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Douglas C. Wilson

Portland State University, doug@pdx.edu

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Musket Balls, Lewis & Clark, and the Fur Trade: Isotopic, Elemental, and Historical Analysis

by Doug Wilson, NPS Archaeologist

The chemical analysis of lead objects has been used in archaeology and forensics to tie a particular ore or manufacturer to a particular artifact. In 2005, the Park Service partnered with Portland State University to explore the Chinook “Middle Village” site/Lewis and Clark’s Station Camp at the mouth of the Columbia River. Isotopic and elemental analyses of artifacts from the site, combined with analyses of similar artifacts from the Cathlapotle and Meier sites in the Portland Basin, expand on Jamie Lockmann’s work, which explored artifacts from Fort Vancouver, a Hudson’s Bay Company site; and Fort Clatsop, and Travelers’ Rest, Lewis and Clark Corps of Discovery sites.

Historical records suggest that lead recycling of musket

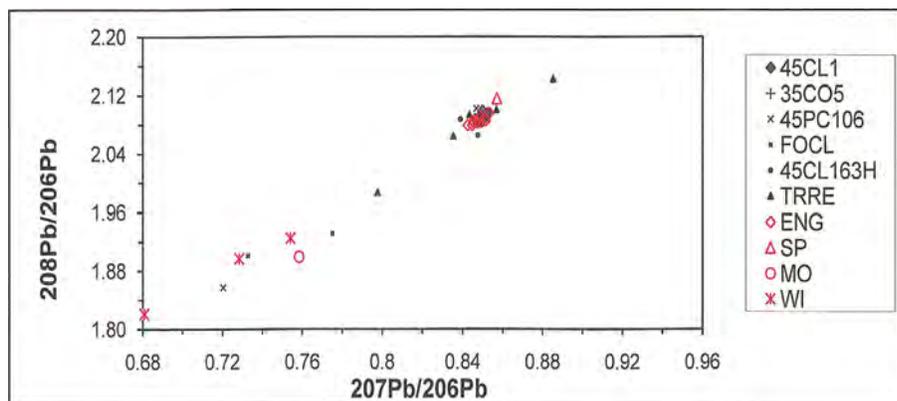


Image courtesy of Fort Vancouver NHS

Lead isotope characteristics of artifacts compared with likely sources. With one exception, all of the samples from 45CL1 (Cathlapotle, Clark County, WA); 45PC106 (Station Camp/McGowan site, Pacific County, WA); and 35CO5 (Meier site, Columbia County, OR) cluster with the English sources and artifacts from 45CL163H (Fort Vancouver site). While artifacts from FOCL (Fort Clatsop site, Clatsop County, OR) and TRRE (Traveller’s Rest site, Missoula County, MT) reflect a variety of origins, some tied to Wisconsin sources. The contexts of the finds suggest that post fur-trade deposition of lead bullets by settlers and hunters were likely responsible for these artifacts. (Bower et al. 2007: table 1; Lockman 2006: appendix A). ENG (English sources); SP (Spanish source); MO (southeast Missouri source); WI (Wisconsin Source).

balls and shot from multiple, chemically distinctive sources was probably minimal in the 19th century, and unlikely to confuse the contrasts between distinctive lead mining regions and distribution routes for lead artifacts. This suggests that isotopic and chemical techniques can be used to identify sources of lead in the Pacific Northwest during the fur trade period.

Likely sources of lead musket balls and shot in the Pacific Northwest are from England, perhaps Spain, and the Wisconsin and southeast Missouri areas of the United States. The results of this analysis suggest that the bulk of lead at Chinookan sites is from English sources. The elemental

analysis provides clues that early fur trade sources of lead might be different from later Hudson’s Bay Company sources of lead, and point to innovations in lead smelting and manufacturing technology. Contrary to popular accounts, the identification of a unique lead signature related to the Lewis and Clark expedition is still uncertain.

Regardless, isotopic analysis appears useful for inferring the source of lead artifacts and the technological development of lead products during the Industrial Revolution. Results of the study will be presented at the 62nd Annual Northwest Anthropology Conference, April 9, 2009 at Newport, Oregon.



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Fort Vancouver National Historic Site & Vancouver National Historic Reserve

612 East Reserve Street
Vancouver, WA 98661

Phone

360 816-6230

Website

www.nps.gov/fova

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