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LETTER REPORT

AN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBSIDIAN ARTIFACTS FROM WALLACE TANK PUEBLO (AZ Q:1:199), APACHE COUNTY, ARIZONA

4 November 2010

Dr. Greg Schachner
Department of Anthropology
University of California
Los Angeles, CA 90095

Dear Greg,

This collection from Wallace Tank Pueblo, even as small as it is, exhibits substantial provenance diversity from Arizona's Government Mountain (60%), to sources in northern and western New Mexico (Mule Creek, 20%; Mount Taylor, 10% and one each from Cerro Toledo and Valles Rhyolite sources in the Jemez Mountains of northern New Mexico (Tables 1 and 2; Figure 1). There is certainly a high level of social contact in all directions in this part of the "Western Anasazi" region as suggested by the obsidian provenance studies in and around Petrified Forest National Monument.

The samples were analyzed with a Thermo Scientific *Quant'X* EDXRF spectrometer in the Archaeological XRF Laboratory, El Cerrito, California. Specific instrumental methods can be found at <http://www.swxrflab.net/analysis.htm>, and Shackley (2005). Samples assigned to source by comparison to source standards at Berkeley (Shackley 2005; see Figure 1 here). Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Table 1 here).

Sincerely,

M. Steven Shackley, Ph.D.
Director

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<http://www.swxrflab.net/>

REFERENCE CITED

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	Source
1	462	557	9048	117	79	23	82	52	Government Mtn
2	507	550	8577	108	76	22	80	51	Government Mtn
3	440	549	8812	113	79	18	82	50	Government Mtn
4	436	480	7737	100	70	19	75	44	Government Mtn
5	459	547	8699	109	76	18	78	57	Government Mtn
6	421	554	8800	110	77	22	81	57	Government Mtn
7	543	304	7602	199	15	39	98	22	Mule Cr (Antelope Cr)
8	611	389	8843	247	14	44	110	29	Mule Cr (Antelope Cr)
9	397	861	8065	574	7	76	109	194	Mount Taylor
10	384	559	8632	110	75	18	77	54	Government Mtn
11	422	615	8799	509	7	83	130	222	Mount Taylor
12	512	561	9064	111	77	19	79	49	Government Mtn
13	623	403	9053	247	15	42	110	25	Mule Cr (Antelope Cr)
14	444	632	9699	117	84	24	78	45	Government Mtn
15	422	554	8807	109	78	23	79	52	Government Mtn
16	527	568	8888	107	78	20	81	51	Government Mtn
17	434	519	8478	112	76	21	78	53	Government Mtn
18	601	530	9602	209	7	62	163	94	Cerro Toledo Rhy
19	769	465	10267	174	8	48	167	58	Valles Rhy
20	649	368	9055	243	15	42	108	25	Mule Cr (Antelope Cr)
RGM1-S4	1753	301	13102	149	104	26	211	8	standard
RGM1-S4	1691	313	13014	154	106	26	209	10	standard

Table 2. Frequency of source provenance at Wallace Tank.

Source	Frequency	Percent
Government Mtn	12	60.0
Mule Cr (Antelope Cr)	4	20.0
Mount Taylor	2	10.0
Cerro Toledo Rhy	1	5.0
Valles Rhy	1	5.0
Total	20	100.0

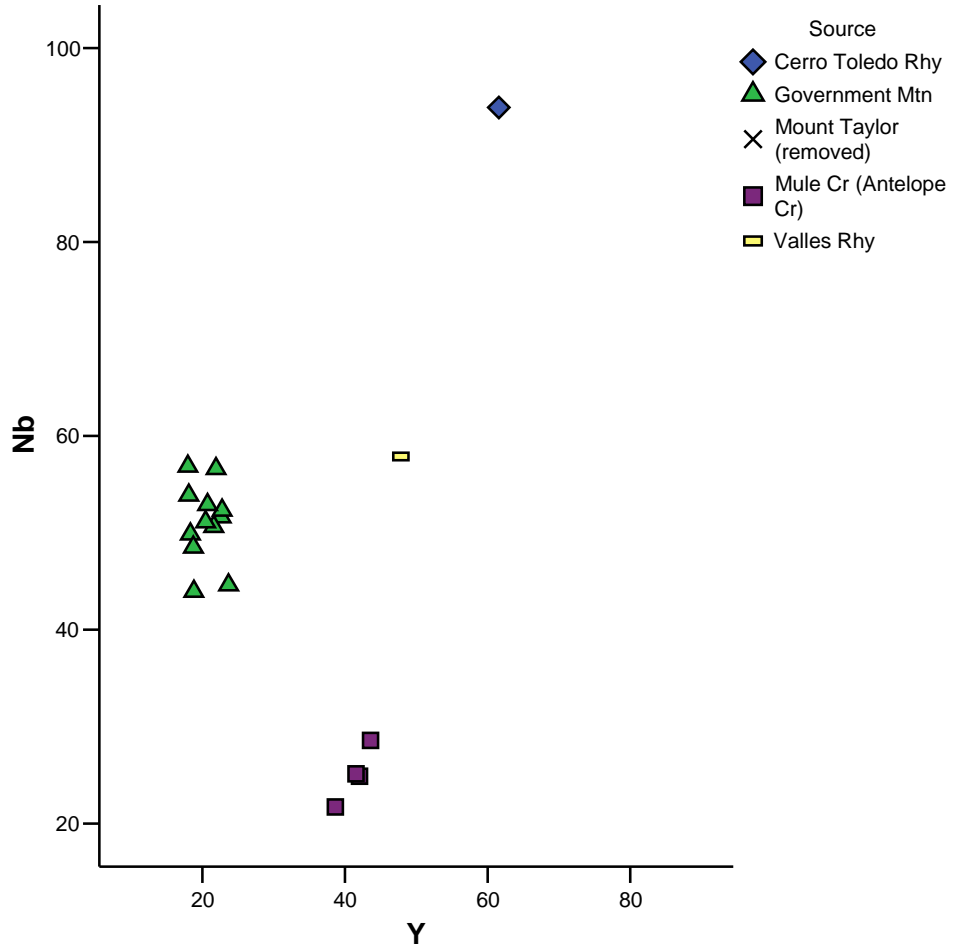


Figure 1. Y versus Nb bivariate plot of the archaeological specimens. The high Nb Mount Taylor samples removed for clarity.