1818809 - R8 SDMS

December 4, 1987

Ed Ayers

Ted Duaime

Marvin Miller, Rick Appleman

ADDITIONAL ANALYTICAL RESULTS OF ORPHAN BOY MINE WASTE

Attached are the remaining analytical results from the material collected from the Orphan Boy Mine waste dump.

As was stated in my memo of 10/19/87, the material was collected at one-foot increments in each of the five drill holes, and then composited to sample per hole, in the laboratory and then submitted to the analytical lab for digestion and analysis.

The digest performed was an aqua-regia--hydrofluoric digest.

I see nothing in the attached data to make the use of this material any more favorable than discussed before. I feel use of this material would be inappropriate due to the elevated metal concentrations, and would encourage you to pursue use of one of the other sources we discussed in your office last month.

If you have further questions concerning this data, feel free to contact me at your convenience.

TD:blm

Attachment

Soil Analyses of Orphan Boy Mine Waste Material

	Parameters (ug/g)						
Field Number/Sample Depth	Al	Fe	Mn	Cd	Cr	Cu	Zn
OB-1, 0-10 FT	60,700	23,600	10,800	29	52	80	13,500
OB-2, 0-10 FT	59,700	27,000	15,500	49	51	102	18,600
OB-3, 0-10 FT	62,300	21,400	10,500	16	61	49	4,400
OB-3, 0-10 FT (Duplicate)	63,000	21,400	10,400	15	60	49	4,400
OB-4, 0-10 FT	56,600	26,300	20,300	32	73	84	13,100
OB-5, 0-9 FT	61,700	27,900	13,000	19	45	59	7,100
OB-5, 0-9 FT (Duplicate)	61,500	26,800	12,700	17	41	65	7,100

Aqua-Regia HF digest, results by ICP

MONTANA BUREAU OF MINES AND GEOLOGY
ANALYTICAL DIVISION
WAYNE G. OLMSTEAD, ACTING DIVISION CHIEF

Analysis of solid sample using
Aqua-Regia HF Digest and ICP
for Ted Duaime

Element ug/g	Sample # and Identification						
	87G259	87G260	87G261	87G261 Dup Anal	87G262	87G263	87G263 Dup Digest
	OB-1 0-10	OB-2 0-10	OB-3 0-10		OB-4 0-10	OB-5 0-9	
Ca	14900	18900	15700	15800	19600	17500	17300
Mg	7300	7500	6100	6200	7500	7600	7600
Na	7100	5400	7100	7200	4800	6100	6000
K	31000	32600	37500	37500	33200	36400	36500
Al	60700	59700	62300	63000	56600	61700	61500
Fe	23600	27000	21400	21400	26300	27900	26800
Mn	10800	15500	10500	10400	20300	13000	12700
Cd	29	49	16	15	32	19	17
Cr	52	51	61	60	73	45	41
Cu	80	102	49	49	84	59	65
Li	17	13	12	12	14	13	12
Mo	17	15	23	22	17	15	18
Ni	11	10	11	<10	<10	<10	10
P	500	500	400	400	500	600	600
Pb	3000	4700	2000	2000	2600	2500	2500
Sr	180	150	170	170	140	160	160
Ti	380	300	430	430	340	480	410 ~~140~~
V	47	55	46	43	63	61	59
Zn	13500	18600	4400	4400	13100	7100	7100
Zr	40	46	62	61	41	38	25