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AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM CABEZA PRIETA WILDLIFE REFUGE, SOUTHWESTERN ARIZONA

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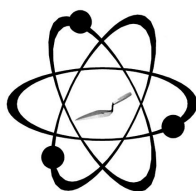
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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM CABEZA PRIETA WILDLIFE REFUGE, SOUTHWESTERN ARIZONA

19 October 2021

Rick Martynece
PO Box 565
Ajo, AZ 85321

Dear Rick:

The artifacts were produced with Saucedo Mountains obsidian ($n=2$) with one from Los Vidrios, not unlike the distribution of sources in previous studies at CPWR (Table 1 and Figure 1). Specific instrumental methods can be found at <http://www.swxrflab.net/analysis.htm> and Shackley (2005). Source assignment was made by comparison to source standard data in the laboratory (see also Shackley 1995, 2005). Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Table 1 here). Refer to Shackley (2015) for a more in-depth discussion of the sources.

Sincerely,

M. Steven Shackley, Ph.D.
Director

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REFERENCES CITED

Shackley, M.S.

1995 Sources of Archaeological Obsidian in the Greater American Southwest: An Update and Quantitative Analysis. *American Antiquity* 60(3):531-551.

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

2015 Source Provenance of Obsidian Artifacts from the Cabeza Prieta National Wildlife Refuge, Southwestern Arizona. Report prepared for Cabeza Prieta National Wildlife Refuge.

Table 1. Elemental concentrations for the archaeological samples and USGS RGM-1 rhyolite standard. All measurements in parts per million (ppm).

Site/Sample	Ti	Mn	Fe	Zn	Rb	Sr	Y	Zr	Nb	Ba	Ce	Pb	Th	Source
10501-1	1485	377	10490	59	163	74	34	203	23	1060	104	19	28	Sauceda Mtns, AZ
10605-1	1208	273	11963	57	117	71	31	217	17	915	75	18	16	Sauceda Mtns, AZ
10606-1	970	273	12999	136	256	19	70	224	35	14	82	28	38	Los Vidrios, Sonora
RGM1-S4	1462	284	13333	37	151	107	22	219	10	803	39	20	18	standard

¹ Site number (AZ Y:) followed by sample number for that site noted on sample bag.

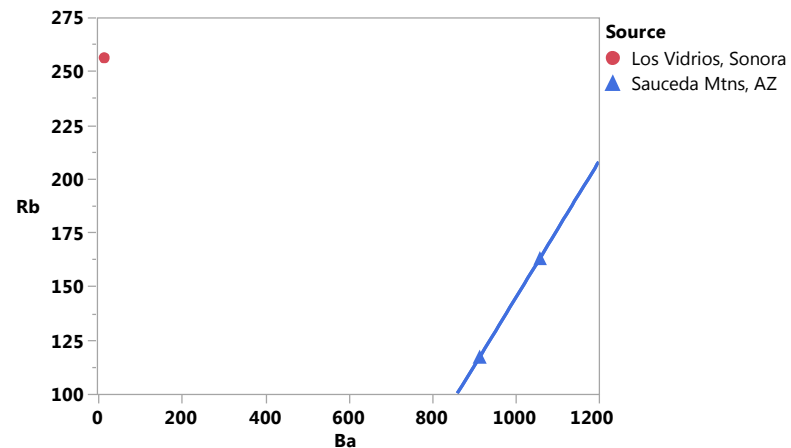


Figure 1. Ba/Rb bivariate plot of the archaeological samples and source assignments. Confidence line at 90%.