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Title
An Energy-Dispersive X-Ray Fluorescence Major Oxide and Trace Element Analysis of Two Artifacts from AZ EE:9:1 (ASM)

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Author
Shackley, M. Steven

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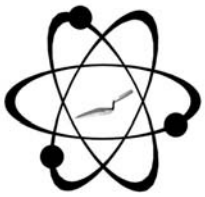

GEOARCHAEOLOGICAL XRF LAB

GEOARCHAEOLOGICAL X-RAY FLUORESCENCE SPECTROMETRY LABORATORY
8100 Wyoming Blvd., Ste M4-158 Albuquerque, NM 87113
USA

LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE MAJOR OXIDE AND TRACE ELEMENT ANALYSIS OF TWO ARTIFACTS FROM AZ EE:9:1 (ASM).

21 April 2015

Dr. Barnet Pavao-Zuckerman
Department of Anthropology
University of Arizona
Tucson, AZ 85721-2976

Dear Barney,

As you suspected, the one projectile point (FN 1636) is likely bottle glass given the oxide and trace element chemistry, and the one small piece (FN 308) is likely a lead slag fragment given the high Pb and As concentrations (Table 1). It appears that there was some smelting at the site, at least for lead, perhaps for weapon balls. I've seen many bottle glass projectile points in Mission period Kumeyaay sites in San Diego County as well. Specific instrumental methods can be found at http://www.swxrflab.net/anlysis.htm, and Shackley (2005).

Sincerely,

M. Steven Shackley, Ph.D.
Director

VOICE: 510-393-3931
INTERNET: shackley@berkeley.edu
http://www.swxrflab.net/

www.escholarship.org/uc/item/3vf0z9qp

REFERENCE CITED

Shackley, M.S.
2005 *Obsidian: Geology and Archaeology in the North American Southwest*. University of Arizona Press, Tucson.

Table 1. Major and minor oxide and trace element concentrations for the archaeological sample, and USGS RGM-1 obsidian standard. All measurements in parts per million (ppm).

Sample	Na2O	MgO	Al2O3	SiO2	P2O5	Cl	K2O	CaO	TiO2	MnO	Fe2O3	As2O5
	%	%	%	%	%	%	%	%	%	%	%	%
1636	2.965	4.42	6.486	60.069	0.261	0.55	3.303	18.351	0.318	0.25	2.72	0.003
308	15.312	1.779	2.621	30.712	2.057	0.593	3.319	11.651	0.336	0.556	5.786	0.944
RGM1-H2	4.065	0	13.253	74.387	0	0.038	4.563	1.309	0.234	0.037	1.949	0.001

	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Pb	Th
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
1636	181	13	39	1159	18	122	2	1053	68	9
308	26870	20	25	156	1	84	0	1349	40348	3
RGM1-H2	26	18	144	109	26	212	12	680	22	11