DIVISION OF PRESERVATION AND ACCESS

Narrative Section of a Successful Application

The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the NEH Division of Preservation and Access application guidelines at https://www.neh.gov/grants/preservation/humanities-collections-and-reference-resources for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Preservation and Access staff well before a grant deadline.

Note: The attachment only contains the grant narrative and selected portions, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title: Digitizing Plimoth Plantation's 17th-Century Historical Archaeology Collections

Institution: University of Massachusetts, Boston (Boston, MA)

Project Director: Christa Beranek

Grant Program: Humanities Collections and Reference Resources

Out of the Box and Onto the Internet:
Digitizing Plimoth Plantation's 17th-Century Historical Archaeology Collections

1. Significance

In 1620, a small group of 102 intrepid men, women, and children arrived in New England aboard the English ship *The Mayflower*. Today, there are approximately 23 million Americans descended from this group of pilgrims, and their voyage has played an instrumental role in American identity and mythology, ranging from Thanksgiving traditions to stereotypical iconography of pilgrims with buckled hats. As the 400th anniversary of their arrival (1620-2020) approaches, this historic voyage and the founding of Plymouth Colony has generated renewed public, scholarly, and institutional interest in the history and interpretation of the early years of the colony and in the primary source collections that form the basis of those interpretations.

Chief among those primary sources are archaeological collections from 17th-century domestic sites held by Plimoth Plantation, a living history museum in Plymouth, Massachusetts, dedicated to studying and interpreting 17th-century Native and colonial life. Excavated between 1940 and 1972, the Museum's archaeological collections remain some of the most significant resources from the first 80 years of English settlement in Massachusetts. However, the collections and the data drawn from them have not been readily available to scholars or the public because of their incomplete and variable cataloging and their non-standard storage and organization. Currently, less than 1% of the collections are on physical display at the Museum, and none of it is yet accessible online.

In an effort to make the Museum's rich archaeological resources available to scholars, educators, *Mayflower* descendants, and the general public, this project will digitize four of the Museum's most significant 17th-century archaeological collections and make them available online via both scholarly databases and public-friendly finding aids through the Museum's web page. As a result, these collections will be accessible for new research and interpretation for the first time in the Museum's 70 year history, an especially timely project as we approach the *Mayflower*'s 400th anniversary.

This work is part of a multi-component Plimoth Plantation-University of Massachusetts Boston partnership begun in 2013. Two studies have been completed in preparation for this project (see Prior Grants): the first was a Survey and Planning Grant completed for the Massachusetts Historical Commission which surveyed all of the Museum's historical archaeological collections, identifying which of those had 17th-century components and assessing housing issues at the collection level; the second was a Creative Economy grant from the University of Massachusetts which piloted the digitization standards and workflow that will be used in this proposed project. The completed pilot project worked with the collection from a single site (the RM/Clark Garrison site, C-1). The proposed project would digitize three additional significant 17th-century archaeological collections (the Winslow site, C-2; the William Bradford II site, C-6; and the Allerton-Cushman site, C-21), and create the web interface for all four sites. Specifically, the HCRR grant would use the metadata and standards developed during the earlier pilot project to catalog the Winslow, Bradford, and Allerton-Cushman sites, photograph the artifacts (including 3D photogrammetry), digitize the associated documentary data, and create the descriptive finding aids for all four sites. We are currently prototyping the public, online interface for these finding aids and digital collections which will be linked from Plimoth Plantation's website, and we will use the HCRR grant to develop and finalize this portion of the project with input from a multi-disciplinary Advisory Committee.

As one of the first efforts to create a multi-site digital overview of New England's historical archaeological collections, the project's Advisory Committee will include public historians, archaeologists, and database specialists. They will be consulted at the outset of the project to review the database structure, catalog fields, and terminology developed during the pilot project in 2016-2017 so that

we can make any necessary adjustments, and again as we develop the final web interface. Their input will help determine what kinds of information different audiences would like to be able to access and the best methods to effectively present this information. Several member of the Advisory Committee have expertise with large archaeology- and collections-based databases and will be able to advise with technical aspects of the project and to ensure that our work is in-line with current best practices.

1.1 Significance of Plimoth Plantation's Archaeological Collections

Archaeology has always been a core part of Plimoth Plantation, founded in 1947 by Henry Hornblower who trained as an archaeologist before taking on a career in banking. Hornblower later hired Dr. James Deetz to continue fieldwork on colonial sites in the region. Deetz went on to become one of the founders of the academic discipline of historical archaeology. Active field research by Plimoth Plantation staff continued into the early 1980s, after which time, the museum narrowed its focus to collections curation and interpretation.

Plimoth Plantation owns and curates more than 70,000 archaeological artifacts from Native and colonial sites, primarily in Plymouth and Barnstable counties, Massachusetts. These collections vary widely in recovery method; some were collected by avocational archaeologists while others were professionally excavated. As a result, the collections' documentation, analysis, and inventory methods also vary dramatically. All of the archaeological materials have slowly undergone basic processing, and most have been washed and removed from their field bags. The collections have been cataloged to some degree, although cataloging is not always complete and there is no standard physical organization or cataloging system among the collections, making it difficult if not impossible to compare the sites to each other or to other collections at other institutions.

The collections covered in this grant were excavated by Hornblower and Deetz and are significant both as some of the few known 17th-century archaeological sites in Massachusetts and as part of the history of historical archaeology. These collections contain fragmented glass, ceramic, metal, stone, and bone artifacts that provide information about the household furnishings, diet, economic interactions, dress, and other activities of the 17th-century English and Native residents of Plymouth Colony. The bulk of the collections consists of European-produced material, with small numbers of local Native lithics and ceramics.

RM/Clark Garrison Site (C-1): The RM Site, also known as the Clark Garrison, is located on the grounds of Plimoth Plantation. Between 1623 and 1635, Thomas Clark built a house on this site and lived there with his family and possibly other individuals. The house was destroyed ca. 1676 during King Phillip's War (Beaudry, Goldstein, and Chartier 2003; Deetz and Deetz 2000) and is one of the few excavated sites to show evidence of the violent conflict. From 1940 to 1987, the site was excavated multiple times by numerous individuals, including Hornblower, Deetz, and Douglas George (Beaudry and George 1987). Many of the artifacts from this site have been lost in the decades since excavation, but there is still considerable interpretive potential in the 15 boxes of material that remain. During 2016-2017, a Creative Economy Grant funded digitization of the 4,000 artifacts and two and a half linear feet of associated documentary material.The workflow developed for this digitization project will become the basis for digitizing the three other collections outlined below, and the HCRR grant would create a finding aid for this digital resource that is comparable to the finding aids generated for the other three collections included in this project.

Winslow Site (C-2): The Winslow site in Marshfield, Massachusetts, was home to Josiah and Penelope Winslow during the second half of the 17th century. Josiah Winslow was the fourth child of *Mayflower* passengers Susanna White and Edward Winslow and was the first Plymouth-born governor of Plymouth Colony. The archaeological remains of his house, therefore, provide unique insight into daily life among well-respected, second-generation colonists. Hornblower and members of the Harvard Excavators' Club

2

excavated the site in 1941 and 1949. In 1971, Deetz and Geoffrey Moran of Brown University conducted a limited re-excavation of the site, listed as Plimoth Plantation C-14. Subsequent reanalysis by Dr. Karin Goldstein produced an updated view of the structure as a double-pile building with a central chimney that was furnished with objects representative of the Winslow family's high status in the community (Goldstein 2001; Beaudry, Goldstein, and Chartier 2003). Currently, this collection has approximately five linear feet of documentary material associated with the excavations and subsequent research. Eighteen of the 39 total boxes have been inventoried in Excel spreadsheets, which will be merged with other inventories and checked against the original paper catalogs prior to being updated to include additional data and standardized with other collections held by the Museum. The collection is currently organized by material rather than provenience, however the artifacts will be resorted according to provenience and photographed so as to be more useful for scholars and future exhibits. Overall, the collection is in good condition, with more than half of the artifacts stored in archivally-appropriate containers; the remaining portion will be rehoused in polyethylene bags and coroplast boxes (as recommended by Federal and disciplinary standards; see https://sha.org/resources/curation-standards-guidelines/) as it is reorganized.

William Bradford II Site (C-6): The William Bradford II site is located on a parcel owned by the Massachusetts Society of Mayflower Descendants in Kingston, Massachusetts. William Bradford II was the first child of Alice Bradford and *Mayflower* passenger and author of *Of Plimoth Plantation*, Governor William Bradford. The 17th-century archaeological material from this site, therefore, offers further insight into daily-life among second-generation colonists. The site was excavated in 1966 by Deetz and the collection is owned by and housed at Plimoth Plantation. George's (1986) evaluation of the collection suggests that it represents two occupation periods, with a cellar hole from 1680-1710 and an 1800-1850 house. The field documentation of the excavation is relatively good, and the site has been mentioned in multiple publications, making it an important site to have digitally accessible for future researchers. Currently, this collection has nearly one and a half linear feet of documentary material as well as an Excel catalog of approximately 1,000 artifacts. Like the Winslow Site collection, the documentary material will be scanned and the artifact catalog will be updated to include missing data that would bring it in line with the Museum's other archaeological collections. This collection would then be reorganized by provenience and photographed, although no rehousing is currently necessary as it is in archival-grade storage containers.

Allerton-Cushman Site (C-21): The Allerton-Cushman site is located in Kingston, Massachusetts, on property purchased by *Mayflower* passenger Isaac Allerton in 1628, later deeded to his son-in-law Thomas Cushman. Isaac Allerton served as the assistant to Governor William Bradford from 1621 into the 1630s, a post which enabled him to work directly with the Colony's London investors and numerous business transactions. In 1972, Deetz excavated the site (Deetz and Deetz 2000) and identified the first example of post-in-ground or earthfast architecture in New England, a structure with large corner post molds, a cobble stone hearth, pit features, and a palisade trench. This discovery revolutionized our understanding of early colonial houses and building methods in the region. The collection includes less than one linear foot of documentary material and approximately 1,000 artifacts that have been cataloged in an Excel spreadsheet. Like the other collections in this project, the documentary material will be scanned and the artifact catalog will be updated to include missing data. While the collection also needs to be reorganized by provenience, it is in good condition and will not require rehousing.

The work proposed in this grant would continue the archaeological mission that was part of the founding of Plimoth Plantation and build on the incremental improvements to collections storage and cataloging made over the previous 10 years by current (Dr. Kathryn Ness) and former curators (Dr. Karin Goldstein). This grant would carry out recommendations made by the 2014 Survey and Planning project (described below) to improve and standardize artifact storage, create comprehensive digital catalogs necessary to enhance the accessibility and research value of the collections, and to facilitate comparative research both

among collections held by Plimoth Plantation and other institutions.

1.2 Significance of the Sites and Collections

Together, these sites offer unique insight into daily life among first and second generation colonists in Plymouth Colony and provide a tangible source of data on 17th-century New England that allows both scholars and the public to better understand this part of our national past. A 2014 Survey and Planning project (Landon and Beranek 2014) identified a total of only 32 sites with 17th and early 18th-century components from the core area covered by Plymouth Colony (the modern towns of Plymouth, Marshfield, Kingston, and Duxbury). The survey found that Plimoth Plantation holds more archaeological collections from 17th-century colonial sites than any other regional repository. The four collections covered by this grant, and a small number of others owned by other institutions (Alden Site, Duxbury; Howland Sites, Kingston; Myles Standish Site, Duxbury; and Marshfield Airport Site, Marshfield) are the most significant 17th-century sites. Several other sites are known in Boston and Charlestown, but the corpus of archaeological material about the early 17th-century in Massachusetts is relatively limited, especially when compared to the 450 known buildings (discovered as archaeological sites) in Maryland and Virginia from the same time period (Lounsbury 2011: 39).

1.2.1 Research and Interpretative Themes

Plimoth Plantation's collections, especially the ones included in this project, have a very high degree of research potential in the fields of archaeology, colonial and Native history, and architectural history. However, the small scale of many existing analyses and limited number of artifact types studied proves that this research potential has yet to be fully realized. Comprehensive digital catalogs will significantly enhance access to the collections and make it easier for outside scholars to use Plimoth Plantation's archaeological resources. Similarly, standardizing the inventory methods and catalog data will increase the ease and possibility of using these sites in cross-site analyses both within and beyond the region, enabling the collections in this project to be studied as part of broader North American and trans-Atlantic colonial enterprises.

To date, the most detailed scholarship on these sites and collections has been in vernacular architectural history, understanding early colonial building forms and techniques. The RM, Winslow, and Allerton-Cushman sites, for example, were key sites in a study of 17th-century architecture in New England (Beaudry, Goldstein, and Chartier 2003, Deetz and Deetz 2000), and the Allerton-Cushman Site yielded the first evidence of earthfast construction in New England. When combined with documentary evidence such as probate records, the archaeological material from these sites can also help scholars understand how structures and rooms were organized and used in the past. Further research remains to be done on architectural material (nails, window leads, window glass, and door hardware) and spatial layout at all of the sites.

Beyond studies of the house form, however, most research topics have not been examined across multiple sites or multiple categories of artifacts, yet the collections have the potential to speak to research themes across the social sciences such as the expression of social differentiation and social status (Beaudry 1984; Goldstein 2001); early colonial trade and exchange (Hawkins 2016); Plymouth's role in colonial America and the Atlantic world as well as the global nature of 17th-century colonization and trade; the beginning of Anglo-American craft production in New England; the history of dress and personal adornment; and the history of foodways (Landon 1996; Randall 2009) and developments in Anglo-American cooking and cuisine. At a large scale, all of the collections can be used in studies of European colonialism and the relationships between colonists and Native people (Bowers 2015). The examination of the long-term interaction of these groups after European settlement has been one of the major developments in research on the early colonial period in recent years, producing a more complicated picture of exchange, resistance, and persistence than has been presented in earlier, mythologized narratives.

Finally, the field notes and collections that will be digitized are an important part of the history of the field of historical archaeology. The collections held by Plimoth Plantation were excavated over nearly six decades and offer unique insight into the development of archaeological methods, theories, and approaches to studying and interpreting the past. Many of them are the sources for important studies in the development of historical archaeology as a field. Deetz's seminal work *In Small Things Forgotten* (1977) is often considered foundational reading for archaeology students, and he used many of the collections held by the Museum as the basis for his three-phase model of cultural change, a model that has been applied and tested by numerous other scholars working on Anglo-American colonial sites throughout the United States.

1.3 Audience

The audience for this material is broad and includes scholars in archaeology, anthropology, architectural history, and colonial and Native history, as well as museum interpreters and educators at Plimoth Plantation and elsewhere, primary and secondary school teachers and their students organizations creating historically-informed media, and the general public.

The collections at Plimoth Plantation serve as a significant research and reference collection for scholars, with broad research topics outlined above. Archaeologists, museum professionals, and members of the public routinely visit or contact Plimoth to request research visits, learn about specific collections, or ask for help identifying objects. In the past year, nearly a dozen individuals have requested research visits, including the State Archaeologist for Connecticut; professors from Laval University (Quebec, Canada), the College of William and Mary (Virginia), and UMass Boston; staff from Native museums in the area; and graduate students undertaking thesis research. The artifacts are also used by UMass Boston faculty and students for classes and as a resource during their annual archaeological field school in Plymouth.

The lack of available online information about the collections means that most of these requests occur because individuals know by word of mouth that the Museum has appropriate artifacts. As Plimoth Plantation's holdings are digitized and made accessible online, we anticipate a significant increase in such requests, and expect to be able to accommodate the requests better. Currently, questions from outside scholars are vague because they are unable to identify specific collections or objects that would help them with their research. As a result, staff members spend significant amounts of time searching for answers to collections questions, and are often unable to recommend additional sources within the collections that might help the scholar. A detailed, online database would allow scholars and the public to find and request specific items or collections as well as give staff the resources to locate and recommend other objects that might be useful. The HCRR grant would help spread the knowledge of the collection resources and increase their research potential.

Plimoth Plantation's interpreters, museum staff, and visitors are also a significant audience for this material. The Museum receives more than 330,000 in-person visitors per year, while its website had over 1.5 million visits in 2016. Creating a digital collections catalog will provide Plimoth Plantation staff with the foundational information for the creation of both physical and web-based exhibits on 17th-century daily life for these visitors. Such interpretative work is currently very difficult because there is no easy way to determine the contents of the archaeological collections or compare them to other material in the Museum's collections. The digital photographs, catalogs, and finding aids created under this grant would facilitate the creation of additional, future web-based exhibits that would reach audiences not physically able to visit the museum, while the ability to use a digital database to mine the collections for new data will allow staff to update the living history exhibits and make them as historically accurate as possible. These digital resources will also be available to staff at other museums which interpret this period, but lack deep original collections of period materials of their own.

Visitors to Plimoth Plantation would also be able to directly observe the grant-funded work in progress in

the new ArchLab (opened summer 2016), a public archaeology laboratory in the Museum's Visitor Center. This open lab allows visitors to interact with the staff, students, and volunteers who are processing artifacts, making visible the work of cataloging and curation which is frequently hidden from view. The open ArchLab has already proven to be a valuable addition to the guest experience. Individuals in the media, from *The Journal of Antiques and Collectables*, *American Archaeology*, and local news outlets have also used the lab when working on features about the collections or local historical research. In addition, documentary filmmakers rely on the Museum's exhibits and collections for their work, including Ric Burns in his 2015 documentary *The Pilgrims*.

Lastly, educators and school children would also benefit from this digital resource. Plimoth Plantation staff reached over 80,000 school children in 2016, either via student visits to the Museum or staff classroom visits and Skype sessions. Since 2009, Plimoth has collaborated with *Scholastic* and will be featured in all of their November issues between 2016-2021, reaching one in three American primary-grade school children. With this proposed project, teachers will be able to incorporate primary-source objects into their existing curriculum or expand their lesson plans, print out replicas of the objects, and show students 3D images of items actually owned by the individuals they are studying, thereby making history a real and vibrant part of education.

2. History, Scope, and Duration

Archaeology has been a core part of Plimoth Plantation since its inception in 1947, and its collections are significant to the past and future of the field. Plimoth Plantation holds one of the largest and most significant collections of Native and early colonial material in the region and is an important resource for scholars including historians, archaeologists, and material culture specialists. In partnership with UMass Boston, the Museum is currently supporting active field work. The open archaeological lab in the Visitor Center and several prior and pending grants are part of on-going efforts to make the collections and the interpretations drawn from them more visible. Digital collections will exponentially expand research opportunities for those interested in the past.

2.1 Prior Grants

The preparatory work for this HCRR proposal was supported by two completed grants, one that surveyed the collections and established their significance, and a second that developed a protocol and standards for digitization. In 2013-2014, Dr. David Landon at UMass Boston received a Massachusetts Historical Commission Survey and Planning Grant. Dr. Christa Beranek was one of the research team members on this project. The grant-funded work was a broad survey of Native and colonial sites in the core area of Plymouth Colony dating from 1500 to 1691, and included a review of previous scholarship, Massachusetts Historical Commission files, and files and collections at multiple regional repositories. One of these was Plimoth Plantation, where team members conducted a detailed review of the size, condition, and research potential of all the post-contact archaeological collections either owned or curated by Plimoth Plantation (Landon and Beranek 2014) and identified collections with 17th-century components. Of these, the RM, Winslow, Allerton-Cushman, and Bradford sites are the most significant collections owned by the Museum. The data assembled under the Survey and Planning Grant provides the baseline for assessing the size and significance of the Plimoth Plantation collections and for choosing the collections targeted for digitization in this project.

Most recently, Landon (UMB), Dr. Kathryn Ness (Plimoth Plantation), and Jessica Rudden-Dube (Plimoth Plantation) have completed work funded by a one-year (2016-2017) collaborative Creative Economy Grant from the University of Massachusetts, "Visualizing the Virtual Museum," that served as the pilot for this proposed HCRR project. The Creative Economy grant digitized the archaeological collection and records associated with the RM Site (C-1); developed a Digital Asset Management System (DAMS) using a new digital collections database CollectionSpace (CSpace); and developed a workflow

for the digitization process. To date, this grant has allowed the team to digitize 86 documents (1439 pages), 21 negatives, 25 slides, and over 670 artifacts. Under this grant, the work of digitizing and cataloging was carried out by a graduate student from UMass Boston enrolled in the Historical Archaeology M.A. program who received basic training in laboratory methods and artifact identification at UMass Boston (supervised by Beranek) and then was supervised for the grant work at Plimoth Plantation by Ness, Curator of Collections. The Creative Economy grant served as a single-site pilot project for the work proposed in this HCRR grant, and, as such, allowed the team to develop the protocols and workflow for digitizing site records and creating a digital artifact catalog as well as implementing CSpace, the new open-source collections management software used by Plimoth Plantation and maintained by Rudden-Dube, Deputy Director of Media, Design, and Collections at Plimoth Plantation. The HCRR grant, if awarded, would follow the same model of employing UMass Boston graduate students under the supervision of Ness and Beranek, with Rudden-Dube continuing to support and maintain the computing infrastructure.

2.2 Related Grants and Initiatives

Less directly related, a collaborative team lead by Landon and Beranek (UMass Boston) received a National Endowment for the Humanities Collaborative Research Grant (2016-2018), to conduct archaeological fieldwork in Plymouth in order to locate new 17th-century sites. The research questions being addressed by this fieldwork will draw on the existing collections held by Plimoth Plantation, and enhanced access to the collections will directly benefit the interpretive results of the Collaborative Research Grant. The Museum's archaeological collections also serve as important reference and identification sources for newly discovered artifacts from this NEH-funded fieldwork.

This HCRR proposal is part of a broad Plimoth Plantation commitment to make all of its collections more accessible to the public and the academic community. As such, the Museum staff is using CSpace for other parts of its holdings and is actively inventorying, photographing, and digitizing its non-archaeological collections. In addition, Plimoth has applied for a Museums for America grant from the Institute of Museum and Library Services (IMLS) that would create a more publicly visible collections space and allow for digitization of other portions of the Museum's collections, as well as a grant from the Council on Library and Information Resources (CLIR) that would allow the Museum to digitize four other archaeological collections held by the Museum not included in this proposal. If funded, the CLIR grant or the IMLS Museums For America (MFA) grant would support staff on other aspects of the broader digitization project, and the IMLS MFA grant would also support expansion and improvements in the workspace available for digitizing collections.

In the event that either of these proposals and the HCRR proposal are awarded, the Museum would be able to digitize a total of eight of the 12 archaeological collections that it owns and make them available online as well as ready for in-person research visits. As designed, these projects would happen within the next three years, meaning that two-thirds of Plimoth Plantations collections would be available online during the period of renewed interest in this story surrounding the 400th anniversary of the *Mayflower*'s arrival in 1620. Future grant applications would seek funding for the remaining collections.

These initiatives are in keeping with the Museum's educational mission and strategic goals of providing opportunities for critical examination of the past and promoting open dialog around its impact on world cultures and the global economy; becoming a repository for knowledge and redistributing it to those who cannot access it in person for reasons of socioeconomic disadvantage or distance (see the Museum's Digital Strategic Plan, Appendix C); and developing a Center for 17th-Century Native and Colonial New England Studies that would facilitate interns, visiting scholars, and other researchers who wish to use Plimoth Plantations resources as part of academic research projects.

3. Methods and Standards

The Museum is committed to ensuring that its collections information, including the data generated during this project, are high quality, accessible, and sustainable. As a result, Plimoth has chosen to use CSpace, a web-based, open-source collections management program that is used by universities and museums throughout the US and Asia. CSpace is fully customizable to suit the Museum's and the collections' needs. While CSpace itself can be made publicly accessible and is a useful platform for researchers, it is also designed to work directly with Omeka, an open-source web publishing platform designed specifically to create digital exhibits for libraries, museums, archives, and scholarly collections.

To maintain accuracy and quality in CSpace, and by extension Omeka, Plimoth Plantation currently has (and will continue to have) a system of checks in place. The project requests funds for a Digital Assets Project Manager (Jonathan Green) who will devote two days per week to this project; Green has already worked with the completed pilot phase and has the archival background necessary to help with digitizing the documentary material related to these sites. The Curator of Collections (Ness) monitors the work of the graduate students and the Digital Asset Manager, and the team participates in weekly meetings to ensure that any errors or challenges are dealt with before work continues or to develop course corrections if necessary. Members of the Advisory Committee and UMass Boston faculty and students will test the functionality of the database as the team uploads new objects, allowing for both expert input in artifact identification and functional view of the database's performance. Quarterly, Plimoth Plantation staff (Green and Rudden-Dube) will evaluate a sample of the project to verify image quality, metadata and system function using checksums and diagnostic tools.

During the digitization process, Plimoth Plantation staff will be following the workflow and specifications in the Technical Guidelines for Digitizing Cultural Heritage Materials produced by the Federal Agencies Digital Guidelines Incentive (FADGI) , which is the current practice at Plimoth Plantation. The customized workflow outlined below was developed in conjunction with the University of Massachusetts Boston, and has been tested and refined during 2016-2017 as the team digitized the RM Site. All policies, workflow, and infrastructure have been designed to ensure the integrity and authenticity of all created digital copies will be maintained during and after the digitization process.

3.1.1 Terminology

In the Plimoth Plantation catalog, material is the primary category for archaeological artifact identification. While there is no national standard terminology for cataloging historical archaeological materials, this project will follow two overarching guidelines. First, cataloging terminology will be internally standardized, so that all Plimoth Plantation collections are directly comparable to each other. This will be ensured by drop-down menus built into the cataloging software, CSpace (see Appendix B for catalog fields and selections from the laboratory manual). Secondly, the project will refer to widely-used standard references for the most common materials, such as early modern ceramic types. The Maryland Archaeological Conservation (MAC) Laboratory website, Diagnostic Artifacts in Maryland (http://www.jefpat.org/diagnostic/index.htm), is one of the standard references for describing historic ceramics, one of the most common materials in archaeological collections, and specifically ceramics from English colonial sites. We will use MAC terminology in cataloging the Plimoth Plantation collections whenever possible. Other recent projects to create multi-site digital catalogs, such as the NEH-funded Colonial Encounters: The Lower Potomac River Valley at Contact, have followed similar guidelines.

While there is a lack of standard terminology for archaeological materials, there are numerous terminology and metadata schemas that are appropriate for archival metadata and will be used when digitizing the documentary records for this project. These schemas are already native to CSpace and

Omeka, the primary collections software programs used by Plimoth Plantation. For this project, we will rely on Dublin Core when documenting the archival metadata.

3.1.2 Technology

To insure the integrity and authenticity of all digital copies, Plimoth Plantation submits all created data and associated metadata into multiple repositories. These files are stored locally and remotely on both external hard drives, on the Museum's Linode server and Amazon Cloud for backup. The digital versions of the documentary material will be scanned into 16-bit depth, 400 dpi, high-quality PDF/A format using a Savin MP 4504 scanner; all objects will be photographed in RAW file format using a Canon Rebel T6 camera to create the master files prior to being processed according to the FADGI Tiff Image Metadata recommendations using Adobe Bridge and Photoshop. Objects selected for 3D rendering will be photographed from numerous angles in the same manner and will then be rendered into a 3D image through Agisoft Photoscan Photogrametry software (which the Museum already has). The 3D files will be saved as both .obj and .dxf files so that the models can be viewed online and also 3D printed. Grant funds are requested to purchase two additional Canon cameras and tripods and one additional computer work station.

The team will also evaluate and regularly check the quality of digitized objects in 3D as well as downloadable 3D printing files that serve as extra features for the database users. The new Makerspace at UMass Boston will be testing a number of the printable files already created from artifacts from other sites for quality control and to verify printability. The team also anticipates sharing the printable files with students at both of the two new tech labs in Plymouth North High School and Plymouth South High School as the town approaches its 400th anniversary in 2020.

No data created during this project will be locked into proprietary software. Plimoth Plantation will retain control over all original files and data and will keep copies in easily transferable formats such as .xml. In the event that technical or other circumstances require the migration of project files and metadata from one system to another, Plimoth Plantation will use Mark LaBrecque, the Museum's Director of Information Technology to assist Rudden-Dube in the migration to the new system and would migrate the data to a system of comparable function and access level.

All digital files and associated metadata will be made easily discoverable and accessible to relevant use communities for the long term through CSpace and easily viewed online through the Omeka platform. These platforms are open-source, designed to be used by cultural heritage organizations, can handle large numbers of records, are web-based, and will be found in online search results as well as linked on Plimoth Plantation's and UMass Boston's websites. The CSpace schema is based on the SPECTRUM documentation standard, which is created/maintained by the CollectionsTrust in the United Kingdom. It can be mapped to Dublin Core, CDWA, VRACore, and other standards as needed. Because Omeka uses Dublin Core, that will be the primary schema used for documentary material in this project. With this baseline, Plimoth Plantation plans to aggregate and publish project metadata through the Open Metadata Registry (http://www.metadataregistry.org). In addition, updates and modifications to Plimoth Plantation's CSpace instance configuration will be made publicly available through GitHub, therefore allowing other institutions to see how the platform is being used and potentially help develop new uses for the software. Similarly, staff and graduate students will be updating and contributing to digitization manuals throughout the project that will act as guides for future digitization projects at Plimoth and might be used or adapted by other institutions attempting to digitize their holdings. The finding aids and manuals will be posted online for the public at the end of the grant term.

Digital copies created through this project will be published under the Creative Commons license CC BY-NC-ND 4.0, which will allow the sharing and redistribution of digital copies in any medium or format, but with attribution to Plimoth Plantation, Inc. and a link to the license. This license- CC BY-NC-ND 4.0-

does not allow distribution of derivative works, nor does it allow for commercial use. This policy will be reassessed based on requests for derivative work and commerical use.

4. Sustainability

The final outcome of this project is a digital database, collection-based finding aids, an updated and newly-standardized artifact catalog, and digitized objects in 3D and downloadable 3D printing files.

All digital files created through this project will be stored locally and remotely. We will be keeping two copies of all files on each of the following: external hard drives; local machines; Linode servers; and Oracle Storage Cloud Archival and Database Backup servers. We will automate nightly backups for the servers and local machines. The files and metadata will be checked regularly for continued integrity using checksums at various stages of data backup and transfer and logged.

After the conclusion of the project, Rudden-Dube will be responsible for sustaining the preservation activities on a weekly basis. Rudden-Dube is skilled in data and file management. Plimoth Plantation, Inc. also has the support of an internal Information Technology Director, Mark LaBrecque.

5. Dissemination

This project will be made public in a variety of ways. Throughout the grant period, the team will update Plimoth Plantation staff during regular training sessions so that the Museum staff, including public-facing individuals who interact with guests on a daily basis, are aware of the project and its progress, and can share the news with the public. These staff members will include Darius Coombs, Director of Indigenous Research and Interpretive Training, who will serve as a point person for the Museum's Native staff to ensure that they are aware of the Native materials in these collections (although they collections are dominated by European-produced items) while also helping the team use the appropriate language to describe Native artifacts. Regular updates via existing social media platforms such as the Museum's and the Fiske Center's Facebook, Instagram, Twitter, and blogs also will help to keep the Museum staff and public informed and excited about the project. In addition, part of the work will be conducted in the Museum's public archaeology lab and will therefore be highly visible to the more than 330,000 people who visit the Museum each year.

To boost the visibility of the project to the scholarly community, the team anticipates presenting the project at local and international academic conferences for archaeologists, anthropologists, and museum professionals. In the fall of 2017, Ness, Beranek, and Landon intend to present the work to-date on the RM Site collection at the Council for Northeast Historical Archaeology (CNEHA)'s annual meeting (Portsmouth, NH). Other potential conference venues include annual meetings for the Society for Historical Archaeology (SHA), the American Association for State and Local History (AASLH), and the American Alliance of Museums (AAM). In addition, the team hopes to submit a professional journal article to *Historical Archaeology* to both publicize the new resource to archaeologists and to offer ideas for digitizing other, similar archaeological collections.

As a web-based catalog, the final product will be readily accessible for anyone with an internet connection. The team will be using Omeka software to present curated, digitized content in an online format. Links to the finding aids and catalogs will be available on Plimoth Plantation's and UMass Boston's websites as well as websites for other local history organizations with connections to the artifacts or sites.

As described above, all digital copies created through this project will be published under the Creative Commons license CC BY-NC-ND 4.0, and are thereby readily accessible to those interested in the data. Updates and modifications to Plimoth Plantation's Collection Space instance configuration will also be made public in order to help other museums and cultural heritage organizations who might be interested

in similar projects.

6. Work Plan

The current workflow for digitizing artifacts at Plimoth Plantation was designed to work for a variety of collections in various states of processing. That said, each collection has its own set of needs and the work will be adjusted accordingly and as issues arise. Throughout the grant term, Ness will be in close contact with Green (Digital Asset Manager), graduate students from UMass Boston and potential interns working on the project and determine as a group when and what changes need to occur. Rudden-Dube and Ness will hold weekly or bi-weekly meetings to discuss progress and any course corrections that might be needed.

All of the work will take place at Plimoth Plantation and the collections will be removed from storage while they are being used to a secure, climate-controlled research space in the same building. This process minimizes damage to artifacts caused by frequent movement and also ensures that the collections are not accidentally mixed.

6.1.1 Scanning Field and Research Material

The first stage is to scan all relevant field documentation (photographs, slides, and paper records) and material regarding the excavations and research of the property or artifacts. This step will be supervised by archivist and Digital Assets Project Manager Jonathan Green (Plimoth Plantation).

6.1.2 Standardizing Artifact Catalogs

The team then manually reconciles the original paper inventories and the existing digital inventories by going through each artifact, deleting or merging duplicate records and data, documenting previously unrecorded information, such as item weight, size or color (Appendix B), or creating a new record for previously uncataloged artifacts. All available metadata will be entered at the institutional, project, collection, and object levels. The team enters this data directly into the Museum's web-based collections management software, CSpace, thereby minimizing the required steps for making the data accessible online. In addition to entering textual data, all objects are photographed. At the same time, a conservation survey at the artifact level developed by archaeological conservator Dennis Piechota (UMass Boston) will be completed by the catalogers. Piechota will train the catalogers to make initial assessments and will check their work.

6.1.3 Reorganizing Artifacts

Once the team has recorded all metadata and standardized the catalog, they will then reorganize the artifacts by provenience. For this grant, the collections are generally sorted by material, with all ceramics in one box, all bone in another, and so on. This approach, while facilitating studies of specific materials, is not a standard way of organizing archaeological collections and makes it difficult for researchers and staff to understand the sites and archaeological features as a whole. Organizing the objects by provenience, or where they were recovered during excavation, will facilitate research and bring the collections in line with standard practices for those curating archaeological artifacts. By saving this step till the end, the team is able to document alternative organization methods, should this information be useful in future research, prior to resorting the artifacts. While most of the objects are currently stored in archivally-appropriate polyethylene zip bags and corrugated plastic boxes with acid-free trays and dividers per Federal and disciplinary standards. Those that are stored in other materials will be rehoused so that all objects are stored in the same conditions.

6.1.4 Creating Finding Aids

Currently, there is no way easy for scholars, the public, or even Plimoth Plantation staff to find out what archaeological collections are held at the Museum or to access information about them. The sites and collections are summarized in paper files created by George in the 1980s, and historic period sites are described in a table in the report generated by the 2014 Reconnaissance Survey (Landon and Beranek 2014). To make the information about the archaeological collections accessible, the final step of work proposed under this grant will be developing means of disseminating the results via an online interface that includes digital finding aids.

Specifically, the team will use the newly updated and standardized catalog to study the collections and generate the information for the finding aids, thereby testing the effectiveness of the catalog for large-scale projects and making any necessary corrections. To generate preliminary outlines for the contents of the finding aid (Appendix A), we surveyed other webpages that aggregate data from multiple archaeological sites, such as the Archaeological Collections in Maryland (http://www.jefpat.org/NEHWeb/), Maryland Unearthed (http://jefpat.org/mdunearth/SiteSummaryList.aspx), Colonial Encounters (http://colonialencounters.org/index.aspx) and the Digital Archaeological Archive of Comparative Slavery (DAACS; https://www.daacs.org/) web pages. Discussions with the project's Advisory Board will help us to determine how best to present the information about the sites and collections in ways that will be useful to diverse audiences. Because the data will be entered directly into CSpace, a significant portion of the work will already be online and ready to put into a user-friendly interface through Omeka. Once the finding aids are complete, Rudden-Dube will oversee developing the online interface using Omeka software. The online portions will include the finding aids, images and 3D renderings, and links to the catalogs.

Also during this stage, Ness will work closely with Beranek, Landon, and Richard Pickering, Plimoth Plantation's Deputy Executive Director and a *Mayflower* descendant, to develop academic papers to be presented at both museum and archaeology conferences and for submission to academic journals.

6.2 Schedule

Because each collection has its own set of requirements and needs and because of space limitations at the digitization work stations, the team will complete the entire process outlined above in the Work Plan for one collection prior to moving on to the next. We will start with the smallest collection in order to test the existing digitzation workflow and refine it as necessary.

Project Portion	Schedule
Digitize the Allerton-Cushman Site	May-October 2018
Digitize the William Bradford II Site	November 2018-July 2019
Digitize the Winslow Site	August 2019-October 2020
Create Finding Aids and Digital Interface	November 2020-April 2021

7. Staff

Dr. Christa Beranek (**UMass Boston;** Ph.D. in Archaeology, Boston University) is a Research Archaeologist at the Fiske Center. Along with Landon, she has co-directed Project 400, researching Plymouth Colony's early sites and collections, since 2013. Beranek will assist with project management,

supervise training graduate students involved in the grant in laboratory methods and artifact identification, and assist Ness in writing the site and collection descriptions (20% time).

Dr. Kathryn Ness (**Plimoth Plantation;** Ph.D. in Archaeology, Boston University**)** is the Curator of Collections at Plimoth Plantation. She will provide access to the collections and documentary material, oversee the graduate student completing digitization process, and work with Beranek to create finding aids and on scholarly outreach (10% time).

Jessica Rudden-Dube (**Plimoth Plantation;** M.S. in Urban Education, AmeriCorps' New York City Teaching Fellows program; Professional Certificate in Advertising and Documentary Photography, New England School of Photography) has been Deputy Director of Media, Design and Collections at Plimoth Plantation since 2013. Rudden-Dube will be responsible for overseeing the project's sustainability and technical needs as well as developing the online interface (3% time).

Dennis Piechota (**UMass Boston;** M.A. in Archaeology, Brown University; Certificate in Conservation, Smithsonian Institution) is an archaeological conservator with experience on both terrestrial and underwater sites. He will serve as a consultant to develop a conservation survey of items in these collections, train students to complete this survey as they catalog, and review their results (funds requested for 5 days over the course of the project).

Jonathan Green (**Plimoth Plantation;** M.A. in History, UMass Boston) is the Digital Assets Project Manager at Plimoth Plantation. He will provide the archival expertise required when digitizing the field records (photographs, slides, and paper records) of the collections in this project while also helping to manage the CSpace, Omeka, and the 3D renderings of selected objects (funds requested for 2 days/week for duration of project).

Darius Coombs (Plimoth Plantation), a member of the Mashpee Wampanoag Tribe, is the Director of Indigenous Research and Interpretive Training and has over 30 years of experience with the Wampanoag Indigenous Program at the Museum. He will serve as the point person for consultation with the Museum's Native staff regarding Native objects in the digitized collections (2% time).

Graduate students from the M.A. program in Historical Archaeology at UMass Boston will be hired to create the digital files for images and artifacts. They will receive training in artifact identification as part of their graduate training and additional training in digitization at Plimoth Plantation. This grant will provide the salaries for the students for their digitization work on this project (1 person at 1 day/week during the academic year; 2 students full time for 9 weeks during the summer).

Project Advisory Committee

Dr. Emerson Baker (Salem State University) is an archaeologist and public historian who is an expert of the archaeology of 17th-century sites in New England and has considerable experience presenting this information to the public through programs such as PBS's Colonial House. He will advise on the public presentation of the archaeological information through the final web sites and on ways the information generated under this grant could be incorporated into other media.

Adam Brin (The Digital Archaeological Repository, Digital Antiquity) is the Director of Technology for Digital Antiquity and has worked with database projects including The Digital Archaeological Repository (tDAR), NASA, Internet Archive, Luna Imaging, David Rumsey Map Collection, the University of California, and OCLC. With a specialty in database management and creation as well as a familiarity with archaeological and scholarly databases, he will advise on the technological side of the project, including public interface, data storage and collection, and digital repository needs.

Dr. Julia King (St. Mary's College of Maryland) is an archaeologist with expertise on 17th-century colonial and Native sites. She recently directed a project to bring together and digitize archaeological data from 34 sites in the Potomac River Valley (http://colonialencounters.org/index.aspx) and will advise on both technical decisions and the final content for the web interfaces for presenting the material to scholars and the public.

Dr. Taylor Stoermer (Johns Hopkins University) is a public historian with an expertise in living history museums and the American colonial era. With his history and museum background, he will advise on ways that the project and resulting public interface might best serve historians while also being of interest to the general public.

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