An Explanation of the Vermont Division for Historic Preservation's Predictive Model

All human beings require a minimum set of resources to survive. Decades of archaeological research have informed the Vermont Division for Historic Preservation (VDHP) how Native Americans in Vermont mapped themselves onto specific resources through time, and environmental reconstructions and field observations have helped determine what a given location offered for resources at specific periods in the past. Recorded archaeological site locations provide additional, direct evidence of past occupations and resource procurement areas, and how these have changed.
In 2002, the Vermont Division for Historic Preservation (VDHP) developed a predictive model based upon the accumulated environmental and archaeological information as a means to forecast the probability of significant archaeological sites occurring in any particular location. The Vermont Advisory Council on Historic Preservation (ACHP) reaffirmed the predictive model without reservation on October 22, 2015. The predictive model is a checklist that scores an area's proximity to a select list of current and/or past environmental features important to precontact Native American communities. The graphs below provide two, real world examples of two criteria the predictive model considers (Figures 1 and 2).

Figure 1 illustrates the distances (between 0 and 300 m) of a total of 1749 Native American archaeological sites to the nearest stream course. This represents approximately 80% of all of the precontact Native American sites yet identified in Vermont. Although there are spikes and dips in the frequencies of sites at any given distance, the overall trend indicated by the dotted line shows a decreasing number of sites with increasing distance from streams. This trend is reflected in the scoring on the predictive model, where 0-90 m from a stream is awarded a score of 12 and 90-180 m is awarded a score of six.

Figure 2 graphs the distances (between 0 and 300 m) of a total of 759 Native American archaeological sites to the nearest major river. A trend of the decreasing numbers of sites with increasing distance from a river is also evident in this graph. The lower overall number of sites between 0 and 300 m compared to the stream/site frequency graph is a function of the limited numbers of major rivers in Vermont compared to the relative ubiquity of streams. Where rivers are present, they were powerful attractors for Native Americans. As such, the scoring on the predictive model is equivalent to the scoring for streams, where 0-90 m from a stream is awarded a score of 12 and 90-180 m is awarded a score of six.

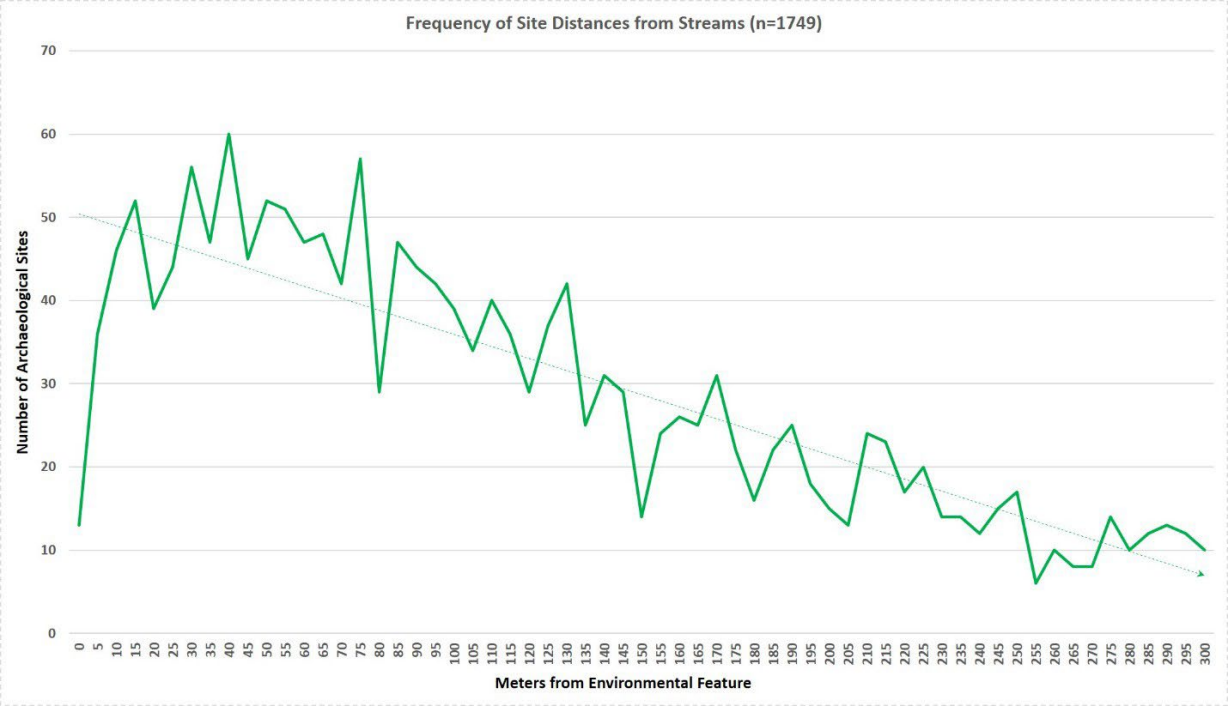

Figure 1 Graph depicting the frequency of distances between Vermont Precontact archaeological sites and mapped streams. The dotted line depicts the overall trend.

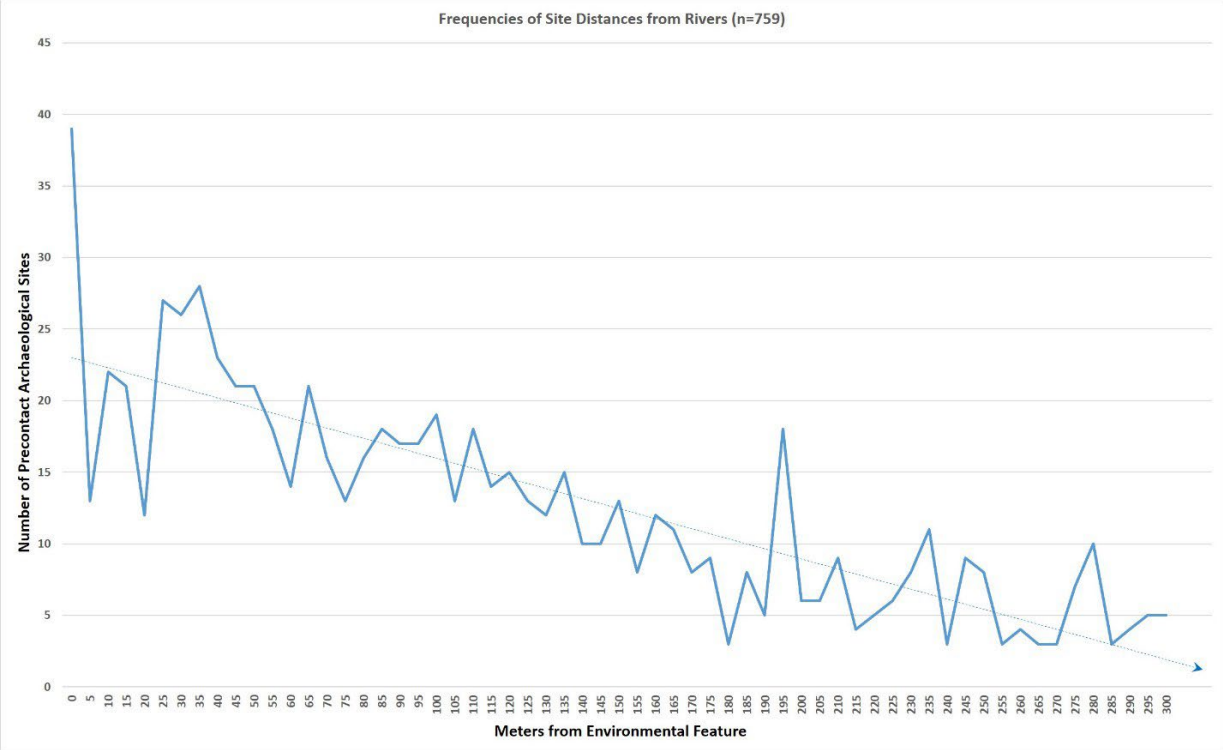

Figure 2 Graph depicting the frequency of distances between Vermont Precontact archaeological sites and mapped rivers. The dotted line depicts the overall trend.

A range of other environmental factors, such as proximity to wetlands, river/stream confluences, waterbodies, and locations on Late Pleistocene Champlain Sea shorelines are also scored as part of the predictive model. Like rivers and streams, they are scored based upon their proximity to the project area and by their degree of direct association with previously identified archaeological sites. Although several non-environmental factors, such as the presence of previously identified Precontact archaeological sites within 5 km of the project area and areas that have a demonstrated importance in Native American oral history, are considered in the predictive model, the overall reliance upon the environmental and physical characteristics of the landscape means that it is only marginally helpful in predicting the locations of individual Native American burials, cemeteries, and special use or ceremonial areas (i.e. Traditional Cultural Properties) during any Precontact or early Contact-era time period.

The predictive model may also be helpful for predicting the locations of early historic-era sites. Increasing industrialization and population expansion throughout the 1800s, however, enabled settlers to move into areas that were previously uninhabitable for extended periods of time. As such, the model is largely ineffective at predicting the locations of sites dating to and after the industrial age (1820-1870).

The predictive model can only be completed and submitted to the VDHP by a Secretary of the Interior qualified consultant for the purposes of project review. The predictive model is only a coarse filter that may highlight potential archaeological site areas. It should be utilized as an initial desk review tool as part of an overall evaluation of the archaeological sensitivity of the project area. It should not be used in lieu of a site visit.

Any questions regarding the predictive model or its application in archaeological sensitivity assessments please contact:

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