✓ 788	1894✓	SU041497-1 thru 10 (K)	Superior	✓	✓
✓ 788	1894✓	SU041597-1 thru 17 (L)	Superior	✓	✓
✓ 788	1894✓	SU041697-1 thru 7 (M)	Superior		

Superior Project

1 of

TEV	Act Lab	Sample Sequence	7½' Quad	OTM	Depth
676	1496	SE - 1 thru 8	Superior	✓	✓
CER	1583	SE 01 03 96 - 1 thru 17	Superior	✓	✓
757	1846	PM 011397 - 1 thru 11	Picketpost mtn	✓	✓
757	1846	PM 01 14 97 - 1 thru 5 (A)	Picketpost mtn	✓	✓
757	1846	PM 01 15 97 - 1 thru 12 (B)	Picketpost mtn	✓	✓
757	1846	PM 01 16 97 - 1 thru 20 (C)	Picketpost mtn	✓	✓
757	1846	SU 011697 - 1 ONLY	Superior	✓	✓
757	1846	SU 01 17 97 - 1 thru 4 (A)	Superior	✓	✓
757	1846	PM 01 17 97 - 1 thru 10 (D)	Picketpost mtn	✓	✓
760	1848	SU 012197 - 1 thru 21 (B)	Superior	✓	✓
760	1848	SU 01 22 97 - 1 thru 22 (C)	Superior	✓	✓
760	1848	SU 01 23 97 - 1 thru 11 (D)	Superior	✓	✓
760	1848	SU 01 24 97 - 1 thru 13 (E)	Superior	✓	✓
762	1853	SU 01 28 97 - 1 thru 15 (F)	Superior	✓	✓
762	1853	SU 012997 - 1 thru 26 (G)	Superior	✓	✓
762	1853	SU 013097 - 1 thru 10 (H)	Superior	✓	✓
771	1878	SU 031797 - 1A thru 1D (2A on map)	Superior Depth Study	✓	✓
771	1878	SU 031797 - 2A thru 2F (4A on map)	Superior Depth Study	✓	✓
771	1878	SU 031797 - 3A thru 3C (1B on map)	Superior Depth Study	✓	✓
771	1878	SU 031797 - 4A thru 4D (4B on map)	Superior Depth Study	✓	✓
771	1878	PM 031797 - 1A thru 1F (15C on map)	Picketpost Mtn Depth Study	✓	✓
787	1894	PM 040797 - 1 thru 5 (E)	Picketpost mtn	✓	✓
787	1894	PM 040897 - 1 thru 16 (F)	Picketpost mtn	✓	✓
787	1894	PM 040997 - 1 thru 15 (G)	Picketpost mtn	✓	✓

33111



Superior Project

7.5 MINUTE QUADRANGLE NAMES

A1	Grayback	E1	Two Bar Mtn.
A2	North Butte	E2	Pinyon Mtn.
A3	Florence SE	E3	Horse Mesa Dam
A4	Florence	E4	Mormon Flat Dam
A5	Blackwater	E5	Stewart Mtn.
A6	Sacaton	E6	Granite Reef Dam
A7	Gila Butte SE	E7	Sawik Mountain
A8	Sacaton Butte	E8	Paradise Valley
B1	Teapot Mountain	F1	Windy Hill
B2	Mineral Mtn.	F2	Theodore Roosevelt Dam
B3	Florence NE	F3	Four Peaks
B4	Magma	F4	Mine Mountain
B5	Sacaton NE	F5	Adams Mesa
B6	Chandler Heights	F6	Fort McDowell
B7	Gila Butte	F7	McDowell Peak
B8	Gila Butte NW	F8	Currys Corner
C1	Superior	G1	Armer Mountain
C2	Picketpost Mtn.	G2	Greenback Creek
C3	Florence Junction	G3	Tonto Basin
C4	Superstition Mts. SW	G4	Boulder Mtn.
C5	Desert Well	G5	Maverick Mtn.
C6	Higley	G6	Bartlett Dam
C7	Chandler	G7	Wildcat Hill
C8	Guadalupe	G8	Cave Creek
D1	Haunted Canyon	H1	Copper Mtn.
D2	Iron Mountain	H2	Picture Mtn.
D3	Weavers Needle	H3	Kayler Butte
D4	Goldfield	H4	Reno Pass
D5	Apache Junction	H5	Lion Mountain
D6	Buckhorn	H6	Horseshoe Dam
D7	Mesa	H7	Humboldt Mtn.
D8	Tempe	H8	New River Mesa

7.5-minute maps may not be available for all areas

Certain areas may be covered by 7.5 x 15- or 15-minute maps

See CATALOG OF PUBLISHED MAPS for available maps, dates, scales, prices, and Map Order Forms

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