Testing for phosphates at archaeological sites has helped to guide the placement of archaeological excavation units in the past. Phosphate testing can assist archaeologists by pinpointing areas of elevated human activity. The technique, however, has only been used minimally in archaeological practice. Phosphate testing is not common due to the high laboratory cost of performing phosphate tests, and the relative ambiguity of results obtained from field-testing for phosphates. Archaeology would benefit greatly from a less expensive, more accurate method of phosphate testing. By slightly changing the standard field test for phosphate analysis it is possible to improve results. A revised method for phosphate testing also allows archaeologists to test sites to obtain the location of middens and other features, to identify land-use patterns, to locate new sites, and even discern chronology of a site, within a reasonable budget. Two case study analyses were performed to show how phosphate testing can be used in conjunction with archaeology. They were located at the Achill Archaeology Field School project site in County Mayo, Republic of Ireland, and at the Cornell University project site at Robert Treman State Park, New York State, United States of America.