Title
An Energy-Dispersive X-Ray Fluorescence Analysis of Obsidian Artifacts from Archaeological Sites in Larimer and Jefferson Counties, Colorado

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Dr. Jason LaBelle
Department of Anthropology
Colorado State University
Fort Collins, CO 80523

Dear Jason,

Your assumption was correct, and the two artifacts were produced from one of the three major sources in the Jemez Mountains, Cerro Toledo Rhyolite, and Valles Rhyolite (Cerro del Medio; see Shackley 2005; Table 1 here). Cerro Toledo Rhyolite is available as secondary deposits as far north as Española, New Mexico, but Cerro del Medio is only available in the Valles Caldera proper (Shackley 2005, 2010).

The samples were analyzed with the Thermo Scientific Quant’X EDXRF spectrometer in the Archaeological XRF Laboratory, Albuquerque, New Mexico. Specific instrumental methods can be found at http://www.swxrflab.net/anlysis.htm, and Shackley (2005). Samples assigned to source by comparison to source standards at Berkeley (Shackley 2005). Analysis of the USGS RGM-1 standard indicates high machine precision for the elements of interest (Table 1).

Sincerely,

M. Steven Shackley, Ph.D.
Director
REFERENCES CITED

Shackley, M.S.


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

<table>
<thead>
<tr>
<th>Sample</th>
<th>Ti</th>
<th>Mn</th>
<th>Fe</th>
<th>Rb</th>
<th>Sr</th>
<th>Y</th>
<th>Zr</th>
<th>Nb</th>
<th>Pb</th>
<th>Th</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-1</td>
<td>858</td>
<td>505</td>
<td>1035</td>
<td>207</td>
<td>8</td>
<td>67</td>
<td>179</td>
<td>96</td>
<td>35</td>
<td>23</td>
<td>Cerro Toledo Rhy.</td>
</tr>
<tr>
<td>2012-2</td>
<td>1117</td>
<td>449</td>
<td>1205</td>
<td>174</td>
<td>11</td>
<td>46</td>
<td>168</td>
<td>53</td>
<td>29</td>
<td>18</td>
<td>Valles Rhy.</td>
</tr>
<tr>
<td>RGM1-S4</td>
<td>1606</td>
<td>293</td>
<td>1326</td>
<td>150</td>
<td>110</td>
<td>24</td>
<td>218</td>
<td>11</td>
<td>20</td>
<td>14</td>
<td>standard</td>
</tr>
</tbody>
</table>