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## Archaeological X-ray Fluorescence Reports

### Title

An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from a Site Near Oracle, Arizona

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**LETTER REPORT**

**AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF  
OBSIDIAN ARTIFACTS FROM A SITE NEAR ORACLE, ARIZONA**

25 November 2012

Richard Higgins  
8409 E Nicaragua Dr  
Tucson, AZ 85730

Dear Richard,

The assemblage is quite diverse from sources in western New Mexico/eastern Arizona (Cow Canyon and the Mule Creek sources) and the Sonoran Desert (Sauceda Mountains, Superior, and Tank Mountains (Shackley 2005; Table 1 and Figure 1 here). The one Tank Mountains sample is slightly outside the source standard data for Rb, but could be from that source.

The samples were analyzed using a Thermo Scientific *Quant'X* EDXRF spectrometer in the Archaeological XRF Laboratory, Albuquerque, New Mexico. Source assignments were made by comparison to published source standard data and the source standard collection at this laboratory (Shackley 1995, 2005). Instrumental methods can be found at <http://www.swxrflab.net/analysis.htm>. Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Govindaraju 1994; Table 1 here).

Sincerely,

M. Steven Shackley, Ph.D.  
Director

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### REFERENCES CITED

Govindaraju, K., 1994, 1994 Compilation of working values and sample description for 383 geostandards. *Geostandards Newsletter* 18 (special issue).

Shackley, M.S., 1995, Sources of archaeological obsidian in the Greater American Southwest: an update and quantitative analysis. *American Antiquity* 60(3):531-551.

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

Table 1. Elemental concentrations for the archaeological samples. All measurements in parts per million (ppm).

Sample	Ti	Mn	Fe	Rb	Sr	Y	Zr	Nb	Pb	Th	Source
8613-1	168	333	1134	163	109	27	175	20	22	21	Sauceda Mtns
8623-1	104	388	1044	239	24	42	109	26	32	36	Antelope Cr/Mule Cr
8794-0	102	458	8788	180	15	23	112	34	25	26	Mule Mtns/Mule Cr
8801-1	127	409	9482	141	138	14	118	16	18	20	Tank Mountains?
9007-0	103	477	8212	117	19	25	94	28	25	8	Superior (Picketpost Mtn)
RGM1-S4	156	282	1340	151	110	24	219	11	23	19	standard

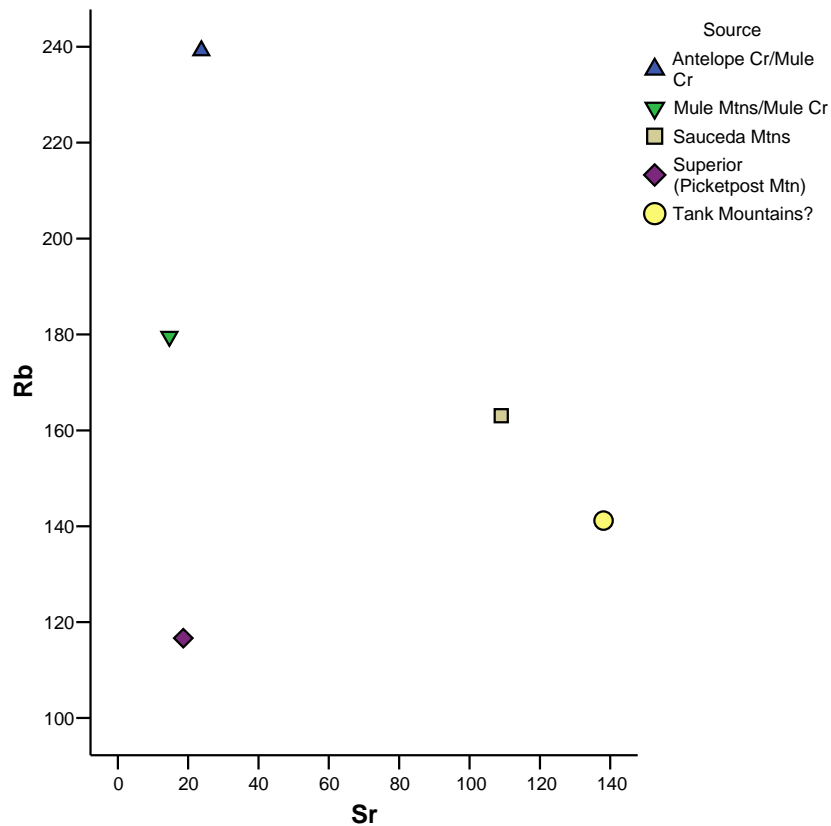


Figure 1. Sr versus Rb bivariate plot of artifacts.