

Fall 2010

Dear Colleague:

Attached here, please find sample narratives, schedules of completion and summary budget forms from 10 successful applications to the IMLS Conservation Project Support (CPS) grant program. These samples represent different types of conservation projects from both living and non-living collections. They emphasize the overall institutional conservation perspective, the involvement of conservation professionals in all phases of the project, and the importance of the project as one of the highest priorities for collections care for the applicant institution. Each of the samples was selected to illustrate a specific aspect of a competitive application in any category, as described below:

Survey projects:

Carnegie Institute - Carnegie Museum of Natural History--This application provides a good example of a Re-Survey, along with the justification presented by the applicant that a general survey was needed for their institution twenty years after its original general assessment.

Museum of New Mexico Foundation - Palace of the Governors—This is an example of a modest proposal to conduct a detailed condition survey for a specific portion of a museum's collection. The conservator's survey methodology is sound, and the time frame is reasonable for the scope of the work.

UC Davis Arboretum—This is a model of a living collection survey using new GIS technologies. The application describes, in detail, not only the inventory of the collection but also the condition surveys of each of the specimens.

Treatment Projects:

University of Southern California – Gamble House is included as an example of a very clearly written narrative that shows a logical progression of conservation steps. The treatment methodology conforms to current, accepted conservation practices.

University of Arizona - Arizona State Museum--The Museum demonstrates that this project is among the institution's highest conservation priorities, as evidenced in the up-to-date Conservation Long Range Plan (provided in the supporting documents). There is clear evidence that this project will benefit the many audiences of the museum, particularly its staff and

students. The museum shows ample evidence of its commitment to the dissemination of information to its audiences about the project, and the benefit of quality collections care.

Preservation Society of Newport County--The project follows a systematic approach following a general assessment, which included environmental improvements prior to conservation. The treatment procedure was described in great detail and incorporates public outreach through a "behind the scenes tour."

Environmental Improvement Projects:

Newark Museum Association--This is a very well conceived and articulated plan for addressing the storage needs of an important collection. The staff and budget seem appropriate, and they are described in detail in the narrative.

Pacific Asia Museum--This is a very logical and realistic project to address preservation challenges relating to seismic activity. Staff and consultants have appropriate training and experience to ensure that this project will be completed professionally and within the anticipated time frame.

Savannah College of Art and Design - SCAD Museum of Art is included as an example of a clear and concise description of the need for the project, with a well detailed description of project activities. This is a carefully presented project design with appropriate staff and consultants.

New England Aquarium is a sample of how to detail the expected outcomes, expected outputs, and benefits to the audience of a conservation project.

I hope that these sample narratives will be useful to you as models for structuring a proposal for your conservation needs. Please contact me at (202) 653-4635 or at mfeitl@imls.gov or David Harrell at (202) 653-4652 or at dharrell@imls.gov if you have any questions. We would be happy to assist you and discuss any questions you have as you develop your proposal. The application deadline for the 2011 Conservation Project Support grant program is October 1, 2010. Applications for CPS are available from the grants.gov website (www.grants.gov). We look forward to receiving your application.

Sincerely,

Mark Feitl
Program Specialist

Statement of Need

How does the project support the museum's long-range conservation plan, conservation priorities, and institutional strategic goals?

The Carnegie Museum of Natural History (CMNH) requests Institute of Museum and Library Services Conservation Project Support (IMLS-CPS) to conduct a general conservation re-survey of the museum's building and collections. The results from the survey will be used to plan and prioritize future collections care and building renovations.

CMNH last conducted a general survey in 1989, funded by IMLS-CPS. It was one of the first major natural history museums to do so, using the survey report as the foundation for the Museum's first comprehensive long-range conservation plan. The 1989 survey results have been used extensively to plan and prioritize collections care activities (OptionalAttachment1.pdf). This re-survey will allow us to assess progress and take a fresh look at the direction of future collections care. The current long-range plan (OptionalAttachment2.pdf) calls for a new general conservation survey, using a team of consultants who can objectively review our progress and help provide cohesive strategies for the next generation of preservation activities at the Museum.

Since the last general survey, CMNH has been through 20 years of growth and change. There have been several administrative turnovers and new conservation staff members have been hired. Numerous renovations to exhibit halls and storage areas have been completed, including new storage equipment and improved mechanical systems. Some collections have been moved off-site to a warehouse. However, these changes have been implemented without creating an updated long-range conservation plan.

During this period, conservation has consistently remained a cornerstone for collections care at CMNH. Priorities laid out in the long-range plan have guided preservation activities at both the institutional and individual collections level. One of the most significant recommendations was to move Conservation out of the Section of Anthropology, where it had been based since it was begun in 1979, to become the Section of Conservation (2000). The Conservator is now considered a decision-maker, equal to Curators, reporting directly to the Associate Director for Research and Collections and the Museum Director. As with the acceptance of the CMNH 2010-2013 strategic plan, which reaffirms CMNH's commitment to the collections' preservation and care, this assessment is considered a top priority within CMNH.

Why this project is among the museum's highest collections care priorities at this time?

Carnegie Museum of Natural History's current long-range conservation plan includes, as the top priority, performing a general survey using outside consultants. It has been nearly two decades since the last long-range conservation plan was written and most of the recommendations have been achieved. As such, CMNH is poised to take the next steps. A new survey is the most efficient and productive way to get a comprehensive assessment of current conditions. It is the most effective means of building an inclusive long-range plan for preservation activities that complements the new CMNH strategic plan. Further, bringing in an outside team with a broad range of expertise and experience that can perform the reassessment will provide the framework needed to move conservation activities forward quickly.

How does the project tie into the museum's previous and current collections care activities?

CMNH has a solid track record of collections preservation activities (OptionalAttachment3.pdf). A long-range plan based on the 1989 assessment report led to systematic and ongoing improvements to collections care. A few examples are below:

- Six exhibition halls have been renovated to meet conservation standards, including improvements to mechanical systems and to exhibit case work.
- Significant HVAC upgrades were made to the Edward O'Neil Research Center (EORC) (1996; 2006).
- Conservation-approved storage cabinetry and storage materials were introduced.

A new assessment will provide independent, outside observations and recommendations needed to form a cohesive plan of future preservation activities. In addition, this survey will include the Oakland facility, which is listed on the National Registry of Historic Places, but was not included in the 1989 survey.

The museum's overall financial commitment to conservation as well as the governing authority's commitment. Since the previous general conservation survey, the institution has supported a broad range of collections preservation initiatives. These have been funded through an equally broad number of sources ranging from local foundations, local and federal public funding (NSF, IMLS, NEH, SAT) and from within the institution. These include: mechanical upgrades for storage (\$1,700,000); storage cabinets and materials (\$1,100,000); and library and archives treatments (\$139,000). This assessment to identify the next steps is considered a top priority by museum leadership and, therefore, staff across the institution will be integrally involved in the project.

2. Project Design

CMNH Conservator Gretchen Anderson and the following team of consultants will conduct the assessment:

- Catharine Hawks, FIIC, PA-AIC, Conservator in Private Practice
- Dr. R. Robert Waller, President and Senior Risk Analyst, Protection Heritage Corporation
- Ernest Conrad, P.E., LEED AP, Principle Architect, Landmark Facilities Group, Inc.
- Paul Kreitler, Engineer, Landmark Facilities Group, Inc.

An internal assessment team led by Anderson will consist of key representatives from Research & Collections, Facilities, Exhibits, and Administration. Anderson will coordinate the accumulation of information required by consultants prior to the site visit, facilitate the site visit, and act as report coordinator and editor through the rest of the project. The project will be implemented in four phases over a five month period.

Overall Goals

The project design is based on recommended strategies as developed by Heritage Preservation.¹ Methodology for this project was developed in consultation with Hawks, Waller, and Conrad. The primary goals are to:

- 1) Assess current conditions of the collections, the museum environments, and policies and procedures.
- 2) Develop short-, mid-, and long-term priorities for collections care and workable strategies to accomplish those priorities. Establish integrated strategies to face the challenges to collections care over the next five years and beyond, particularly with respect to environmental conditions in galleries and storage.
- 3) Develop a cohesive conservation long-range plan with preservation strategies that are compatible with institution strategies. The survey report will provide a primary assessment of current risks to collections and recommend strategies to alleviate risks while seeking a balance between access and collections use.

Project Detail

Phase I: Preliminary Document Preparation – Objective: Gather background information based on Heritage Preservation pre-visit questionnaires and other documents requested by consultants (Supportingdocument 1.pdf). Anderson and internal assessment team will collect this information from staff. CMNH Archivist (Callery) and Anderson will conduct a summary condition inventory of departmental archival material while section heads inventory their research collections. Anderson will conduct an in-house review of environmental conditions and monitoring methodology, and assemble current policies and procedures. Consultants will receive these data prior to their site visit.

Phase II: Site Visit - Objective: Provide consultants with the opportunity to assess the physical plant and interview stakeholders. Landmark Facilities Group, Inc. (LFG) consultants (architect Conrad and engineer Kreitler) will be on-site for one day. Conservators Hawks and Waller will be on-site for five days. On the first day, the full consultant team led by Anderson will tour the Oakland facility, EORC, and warehouse, examining storage and exhibition conditions, and mechanical and monitoring systems throughout each building. LFG will focus on mechanical systems and building envelope. Separate meetings with Administration and Facilities will be scheduled in the afternoon. The team will meet at the end of the day to discuss findings. The

¹ As described in *The Conservation Assessment: A Tool for Planning, Implementation, and Fund-raising* (Heritage Preservation and The Getty Conservation Institute, 1998), *Best Practices for General Conservation Assessments* (Heritage Preservation, 2002) and *Best Practices for Conditions Assessments of Historic Structures* (Heritage Preservation, 2004).

objective of the first day is to provide consultants with an overview of the facilities, and to give LFG the opportunity to collect the information they need to make their assessment.

Throughout the remaining days, Anderson, Hawks, and Waller will hold separate meetings and interviews with Curators and Collections Managers from each Scientific Section, Facilities, Exhibits, Library and Archives, Education, Senior Administration personnel, and others. Meetings will range from one to three hours, and will take place in the offices of those being interviewed. The team will meet over dinner each night to discuss observations. On at least one occasion, other CMNH staff will be invited to join in for an informal discussion.

Tentative Schedule:

Day 1: Overall facilities tour (Oakland facility, EORC, warehouse); meet with Facilities and Administration

Day 2: Vertebrate Paleontology, Invertebrate Paleontology, Anthropology, Mammals

Day 3: Birds, Amphibians and Reptiles, Invertebrate Zoology, Mollusks

Day 4: Botany, Minerals, Library and Archives, Exhibits

Day 5: Education, Retail Shops; Presentation of findings to Administration and the internal assessment team

Phase III: Collaborative Analysis and Strategy Development – Objective: Development of workable strategies to reduce risk to the collections, a primary goal of this effort, will be created through a team approach. The draft report will be developed with ongoing communication between the consultants and Anderson. Anderson will discuss preliminary findings with the CMNH internal assessment team to determine if there are any conflicts among priorities and discuss approaches to resolve these conflicts. The team will draft reports along with recommended priorities for short-, mid-, and long-term care of collections and collections documentation. Anderson will serve as the conduit between consultants and the Museum, compiling individual reports into a unified draft for review by consultants and CMNH staff. Review comments will be incorporated into a final report.

Phase IV: Final Report – Objective: Presentation of final report to all parties. The final report will include recommendations that are prioritized for short-, mid-, and long-range implementation. It will also include specific guidelines relating to environmental conditions, and collections care procedures and policies that need improvement. Based on the report, Anderson will update the five-year conservation plan so that it is ready for implementation. She will present the final report and long-range plan to Administration and distribute to all Museum Sections by the end of the grant period. The plan will guide implementation with respect to discussions deciding resource allocation.

Museum's plan to ensure that normal museum operations are not disrupted.

The work plan is intensive and scheduled to optimize institutional focus and planning schedule. Activities will occur over a period of five months. It takes into account previous commitments of the consultants as well as the Conservator's schedule and that of other CMNH staff. The site visit is scheduled to allow for maximum participation by CMNH staff, including Senior Administration. The activities surrounding the assessment are among the CMNH Conservator's and Administration's highest priorities and therefore will be integral to the Section of Conservation's annual work plan for fiscal year 2010.

Conditions to which the object(s), historic structure(s) or specimen(s) are currently exposed and why they merit attention at this time.

The Museum Building - CMNH's building is a multi-use facility containing natural history exhibits, collections storage and labs, exhibit production spaces, classrooms, and offices. It was originally constructed in 1896 with major additions in 1907 and 2007. The original structure housed three separate entities (Carnegie Museum, Carnegie Library, and Carnegie Music Hall). In 1973, Carnegie Museum became Carnegie Museum of Natural History and Carnegie Museum of Art (CMA). CMA continues to use portions of the 1907 structure, but also has a newer structure, contiguous with the 1907 building. The Oakland facility has been adapted with an array of modern mechanical systems installed in phases, often associated with upgrades to exhibitions or collections storage spaces.

Exhibits - Six exhibition halls have been upgraded since 1989. Conservation provided guidance by developing environmental standards, and advising on materials for cases, exhibition mount design, and treatments. Conservators have worked closely with Facilities to add environmental controls at both the room and case levels. While exhibited collections are in good condition overall, there are lingering conservation concerns. For example, the display cases in the Wertz Gallery run extremely hot (average 80° F; 20-45% RH), probably due to the lighting. The halls containing natural history dioramas were improved in the 1990's (African Hall reinstalled in 1993 and North American Hall refurbished in 1995) but did not include environmental upgrades. The specimens in these areas continue to be subject to environmental fluctuations without monitoring for the environment or pests. Monitoring equipment in use is extremely variable and has not been calibrated recently. Ambient light is controlled and is at very low levels, but there are no data on levels to which objects have been exposed. The strategies that have been used to control climate need to be re-examined for effectiveness (preservation and cost) and efficiency.

Collections Storage - Most collections storage, labs, and offices are housed at the Oakland facility. Some collections storage areas have seen mechanical upgrades as well as the introduction of compactors, conservation-grade cabinetry, and storage materials to help alleviate overcrowding. Space is at a premium throughout the Museum, and collections storage areas are coveted for other purposes. Some collections are seriously overcrowded and others are in what are now considered suspect environmental conditions, such as the Mollusk collection, currently stored in historic wooden drawers and cabinets, and showing signs of bines disease. Section Heads have done what they can, when they can, to alleviate the situation. There is a need for an assessment of the effectiveness of the phased environmental upgrades that came online in 2007. At that time, a large inner courtyard was enclosed with accompanying HVAC installation. Conditions have been ameliorated in several collections areas, but a comprehensive analysis of these conditions, especially with respect to engineering efficiency, is much needed.

Alcohol collections pose their own concern. There is an extensive and important alcohol collection that has been stored in a purpose-built facility constructed in the early part of the 20th Century. Gaskets and containers have been upgraded, but the temperatures and relative humidity are documented to fluctuate with ambient conditions.

EORC – This facility is a former car dealership that has been adapted for collections storage, labs, and offices. It houses the Sections of Anthropology, Mammals, and Conservation. Collections were originally moved into the building in 1979. The current HVAC was installed (1996) as recommended by the 1989 survey. There have been systematic upgrades of storage furniture and supplies as funds have become available. In 2003, Mammals had a major pest infestation that was successfully dealt with through housekeeping and freezing with no reoccurrences. Collections are in relatively good condition, however improvements should be made. The mechanical system fails too often due in part to external power fluctuations and there are ongoing leaks in the roof, most often due to the HVAC unit. The roof was refurbished in 1997 following completion of the installation of the HVAC system.

Offsite storage - The Museum maintains several off-site storage facilities, and is in the process of consolidating them into one newly-leased warehouse. Most of what is stored off-site is non-collection materials (old exhibits, crates, non-archival office record, etc.). The few collections being transferred from the old warehouses to the new include some archeological materials, oversized mammal skeletal collections, and full body taxidermy. Concerns include the lack of climate control, pests, security, and pollution. Collections will be moved into this new facility by the end of 2009. We are currently designing the space to ensure that collections will be stored under better conditions than in the old warehouse.

Policies: CMNH has made significant progress on formalizing policies, plans, and procedures in recent years, including an extensive Collections Emergency Plan, a chemical hygiene plan (in process), an update to the Collection Management Policy (2007 – OptionalAttachment4.pdf), and an Ethics Policy (2007). However,

Integrated Pest Management and Housekeeping plans have not been developed. An assessment of what is current and up to standard and what is missing will help CMNH determine where to allocate resources.

A description of the object(s), historic structure(s), or specimen(s) that is the focus of the project.

As we are proposing to undertake a general conservation re-survey, all of the Museum's collections will be covered by the project. CMNH now holds some 20 million specimens, objects, and associated data that comprise a world-class, irreplaceable record of the Earth's biological, geological, and cultural diversity. These vast holdings include a research library and ten scientific collections, which are curated and maintained by professional staff in Oakland, the EORC, and the off-site storage site in Etna. The Museum's overall collection ranks among the five largest natural history collections in the United States. Individual scientific collections include Amphibians & Reptiles, Anthropology, Birds, Botany, Invertebrate Paleontology, Invertebrate Zoology, Mammals, Minerals, Mollusks, and Vertebrate Paleontology. Many of the collections hold notable rankings within their disciplines in both size and content among all collections in North America, the Western Hemisphere, or on a worldwide scale. The oldest specimens were collected before the Museum opened in 1896. The Life Sciences collections include historical specimens and endangered species from habitats that have been radically changed over the last century in parts of Africa and Central and South America. Among the significant holdings in Invertebrate Paleontology is the largest collection of the Jurassic Solnhofen Limestone in North America and the Section of Minerals contains significant suites from Russia and other republics of the former Soviet Union. Vertebrate Paleontology boasts a significant collection of Jurassic dinosaurs, excavated a century ago in what is now known as Dinosaur National Monument. Moreover, numerous collectors whose specimens are deposited here are noted for their contributions to the historical development of their disciplines. Persistent and productive field exploration over the past 110 years has nurtured the growth of the Museum's research collections.

Archives are held in at least 14 locations throughout the museum. These archives are made up of paper records, film media, and digital records. Callery (Archivist) has been working with the paper records, and has done a preliminary survey of film. However, to date there has been no attempt to include electronic records into the mix.

Conservation methods in terms of efficiency, reliability, and safety; if this is an innovative approach, describe the variation from standard practices and rationale for these new methods.

The conservation methods to be employed in the project are based on standards for collections care set forth by the American Institute for Conservation (AIC), Society for the Preservation of Natural History Collections (SPNHC), and the Canadian Conservation Institute (CCI). The proposed general survey and related activities also follow the recommendations set forth in *The Conservation Assessment: A proposed model for evaluating museum environmental management needs* (Heritage Preservation & Getty Conservation Institute, 1998) and other Heritage Preservation documents. The combination of establishing survey recommendations, using outside evaluators for the assessment and an internal assessment team, will provide proposed solutions that are both sustainable and realistic.

3. Project Resources: Time, Personnel, Budget

Time allocated to complete project.

The work plan is intensive and will take place over the span of five months (May through September 2010). Conservator Anderson will carry the bulk of the workload for CMNH, devoting 50% of her time for the entire five-month period. Since preservation planning is considered a primary task for Conservation, we consider this time reasonable, and she will be able to balance her duties for this finite period. CMNH's part-time archivist (Callery) will devote 40 hours to this project. Since Callery's time is extremely limited, she will be aided by Mowery, a pre-program conservation intern currently working with Anderson, for 150 hours over the course of the project. Members of the internal CMNH assessment team will each provide a significant investment (**10%** of their time) in the project. Staff time will be used as match (for additional detail see below and BudgetJustification.pdf). Other CMNH staff involved (section heads, collections managers) will supply

information to Anderson and be available for meetings during the site visit. We anticipate that 10 curators will spend eight hours each and eight collections managers will spend 16 hours each at a minimum, gathering and reviewing information and meeting with consultants (BudgetJustification.pdf). The consultants will devote a total of 38 days to the project, as detailed in their letters of commitment and the budget justification.

Phase I: Preliminary Document Preparation (May 1- June 5, 2010) - Four weeks will be allowed for collecting information for pre-visit questionnaires and gathering all preliminary documents for consultants. One week will be allowed for consultants to review documents. Consultants estimate that it will take one day per consultant (LFG is considered one) to review documents.

Phase II: Site Visit (June 7 – June 30, 2010) - The consultants will spend five days on-site touring the facilities and conducting interviews sometime during this three-week period. LFG will be on-site for the first day only, and the schedule is arranged to maximize their needs. Staff interviews will last 1- 3 hours each.

Phase III: Collaborative analysis and strategy development: writing report (July 1- September 15, 2010) - Six weeks are allowed for drafting individual reports and collaborative development of strategies, with four weeks allowed for compiling the individual drafts into a final report. Time is allowed for ongoing conversation with internal team members.

Phase IV: Final Report (September 15 – 30, 2010) - Two weeks are allowed to get consultant sign-off on the final report, update the long-range conservation plan, and present the final report to Administration.

Key staff and consultants involved in the project, their qualifications, commitment to project activities, and how they will balance project responsibilities with other ongoing duties.

CV's for senior project staff and consultants are attached (ProjectStaff.pdf).

Gretchen E. Anderson, CMNH Conservator, Head of Section. Anderson joined CMNH to head the Section of Conservation in 2009. In 1989, she established and ran the Conservation Department at the Science Museum of Minnesota where she developed the conservation and collections management program, specializing in preventive conservation for both storage and exhibition. She was a part of the team that planned a new building (open in 1999); setting environmental standards, and planning and directing the move of 1.75 million natural history specimens and objects. Anderson has trained conservation interns and taught preventive conservation both through distance learning (Northern States Conservation Center) and in the classroom. Anderson will devote 50% of her time directing the proposed project as detailed in the budget justification.

Consultants:

Catharine Hawks, FIIC, PA-AIC, Conservator, Falls Church, VA. Hawks is one of two conservators who were part of the original survey team for CMNH in 1989. She was a CMNH Research Associate from 1986-1996 and was chosen specifically for her long-term understanding of this institution as well as her strong background in the assessment and care of biological and paleobiological materials. Hawks has provided general conservation assessments and reassessments to over 68 institutions in the U.S. and abroad. Some of the major institutions where she has worked include: U. S. National Museum of Natural History, Washington DC; Sam Noble Oklahoma Museum of Natural History, Norman OK; and Brooklyn Botanical Garden Herbarium. She is a former Research Associate in the U. S. National Museum of Natural History's Department of Vertebrate Zoology and is currently a Research Associate in the Department of Botany.

Dr. R. Robert Waller, President and Senior Risk Analyst, Project Heritage Corp. Waller is the other consultant on the team who was part of original 1989 CMNH survey team. He recently retired from a long career at the Canadian Museum of Nature where he held the posts of Chief of Conservation and Director of Collection Services. He holds a Ph.D. in Conservation from Göteborg University Institute of Conservation and Professional Accreditation with the Canadian Association of Professional Conservators. Research interests include the preservation of mineral specimens and natural materials in general; cultural property risk assessment, analysis & management, and holistic approaches to collection management & preservation. He has taught, lectured, and served as a consultant at dozens of museums, universities, and organizations worldwide.

Ernest Conrad, P.E., LEED AP, Principle, Landmark Facilities Group, Inc. Conrad specializes in environmental systems for museum and historic structures, including design of mechanical, electrical plumbing, and fire protection systems. Conrad brings the expertise of a LEED Accredited Professional architect to the project. He has played a key role in the development of recent climate control strategies published in the ASHRAE Handbook and recently published design standards for Archival Facilities. He has served significant clientele including the Library of Congress, The National Gallery, and the National Archives, and has designed special climates for Jefferson's papers and the Declaration of Independence at Independence Hall, Philadelphia. He will be assessing both the Oakland museum and EORC in terms of the buildings' thermal envelopes and collections spaces, including outdoor collections spaces, roofs, skylights, and potential water entry locations.

Paul Krietler, Engineer, Landmark Facilities Group, Inc. Krietler has designed many historically significant mechanical systems, performed preservation assessments of building systems, and created master plan studies for historic buildings. He is presently completing a total reconstruction of Frank Lloyd Wright's Martin House campus in Buffalo with Toshiko Mori Visitors Center. He will conduct inspections and selected performance tests of the existing climate control systems and examine the HVAC systems' capability to support the collections needs and control systems.

Internal Assessment Team: Ellen McCallie, Deputy Director, CMNH; Luo Zhe-Xi, Associate Director of Research and Collections, CMNH; Suzanne McLaren, Collections Manager, Section of Mammals, CMNH; Jim Senior, Chair, Exhibits, CMNH); Bernadette Callery, Ph.D., CMNH Archivist and Assistant Professor, School of Information Science, University of Pittsburgh; Tony Young, Manager, Maintenance and Operations, Carnegie Museums of Pittsburgh; Director of Education, CMNH, (position currently vacant). **Services:** Tasha Mowery, Pre-program Conservation Intern.

Each of the internal assessment team members' contributions are detailed in the budget justification.

Budget allocation to accomplish project activities, including both the applicant's contributions and how the applicant will meet the required 1:1 match.

We are requesting support from IMLS for the consultants' fees and travel expenses including transportation and subsistence cost (BudgetJustification.pdf). All match will be provided by applicant salaries, volunteer services, and indirect costs as detailed above and in the budget summary.

4. Impact

How the results will be assessed and their significance, if known.

The project is a general assessment of the Museum's facilities and collections. The final report will provide priorities for the next steps to be taken towards ongoing care of collections. Specific concerns will be outlined in the report, with a list of detailed actions and strategies to be addressed by the Conservator that will mitigate areas of concern. Actions will be prioritized into short-, mid-, and long-term activities. This report will help summarize the successes in past conservation, identify what has been less successful, and ascertain what new opportunities exist due to changes in technology and conservation knowledge since the last survey in 1989.

Information about intended products – written reports, plans, publications etc that will result in this project.

The final report itself is the primary product. The findings detailed within will lead to a more comprehensive long-range plan that is closely aligned with Museum-wide strategic goals and conservation standards as defined by national and international conservation organizations. When completed, the long-range plan will be posted on the web to be used as a model for other facilities facing similar issues. The presentation of findings given by the consultants will be videotaped and made available as a training tool for Museum staff. The cross-divisional team (administration, research and collections, facilities, education, and exhibits) will use the report to guide actions and resource allocation in the 2010-2013 strategic plan. The report will also provide support for seeking additional funding to implement its recommendations, as CMNH intends to enact this upcoming plan with vigor similar to the 1989 IMLS investment.

**Carnegie Museum of Natural History
Proposed General Survey
Schedule of Completion**

Activities	May	June	July	Aug	Sept
Phase 1 Pre-visit preparations					
Phase 2 Site Visit					
Phase 3: Report Writing					
Phase 5: Present to administration					

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages		\$33,829.00	\$33,829.00
2. Fringe Benefits		\$8,324.00	\$8,324.00
3. Consultant Fees	\$39,500.00		\$39,500.00
4. Travel	\$4,865.00		\$4,865.00
5. Supplies and Materials	\$100.00	\$500.00	\$600.00
6. Services		\$3,038.00	\$3,038.00
7. Student Support			
8. Other Costs			
TOTAL DIRECT COSTS (1-8)	\$44,465.00	\$45,691.00	\$90,156.00
9. Indirect Costs	\$24,011.00	\$24,673.00	\$90,156.00
TOTAL COSTS (Direct and Indirect)	\$68,467.00	\$70,634.00	\$138,840.00

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$68,467.00
2. Cost Sharing:	
a. Applicant's Contribution	\$70,634.00
b. Kind Contribution	
c. Other Federal Agencies*	
d. TOTAL COST SHARING	\$70,634.00
3. TOTAL PROJECT FUNDING (1+2d)	\$138,840.00
Percentage of total project costs requested from IMLS	49 %

*If funding has been requested from another federal agency, indicate the agency's name:

1. Statement of Need

Older than the state of New Mexico, the Museum of New Mexico System was founded in 1909 to collect, study, interpret, present, and preserve objects and sites of cultural and historic significance from the Southwest. One century later, it continues to fulfill its mission through an active program of research, conservation, publications, educational outreach, and exhibitions. It is a state agency operating under the Department of Cultural Affairs and governed by a Board of Regents appointed by the governor. The Museum of New Mexico System possesses one of the country's most intriguing collections with four museums in Santa Fe: The Palace of the Governors/New Mexico History Museum, The New Mexico Museum of Arts, The Museum of Indian Arts and Culture and the Museum of International Folk Art. According to the museum's Strategic Plan:

“The New Mexico History Museum uses the artifacts and stories of the State's past to present exhibitions and educational programs that inspire and enrich the present, increasing visitors' knowledge, understanding and appreciation for the rich history and cultures of the people of New Mexico.”

from the Strategic Plan for the New
Mexico History Museum

Approved by the Museum of New Mexico Board of Regents 2004

The Palace/NMHM serves as the state history museum, with a collection of over 15,000 artifacts, as well as a historic site, attracting over 77,000 visitors annually from all over the world. The larger Palace/NMHM complex includes a history library and archive, a photo archives, and the Palace Press. The Palace of the Governors itself housed the residences and offices of 101 governors from the time of its construction by the Spanish crown in 1610 until 1909. The Palace was designated a *National Historical Landmark (NHL)* on October 9, 1960 and added to the *National Register of Historic Places* on October 15, 1966. The building and collections were designated an *Official Project of Save America's Treasures* in May 1999. Located on the plaza (town square and NHL) in downtown Santa Fe, New Mexico, the Palace is the crown jewel of historic New Mexico architecture and the oldest public building in continuous use within the United States. It also served as the northern terminus for significant trade routes, such as the Santa Fe Trail, Old Spanish Trail and *Camino Real* or Chihuahua Trail. Thus it served as an important link for cultural exchange and governmental functions and reflected the diverse cultures and activities that merged at this pivotal location. The Palace/NMHM collections represent our nation's multi-cultural patrimony, the unique history of encounters between ancestral Pueblo, Navajo, Apache and Spanish explorers beginning in 1539 through its occupation by Spain (1598-1821), Mexico (1821-1846) and the United States (1846-present). Few state history museums possess a historic horizon spanning nearly 500 years.

The New Mexico History Museum opened to the public in May 2009, and was constructed adjacent to the Palace specifically to house and showcase the artifacts in the collections, simultaneously providing state-of-the-art storage and exhibit facilities while

reducing stress on the historic building of the Palace of the Governors. In order to prepare for this new building, the Palace/NMHM has systematically sought to survey and treat their high priority collections. After the recent Save America's Treasures Grant (awarded in 2004 and ending at the end of this calendar year) awarded the Palace/NMHM \$358,000 to treat over 1000 conservation and curatorial priority 1 and 2 artifacts in the costume/textile collection, the furniture collection and 3-dimensional objects and to create a new conservation laboratory in the museum. Unable to include the paintings collection in the previous grants (also discussed below), the small but valuable collection of 187 paintings is now the highest priority for surveying under the museum's Long Range Conservation Plan. A comprehensive, detailed condition survey by a contract paintings conservator will enable the museum to assess the condition of their paintings in regards to stability, exhibition and educational purposes. The museum seeks IMLS funds to hire a contract paintings conservator, as there are none on staff.

The Palace of the Governors/New Mexico History Museum's collection contains outstanding paintings of various media dating from the 17th century to early 20th century. Subjects include landscapes, historical events, religious imagery and portraits of men and women whose lives, in one way or another, have played a role in New Mexico history. Two portraits of historical importance in the museum's collection that capture the spirit of the American west are those of Governor Bent and Adolf Bandelier. Charles Bent was the first civil governor under American rule in the territory of New Mexico appointed by General Stephen Watts Kearny during the Mexican-American War. Adolf Bandelier was among the first anthropologists to study Native Americans of the Southwest and who helped overthrow a distorted, romantic view of them.

Of additional importance are the *Segesser Hide Paintings*. Painted on bison hide, they are the first known depictions of Spanish colonial life in the United States and illustrate the ambush in present-day Nebraska of a 1720 expedition led by the Lt. Governor of New Mexico.

The Palace also owns one of the nation's truly exceptional collections of New World colonial paintings. The collection consists of 70 paintings from seventeenth and eighteenth century Mexico and South America with such artists as Juan Correa, José de Paez and José del Castillo from Mexico and Diego Quispe Tito the Incan painter from Peru are just a few of the masters from this collection (See Optional Attachment 4). The paintings were once in the private collection of Charles Wood and Nina Collier who collected the pieces while in South America and Mexico. In 1958 they founded the International Institute of Iberian Colonial Art to preserve their growing collection which was later donated to the Palace of the Governors. Although these paintings were not actually created in New Mexico they have direct relevance to history and culture of New Mexico as many of these artworks served as reference materials for many of the religious artworks created in New Mexico.

Two exceptional pieces from this New World collection are *The Assumption of the Virgin* by Juan Correa and *The Immaculate Conception* by Diego Quispe Tito. Quispe Tito was an Indian, proud of his Incan heritage, who worked in Cuzco. Correa was a mulatto who

directed a large workshop in Mexico City. Thus these two artists exemplify the rich ethnic diversity that characterized Spanish colonial society and represent, as well, the two principal viceroyalties of the Spanish empire, Mexico and Peru.

The survey of the paintings collection at the POG/NMHM is currently the highest priority in collections care for the POG/NMHM. Having recently completed surveys and major treatment of the textile, furniture, and objects collection, the paintings collection at the POG/NMHM remains the last collection type receive major attention. The Department of Cultural Affairs' Conservation Department, which has only 4.5 permanent employees does not currently have a paintings conservator on staff. In addition, the paintings collection nearly doubled with the recent gift of New World paintings, the conditions of which have never been fully assessed. With the opening of the 36,000 square foot New Mexico History Museum in May of 2009, there is an expectation of increased access to and use of the paintings collection.

The POG/NMHM has been generously awarded numerous IMLS grants over the past 20 years. Please refer to Optional Attachment 3 for the full list of grant awards. The two most recent and largest of these grants are:

In 2004, the POG/NMHM received an IMLS grant of \$425,453. This National Leadership for Libraries grant was used for to develop an informational network among the states varied cultural institutions and prepare for an exhibit on the role of the printing press in New Mexico's history.

In 2005, the POG/NMHM applied for and received an IMLS grant to survey, move and rehouse, the textile collection of 3400 artifacts. This project is now complete. As part of this grant the POG/NMHM provided a \$353,889 match to the IMLS's grant award of \$139, 914

2. Project Design

The Museum seeks \$15,000 in IMLS funding to hire a contract conservator to conduct a detailed conservation survey of the collection of 187 paintings at the NMHM/POG. The conservator selected to perform this survey will be Steven Prins, a private conservator who has worked in Santa Fe for over 20 years. Mr. Prins has over thirty years of experience in the field of paintings conservation. He has worked closely with the Museum of New Mexico in the past and has performed similar condition surveys for many museums the Denver Art Museum, the Albuquerque Museum, and Colorado Springs Fine Arts Center.

The goal of the project is to complete a comprehensive, highly detailed condition survey of the paintings collection held by POG/NMHM. This survey will involve the visual inspection of all paintings in the collection, both in storage and on display. Following the visual examination of each painting the conservator will prepare a written report. This report will include information on the construction of the painting, dimensions of the

painting, and any condition problems with the painting. This report will be completed using the existing Paintings survey form developed by the Conservation Dept (See Supporting Document 1). This survey form will be in a format that is compatible with the POG/NMHM collections database. As a final deliverable, the conservator will produce a treatment plan for the painting collection, prioritizing which paintings are most in need of conservation treatment in order to ensure both their stability in storage and display, as well as priorities to address their aesthetic needs for future exhibits. For both priority lists, the curator, Josef Diaz, will work with Mr. Prins to assign a curatorial priority to each painting as well. The conservator will also provide recommendations regarding any necessary improvements in storage and exhibition conditions for the paintings.

Mr. Prins will on site in the storage areas and in the Conservation Laboratory at the New Mexico History Museum. He will work closely with the permanent staff at the Conservation Department and will remain under the supervision of the Director of Conservation. Both the Conservation Department and the staff at the POG/NMHM have planned for this survey in their long range schedules and allocated ample time to assist in the conservation survey. Both the Palace/NMHM and the Conservation Department are prepared to schedule 10-25% time of various staff members to assist in the project. Mr. Prins will be assisted in the day to day handling and moving of the paintings collection by Pennie McBride, Assistant Collections manager. Conor McMahon, Associate Conservator, will serve as the daily contact between Mr. Prins and the Conservation Department.

POG/NMHM staff that will be directly involved with the project include Wanda Edwards, Senior Collections manager for POG/NMHM, Pennie McBride, Assistant Collections Manager, and Josef Diaz, Curator of Spanish Colonial Collections.

The conservator will work independently to survey the POG/NMHM painting collection. Following completion of the physical survey the conservator will deliver copies of the individual surveys and a final written report to the Museum of New Mexico Conservation Department and to the POG/NMHM. This written report will include details on the condition of all the paintings in the collection as well as a prioritized list for treatment. The conservator will also provide recommendations regarding improvements in storage and exhibition conditions for the paintings.

The ultimate goal of this project is to lay the groundwork for the treatment and exhibition of priority artifacts from the POG/NMHM painting collection. The survey will produce a detailed report identifying which paintings are most in need of treatment in terms of structural stability as well as cosmetic issues. This will be used to develop a schedule for the treatment of these paintings as well as a tool to financially plan for their treatment.

3. Project Resources: Time, Personnel, Budget

The proposed time frame for the grant period is approximately 4 months. This schedule allows for a one month period of preparation time by the museum prior to the actual survey period. The actual survey will occur within a two month time window.

Following completion of the survey there will be a period of one month for final write up of the survey and recommendations. This time period will also allow for restorage of the collection following the survey.

The survey is expected to take 20 days of working time. This time frame is based on an estimate of 1 hour of survey time for each painting in the collection. This time frame will also allow for the completion of the survey within an 8 week window.

POG/NMHM staff that will be directly involved with the project include Wanda Edwards, Senior Collections manager for POG/NMHM, Pennie McBride, Assistant Collections Manager, and Josef Diaz, Curator of Spanish Colonial Collections.

Wanda Edwards has been a member of the staff at the POG/NMHM since 2007. She holds an MA in Museum Studies from Texas Tech University and has over 20 years of professional museum experience. Mrs. Edwards will be responsible for arranging the logistics of removing the paintings from storage, transporting them to the survey area and returning them to storage following the survey. It is expected that Mrs. Edwards will spend 10% of her time working on this survey project.

Pennie McBride has been a member of the staff at the POG/NMHM since 2005. She holds a MA in Museum Studies from the University of Essex. Ms. McBride will be responsible for much of the work of removing paintings from storage, transporting them to the survey area, and returning paintings to storage once the survey is complete. It is expected that Ms. McBride will spend 50% of her time working on this survey project.

Josef Diaz has been a member of the staff at the POG/NMHM since 2007. He holds Masters in Art History from the University of New Mexico. Mr. Diaz will assist the conservators in assigning curatorial priorities to the paintings. He will also be responsible for adding art historical information to the survey. It is expected that Mr. Diaz will spend 10% of his time working on this survey project.

Mark MacKenzie has been the director of the Dept of Cultural Affairs' Conservation Dept since 2007. He holds a MA in Art Conservation from Queens University. Mr. MacKenzie has over 20 years of experience in the field of Art Conservation. He will be responsible to the higher administrative functions of the Conservation Department's role in the proposed survey. It is expected that Mr. MacKenzie will spend 10% of his time working on this survey project.

Conor McMahon has been a member of the Dept of Cultural Affairs' Conservation Dept since 2003. He holds an MA in ART Conservation from Buffalo State College. Mr. McMahon will be responsible for the day to day operations of the Conservation Department in relation to the survey. It is expected that he will spend 40% of his daily time on this project.

The primary conservator working on this project will be the contract paintings conservator, Steven Prins. Mr. Prins is a private conservator working in Santa Fe NM. He studied paintings conservation at New York University's Conservation Center and has

over 20 years of experience in the field. Mr. Prins will be responsible for carrying out the actual survey of the paintings collection. He expected to spend 20 working days on the project.

The funds requested from IMLS will go directly to pay the fees of the consultant painting conservator. These consultant costs include the conservator's daily rate for on-site conservation surveys.

4. Impact

This conservation survey will have a major impact on the museum's paintings collection. The last complete survey of the POG/NMHM painting collection occurred in 1985. This survey consisted of a simple checkbox form (See Supporting Document 2 for examples of this survey)). While this form does contain some useful information, it is lacking in the detail needed to develop long range preservation and treatment plans. A more recent survey occurred in 2006 (See Supporting Document 3). This survey was very limited in scope however, and included less than 30% of the painting collection. As with the previous survey from 1985, the depth of 2006 survey was limited and does not fully address the needs of the paintings collection. The proposed survey will capture a level of detail about the condition of the POG/NMHM painting collection that will allow their condition to be accurately monitored over time as well as containing all the necessary information to develop a detailed treatment plan.

Since the last major paintings survey at the POG/NMHM was completed in 1985, the size of the painting collection at the museum has more than doubled. Among the new additions to the collection is the 70 painting "Iberian Collection". This collection has yet to be thoroughly examined by a specialized painting conservator. The proposed survey would also highlight the importance of the paintings held in the POG/NMHM collection.

The proposed conservation survey will have a number of concrete products. These will include:

1. Detailed observations and reports on the construction technique of the paintings and the artists' materials used in their creation.
2. A record of the current condition of each painting. This can be used both to develop treatment plans as well as to provide a baseline for condition monitoring.
3. A treatment proposal for each painting. This proposal will address both issues of structural concern as well as cosmetics of the paintings.
4. A prioritized list for the treatment of the paintings in the collection.
5. High quality digital photographs of all the paintings in the collection. These photographs will include both overall images of each painting and detail photographs of areas of concern.

This survey is the first step in the treatment of the Palace/NMHM paintings collection. With the opening of the New Mexico History Museum in 2009, there is increased exhibit space and visitation. The public has an active interest in an increased display of the

paintings collection, particularly the Iberian collection. The proposed survey will lay the groundwork for the treatment of these paintings.

The survey and eventual treatment of the Palace/NMHM paintings collection is the final element in addressing the needs of the Palace/NMHM collections. Over the past decade the other major collections (i.e. textiles, furniture, objects, paper) at the Palace/NMHM have been systematically surveyed and treated. The museum hopes that the proposed survey will begin the process of devoting the attention and care befitting this extraordinary paintings collection.

Schedule of Completion

POG/NMHM				
A Detailed Condition Survey of the paintings collection				
Proposed Project Timeline				
2009				
Activity	May	June	July	August
Compile Relevant Records and prepare for on-site survey				
Prepare work space for assessment and begin removing paintings from storage.				
Conduct on-site detailed condition survey				
Integrate survey data into collections records				
Project wrap up and reporting				

BUDGET FORM - PAGE FOUR

Section B: Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages			
2. Fringe Benefits			
3. Consultant Fees			
4. Travel			
5. Supplies and Materials			
6. Services			
7. Student Support			
8. Other Costs			
TOTAL DIRECT COSTS (1–8)			
9. Indirect Costs			
TOTAL COSTS (Direct and Indirect)			

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	
2. Cost Sharing:	
a. Cash Contribution	
b. In-Kind Contribution	
c. Other Federal Agencies*	
d. TOTAL COST SHARING	
3. TOTAL PROJECT FUNDING (1+2d)	
% of Total Costs Requested from IMLS	

* If funding has been requested from another federal agency, indicate the agency's name:

1. STATEMENT OF NEED

The UC Davis Arboretum proposes to conduct a detailed conservation assessment of the 2,200 trees in our living plant collection; develop a long-term conservation plan for the trees; design and build a GIS tree assessment data model that will be distributed to botanical gardens and zoo horticulturists nationwide; and educate our visitors about the conservation of living collections and the ecological services provided by trees.

The Arboretum's first plant collections were trees: taxonomic groupings (eucalypts, conifers, oaks, acacias) and California native trees were established beginning in 1936 and used in research and teaching in UC Davis's renowned plant science departments. Later several significant geographic collections were added, including trees native to the Mediterranean climate areas of the world. In recent years, we have focused primarily on building horticultural collections and demonstration gardens, in response to visitor interests and academic emphases. The mature trees in the collection, however, remain an enormous asset to the Arboretum, to the campus, to the scientific community, and to our visitors. Several factors now coincide to make the trees in the collection our top conservation priority and present an uncommon opportunity to undertake the proposed project.

In 2001, we conducted an extensive self-assessment using a planning process developed by management theorist Peter F. Drucker, which applies business principles to non-profit organizations. We conducted more than 60 in-depth interviews and ten focus groups, and surveyed more than 4,000 people through the mail, in person, and online. Respondents included UC Davis faculty, students and staff, members of the Friends of the UC Davis Arboretum, horticulture professionals, and residents of the region. Following this audience research, we worked with a committee of constituents to develop a ten-year plan, which confirmed the institutional commitment to meet contemporary standards of excellence in collections care and conservation. We also developed a physical and programmatic master planning framework called the Arboretum GATEways Project (Gardens, Arts, and The Environment), which envisions the Arboretum as an open door into the campus, inviting the public in to learn about UC Davis research and teaching and bringing together environmental scientists, artists, university students, and Arboretum visitors in a multi-layered learning experience.

The physical site design for the GATEways Project is currently underway; the next few years will be a period of landscape construction and collection development. In addition, UC Davis will celebrate its centennial year in 2009, with a focus on long-term planning for the campus' next hundred years and funding for several centennial projects. The proposed project will allow us to make informed decisions about tree siting, environmental modifications, and maintenance planning as part of these large-scale campus-level projects.

As part of the GATEways Project, we are expanding academic partnerships with UC Davis faculty and students. We have worked with a number of classes to develop projects in the Arboretum that engage students in research that has immediate applications, and in interpretive projects that allow them to share their course content with Arboretum visitors. For example, students in an entomology course studied insects in the Arboretum and created a ceramic mosaic mural, featuring plants in the collection and their associated insects. The mural traveled to the U.S. Botanical Garden on the Capitol Mall in Washington, D.C., where it was seen by hundreds of thousands of visitors as part of an exhibit on the contributions of public gardens. The proposed project offers several excellent opportunities for bringing students into the process of conserving living collections and for collaborative outreach projects.

Over the past year, the UC Davis Grounds Division completed an assessment of the trees in central campus. Arboretum staff consulted on the methods and worked with the arborist conducting the assessment. We now have the opportunity to use same assessment format and arborist for an evaluation of the Arboretum's trees. The campus landscape architect will collaborate on the project as an in-kind contribution. Arboretum records will be incorporated into the campus tree database, which will facilitate work scheduling and maintenance tracking, and make it easier for the Arboretum to take advantage of campus resources, such as heavy equipment and contract tree crews.

Finally, the coast redwoods (*Sequoia sempervirens*) in our collection have recently begun showing signs of stress. We suspect that this may be due to reduced rainfall and longer periods of irrigation with more alkaline groundwater. This is perhaps a harbinger of climate change, which is predicted to increase susceptibility to disease in plant populations. This project will give us the opportunity to collect baseline data so that we can track changes in the collection over time. This will allow us to work with campus climate change experts to model expected changes and the collections care practices necessary to respond to a changing environment.

PREVIOUS AND CURRENT COLLECTIONS CARE ACTIVITIES

The Arboretum has made a significant institutional commitment to the conservation of the collections. Our 1998 Strategic Plan identified increasing the size of the horticultural and curatorial staff as a critical need. Since then we have successfully advocated for full-time, permanent funding for the curator and director of horticulture positions, and have added four full-time positions, director of planning and collections, assistant director, landscape manager, and nursery manager, as well as a part-time horticulturist and additional student gardeners. We have also improved our coordination with the campus Grounds Division and advocated for significant increases in in-kind donations of labor, equipment, and special services. Our Ten-Year Plan 2002-2012 restates our commitment to establish and maintain the highest professional standards of collection care.

Responsibility for the routine maintenance of the UC Davis Arboretum collection is held by the assistant director of horticulture. Garden inspections, attended by the assistant director, horticulturist, and garden specialists, are made on a regular basis and generally cover a single Arboretum collection or garden. Strict departmental and campus regulations control pesticide and chemical use in the Arboretum. Our Integrated Pest Management (IPM) program helps conserve important plants within the collection without adversely affecting research underway in the Arboretum.

In 1999, we participated in assessments under both the MAP and CAP programs. The MAP assessment was conducted by Nancy Morin, former Executive Director of the American Association of Botanical Gardens and Arboreta. She concluded that “[t]he collections represent priceless local, regional, national and international resources. They are a community investment, and support must be given for their long-term curation.” The CAP assessment, conducted by Linda McMahan, Director of the Berry Botanic Garden, addressed critical strategic needs of the institution with an analysis of general museum systems, and highlighted the importance of increasing horticultural staff and planning for collection development.

In 1999, we completed a detailed curatorial analysis of our oak collection. In 2003, funding from an IMLS Conservation Project Support (CPS) grant allowed us to undertake an in-depth assessment of environmental conditions and the condition of individual specimens in the oak grove. Our consulting arborist developed recommendations to help us modify our cultural practices, institute the best possible irrigation regime, prioritize major pruning work, and make decisions about how to treat diseased trees or whether any trees should be removed. In 2004, we received an additional Conservation Project Support grant to support implementation of some of those recommendations, including renovation of the irrigation system, treatment of specimens infected with pathogens, improvements to the soil surface, corrective structural pruning, and training for groundskeepers in conservation methods. Because the 300 trees in the oak grove have been recently assessed, we are not requesting funding to include them in the proposed project.

In 2005 we were awarded an IMLS Museums for America grant to move our collection inventory to BG-Base, a botanical garden database program currently used by 160+ gardens, and our collection maps to ArcGIS, the mapping software that is the worldwide industry and government standard, and to integrate mobile technologies into our collection management processes. In 2007 we were awarded an IMLS Conservation Project Support grant to begin developing a standard GIS data model, to be made available to botanical gardens and zoos for mapping and cataloguing their collections. The ArcGIS Botanical Garden & Zoological Park Data Model project led to a groundbreaking agreement with ESRI, the premier provider of GIS software, to provide millions of dollars in free software, training, and support to botanical gardens and zoos through the American Public Gardens Association and the Association of Zoos and Aquariums. Peter Raven, noted botanist, environmentalist and president of the Missouri Botanical Gardens, gave the keynote speech at this year’s ESRI International User Conference, attended by 14,000 GIS professionals. Dr. Raven’s talk centered on the need for biodiversity and species preservation, and he encouraged GIS users to volunteer with their local botanical gardens to contribute their skills to these causes.

The proposed project will allow us to build on the successes of our previous conservation activities and extend them to all 2,200 trees in the collection. It will make it possible to incorporate a tree assessment module into the ArcGIS Botanical Garden & Zoological Park Data Model that is used by hundreds of gardens nationwide.

2. PROJECT DESIGN

The proposed project is a detailed assessment of the condition of the trees in the collection of the University of California Davis Arboretum, including environmental conditions and status of individual specimens. The goals

of the project are to document current conditions and determine appropriate corrective treatment and/or changes to current maintenance practices necessary to safeguard the health of the collection. The proposed project has the following components:

- **Detailed conservation assessment of the 2200 trees in the Arboretum's plant collection.**

The assessment will be conducted by Melanie Gentles, a certified arborist, who consults with the UC Davis Grounds Division and has assessed the trees of the central campus. Her assessment model follows the Neighbourwoods© protocol developed at the University of Toronto by Dr. Andrew Kenney and Dr. Danijela Puric-Mladenovic. Neighbourwoods© was designed to assist communities in conducting an inventory and evaluation of the state of their urban forest. It provides a standardized procedure for collecting information on tree location, species, size and condition, as well as site characteristics and potential conflicts with urban infrastructure. Trees will be identified by species, accession number, and location (GPS coordinates). A photograph will be taken of each tree. Data collected from each tree will include height, trunk diameter at breast height (DBH), canopy spread, condition, maintenance needs, and physical constraints of each tree's growing space. Each individual tree will be examined visually to identify visible signs of stress, pest damage, or pathogens and to document the need for corrective pruning or other structural treatment. The model will also incorporate a hazard assessment for each tree, based on the International Society of Arboriculture (ISA) protocol. It will be compatible with the i-Tree assessment protocol of the USDA Forest Service.

As arborist Melanie Gentles surveys the tree collection, she will identify specimens with symptoms of stress, pathogen infection, or structural weakness that require further investigation. We will contract with John Lichter, MS, consulting arborist, to provide more in-depth examination, problem diagnosis, and management recommendations for high-value specimens. Depending on the condition of the specimen, a variety of techniques may be used as needed to evaluate and diagnose tree health problems.

Soil conditions may be monitored through the laboratory analysis of chemistry, texture, and bulk density. Soil moisture sensor monitoring and water audits may be used to evaluate the current irrigation system and practices. Soil moisture can be tracked with a series of in-ground electronic monitors. When symptoms of fungal and bacterial pathogens are observed, tissue samples will be collected and analyzed to identify the pathogens involved.

Tree structural problems have the potential to not only reduce tree appearance and longevity, but may also pose a hazard to Arboretum visitors. Root crown excavations, ground-penetrating radar, and aerial inspections may be used to examine the structural strength of branches and roots to more accurately predict the likelihood of structural failure. Based on the results of diagnostic work, therapeutic treatments will be recommended.

- **GIS tree assessment data model.**

Geographic information systems (GIS) are quickly becoming the leading solution for the management of the living collections, facilities, and infrastructure of botanical gardens and other similar public landscapes. The ArcGIS Botanical Garden & Zoological Park Data Model has been a catalyst in this process by providing GIS users with a practical template for implementing GIS projects, and additionally providing a common starting point for the integration of similar data sets across multiple institutions.

The Arboretum GIS manager will work with a team of arboriculture industry experts to design and test a new module for the data model that will provide users with the capacity of performing a comprehensive tree conservation assessment using GIS. This module will allow for the capture of all of the information detailed in the above conservation assessment using a combination of the Neighbourwoods© and ISA protocols, and will be compatible with existing i-Tree software. It will also allow for the capture of related data that may affect tree health such as soil chemistry, irrigation spread and volume, water chemistry, and disturbance and impacts. The module will additionally provide for the detailed tracking of tree maintenance history and will be designed to work with existing enterprise asset management systems such as IBM Tivoli Maximo.

The module will be accompanied by a suite of analysis models that will automate the calculation of key indices related to the health and value of the collection. A condition rating model will calculate a numerical value for the overall tree condition, and a hazard rating model will perform a similar calculation for determining pruning or removal priorities. Functionality will be provided for running the existing USDA Forest Service STRATUM and UFORE models for assessing the ecosystems services provided by collection trees.

The tree conservation assessment module and the suite of analysis models will be added to the ArcGIS Botanical Garden & Zoological Park Data Model, and will be made available for free download via both the

ESRI Data Models website and the forthcoming Alliance for Public Gardens GIS website. The data model will be accompanied by supporting documentation to provide user instructions and technical support options.

• **Long-term conservation plan.**

The Arboretum curator and assistant director of horticulture will analyze the data collected, recommendations of the consulting arborists and other experts, hazard and ecosystem services ratings, and geospatial data generated by the GIS module to prepare a long-term conservation plan for the trees in the Arboretum collection. The plan will analyze data based on a curatorial value assessment that will take into consideration the research, educational, conservation, and aesthetic value of each tree. The plan will establish priorities and procedures for replacing trees reaching maturity, managing pests and pathogens, correcting structural problems, and addressing environmental problems with soil and irrigation. The plan will also generate baseline data on the health and value of the tree collection and help prioritize long-term opportunities for adding trees to the collection or removing trees for as necessary for landscape construction.

PLAN TO ENSURE THAT NORMAL MUSEUM OPERATIONS ARE NOT DISRUPTED

The project will have only a moderate impact on routine Arboretum operations. Our work planning is designed to accommodate strategic initiatives like this project in addition to routine work, and we are experienced at managing large-scale projects. Although the proposed project activities are large in scale, we will rely on the expertise of our partners and consultants for much of the work, and project staff will be relatively unobtrusive in the field. Access to the collection will not be limited, and normal curatorial and horticultural activities will continue during the project. Education staff and volunteers will incorporate the activities of this project into their schedule of educational activities. Administrative staff will manage financial accounting and reporting for the project as part of their normal work load.

SPECIMENS THAT ARE THE FOCUS OF THE PROJECT

The Arboretum's collections have been developed over the last 60 years in response to the needs and interests of the campus and community. The collections consist of plants adapted to a Mediterranean-type climate and able to tolerate the climatic extremes of California's Central Valley. Distinct from other western collections because of their tolerance for frost (winter temperatures can drop to 14°F), they are also remarkably tolerant of both drought and extreme summer heat (up to 120°F). The collection contains approximately 2,200 tree specimens representing more than 250 taxa, displayed by taxonomic group or geographic region of origin, or to illustrate horticultural themes, in a series of gardens along both banks of the old north fork of Putah Creek on the University of California's Davis campus.

The Arboretum's geographic collections include trees native to California, the American deserts, Australia, Mexico, Southwestern U.S., South Africa, Chile, and the Mediterranean basin. Of special interest to researchers are the Arboretum's large taxonomic collections of oaks, conifers, and acacias. Horticultural collections feature small trees for home landscapes, many of which have outstanding features such as visually interesting flowers, berries, bark, fragrance, or fall color. The collections also include ancient valley oak trees that served as boundary markers for the Laguna de Santos Calle Mexican land grant and appear on the earliest maps of the area, as well as numerous trees that are rare or threatened in the wild.

CONSERVATION METHODS IN TERMS OF EFFICIENCY, RELIABILITY, AND SAFETY

The University of California, Davis is one of the most prominent plant science research and teaching institutions in the world. The Arboretum strives in all its operations to reflect the excellence of the University, and to make use of the most current research and thinking in the field. Our staff and consultants teach at UC Davis, serve on the boards or chair committees of organizations such as the American Society of Consulting Arborists, the International Society of Arboriculture Western Chapter, the American Public Gardens Association, and the North American Plant Collections Consortium. Their work keeps them abreast of the latest findings.

The assessment techniques that will be used to evaluate the specimens in the collection and their environmental conditions (described above) are established practices in the fields of arboriculture, horticulture, urban forestry, and environmental management. These techniques have been used to evaluate trees in the central campus of UC Davis, as well as in many municipalities. We have determined that the procedures proposed here are efficient and yield valuable data.

All work done at the University of California is subject to stringent safety requirements. All Arboretum staff, students and volunteers are safety-trained and must be tested and cleared before handling power tools, vehicles, or heavy equipment.

Care will be taken to protect the trees in the collection during the conservation activities. Trucks and other heavy equipment will be confined to roadways to avoid soil compaction. Excavation, if necessary, will be limited to several discrete sampling pits and will be carried out either by hand or with an air spade, to minimize damage to tree roots. Tissue sampling will be conducted only when the presence of pathogens has been confirmed visually. Routine maintenance activities will continue on the normal schedule during the project.

3. PROJECT RESOURCES: TIME, PERSONNEL, BUDGET

TIME ALLOCATED TO COMPLETE PROJECT

We have designed this project within a 14-month time frame, and have carefully allocated time to each project activity, taking into consideration the campus academic schedule, seasonal needs of the plant collections, the availability of project partners and consultants, and the overall responsibilities of Arboretum staff. We have also built in “slack” in time estimates to allow for unforeseen complications. The GIS project includes a test phase and subsequent evaluation and modification, in order to identify and correct problems before the general release of the data model.

As shown in the attached schedule of completion, the project components will go forward simultaneously. The initial month is allocated for planning. The tree assessment will take place during months 2-12. Designing and testing the data model will take place in months 2-11. Education activities will take place in months 4-12. The last two months are allocated to data analysis, writing the long-range conservation plan, evaluation, and dissemination of project results.

BUDGET ALLOCATION TO ACCOMPLISH PROJECT ACTIVITIES

The project budget was developed by determining the activities necessary for the project and identifying the labor, supplies, equipment, and services necessary to carry out each activity. We believe that the estimated project costs are reasonable and appropriate to the scope of the project.

Labor costs were determined by estimating the amount of time needed for each activity, assigning specific staff, consultant, or volunteers to each task, and applying the hourly rates of the person(s) assigned. Many of the activities were performed in assessments of campus trees and the Arboretum’s oak grove, by the same staff and consultant, so we were able to extrapolate time and costs for this much larger project. We have used volunteers, student workers, groundskeepers, and entry-level professional staff whenever possible to keep costs down. Because the consulting firm is located in our area, there are no travel or subsistence costs. Supplies and equipment costs were determined by actual quotes from suppliers or records of recent purchases.

Travel costs included are for two staff members to attend the annual meeting of the American Public Gardens Association. The GIS manager will give a presentation introducing the GIS tree assessment module, which will be available free to all botanical gardens and zoo horticulturists, along with associated software, training and support. The project director will report on the tree assessment project and the development of the long-range conservation plan.

Matching funds will include in-kind donations of equipment and staff time as well as expert consultations by leaders in the field of arboriculture, urban forestry, and geographic information sciences. The University of California, Davis has agreed to reduce the indirect costs charged to the grant. This is an indicator of the importance of the project to the campus. This balance of the indirect cost requirement will be applied as a match.

KEY STAFF AND CONSULTANTS

A leadership team of Arboretum staff and professional partners will guide the project. Mia Ingolia, Arboretum curator, will be project director. She will track project activities and budget, integrate the assessment data with the Arboretum’s plant records, and test the prototype data model. She will also co-write the long-range conservation plan. This will occupy 25% of her time for the duration of the project.

Melanie Gentles, a certified arborist, will conduct the tree assessment. She will use the assessment protocol that she has used to evaluate the trees of the central UC Davis campus as well as several municipalities, with additional data fields specific to the Arboretum. This will occupy 25% of her time for 11 months.

Brian Morgan, GIS Manager at the Arboretum and a graduate student in Geography at UC Davis, will manage the GIS component project. He is the lead designer of the ArcGIS Botanical Garden & Zoological Park Data Model, a collaborative project of leading botanical gardens and zoos under the leadership of the UC Davis Arboretum. He will work with a group of expert advisors to design and test the GIS tree assessment data model. This project will occupy 25% of his time for 12 months.

Mary Burke, director of planning and collections at the UC Davis Arboretum, a professional botanist who is nationally recognized as a leader in technological innovation in botanical gardens and arboreta, will oversee the GIS collaboration and lead the long-range conservation planning. This will occupy 10% of her time for the duration of the project.

Emily Griswold, assistant director of horticulture at the Arboretum, will work with the arborists and serve as liaison to the campus Grounds Division. She will collect all the background data needed for the project, assist with assessment activities, and co-write the long-range conservation plan. This will occupy 25% of her time for the duration of the project.

Betsy Faber, education outreach manager at the Arboretum and a graduate student in Science Education at UC Davis, will manage the education aspect of the project. Her expertise is in environmental leadership and informal science education. She will work with UC Davis faculty and students to develop class projects that assist with the assessment project and educate visitors about conserving living collections. She will also oversee docent tours, school tours, the development of the cell phone tour, and other projects. This will occupy 10% of her time for ten months.

John M. Lichter of Tree Associates will be the consulting arborist for the project. He will conduct a detailed horticultural evaluation of approximately 60 high-value specimens with identified problems. Mr. Lichter holds a Master of Science degree in Environmental Horticulture from UC Davis, and is well respected in his field as an expert on tree health, safety, and conservation through corrective treatment. He will provide 80 hours of consultation.

We will hire a student intern to work with Melanie Gentles on the tree assessment and assist with education programs, including school tours, publications, web content, and outreach events. The student will work 10 hours per week (25% time) for 12 months.

We will consult with an outstanding team of experts in arboriculture, urban forestry, and geographic information sciences to ensure that the project meets the highest standards of excellence and is compatible with national and international protocols. Dr. Jim Skiera, executive director of the International Society of Arboriculture and former head of the UC Davis Grounds Division, will review the tree assessment protocol and GIS data model and consult on the long-range conservation plan. Dr. Greg McPherson, director of the Center for Urban Forest Research of the USDA Forest Service, will consult on the ecosystems services analysis component of the GIS module. His expertise is in quantifying cost and benefits of the urban forest. Dr. Mark Schwartz, faculty in Environmental Science and Policy at UC Davis, will consult on the effects of global climate change on botanical collections. Dr. Don Durzan, faculty in Plant Sciences at UC Davis, teaches Analysis of Horticultural Problems and will work with Arboretum staff to develop class assignments that contribute to the tree assessment project. Skip Mezger, UC Davis campus landscape architect, will help ensure that the project will meet the needs of campus landscape planners and facilities managers. A team of advisors to the ArcGIS Botanical Garden & Zoological Park Data Model, including experts from the Missouri Botanic Garden, the Arnold Arboretum at Harvard, and the San Diego Zoo, will review and test the GIS tree assessment module.

4. IMPACT

This project will provide the basis for future conservation activities to safeguard the Arboretum's tree collection. Extensive data, professional analyses, and recommendations will allow us to modify our maintenance practices and apply corrective treatment as necessary. The survey will also provide leverage as we seek funding for future conservation activities.

The project will make it possible to integrate the Arboretum's tree collection records with those of the UC Davis campus. Arboretum trees are maintained both by Arboretum staff and by campus tree crews. Better integration will facilitate work requests and work tracking. As discussed above in Section 1, the project will facilitate

landscape planning and collection development for the Arboretum GATEways Project and the Campus Centennial Plan. The project will also strengthen the Arboretum's links with campus teaching and research in arboriculture, horticulture, and landscape architecture, helping us to meet our educational goals.

The long-term benefits of the proposed project will be improved health and longevity of the Arboretum's tree collection, which will benefit researchers, educators, students, and visitors who use the collection for teaching, research, or recreation. The project has the potential to contribute to the preservation of biodiversity in the wild, since the collection represents a repository of documented genetic material that can be used for research, teaching, or ecological restoration.

The proposed project will result in the following formal products:

- Reports to the Arboretum by arborists conducting the detailed collection assessment and follow-up evaluation of trees with identified problems.
- Long-term conservation plan for the trees in the collection of the UC Davis Arboretum.
- A tree assessment GIS module that will function as a stand-alone data model or as part of the comprehensive ArcGIS Botanical Garden & Zoological Park Data Model.

EDUCATION AND INTERPRETATION

As leaders in informal education at UC Davis and in the regional community, the Arboretum education staff will provide a range of education programs and interpretation services to inform university students, horticulture professionals, K-12 students, Arboretum visitors, and online audiences about the conservation of living collections and the ecological services provided by trees.

- We will partner with UC Davis faculty and students to create class projects that allow students to conduct research in the Arboretum and share their results with visitors. For example, soil science students will take samples in the Arboretum and analyze their chemistry; plant pathology students will examine foliage for evidence of pests or pathogens; horticulture students will take samples of irrigation water and analyze them for pH and dissolved salts; urban forestry students will practice evaluating trees with the assessment model we are using for the project. Students will then work with Arboretum education staff to produce inexpensive temporary signs that will be installed in the Arboretum to inform visitors about the conservation project.
- We will train education interns, docents, and volunteer naturalists to discuss the conservation project during public educational events and tours with visitors and school groups.
- Education staff and interns will create a cell phone tour about the project; signs at several sites in the Arboretum will invite visitors to call in to listen to recorded messages explaining different aspects of the conservation project and the Arboretum's leadership in collections conservation nationally.
- We will present two talks on the project at the annual meeting of the American Public Gardens Association and submit an article to the journal *The Public Garden*.
- We will make the open-source GIS tree assessment module available at no cost to botanical gardens and zoos nationwide and internationally through the collaborative design effort described above. We will present the GIS application to our colleagues with a workshop at the annual meeting of the American Public Gardens Association.

EVALUATION

We will evaluate the tree assessment process at several points during the process, to identify problems and ensure that the data being collected meet our expectations and are compatible with the Arboretum's record system. We have seen the results of the assessment carried out on the campus trees by the same arborist using the same measures and will expect the same level of accuracy and depth.

The GIS project will be evaluated by a community of experienced GIS users and domain specialists (arborists and urban forestry professionals) who will advise on the design and test the beta version of the application.

The Arboretum uses a three-part evaluation model for educational programs. For this project, we will begin with a survey of visitors and other audiences to determine interests, questions, and misconceptions about conserving the tree collection and more broadly about the value of trees in the landscape. We will use formative evaluation to test and revise signage, programs, and cell phone tours as they are developed. Finally, we will use summative evaluation to document the entire process and record successes, areas for improvement, and suggestions for future projects.

UC Davis Arboretum IMLS CPS 2009 Schedule of Completion

	2009						2010							
	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Overall project planning	-----													
TREE ASSESSMENT														
Document current practices		-----	-----											
Visual assessment of specimens		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Identify specimens for extended assessment		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Detailed risk assessment				-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Soil sampling and analysis									-----	-----	-----	-----	-----	-----
Laboratory analysis of tissue samples to identify pathogens									-----	-----	-----	-----	-----	-----
Water audit, soil moisture monitoring									-----	-----	-----	-----	-----	-----
GIS DATA MODEL														
Consult with design team		-----	-----											
Design and build prototype module			-----	-----	-----	-----								
Test prototype data model with tree assessment data						-----	-----	-----	-----					
Make changes to module for release									-----	-----	-----			
Distribute GIS module and documentation												-----	-----	-----
LONG-RANGE CONSERVATION PLAN														
Integrate tree assessment data with Arboretum records, GIS module												-----	-----	-----
Generate priority lists for tree replacement, treatment												-----	-----	-----
Integrate Arboretum data with campus work order and tracking system												-----	-----	-----
Prepare report													-----	-----
EDUCATION AND INTERPRETATION														
Create class projects for UC Davis students						-----	-----	-----	-----					
Work with students to produce signs about conservation project									-----	-----	-----	-----	-----	-----
Train education interns, docents, volunteer naturalists about project				-----	-----				-----	-----				
Tours with visitors and school groups				-----	-----				-----	-----	-----	-----	-----	-----
Create cell phone tour about project				-----	-----									
Cell phone tour available to visitors									-----	-----	-----	-----	-----	-----
EVALUATION														
Front end evaluation—survey visitor interest, questions				-----										
Formative evaluation—test programs, signs, cell phone tour					-----	-----	-----	-----						
Summative evaluation of project													-----	-----
Report on project at APGA annual meeting													-----	-----
Article on project in quarterly Arboretum Review													-----	-----
Reports to IMLS					-----								-----	-----

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	46,173	69,475	115,648
2. Fringe Benefits	10,381	17,369	27,750
3. Consultant Fees	13,200	0	13,200
4. Travel	3,800	0	3,800
5. Supplies and Materials	1,708	270	1,978
6. Services	4,995	0	4,995
7. Student Support	0	0	0
8. Other Costs	1,198	0	1,198
TOTAL DIRECT COSTS (1-8)	\$81,455	\$87,114	\$168,569
9. Indirect Costs	\$28,510	\$30,490	\$59,000
TOTAL COSTS (Direct and Indirect)	\$109,965	\$117,604	\$227,569

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$109,965
2. Cost Sharing:	
a. Applicant's Contribution	\$117,604
b. Kind Contribution	
c. Other Federal Agencies*	
d. TOTAL COST SHARING	\$117,604
3. TOTAL PROJECT FUNDING (1+2d)	\$227,569
Percentage of total project costs requested from IMLS	48 %

*If funding has been requested from another federal agency, indicate the agency's name:

Narrative

The proposed project promises to fulfill long-standing institutional goals for conservation, which staff recognized following completion in March 2000 of a three-year, 700-page Historic Structures Report. While that report focused primarily on the conservation needs of the building itself (which ultimately led to a comprehensive, award-winning building conservation project completed in 2004), it also became a useful tool for setting further priorities for conservation, interpretation, and programming.

The Gamble House is uniquely qualified to undertake its mission of interpreting the Greenes' legacy of exquisite design and craftsmanship. As a historic house museum it presents to the public the most original and complete example of the Greenes' internationally recognize signature designs. Thanks to the Gamble family's gift of the house and its contents in 1966, the full complement of Greene & Greene-designed decorative arts have remained in its originally-intended environment since the Gambles occupied the residence one hundred years ago. Greene-designed furnishings for their other houses have been dispersed--by descent, auction and private sale--into collections around the world.

Conservation of the objects in The Gamble House collection became the highest priority once environmental issues regarding the building envelope and climate were addressed by an architectural conservation project that was completed in 2004. In a real sense, safeguarding the house itself was key to ensuring a stable and appropriate environment for the collection. A full-time curator was hired in 2004 to care for the collection, ensuring that sufficient attention could at last be paid to documentation, cataloguing and conservation of the objects.

The proposed project represents the next strategic step in the museum's overall conservation plan. In particular, the project addresses specific treatment recommendations for objects resulting from a Getty-funded collections-conservation planning initiative undertaken by Gamble House curator, Anne Mallek, with the aid of Griswold Conservation Associates, Inc., in 2006-07. Important to the success of the proposed project is the continued participation of Ms. Mallek (who had previously catalogued and cared for the Huntington's collection of William Morris objects) and GCA, Inc., as we move into the implementation phase.

Financially, the institution remains fully committed to its overall conservation plan, which anticipates appropriate interpretation and educational components. An architectural conservation endowment was partly funded in 1998 by the late James N. Gamble, after which a capital campaign for the architectural conservation project successfully raised \$3.6 million from both private and public sources (including \$350,000 from "Save America's Treasures," as well as planning and implementation grants from the Getty Foundation), which were used to complete the conservation of the house in 2004. With the prestige that

IMLS assistance brings, we anticipate that matching funds will be approved for applications pending with foundations and other donors that also supported the architectural conservation project. These include in particular the Ralph M. Parsons Foundation, the Ayrshire Foundation (a Gamble family fund), and other private support. The Friends of The Gamble House membership organization has traditionally supported our conservation objectives as well, and we expect this to continue.

Project Design

The 2006 collections conservation survey report see Supporting Document 1 was organized according to three treatment priorities: **Priority 1** for highest conservation need, which included structural stabilization, prevention of significant active deterioration or loss, prevention of loss of historical information, and/or need for significant improvement of appearance for exhibition; **Priority 2** for less urgent conservation treatment, where items were reasonably stable in present exhibition; and **Priority 3** for less immediate need, but involving necessary cleaning by conservator (removal of accretions, etc.)

This project proposes to address the conservation of 270 objects, the majority of which were part of the original gift made by the Gamble family to the City of Pasadena and the University of Southern California in 1966. The majority of these objects were designed by the Greenes. In addition, important gifts in past years have included a collection of Dirk van Erp copper vases and a large jardinière, various oak furnishings produced by Gustav Stickley's firm or that of L & JG Stickley (two rooms in the Gamble House were originally furnished with Stickley pieces, though only one original piece – a chest of drawers – remains in the collection), and a collection of antique Oriental rugs which originally furnished the Greene & Greene-designed William R. Thorsen house in Berkeley, California.

This project will primarily address objects categorized as Priorities 1 and 2, with select inclusion of objects in the Priority 3 category. Almost all of these objects are on continual exhibition at the Gamble House or at The Huntington Library, Art Collections, and Botanical Gardens (a gallery dedicated to the work of Greene & Greene that is co-curated by the Gamble House and The Huntington Art Collections). In performing the proposed conservation treatments we can establish a reliable baseline of condition for future monitoring and maintenance. For example, when fresh-looking damages have been treated to be less visually distracting, future damage or changes will become readily apparent, allowing Gamble House staff to take appropriate and timely corrective action to protect the collections.

The conservation project will be organized in batches of objects having similar treatment needs, in order to maximize efficiency in executing treatments by setting up lab facilities for like items, and for training of our conservation

technicians and interns on specific tasks. Treatment progress will be communicated through illustrated progress reports. Lab visits will be scheduled at key milestones throughout the treatment process to facilitate clear communication of goals. This strategic treatment of like objects will allow for useful comparisons between objects and their more efficient conservations. GCA has the physical space to safely accommodate large groups of objects, with multiple workstations allowing simultaneous treatment by trained staff directly supervised by its conservators. The project will be tracked using both a Filemaker Pro database and web-based project management software (Basecamp). All parties on both the conservation team and the curatorial team will have access and input to the project through this service.

As many Priority 1 objects will require removal to a conservator's studio for treatment, the curator and consulting conservator will coordinate the removal of objects to ensure that there are no significant interruptions in the ongoing interpretation and touring of the interior spaces of the Gamble House. Any conservation carried out on site would not limit the access to a particular room – as during its exterior restoration and collection conservation survey, the House would permit public interaction and encourage education. Through emails, newsletters, and signage we will keep docents, members, and visitors apprised of the progress of the work and the de-installation/temporary absence of any objects.

GCA is a full-service conservation lab with multiple projects continually underway. Its conservators have over 10 years experience successfully managing a large workload and critical timeframes with hard deadlines. The proposed treatments are estimated based on "Conservator Hours" and a "Blended Rate." This anticipates the participation of various conservation staff at different billing rates, from the principal conservators (\$125/hr) to conservation technicians and pre-program interns (\$45/hr). This allows flexibility in assigning appropriate, cost-effective staff to the various tasks and sub-tasks comprising each treatment.

The conservation methods proposed in the 2006 survey adhere to the AIC Code of Ethics and Guidelines for Practice. Principles of minimal intervention, reversibility/re-treatability, and efficiency without sacrificing quality of treatment, guided the selection of methods and materials. Every effort will be made to preserve as much of the original surfaces as possible. The 2006 survey and investigation showed that very few elements, features and objects have been recoated, refinished or otherwise altered or contaminated since they were first made. With most of the furnishings and objects remaining in their original placement within the house, the patterns of wear, deterioration (e.g. from light exposure, etc.) and other surface changes reflect their use, routine housekeeping practices and history of repair, if any. Conservation methods chosen allow these informative characteristics to remain "legible," while improving stability and aesthetic presentation.

Where visual reintegration of damage is called for, it will be done with the most reversible and effective means possible. Resins chosen for adhesives and coatings/binding media will remain soluble in organic solvents of relatively low toxicity that will not negatively affect the underlying historic surfaces. For example, low-molecular weight resins such as Aquazol, colored with artist pigments or dyes, may be used locally to in-paint abrasions and scratches. This resin is known for an increase in solubility as it ages, facilitating future removal or re-treatment. Where feasible, an isolating layer or barrier coating will be used to facilitate future separation of infilling material on all substrates. None of the methods proposed could be considered experimental, or outside of the range of established best practices for the field. The conservation team will work closely with the Curator and Director to determine the most appropriate degree of treatment. The methods chosen allow for an ample range of technique to satisfy the curatorial aesthetic goals.

The attached Supporting Document 1 of the individual condition assessment survey records present the proposed methods in detail. It will be apparent, upon reading through the treatment steps for each record, that each feature, element and object will be treated as unique, and that it is incumbent upon the conservator to perform local testing to determine the best choice of solvent, aqueous solution, dry cleaning method, or applied coating to be used.

A significant component of the proposed conservation treatment project is a training workshop and handbook to be presented by the conservation team to the Gamble House staff. The training will focus on describing the nature and condition of the various items in the collection and their relationship with the interior spaces, and understanding the reasons behind the conservation treatment performed. This background information will then inform the reasons behind practical systems for monitoring, maintenance, security and presentation. Staff will be given a handbook, specific to the Gamble House, to enable curatorial staff to offer conservation and preservation-related trainings and orientations to new staff and docents.

Project Resources: Time, Personnel, Budget

This project proposes a two-year timeframe for successful completion of all object conservation, with the majority of the first year taken up with conservation of those objects requiring the most extensive treatment (including all in the Priority 1 category). This will ensure that objects are removed from exhibit gradually, limiting disruption of interpretation of a given room or exhibit space. The conservators on the project will also deliver treatment reports as objects are completed so that the data may be immediately incorporated into the Gamble House object conservation files and relevant information can be added to the collections management database.

Anne Mallek, Curator of The Gamble House, will manage this project at a rate equivalent to 20% of her daily work schedule. This will include oversight and organization of any on-site conservation as well as the relevant notifications to volunteers and the public by way of newsletters, signage, and website updates. Ms. Mallek has spent the past five years cataloguing the Gamble House collection, and also managed the Getty-funded collections conservation survey in 2006. Previously, she had catalogued a large collection of William Morris & Company archives at The Huntington Library. In the last year, she has also edited a volume of new scholarship on the Greenes' work, and co-curated a traveling exhibition on the Greenes' furniture design and architecture, the most significant exhibition of their work in over three decades, and the first to travel outside of California.

Current estimated unrestricted endowment income for Gamble House operations in the next fiscal year is \$166,000. In addition, the estimated endowment income for furniture conservation is \$13,000. This would be sufficient to cover matching funds should our applications to other private parties and organizations be unsuccessful. We will be making applications to the Ralph M. Parsons Foundation and Ayrshire Foundation (a Gamble family fund), both of which have consistently supported past Gamble House projects. Additionally, we anticipate support from The Friends of The Gamble House membership organization.

Griswold Conservation Associates (GCA) has a long and important relationship with The Gamble House and its collections, having completed its first comprehensive collections conservation survey in 2006. GCA was also closely involved in the conservation of the exterior of the house in 2004. The expertise and familiarity that the firm and its Principal Conservator, John Griswold, have developed over this period, both with the house and with its collections, make them uniquely qualified to treat these objects. GCA has also carried out conservation on other Greene & Greene works in relation to the aforementioned exhibition. It is important to note that the very few Greene & Greene-designed furnishings that were made were one-off designs created for single house commissions, so this prior sensitivity to the general conditions of these rare pieces, the materials involved in their creation, and their overall structure and composition, is significant to the success of this project. Our history with GCA on past conservation projects has proven their ability to work to a deadline and within a fixed budget.

| Impact

Treatment results will be inspected by the Gamble House Curator and/or Director at the GCA lab, prior to the return of each group of objects to the Gamble House. Those features, elements and surfaces to be treated *in situ* will be evaluated as

treatments progress. Evaluation will be based on visual inspection, and comparison with before treatment photography, etc.

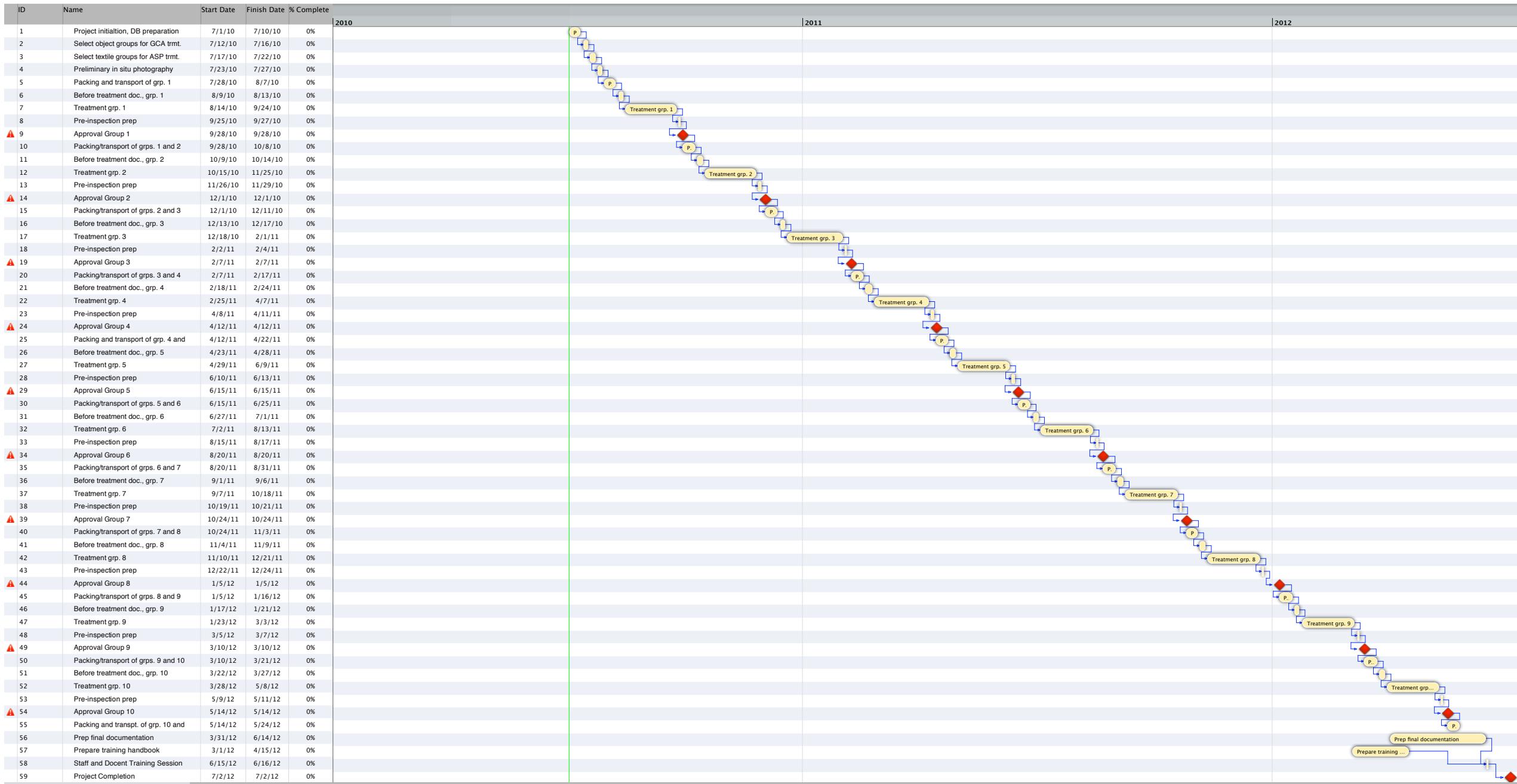
The final report will be based on layouts added to the existing Filemaker Pro 10.0 database in use by Gamble House staff, as provided by GCA at the end of the 2006 survey. Treatment information, including methods and materials used, diagrams showing location of treatment on the object as needed, and reference photos will be included. All other photos will be submitted on CD-R disc, along with a PDF version of the records. In addition to this documentation, a PDF file of an illustrated training manual will be submitted on the disc.

The Gamble House, in accordance with its mission, endeavors to make use of any activities related to its architecture or collections (whether exhibition, conservation, etc) as an opportunity for education – this includes visitors to the museum as well as staff, volunteers, and its membership. Both during and following restoration of the exterior of the house, The Gamble House documented and published the process on its website and in newsletters to its members and docents (<http://www.gamblehouse.org/conservation/index.html>). Our intention with this project would be to publicize and document it in a similar manner (that is, through articles, website postings, and photographs), as the next phase of the Gamble House conservation program. Also, when conservation will be performed on site and during tour hours, the process will be made visible and available to the touring public and to docents.

In cooperation with the University of Southern California's School of Architecture, The Gamble House annually hosts and leads a class on historic site administration, a course required as part of the certificate program in Historic Preservation. We have also shared details of the exterior restoration with the class, and would anticipate sharing details of process and outcome of the proposed collections conservation project. This would include participation of both the Gamble House Curator Anne Mallek as well as lead project conservator John Griswold. Additionally, the conservators plan to present interesting and timely aspects of the project at professional conferences such as AIC and WAAC.

As much of the collection is over 100 years old, including 60 years of regular use by members of the Gamble household, it is appropriate that we conserve a number of objects that have suffered from wear or from overexposure to sunlight or other environmental conditions. These conditions have been mitigated by the addition of blinds throughout the house, UV filters on all windows, and the addition of a new HVAC system and environmental monitoring system. The collection is now housed in more stable conditions and handled carefully and with much less frequency than it once was. To further stabilize the objects themselves will only help to ensure our ongoing ability to share them with the public as supreme examples of the Arts and Crafts design as executed by architects Charles and Henry Greene and their craftsmen.

In performing the proposed conservation treatment project, goals established in the HSR and the Long Range Conservation Plan will be met. The project will allow the establishment of a quarterly maintenance and monitoring program for the collections and interior elements and features, dovetailing with the present quarterly maintenance plan for the exterior of the house.



Gamble House IMLS Conservation Project
Thursday, September 24, 2009

Legend:

- Task (Yellow circle)
- Subproject (Blue circle)
- Milestone (Red diamond)
- Finished (White circle)
- On schedule (Green circle)
- Task late (less than 5%) (Yellow circle)
- Task late (more than 5%) (Red circle)

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages		\$16,224.00	\$16,224.00
2. Fringe Benefits		\$4,867.20	\$4,867.20
3. Consultant Fees	\$113,200.00	\$117,200.00	\$230,400.00
4. Travel	\$1,215.50		\$1,215.50
5. Supplies and Materials	\$3,436.00		\$3,436.00
6. Services	\$1,000.00	\$7,270.00	\$8,270.00
7. Student Support			\$0.00
8. Other Costs			\$0.00
TOTAL DIRECT COSTS (1-8)	\$118,851.50	\$145,561.20	\$264,412.70
9. Indirect Costs	\$7969.38	\$7373.92	\$15343.30
TOTAL COSTS (Direct and Indirect)	\$126820.88	\$152935.12	\$279756.00

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$126820.88
2. Cost Sharing:	
a. Applicant's Contribution	\$66,207.12
b. Kind Contribution	\$86728.00
c. Other Federal Agencies*	
d. TOTAL COST SHARING	\$152935.12
3. TOTAL PROJECT FUNDING (1+2d)	\$279,756.00
Percentage of total project costs requested from IMLS	45 %

*If funding has been requested from another federal agency, indicate the agency's name:

1. Statement of Need

The Arizona State Museum (ASM) at the University of Arizona in Tucson is requesting support for the conservation treatment of 700 archaeological and ethnological ceramic vessels from the Southwest collections. The vessels are the Museum's current highest conservation priority because they have been identified through a detailed conservation survey as insecure and in imminent threat of destruction and because they possess high scholarly significance and interest to the Museum, scholars and researchers, tribal community members, and the general public. An Item-by-Item survey was completed between 2002-2008. The collections have been documented and re-housed in a new visible vault storage facility. Treatment for the vessels with both the highest conservation and curatorial priority is the final step in the comprehensive conservation program for this important collection.

The need for conservation of the 20,000 southwest ceramic vessels was identified as collections care priority in the early 1980s when ceramic dust was found on shelves around the vessels with soluble salt efflorescence. Since 1984 various conservation surveys and treatment projects for parts of the ceramic collection have been undertaken. However, due to the size and distribution of the collection much of it remained vulnerable to disintegration and destruction. A *Collection Conservation Assessment* by Steve Weintraub in 1996 states that "Because of the lack of proper environmental conditions in both ASM buildings, it is essential to develop a realistic schedule and time frame for upgrades".

In 2000, conservation of the collection became an official project of the Save America's Treasures (SAT) program. Known as *The Pottery Project*, this effort addressed the need for new environmentally controlled, secure, unified, space for a collection that is arguably the largest and most comprehensive collection of southwest ceramic vessels. Much has been accomplished since the initial SAT grant funding. 1. Preventive stabilization improvements include the successful relocation of the entire collection from various storage areas into a single designated storage space which is controlled with thermostat-humidistat controls, advanced filtration, automatic filtered aisle lighting, seismic protection, security cameras, and advanced entrance locks and alarms in 2006. 2. Cultural inclusion efforts include the development of guidelines for curation, access, research, and conservation treatment based on consultations with American Indian representatives in 2001-05. 3. Conservation planning strategies include the completion of a detailed item-specific Conservation Condition Survey for all of the vessels in 2008.

Since 2000, ASMs *Institutional Plan* has included The Pottery Project as a highest priority. The other highest priority (2000-2009) was The Rio Nuevo Project involving development of an additional downtown facility for exhibitions. After treating almost 2000 objects, this project was terminated in 2009 due to the economic recession and massive budget cuts at the University of Arizona. In 2001 ASM adopted a final version of *The Comprehensive Master Plan: A guide for twenty years of collection growth*. This extensive study was funded by the University of Arizona and was coordinated by the museum planning firm, Ann Beha and Associates, Inc. of Boston with museum staff.

This document includes a Feasibility Study for the facility as well as information related to the collections. Highlighted concepts related to the SW Pottery included recommendations for visible storage with safe and appropriate environments, secure facilities for tribal use, study areas related to storage areas, labs that optimize preservation of collections, and expanded public and interpretive exhibits.

Likewise, the 2000 *Long-Range Conservation Plan* with updates in 2005 and 2009 reflects the ongoing priority of the Southwest ceramic vessels in the collection. The current plan follows the Conservation Assessment Program (CAP) outline and identifies ongoing and prioritized activities in all identified areas. The ceramic vessels are listed under conservation treatment priority, collection care priority, and exhibition improvement priority, and a storage priority. By all accounts, The Pottery Project is the largest and most extensive project ever undertaken by the ASM.

The 2009 *Conservation Assessment Report: A Detailed Item-by-Item Condition Survey of Southwest Pottery Vessels in the Arizona State Museum* by Chris White summarizes the survey that was completed in 2008 and recommends conservation treatment as the next highest priority for conservation. This Report refers to the detailed survey database with images of 20,000 vessels. It identifies 1836 vessels that remain noted as needing conservation treatment. It further suggests that there are approximately 700 vessels with both highest conservation need and highest curatorial priority.

[Please see the attached Long-Range Conservation Plan and the Detailed Conservation Survey Report in the Supporting Documents Attachment for more information. Note that both the Museum Comprehensive Master Plan and Institutional Plan exceed IMLS length requirements for supporting documents and are not included in this application].

Conservation treatment for the vessels with both the highest conservation and curatorial priority is the final step in the comprehensive conservation program for this important and highly used collection. If funded, treatments will be proposed and executed based on tested and proven professional as well as special knowledge gained during the survey period. For example new information resulting in adhesive testing protocols, indigenous and historic adhesive references, desalinization procedures, and storage supports has been shared with colleagues through professional presentations, publications, and posters at numerous venues will be considered. The ASM conservators and the proposed grant funded conservator have extensive knowledge, skills, and experience with this collection and the treatment of southwest ceramic vessels.

The Arizona State Museum is a research unit of the University of Arizona and reports to the Vice President for Research. The collections include world-wide comparative examples of archaeology and ethnology but the collections are considered among the most notable resources in the world for research and study of Native peoples of the American Southwest and northern Mexico. As a university museum, ASM serves a wide range of audiences including students and faculty of the University of Arizona (notably the School of Anthropology, Arid Lands Studies, American Indian Studies, Department of History, Latin American Studies, and Department of Materials Science & Engineering, and others); professional archaeologists (ASM is the largest non-federal repository in the

United States); Native American Tribes (Arizona has 23 recognized tribes); international scholars; and the general public. Our faculty members are evaluated on their contributions to research, service, and education and museum programs. All of our programs in exhibition, teaching, public outreach, and research strive to integrate the needs of our audiences.

The southwest ceramic vessels are part of an extensive collection that includes nearly 200,000 cataloged archaeological and ethnographic artifacts; more than 20,000 cubic feet of boxed research archaeology collections; 250,000 photographic negatives and prints; and 70,000 library titles. Formerly known as the Arizona Territory Museum, the ASM was founded in 1893 by the Arizona Territorial Legislature.

The mission of the Arizona State Museum, an anthropology museum, is to promote understanding of and respect for the peoples and cultures of Arizona and surrounding regions. (Mission Statement approved by ASM Executive Committee, 2003)

The Museum strives:

- To collaborate with diverse communities to explore and celebrate the rich cultural heritage of Arizona and surrounding regions.
- To be a premier anthropological research center that embraces the voices and cultures of all peoples of Arizona and surrounding regions through time.
- **To practice and promote the highest professional standards in collecting, preserving, researching, interpreting and sharing objects and information.**
- To be a leader in fulfilling ethical and legal responsibilities for archaeological and cultural preservation.
- To advance The University of Arizona's mission and relevant initiatives. (Vision Statement approved by ASM Executive Committee, 2003)

The ASM has employed a faculty level conservator since the late 1970s. Ongoing financial commitment is evident as the conservation laboratory has grown into the Preservation Division which supports research, educational activities, and public outreach programs (windows allow visitors to look into lab). The conservators provide preventive and interventive conservation services for the collections; review all objects going on loan or exhibition; review all objects subject to repatriation or destructive sampling; and provide field conservation for the museum's excavations. When possible, the Museum and the University support professional development and laboratory upgrades. In 2008 the ASM received the *Outstanding Commitment to the Preservation and Care of Collections* joint award from the American Institute for Conservation and Heritage Preservation with special mention of The Pottery Project.

The museum's fundraising goal for The Pottery Project building renovation was reached with the incredible effort and generosity of the ASM Advisory Board, museum members, friends, the ASM family, American Indian communities, Arizona Archaeological and Historical Society members and Arizona Archaeological Society members. The Pottery Project collection survey and re-housing efforts have been supported through generous private gifts, foundation awards, federal grants, and a Save-A-Pot program for vessels with instability due to soluble salts.

2. Project Design

The approximately 700 southwest ceramic vessels that are the focus of this proposal are examples of systematic archaeological excavations and ethnological research. In 2005 Governor Janet Napolitano named the ASM Southwest Pottery Collection an *Arizona Treasure*. Many of these archaeological vessels are The Example that names a specific Pottery Type such as 76-39-44, bowl, Rio Rico Polychrome, Hohokam culture. Many of the ethnological vessels were made by famous potters such as Nampeyo (Hopi), Maria (San Ildefonso), and Ida Redbird (Maricopa) and whose examples are recognized internationally.

Over a two-year period, the museum's conservators and curatorial staff will supervise, participate, and facilitate with the work of a part-time specialist conservator and a graduate research assistant dedicated to the conservation treatment and stabilization of vessels. The completed Item-by-Item Conservation Survey Database makes it possible to query for the items identified as needing conservation treatment. It is also possible to link these selections with the items of highest curatorial priority and identify which vessels will receive conservation treatment during this project.

The conservation treatments will be executed in accordance with the AIC Code of Ethics and Guidelines for Practice. An appropriate project conservator has been identified. Marilen Pool is a local professional and can commit to the project on a part-time basis. She is particularly familiar with the collection, the conservation lab, and the museum staff. The graduate student will be selected from the University of Arizona's graduate program in Heritage Conservation Science. Documentation for this project will be incorporated into the ASM collections database and the Pottery Project conservation database as well as hardcopy files. Treatment sequences that have particularly good educational or public outreach value will be photo-documented so as to facilitate use for other purposes.

The new state-of-the-art Conservation Laboratory is adjacent to the Visible Vault and affords visitors the opportunity to view conservation in action from the Pottery Interpretive Gallery. The lab has large height adjustable worktables, movable and adjustable glass-bead sandboxes and local exhaust tubes; adjacent chemistry laboratory with fume hood; adjacent instrumentation laboratory with FTIR, portable XRF, PLM and forensic microscopes, and cabinet X-Ray instrumentation; and a photographic documentation area with controls for special lighting.

A typical conservation treatment for a previously restored but currently unstable ceramic vessel from the southwest might include the following. 1. First, photo and written documentation of each vessel. 2. Review of curatorial comments and discussion as necessary. 3. Testing and analysis of old adhesives, residues, deposits. 4. Disassembly of old reconstruction and removal of old adhesives, fill materials, and paints. 5. Further cleaning, consolidation, and testing. 6. Discussions with Dr. Vandiver regarding specific

issues of ceramic materials, manufacture, condition. 7. Layout and reassembly. 8. Fill and toning as necessary for stability. 9. Documentation.

Normal operations at ASM will not be disrupted by this project as the space was specifically designed to accommodate ongoing ceramic conservation projects. ASM staff conservators will spend a percentage of their time communicating with the project conservator, the graduate student, curatorial staff to monitor and discuss the progress of the project. The conservation lab can easily accommodate this project. The ASM conservators will also provide regular updates on the project to the education and exhibition staff so that they may provide interpretation for visitors viewing the project from the Interpretive Gallery window.

3. Project Resources: Time, Personnel, Budget

The **time** allocated to complete this conservation treatment project, which includes the training component for the graduate student is 2 years. Based on estimates of treatment time recorded in the Item-by-Item Condition Survey by professional conservators, this is an appropriate amount of time to undertake the stabilization treatment of items identified as needing conservation treatment with those of highest curatorial priority.

Key **personnel** for the conservation treatments include:

Dr. Nancy Odegaard. Conservator Professor, Head of Preservation Division, Arizona State Museum, University of Arizona (PhD in Applied Science, University of Canberra, Australia; MA in Museum Studies, George Washington University, Washington DC with Certificate in Conservation, Smithsonian Institution). Dr. Odegaard specializes in the conservation of archaeological and ethnographic objects of art and archaeology. She is Co-Director of the Heritage Conservation Science graduate program at the University of Arizona. She is a Fellow of the AIC and IIC. Dr. Odegaard has successfully managed projects involving project conservators, interns, students, and volunteers for over 25 years.

Ms Teresa Moreno. Associate Conservator, Arizona State Museum, University of Arizona (MA Archaeological Conservation, Durham University and MA Classical Archaeology, University of Arizona). Ms Moreno specializes in the conservation of archaeological objects with interests in field conservation and metal objects. She is a Professional Associate of the AIC. She has served as Assistant Project Director for the Pottery Project.

Dr. Pamela Vandiver. Professor of Materials Science & Engineering, University of Arizona (PhD in Materials Science, MIT, Cambridge MA). Dr. Vandiver specializes in ceramic materials, technology, and analysis. She is Co-Director with Dr. Odegaard in the Heritage Conservation Science graduate program and runs a laboratory of cultural materials analysis.

Ms Marilen Pool. Conservator in Private Practice, Sonoran Art Conservation Services, Tucson AZ (MA in Museum Studies, Oregon State University, Corvallis OR and Diploma in Conservation, Sir Sanford Fleming College, Peterborough ON). Ms Pool specializes in objects conservation and is a Professional Associate of the AIC. Her relevant experience includes project work at the Arizona State Museum, notably as a survey conservator for Item-by-Item Conservation Survey for The Pottery Project.

Additional staff at ASM who will be involved with this project include: Dr. Patrick Lyons, Associate Curator and Head of Collections Division and Associate Professor of Anthropology (PhD in Anthropology, University of Arizona); Ms Diane Dittmore, Assistant Curator of Ethnology Collection (MA in Anthropology, University of Denver, CO);

Mr. Mike Jacobs, Collections Curator for Archaeological Materials (MA in Anthropology, University of Arizona). [Please see resumes in the Key Project Staff attachment].

All ASM staff members are fully committed to their responsibilities for this project. The Pottery Project has been of the highest institutional priority for almost 10 years and these individuals are committed to the preservation of the collections. Because the conservators are already familiar with the collection and its needs, day-to-day impact should not significantly interfere with other duties. Dr. Vandiver enthusiastically endorses this project and looks forward to participating where she can.

The **budget** allocation for this project is primarily associated with personnel. The costs associated with treatment are based on wages and benefits comparable to other conservation projects. The graduate research assistant salary & benefits follow university standards. The costs for materials and supplies associated with treatments are based on standard and appropriate vendor catalogs. [A breakdown is included in the Budget Justification attachment]. Travel support is requested to send the graduate student to the North American Association of Graduate Programs in Art Conservation (ANAPIC) annual meeting.

All conservation treatments will take place in the ASM conservation laboratory. The museum will meet the required 1:1 match by contributing staff time and expertise. [Please see the Detailed Budget and Budget Justification]

4. Impact

There are several long-term benefits of this project. The conservation treatment of the ceramic vessels will (1) improve and stabilize their condition, (2) ensure their long-term preservation and, (3) enable accessibility by a diverse range of audiences. These highly important and highly requested objects will be better served through the successful completion of this treatment project. Treatments will be recorded in the Collections database and the Conservation Pottery Project database thus providing regular and searchable records.

The progress and results of the project will be disseminated and publicized through a variety of means. The project will be featured on the ASM website and in the newsletter and a press release will be sent out. The hands-on nature of conservation treatments make them a popular feature for local news shows. Previous conservation participation in the annual Southwest Indian Art Fair (2-day, 5000 visitors), the Southern Arizona Regional Science Fair Fest (3-day, 5000 visitors), Archaeological Month Expo (1-day, 1000 visitors) has been successful. Since completion of the new Conservation Lab, the conservation staff has also successfully initiated several public workshops on conservation and object care (textiles, basketry), a special reception/tour for students of the University of Arizona, and a lecture series that features objects in the Conservation Lab.

The museum's commitment to education and outreach will be further fulfilled through the inclusion of a graduate research assistant, the regular inclusion of students, and the development of publications, lectures, web information, and workshops for museum professionals as well as the public. While the conservation of ceramic vessels is a standard procedure for many museums, references to the conservation of great examples of ceramics from the Southwest of the United States are not so common. It is anticipated that new and useful information will be generated as a result of this project. [Please see List of Professional Presentations and Publications that were produced during the Item-by-Item detailed Conservation Survey phase in Optional Attachments].

**Arizona State Museum, University of Arizona, Conservation of Southwest Ceramic Vessels
 Schedule of Completion Year 1
 (August 1, 2010 – July 31, 2011)**

Activity	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July
Press release	x-----											
Initial examination and schedule	x-----											
Conservation treatment		x-----										
Ongoing photo-documentation		x-----										
First newsletter article						x-----						
SWIAF event Demonstration								x-----				
AZ Archaeology Month lecture									x-----			
ANAGPIC Student presentation											x-----	

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	\$65,846.00	\$79,632.00	\$145,478.00
2. Fringe Benefits	\$25,961.00	\$22,982.00	\$48,943.00
3. Consultant Fees	0	\$0.00	\$0.00
4. Travel	\$1,000.00	\$0.00	\$1,000.00
5. Supplies and Materials	\$6,550.00	\$0.00	\$6,550.00
6. Services	\$0.00	\$0.00	\$0.00
7. Student Support	\$0.00	\$0.00	\$0.00
8. Other Costs	\$0.00	\$0.00	\$0.00
TOTAL DIRECT COSTS (1-8)	\$99,357.00	\$102,614.00	\$201,971.00
9. Indirect Costs	\$47,686.00	\$52,846.00	\$100,532.00
TOTAL COSTS (Direct and Indirect)	\$147,043.00	\$155,460.00	\$302,503.00

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$147,043.00
2. Cost Sharing:	
a. Applicant's Contribution	\$155,460.00
b. Kind Contribution	\$0.00
c. Other Federal Agencies*	\$0.00
d. TOTAL COST SHARING	\$155,460.00
3. TOTAL PROJECT FUNDING (1+2d)	\$302,503.00
Percentage of total project costs requested from IMLS	48.6 %

*If funding has been requested from another federal agency, indicate the agency's name:

Conservation Treatment of Chinese Lacquer Panels

1. Statement of Need

The Preservation Society of Newport County was founded in 1945 with the specific objective of saving Newport's historic architectural, artistic and social history for the public's enjoyment. The Society holds ten properties that are open to the public for tours and educational activities. Seven of the properties have been designated as National Historic Landmarks, and all ten are Official Projects of Save America's Treasures. The Elms on Bellevue Avenue was constructed in 1901 and is one of the Preservation Society's seven National Historic Landmarks. The building is a stone replica of the 1750 Château d'Asnières, which is located outside of Paris, France. Horace Trumbauer of Philadelphia designed the structure for Edward and Sarah Berwind of Philadelphia; Edward Berwind was an entrepreneur in coal and shipping industries.

The Elms roof was one of the first roof preservation projects for the Preservation Society and was completed in 1996-1997. In 2000, a Historic Structures Report (HSR) was completed for The Elms by Mesick, Cohen, Wilson, Baker Architects; it is a two-volume report. This HSR remains the guide for both the history of The Elms and also its needs for the future.

In 2002, two conservators (an architectural historian/conservator and an objects conservator), completed a general conservation survey of the Preservation Society's ten historic sites, based on the Heritage Preservation CAP model. This general survey was the first step in developing a coordinated plan for preservation and conservation of the Society's collections; the survey was funded by the Institute of Museum and Library Services (IMLS). The object conservator's Executive Summary is enclosed.

As a recommended final product of the IMLS General Conservation Survey, the Conservation Department developed the Long-Range Collections Preservation Plan (LRCCP), a database that details and assigns priority to the needs of the collections and the decorative architectural interface. The LRCCP's most important conservation project, The Elms Breakfast Room's lacquer panels, is the focus of this proposal; only the summary and some object condition reports are enclosed here, as the total LRCCP is 70 pages long.

The Elms Breakfast Room is furnished with Regency-style walnut paneling, within which are three Chinese lacquer, or urushi, panels (c.1622-1722, K'ang Hsi Period), three overdoor panels with fragments of urushi that have been restored using European methods, and a panel that is a copy provided by the Parisian design firm Jules Allard and Son. Custom made furniture with Oriental detailing, a Chinese carpet, and blue-and-white ceramics complete this early 20th century version of an 18th century Chinoiserie room. The lacquer panels give the room significant historical and architectural value as they reprise a style popular in the 18th century, but are now rarely seen. Lacquer panels similar to these, in sets of 3-5 leaves, were created in early 18th century Canton for export trade rather than for domestic use in China. These panels likely found their way to France in the 18th century and thence, after a long life, to Newport. However, the investigative phase very early determined that these particular panels never served as sections of screens. They are original to the house, having been provided and installed by the French decorating firm of Jules Allard and Son. They are internationally important, as they join a small group of 18th century lacquer panels that remain in an architectural context; others are

extant in 18th century historic buildings in Vienna, Germany, and Sweden. The Chinoiserie panels at the Elms have been classified as “high priority” for preservation and conservation treatment in the LRCPP.

In 2005, a conservation assessment and report was commissioned from Marianne Webb, Conservator at the Royal Ontario Museum and author of *Lacquer: Technology and Conservation*, to establish the importance of the Chinoiserie panels and provide some recommendations. Her report had considerable influence on the project at the outset and was likely significant in obtaining funding for the study.

In 2006, because of the significance of the panels, the Chief Conservator engaged an engineering firm (Landmark Facilities Group, Inc. of CT) to undertake an environmental assessment of the Breakfast Room. It was determined that the single largest problem for the panels was the excessive humidity in the area during Newport’s summer months; two years of monitoring of the space with dataloggers confirmed these findings. A commercial dehumidifier was installed in the basement of The Elms and delivers dry air to the Breakfast Room. It has been shown to be effective at moderating the climate in the room by reducing RH by an average of 15% during the summer months. The room is kept at approximately 55°F, with 3 degrees of variance in the winter; this minimizes drying.

In 2007, the Preservation Society was awarded an Architectural Planning Grant from the Getty Foundation to conduct a detailed survey of the lacquer panels. The Chief Conservator of the Preservation Society, Charles Jeffers Moore, and Melissa Carr, Conservator, of Masterwork Conservation in Arlington, MA, visited Vienna, Austria, to examine 18th century lacquer panels displayed in an architectural setting. They discussed the lacquer treatments undertaken by conservator Silvia Miklin at Schönbrunn Palace, Palais Esterhazy, and the Hofmobiliendepot. The visit was extremely valuable, as the conservators were able to discuss the different treatment strategies and materials, and what had worked best over time.

During this Getty Foundation-funded project, the Conservation Department undertook detailed studies of the four large and three smaller panels at The Elms, including scientific analysis, cross-section microscopy, X-ray examination, wood identification and photographic documentation. A thorough search of all appropriate literature was conducted. The Executive Summary of the final report to the Getty Foundation-funded detailed object survey is attached. The study confirmed that the panels are at substantial risk, with the following deterioration identified: cracks in wood substrate, insufficiently bound grounds, peeling lacquer, detaching decoration, losses, poor restorations, abundant wax infills, and degraded varnishes applied during European restoration campaigns.

A thorough environmental survey of all ten buildings was conducted within this past year. The project was funded by IMLS in 2008; engineering reports from the firm of William Wladeka are pending. This study included The Elms and all other houses; it will offer even more information about exterior and interior conditions of the buildings overall. The environmental engineer's report will deliver recommendations regarding a measured response to deleterious conditions.

The Conservation Department is composed of a Chief Conservator, a Textile Conservator, a Conservation Technician and a part-time Archivist, who is responsible for the institutional archives and photography collection. The department has expertise in furniture, architectural surfaces, textile, and metals conservation, plus paper preservation, but must rely on contracted painting conservators for its works of art on canvas and board. The Chief Conservator has been employed by the Preservation Society for 25 years; all other employees have extensive training and experience in the field of museum and conservation work.

2. Project Design

The project objectives are: 1) to respect the state the panels were in when installed in 1901 2) to leave historic repairs in place that are not jeopardizing their condition and 3) to undertake all conservation work according to the Code of Ethics and Guidelines for Practice of the American Institute for Conservation of Historic and Artistic Works.

The panels are described in the Curatorial accession records as:

“A SET OF THREE CHINESE BLACK AND GOLD LACQUER WALL PANELS (Chinese, 18th century); (K'ang Hsi Period, 1662-1722); together with three matching overdoors and a wall panel in black and gold lacquer from the workshops of Allard et ses Fils of Paris (French, circa 1900); all finely painted in tones of gold, with figures strolling and conversing within elaborate pavilions enclosed by rockeries and foliage, the larger panels with borders of landscape vignettes, Fu lions and birds, the smaller panels with graceful arrangements of flowering branches enlivened with songbirds; all on black grounds.” The four large panels measure 120" H x 80" W. The three overdoor panels are 48" H x 67" W.

A suitable space is vital for the treatment of the panels and overdoors. It is preferable to keep the panels in as similar an environment to The Elms as possible to avoid the changes that might occur with shipping them off-site; they have become acclimated to their location. There is a large room in the basement of The Elms that can be adapted to this use. It is well preserved and dry, being partly out of the ground and with a large sub-basement beneath. This room will be dehumidified similarly to the Breakfast Room, with a commercial dehumidifier, and warmed as necessary in the winter. Ventilation will be installed to carry vapors to the outside; windows are available. The room was once a collections storage room, so the capability is there for the addition of lighting, ventilation, and custom designed/fabricated surfaces for work and clamping.

The largest panels are 120"H x 80"W, which makes treatment logistically complicated. Only one panel at a time can be treated. Each must be treated flat, and appropriate supports will be constructed to keep them horizontal. Clamps can be used around the edges of the panels to hold conserved parts. However, conservators will need to work from a rigid canopy to reach those most difficult middle areas, allowing the conservators to use "go-bars" or the shinbari technique, which uses flexible sticks to apply pressure to the cauls. The platform will be constructed by the Properties and Conservation Department staffs.

The area is presently on The Elms “Behind the Scenes” tour. The tour will, however, continue past the space, and the Preservation Society will make the treatment work as a valuable visitor educational experience by providing visual access to the area. Visitors will be able to observe

the conservators at work, through a Plexiglas barrier. A sub goal of the project is education, at the site and on the website; this will be discussed further under Impact.

Conservation treatment of the lacquer panels will include reattaching peeling lacquer, cleaning waxy accumulations from the surface, removing one layer of modern discolored varnish, filling cracks, restoration of significant losses of decorative material (either lacquer or japanning), and the application of a reversible, non-damaging, protective varnish. Severely tented lacquer and japanning will be reattached first, using appropriate adhesives. Wax and the modern varnish will be removed, as will repairs with poor infills of paint or bronze paint. Loss compensation will be undertaken, and a reversible coating may be applied for gloss adjustment and protection if it is deemed necessary. The Condition Report and Treatment Proposal that is appended is written for all the Chinese lacquer panels; the same conservation techniques will be used for all.

A conservation team will be assembled consisting of a Project Manager, Project Conservator, Assistant Conservator, Technician, and Intern. The Preservation Society seeks funding to complete a one-year conservation treatment project that will complete conservation treatment of one large panel and one overdoor panel. Other funding will be sought to conserve the remaining panels. The Project Manager and Project Conservator will train and supervise all new personnel.

The Properties Department will assist the Conservation Department by assembling scaffolding within the Breakfast Room for removal and reassembly of the lacquer panels. Time will also be needed for setting up the specific lab conservation room with appropriate ventilation, dehumidification, heating and humidification in the winter months, electricity, and some additional lighting. This is included in the budget as twenty days of labor from the Properties Department. The Society's regular contracted electrician, and possibly the plumber, will be hired to bring in needed services. Details of equipment required will be in the Budget Justification section.

The project is intended to include one year of conservation treatment time on the lacquer conservation project. It would be expected that one single large lacquer panel and one of the overdoor panels will be completed in that time; it will begin on September 1, 2010, and continue until August 31, 2011. Other panels will be completed at a later date. The estimates developed through the Getty Foundation-supported Architectural Planning grant were \$75,000 each for the three large historic panels and \$25,000 each for the smaller overdoor panels. The total estimate is \$300,000. The one large 20th century panel is in very good condition.

3. Project Resources: Time, Personnel, Budget

The Chief Conservator for The Preservation Society of Newport County is Charles Jeffers Moore. His area of expertise is furniture and architectural surfaces, so working with wooden panels is within his experience and expertise. He will advertise the external positions and interview candidates, complete some treatment, supervise all personnel, and write interim and final reports. He will be needed for 50% of his regular working schedule. As the head of the Conservation Department, Mr. Moore has other duties which will demand his time and attention.

A Project Conservator will be hired on contract, one who has an expertise in Asian lacquer treatment. Melissa Carr, Conservator in private practice of Masterworks Conservation in

Massachusetts, will be hired to work on the treatment project. Ms. Carr participated in the detailed survey of the panels and is an acknowledged expert in conditions and conservation of lacquer objects; she has an intimate knowledge of these particular panels. She will be at the site two days a week, or 100 days. Partial funding (58%) of her stipend is requested in this proposal.

An Assistant Conservator will be sought who has some experience in working with lacquer objects. This outside contractor's position will be pursued internationally; the proposed Assistant Conservator will have experience in the conservation field of no less than three years and must have a recommendation from either an active conservator or a conservation training program. A stipend and housing in one of the Society's properties will be offered to a prospective applicant, who will be f/t or 220 days. The Assistant Conservator will work closely with the Project Conservator and a Technician. A proposed job description is enclosed.

A Contract Conservation Technician will be sought, for a period of one year p/t (3 days per week). The applicant must have some experience working with decorated surfaces and will work on setting tented lacquer down and removal of varnish. This position is for 100 hours, usually midweek, and will be funded by another source. A job description is enclosed.

A third-year Conservation Program Intern will be sought from the community of conservation graduate programs (eg., Winterthur Conservation Program). The intern will have a specialty in architectural or decorative finishes and a science background. He/she will assist with the treatment techniques and develop a technical study; the Intern may be asked to present the paper/study at a designated program. The intern will be assigned for the one year of the project for 25 hours per week, for 9 months. The intern services will be an in-kind responsibility of the Preservation Society's Conservation Department and a match to the proposal request. The job description is enclosed; the position is for academic credit only.

The Properties Department of the Preservation Society will have staff assist in the setting up of scaffolding and prepping of the conservation space for lighting, ventilation, and to fabricate work surfaces. Twenty man-days of time will be required, and this will be indicated in the budget but with no specific named personnel. Personnel will vary as set-up demands will dictate need for the Properties staff.

The services of the Preservation Society's Conservation Technician, John Bartosh, will be required to supervise the setup of the small lab area. He will be needed for about 80 hours of working time. The Preservation Society will support this expense as a match. The conservation room can remain until the project is finished, and no additional costs for setup will be incurred. The Preservation Society also seeks support for the supplies required for the conservation treatment process in this proposal. The supplies will be mostly used up during the treatment.

4. Impact

The Chinese lacquer panels were part of the original furnishings of The Elms, which was completed in 1901. They may be the only known 18th century Chinese export lacquer panels in a historical architectural context in the United States. In 1962, the property was acquired by a developer who planned to demolish the building and construct a shopping center. Immediate action by The Preservation Society of Newport County resulted in the preservation of the house

and grounds, but most furnishings were sold at auction before the property was transferred. Furnishings have slowly returned due to loans and gifts and the Society continues to pursue important original art and furnishings. Because the Chinese panels were attached securely to the walls, they could not be included in the auction. It is fortunate that the lacquer panels were saved along with the house. They are the centerpiece of the Breakfast Room and a vital part of the cultural and architectural interpretation of the house.

The Preservation Society views education as a fundamental part of its mission. Due to the historical and cultural importance of the Chinese lacquer panels, there will be an opportunity to engage a variety of stakeholders - including schools, the public, other supporters, and funders - in the preservation process. To date in September of 2009, there have been 123,717 visitors to The Elms in calendar year 2009, an increase of 13.6% over 2008. These numbers would indicate a worthy goal for an educational conservation viewing while touring The Elms in the years 2011 and 2012 (April through March is the Society's fiscal year).

A project of this importance can be significant for educational, marketing, and fundraising purposes. Working with the Marketing and Communications Department, the Project Director can plan a campaign for the advertising of the importance of the conservation treatment of the panels. The Society's website can accommodate educational material related to specific projects.

The Director of Academic Programs will arrange for educational programming centered around the theme of conservation and importance of the panels to The Elms. A one-day Conservation Study Seminar will be planned; the Project Conservator, Sylvia Miklin, the conservator from Austria, and the Conservation Intern will be invited to present papers at this Seminar. These papers would all give different perspectives concerning the conservation treatment of Chinese lacquerwork. Preservation Society members, museum staff members, other conservators, and the public will be invited to the event. Grant funds will cover speakers' stipends and travel, housing, and per diem for the international speaker. Printing of a brochure and other expenses of the seminar will be matched by the Society.

There will be other opportunities to engage in professional outreach. For instance, in April 2009 the Preservation Society held a meeting of the New England Conservation Association regarding the lacquer panels. A group of seventeen regional conservators assembled to review and critique the project and the proposed conservation methods. It was a valuable exchange of opinions and information. It is expected that future meetings like this would be planned as the project proceeds, including the conservation profession at large. The Spring 2008 issue of the Society's *Newport Gazette* featured two articles about The Elms Breakfast Room and the conservation treatment proposal for the lacquer panels.

The Chief Conservator, Charles J. Moore, has been invited to address the conference "Crossing Borders: The Conservation, Science and Material Culture of East Asian Lacquer" to be hosted by the Victorian and Albert Museum in October of 2009. The topic will be the proposed treatment plan for this project.

There will be continued cooperation between the Conservation and Development Departments, as the Archivist/Grant Writer submits all proposals. The Preservation Society was awarded a

grant of \$30,000 by the E. Rhodes & Leona B. Carpenter Foundation of Philadelphia, PA, in June of 2009. The Carpenter Foundation is especially interested in Asian art exhibitions and collections care, and this award is specifically for treatment of the lacquer panels. The funding will be used for partial support of the Project Conservator's fees.

The Society will also apply to several other foundations which have interests in Asian art and educational programming; the remaining panels not supported by this proposal still need funding support. Preliminary letters of inquiry have been sent to: The Chace Fund, Inc., the Haffner Foundation, and the Edwin S. Webster Foundation. Grant requests will be submitted within the next month to the Wilbur Foundation (\$10,000) and the Berwind Corporation (\$20,000). The Berwind Corporation funded the initial environmental improvement work in the Breakfast Room; the corporation is still supportive of the founding family's Newport home. Funding remains from two previous awards (private foundations) for The Elms environmental improvements that totals \$12,400; this will be used for setup costs of the lab requirements. A local entrepreneur and member of The Elms House Advisory Committee has proposed an interesting source of funding, which is currently not well developed but could be viable to support later conservation on other lacquer panels.

The anticipated advantages of this treatment project may be far reaching. The public, professional curators and conservators, students and educators will be included as recipients of the information gleaned. The conservation field as a whole could benefit from increased knowledge gained by this treatment project.

Projected Benefits of the Lacquer Panel Conservation Project

- A detailed, written report describing the methods used, the results and the completed outcome of the conservation effort will be prepared and made available to conservators, curators and art historians.
- Milestone events and podcasts related to the treatment will be presented on the Preservation Society's website www.newportmansions.org, under the Education section.
- Lectures will be presented at the Preservation Society events and symposia, specifically the one-day Conservation Study Seminar.
- The conservation work in progress may be viewed by the public as part of the "Behind the Scenes" tour, thus engaging the public in the conservation treatment process. It could attain visitor destination status in that regard.

The conservation of the Chinese lacquer panels is the most important conservation project that the Preservation Society has planned at this time. The panels are the number 1 collections priority for treatment. The project will demonstrate the Society's commitment to the highest level of appropriate treatment delivered to an exotic material - prized, collected and exhibited by European royalty in the eighteenth century – and, in this case, similarly installed in a great American Beaux Arts mansion for a very powerful man of the early 20th century.

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	\$0.00	\$72,667.00	\$72,667.00
2. Fringe Benefits	\$0.00	\$8,819.00	\$8,819.00
3. Consultant Fees	\$82,500.00	\$30,000.00	\$112,500.00
4. Travel	\$18,480.00	\$0.00	\$18,480.00
5. Supplies and Materials	\$2,155.00	\$0.00	\$2,155.00
6. Services	\$0.00	\$18,400.00	\$18,400.00
7. Student Support	\$0.00	\$0.00	\$0.00
8. Other Costs	\$3,045.00	\$1,000.00	\$4,045.00
TOTAL DIRECT COSTS (1-8)	\$106,180.00	\$130,886.00	\$227,066.00
9. Indirect Costs	\$5,802.00	\$0.00	\$5,802.00
TOTAL COSTS (Direct and Indirect)	\$111,982.00	\$130,886.00	\$242,868.00

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$111,982.00
2. Cost Sharing:	
a. Applicant's Contribution	\$130,886.00
b. Kind Contribution	\$0.00
c. Other Federal Agencies*	\$0.00
d. TOTAL COST SHARING	\$130,886.00
3. TOTAL PROJECT FUNDING (1+2d)	\$242,868.00
Percentage of total project costs requested from IMLS	46.1 %

*If funding has been requested from another federal agency, indicate the agency's name:

The Newark Museum – IMLS Conservation Project Support Application

1. Statement of Need

a. Overview of need and identification of priorities: The Newark Museum requests a grant to support the rehousing of approximately 2000 objects in the Museum's African art collection, currently stored in the Museum's Main Building basement storage area. The rehousing project would place these art works into conservationally sound and customized cabinetry. The most recent General Conservation Assessment completed by Wendy Jessup and Associates, Inc. in 2005 identified the need to rehouse the African collection as one of the highest collections care priorities for the Museum. The 1,750 square foot storage room for the art collections of Africa and the Americas (called the Ethnography collection prior to 1999) is overcrowded, with a large proportion of the most sensitive collection material stored on open shelving, open trays and in flat file units, while larger objects are stored on blocks and carts in the middle of aisles. As cultural objects made primarily of organic materials, they are by their nature, construction and history of use some of the most sensitive objects in the museum. In their current storage, much of the African collection is at risk of potential infestation and exposure to light is a crucial issue since the storage room also functions as a workspace. The Museum has identified the African art collection as the highest priority for rehousing on the basis of three key points: Begun within the first decade of the Museum's founding in 1909, the African art collection ranks among the nation's oldest and most comprehensive and is distinguished from that of other art museums for its breadth of artistic representation both in terms of the range of art works represented and their geographic origins. Additionally, as one of the most active collections in the Museum (3 exhibits featured the collection in 2008 alone, additional exhibits are planned for the next few years, and it is the most visited gallery for school education programs), there is need for frequent and thorough accessibility that is not being met by current storage facilities. Finally, the African art collection is currently the focus of a major reinstallation and expansion project that will result in one of the largest galleries dedicated to African art in the nation.

b. How project fits ongoing conservation activities and overall institutional commitment: For more than 20 years, the Newark Museum has been taking progressive steps to improve the overall preservation of its collections. As part of the Museum's institution-wide Long Range Plan, entitled *Toward the Centennial, 2000-2009*, the Board of Trustees adopted renewed goals and strategies, affirming as a primary objective the commitment to the "long-term preservation, storage and documentation needs of all collections." To carry out day-to-day implementation of this institutional priority, all collection care responsibilities are consolidated under the authority of the Office of the Registrar (the Museum is currently undergoing the process for updating the institutional Long Range Plan for 2010 and beyond, of which conservation care will continue to be a central focus of the plan). The position of Consulting Conservator was created in 1994 and is currently held by Linda Nieuwenhuizen. The consultant visits the Museum on a monthly basis (more frequently as needed) and meets with collections management and curatorial staff. Her regular consultant visits will continue during the grant period, and in addition she will spend several days as outlined to work specifically on this project.

As part of extensive renovations that occurred in the late 1980s, the Museum made substantial upgrades of its fourteen collection storage rooms. This involved systematic improvements to the environment of all areas and the overall preservation of its collections. Conservation activities included the installation of then state-of-the-art climate control and security in collection storage facilities and galleries. Then state-of-the-art storage furniture was also procured for most areas. Since that time, the Museum has continued to allocate additional resources toward collections and preventive conservation. In 1994, the Institute for Museum and Library Services provided funding for the Newark Museum to conduct a General Conservation Assessment of its collections. Guided by this survey, the Museum completed a number of vital conservation and facility improvement projects that have greatly served to enhance the Museum's mission to ensure long-term preservation, storage and documentation needs of its collections. Projects included: surveys of the paper, photography, science and African art collections (for which both the paper and African collections surveys received support from IMLS funds); upgrade of the textile storage area including installation of textile racks and rods to stabilize American quilts and coverlets; installation of compact shelving for the paper-based collection; lease of high security, climate controlled off-site storage for the industrial collection; renovation of the science storage area, purchase of new compact storage equipment and rehousing of most of the science collection; expansion of the storage area for the African, Native American and Pacific art collections with associated resolution of long-term leak and dampness problems; conservation of paintings from the American art collection for reinstallation of *Picturing America*; and retrofitting the temporary object holding storage area. In 2006 the

Museum installed gaseous pollutant filtration on the mechanical system.

c. How the project meets the highest conservation needs: As the Museum has undergone extensive growth in both collections and programs and has completed the majority of the most pressing issues outlined in the 1994 General Conservation Assessment, it was determined that a new survey was crucial to the Museum's continued efforts to preserve its collections. The Museum retained Wendy Jessup and Associates, Inc. to conduct a thorough assessment of the Museum's facilities and collections with the goal of providing recommendations for improvements for the next five to seven years. Ms. Jessup submitted the attached General Conservation Assessment Report to the Museum on September 28, 2005. It was approved and is being used as the basis for collection management and conservation upgrades and reflects the urgent need for improvements in the Africa and the Americas (Ethnographic) storage area.

In terms of priority, page 43 of the General Conservation Report states: *"Cabinetry for the tangka collection should be given highest priority when seeking funding for new or replacement cabinets. Once funding for this cabinetry has been secured, The Newark Museum is encouraged to continue to seek funding for replacement cabinetry for the following collections: Classical; Ethnographic; mounted birds and bird skins; and Ceramics."* Within the last few years, the Museum has addressed two of the most pressing collection care priorities – the rehousing of both the Tibetan tangka collection and the ceramics and glass collections, which were supported through IMLS Conservation Project grants in 2006 and 2007 respectively. The Museum currently does not have a curator for the classical collection to provide oversight for a major conservation project, and the mounted birds and bird skins are rarely exhibited and accessed. Therefore, these projects are lower on the highest priority list.

Based on these considerations, the storage area for Africa and the Americas is the highest priority for the Museum at the present time. With the achievement of having addressed a number of the highest conservation priorities, with the exception of the Africa and the Americas storage area, in 2009 the Museum contracted with Wendy Jessup, President and Conservator of Wendy Jessup and Associates, Inc., to update the General Conservation Assessment, and that process is underway at the time of this submission. A letter from Ms. Jessup with current thoughts about the area is attached to this application. A two-year project has been planned to rehouse the African collection in conservationally sound cabinetry in order to mitigate potential damage from infestation, light pollution, and overcrowding. Funding is requested through the IMLS Conservation Project support program for a mobile-aisle system and 53 cabinets. Private individual donors have awarded the Museum a gift designated toward improving its storage areas that will be used as matching funds for the project. Once rehousing of the African collection is complete, attention will then be moved to the Native American collection, for which the Museum is seeking an Associate Curator as the next highest priority.

2. Project Design

a. Current Conditions: The African objects, many of which are made of organic material, are stored on sliding trays which are open to light when work is done in the area, and it is possible for pests to travel from one unit to another. Objects are not protected as completely from dust as they might be, and there is inadequate protection from possible leaks from piping above in this basement area. The trays themselves do not easily move in their tracks, they have no stops, and are too deep to safely remove objects without endangering others. There are some materials that can be safely stored on the existing system, but most of the material needs to be evaluated and placed in new, enclosed units.

b. Conservation methods: Storage equipment options were discussed with Linda Nieuwenhuizen, consulting conservator; Dr. Christa Clarke, Senior Curator of the Arts of Africa and the Americas, and Curator, Arts of Africa; Rebecca Buck, Deputy Director for Collection Services and Chief Registrar; and collection managers. Based on their evaluations, it was determined that cabinets similar to those selected for the ceramics collection, which have proven to be conservationally sound, would serve as the best storage facility for the African material. Quotes were requested from SpaceNow! for the carriage system, and Delta Designs, Ltd. for the cabinets.

In order to ensure safety of the collection objects during the upgrade, which includes moving the objects to a temporary holding space during cabinet installation and a subsequent return to the permanent storage area, the conservator will review objects and work with collections staff to determine priorities and handling procedures. The project plan also calls for one

temporary Preparator who will be assigned to the project so that other collection activities are not delayed and time will be available to properly build storage mounts as needed for the most delicate material.

c. Goals and Objectives: The overall goal of the project is to rehouse the most sensitive and fragile objects in the African art collection in a way that will enhance access to the collection while preventing any damage that might occur with an active collection.

Objective 1: Order Materials

A mobile-aisle compact shelving system will be developed in the space where the African art collection is now stored. The tracks will be moveable should the Museum ever need to change storage spaces or develop new storage areas. The area will be 27 x 18 feet. The ordering of materials will include a SpaceNow! carriage system for the compact storage unit, 53 cabinets from Delta Design, Ltd, and supplies for developing custom boxing for fragile and unusually shaped artifacts in the African art collection. The cabinets include units with drawers for small objects, units for general storage of medium-sized objects, and four cabinets for large ceramics and sculpture. The track unit and the cabinets will be ordered at the beginning of the grant period.

Objective 2: Hire Assistant Preparator

The Museum will hire a full-time temporary Assistant Preparator dedicated to this project to work under the direction of the Senior Preparator. With the regular and special project workloads of the Museum's fulltime registrar staff, it is necessary to hire one temporary Preparator who can devote their full attention to the implementation and success of this project.

Objective 3: Prepare Temporary Holding Area for the African Collection

A secured, environmentally-controlled temporary holding area for the African Collection will be created with padded tables for collections examination and mount fabrication. This location will be onsite at the Museum and will be prepared to accommodate the security and conservation care of the collection objects.

Objective 4: Train staff in developing proper storage housing for fragile African objects and in determining priorities for types of storage

Linda Nieuwenhuizen, Conservator, and Dr. Christa Clarke, whose specialty is African art, will review the African collection and advise on the priorities for storage mounts, collection types that must be stored in the new cabinets, and areas that might be stored without damage on existing shelving. The conservator will develop guidelines for object handling and review procedures for the movement to and from temporary storage. The existing shelving (i.e. trays) will be moved to another storage area and be used for the most stable and least pest/dust susceptible objects in the collection.

Objective 5: Move African objects to Temporary Holding Area

Jason Wyatt, Senior Preparator and David Bonner, Assistant Preparator, will work with the Assistant Preparator dedicated to this project to move the African art collection to temporary storage. Specific procedures developed by the conservator will be followed. Photography will be completed as needed during the move so that objects are not handled more than is absolutely necessary. Olivia Arnone, Associate Registrar for Photography, Rights and Reproductions will be in charge of imaging.

Objective 6: Secure Native American Collection and prepare space for new storage units.

Collections remaining in the storage area to be renovated will be protected against dust, paint and the activities of installation. A temporary wall will be built to protect the Native American collection immediately adjacent to the mobile shelving area space. The collections on oversize shelving on the one remaining wall will be removed during preparation and installation. Staff will inspect and clean the area, perform any needed maintenance, and paint walls and floors. The conservator will review procedures and materials used during this phase.

Objective 7: Compact rail system will be installed by SpaceNow! and cabinets will be installed by Delta Design, Ltd.

SpaceNow! will install the basic carriage for compact storage. The new storage cabinets from Delta will be state-of-the-art enclosed cabinets of three types: 48 in. cabinets with glass doors, four drawers and four shelves, 36 in. deep and wide cabinets with the capabilities of housing some sculpture and large ceramics, and 36 x 18 in. wide cabinets with drawers and shelves for various small and light-sensitive objects.

Objective 8: Rehousing of African objects, updates input in ARGUS

Objects will be rehoused by type in drawers, shallow shelves, and on deep shelves according to conservator's priority list and curator's use priorities. This will include development of specific mounts and boxes made for unique objects. The temporary Assistant Preparator will build storage mounts and boxes. The Senior Preparator will develop a numbering system consistent with the master numbering scheme for the shelving. As objects are moved back to the area, new permanent locations will be noted in the collections management database (ARGUS) by Antonia Moser, Associate Registrar for Permanent Collections.

d. Plan to ensure normal operations are not disturbed: The areas in question will be reviewed by Antonia Moser, Associate Registrar, and curator, Dr. Christa Clarke to be certain that all material will be accessible as necessary. If the curator determines that new images are needed, photography will take place as part of the move procedures. Staff who will work on the project have this type of work in their job descriptions, and are constantly working from one project to another as need and funding converge. It is anticipated that there will be no disruption to other areas of storage and that needed parts of the collection will remain accessible.

e. Importance of the African Art Collection: The Newark Museum's African art collection ranks among the nation's oldest and most comprehensive, developed beginning in the 1910s and now comprising more than 4,000 works representing the diversity and vitality of artistic creativity throughout the entire continent. Art works from over 200 African cultures are represented in varied media, including fiber, leather, ceramics, wood, metal, ivory, beads and photography. The vast majority of works date from the late 19th century to the present day. The collection includes important examples of art works based on long-standing traditions, such as masks and figural statuary, objects of domestic use, textiles, jewelry, and pottery. The Museum's textile holdings are especially extensive and notable for their fine quality and breadth of representation. In recent years, the Museum has become very active in developing a collection of contemporary African art, significantly expanding its holdings with notable acquisitions.

The Newark Museum's African art collection is distinguished from that of other art museums for its breadth of artistic representation, both in terms of the range of art works represented and their geographic origins. Unlike many art museums, which tend to focus on masks and figural sculptures, the Newark Museum's broad-based holdings range from Moroccan textiles and furniture to Ethiopian paintings to South African beadwork. Such holdings, acquired beginning in 1917, are unmatched today by most art museums, many of which are only just beginning to adopt a "whole continent" approach to representation and to expand their collection to include a wider range of art works. Works acquired by the Museum from visitors to the continent are particularly important from an historical and cultural perspective and, at the same time, particularly in need of optimum storage conditions. Among these are works collected in southern Cameroon by missionary Herbert W. Greig, Kongo arts acquired by missionary Josephine Harris in the 1880s, a group of objects collected in coastal West Africa in the late 19th century by businessman Walter Dormitzer, works from northeastern Congo and Kenya collected in the 1920s by the explorer Delia Akeley, and South African beadwork collected in the 1930s by Lida Broner. Many of these field-based collections include works made of organic materials or that are particularly fragile in nature. The Josephine Harris collection, for example, includes many fine examples of Kongoese fiber weavings (baskets, hats, mats) that collectively provide an invaluable representation of late 19th century artistic production in the Congo region. The Delia Akeley collection includes weapons, musical instruments, dress and adornment, much of which is made with animal skin, leather, fiber and other at-risk organic materials. South African beadwork in the Lida Broner collection includes examples with sinew-threads that are extremely fragile.

3. Project Resources: Time, Budget, Personnel

a. **Time:** If this rehousing project is funded by an IMLS grant, the Museum will implement the following schedule of activity to complete the move in two years:

- *July 2010:* order storage equipment and rehousing supplies (objective 1); hire temporary Assistant Preparator (objective 2) and prepare Temporary Holding Area (objective 3);
- *August – November 2010:* Train staff (objective 4) and move African collection to Temporary Holding Area (object. 5);
- *December 2010:* Secure remaining collections and prepare area to accommodate new storage equipment (object. 6);
- *January 2011 –February 2011:* Install mobile aisle system and cabinetry (objective 7);
- *March 2011 – end:* Fabricate storage mounts and housings, complete numbering of objects and documentation, and return collections to the upgraded storage room (objective 8). To goal is to complete all tasks necessary to make the collection and its records readily accessible from this point forward.

b. **Budget:** The final budget was developed by the Deputy Director of Collection Services and Chief Registrar and reviewed by the Museum Director and senior administration. Whenever possible, the Museum is utilizing in-house staff and resources to carry out the project to ensure that all costs are reasonable and appropriate and that best practices are observed. As reflected in the letter from Linda Nieuwenhuizen, the Museum has also conferred with the consultant and obtained her written input in formulating the budget. Bernard Morcheles of SpaceNow! provided the cost estimates for the new rack system and Bruce Danielson of Delta Designs, Ltd. provided estimates for the cabinets.

c. Personnel:

Rebecca Buck, Deputy Director for Collection Services and Chief Registrar, will serve as the project director (12% of her time) and will work closely with the Dr. Christa Clarke, Curator of the Arts of Africa, consulting conservator, and Museum staff to oversee the re-housing process, photograph documentation, input of collection data, and all administrative functions. Ms. Buck has a Master of Education degree from Boston University and has worked in the museum profession for more than 25 years. She is co-editor of the *New Museum Registration Methods* and co-author *On the Road Again: Developing and Managing Traveling Exhibitions* and *Collection Conundrums: Solving Collection Management Mysteries*, all published by the American Association of Museums. She is the 2001 recipient of the AAM Dudley Wilkinson Award of Excellence and was recognized by the AAM as one of the museum world's "one hundred champions" of the past 100 years. She is also an Adjunct Professor at the Seton Hall University Museum Professions Graduate Program. Ms. Buck is responsible for the registration of the Museum's collection of approximately 200,000 pieces, collections care and documentation, storage and maintenance.

Christa Clarke, Curator of the Arts of Africa and the Americas, and Curator of the Arts of Africa, will spend approximately 10% of her time on the project, working with the Chief Registrar, conservator, and preparators and providing input into the rehousing of the African art collection. Dr. Clarke holds a B.A. from the University of Virginia and an M.A. and Ph.D. in Art History from the University of Maryland. Prior to her appointment at Newark in 2002, Dr. Clarke served as Curator of African Art at the Neuberger Museum of Art and was also a curatorial advisor for the Barnes Foundation, the Philadelphia Museum of Art, the Kreeger Museum and the World Bank. She has held research positions at the Metropolitan Museum of Art and the National Museum of African Art and teaching appointments at George Washington University, the Corcoran School of Art, Rutgers University and Purchase College, SUNY. Dr. Clarke's most recent publication will be the forthcoming, Representing Africa in American Art Museums: A Century of Collecting and Display (co-edited with Kathleen Bickford Berzock), examines the impact that museum practice has on the formation of meaning and the public perception of African art. From 2001 -2008, Clarke was the Exhibition Reviews Editor for *African Arts*, the leading periodical in the field, and continues to serve as Consulting Editor. She also served on the Committee for Professional Standards of the Association of Art Museum Curators (AAMC) and is currently on the board of the Arts Council of the African Studies Association (ACASA).

Jason Wyatt, Senior Preparator, will be responsible for most of the physical activities required to implement and complete the project and as such will allocate 25% of his time to the project. Mr. Wyatt has a Bachelor of Arts degree from Arizona

State University and a Master of Arts degree in Museum Professions from Seton Hall University. Mr. Wyatt will work with the consulting conservator to plan the rehousing of the African art collection, will oversee the removal of objects from their current location, and installation into the new cabinetry, and oversee the temporary Assistant Preparator.

Linda Nieuwenhuizen, Consulting Conservator, has a Master of Arts and Certificate of Advanced Studies from the State University of New York and extensive experience in assessing conservation needs and conducting treatment of objects for museums and galleries. Her prior experience includes monitoring, examining and conserving ethnographic and archeological artifacts from North, Central, and South America, Asia, Africa and Oceania for the American Museum of Natural History. Ms. Nieuwenhuizen has been working with the Newark Museum since 1995, is very familiar with its collections, and will address conservation concerns related to the African art collection project. She will work with the curator and preparators to determine weaknesses, special handling needs during the temporary relocation and assess which objects will be stored in the new cabinets. In addition, she will help determine the plan for developing necessary storage mounts.

Assistant Preparator, to be hired, will focus on all aspects of the project of rehousing the African Art collection in new compact storage cabinets. The work will include but not be limited to physical moves of objects, inventory updates, storage mount building, and rehousing. This is a full-time temporary position and a job description is attached.

Olivia Arnone, Associate Registrar for Photography, Rights and Reproductions has a Masters in Photographic Preservation and Collections Management from Ryerson University and will spend 7-10% of her time on the photographic documentation of the African art collection as needed and determined by the curator, Dr. Christa Clarke and inputting this information into the ARGUS database.

Antonia Moser, Associate Registrar for Permanent Collections, holds a Masters degree in registration from Seton Hall University and will spend 4-6% of her time working with Dr. Clarke to determine access needs for the African art collection throughout the rehousing project. She will also work with location updates throughout the project and retrieve specific objects as needed for projects.

Amber Germano, Associate Registrar, will spend 2-4% of her time working with the consulting conservator to make certain that conservation visits throughout the project are coordinated with appropriate staff and daily projects and responsibilities.

David Bonner, Assistant Preparator, holds a Masters degree from Seton Hall University with a concentration in registration and will spend 20% of his time working with the project Assistant Preparator on collections moves as well as mount and box building.

4. Impact:

The impact of the African art collection rehousing project will be far-reaching, affecting the museum's collections operations and strategic plans, the scholarly study of African art and the Museum's growing constituency of African art enthusiasts. In terms of museum operations, the rehousing project will greatly relieve the time and pressure put upon the registrar staff to accommodate review of the collection. At the present time, requests to review works from the collection – whether on the part of the curator or visiting scholars – require much preparation time on the part of the registrars due to the fact that the collection is difficult to access, has limited viewing space, and is not housed in a logical, easily accessible manner. In addition, as the Newark Museum moves forward with its plans to bring this collection to the forefront of its exhibition and publication activities, there have been increasing requests from scholars to study the collection. The rehousing project will enable the Museum to overcome these challenges and make the collection readily accessible for retrieval, review and study by the curator, scholars and other museum professionals, thereby adding to the Museum's knowledge of its African art collection, which can inform public exhibitions and publications. Information learned through scholarly study will be captured in the ARGUS database, adding to the object records achieved through the rehousing project and making them even more comprehensive. In addition, the African art collection will be the focus of a major catalogue to coincide with a major

reinstallation and reinterpretation of the African permanent galleries, making enhanced accessibility for scholars a critical component of this project.

The project is also timely due to a current emphasis on institutional collecting of contemporary African art, which has added pressure to the current storage capacity available for the collection. Within the last two years, recent acquisitions have included a gift of 30 works of Yoruba art, which combined with the Museum's own collections, has established the Museum as one of the leading repositories of Yoruba art in the nation; the extensive field collection of glass beads from Ghana from Dr. Suzanne Gott; and 15 *mwana* hiti figures from Tanzania, the first part of an eventual pledged donation of east African art.

The project will also have impact on the Museum's ability to move forward with its strategic plan for a major reinstallation and expansion project that will result in a one of the largest galleries dedicated to African art in the nation. By making the African art collection more accessible for study, and thereby enabling the Museum to gain even greater intellectual control over the collection, the curatorial and educational team that will oversee the reinstallation will be able to more effectively design permanent gallery spaces that resonate with the viewing public. In 2008, the Museum received a National Endowment for the Humanities planning grant to help support planning activities. The ultimate goal is to demonstrate the full breadth of the African art collection, which explores both traditional and contemporary art works through an exciting cross-cultural thematic approach.

The impact of the African art rehousing project will be greatly beneficial to the Museum's diverse audiences. The collection has the benefit of a dedicated membership group of enthusiasts through the Friends of African Art, who contribute funds to the African art department and enthusiastically and knowledgably, due to membership programming that provides in-depth access and insight into the collection, advocate for the appreciation and study of African art throughout the New York/New Jersey region. In addition, local chapters of Zonta International and the Links, African-American membership groups, are very involved in and support the Museum's African art activities, serving as docents who are trained to give tours of the collection to the public. The improved accessibility and thereby study of the collection will enable the Museum to further train these committed groups who educate the Museum's public audiences.

The Museum also has a number of exhibition projects focusing on aspects of the African art collection planned for the next several years that will further engage public audiences, and which the rehousing project will help make possible. These include an exhibition on the collection formed by explorer Delia Akeley in the 1920s (planned for 2011), for which increased accessibility of the storage area will enable scholarly research into the collection. A traveling exhibition co-organized with the UCLA Fowler Museum is being planned for 2012 that will feature the Museum's collection of historic Zulu beadwork, ceramics and sculpture. As the African galleries are the most utilized art galleries in the Museum by school groups, the successful research and presentation through future exhibits will serve even the youngest of audiences. So beloved is the African art collection, that the Museum recently announced the establishment of a permanent gallery of contemporary African art within the existing suite of African galleries, one of the few such dedicated museum installations in the country. Having full accessibility to the African art collection and comprehensive records is essential to the Museum's ability to fulfill the ever growing expectations of its growing audiences for African art.

Finally, the Newark Museum has begun to make a concentrated effort to more effectively educate its public about the importance of collection care and conservation, periodically publishing articles in its *Access* member's magazine that explore recent conservation activities and which explain why such activities are essential to Museum operations and to the future enjoyment of the public. The article focusing on the Tibetan *tangka* rehousing project, which was funded by IMLS, is included with this application, and a similar article will be developed and published for the African art rehousing project should it be awarded funding.

2010-2011

Activity	July '10	Aug '10	Sept '10	Oct '10	Nov '10	Dec '10	Jan '11	Feb '11	Mar '11	Apr '11	May '11	June '11
1 Order equipment and supplies												
2 Hire Assistant Preparator												
3 Prepare space												
4 Train staff/conservation review		2 days			1 day				1 day			1 day
5 Move collection to temporary area												
6 Secure remaining collections												
7 Install mobile system and cabinets												
8 Rehouse objects**												

2011-2012

Activity	July '11	Aug '11	Sept '11	Oct '11	Nov '11	Dec '11	Jan '12	Feb '12	Mar '12	Apr '12	May '12	June '12
1 Order equipment and supplies												
2 Hire Assistant Preparator												
3 Prepare space												
4 Train staff/conservation review				1 day				1 day				1 day
5 Move collection to temporary area												
6 Secure remaining collections												
7 Install mobile system and cabinets												
8 Rehouse objects**												

* Numbers in boxes indicate conservation visits by conservator. 8 visits total.

** Includes photography as needed, fabrication of storage mounts/boxes, completion of documentation upon return to upgraded African storage area

BUDGET FORM - PAGE FOUR**Section B: Summary Budget**

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	68,000.00	71,670.00	139,670.00
2. Fringe Benefits		27,934.00	27,934.00
3. Consultant Fees		8,000.00	8,000.00
4. Travel			0.00
5. Supplies and Materials	54,531.00	90,929.00	145,460.00
6. Services	26,055.00	13,695.00	39,750.00
7. Student Support			0.00
8. Other Costs			0.00
TOTAL DIRECT COSTS (1–8)	148,586.00	212,228.00	360,814.00
9. Indirect Costs		18,040.70	18,040.70
TOTAL COSTS (Direct and Indirect)	148,586.00	230,268.70	378,854.70

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	148,586.00
2. Cost Sharing:	
a. Cash Contribution	230,268.70
b. In-Kind Contribution	
c. Other Federal Agencies*	
d. TOTAL COST SHARING	230,268.70
3. TOTAL PROJECT FUNDING (1+2d)	378,854.70
% of Total Costs Requested from IMLS	39.00%

* If funding has been requested from another federal agency, indicate the agency's name:

Pacific Asia Museum
Earthquake-Secure Collections Storage Environment
Narrative

1. Statement of Need

Pacific Asia Museum is requesting support for the second phase of a long-term project to protect the 3,000 works in its noted collection of Asian ceramics from the effects of seismic activity. In this earthquake-prone region, this is considered by conservation specialists to be the collection's most urgent conservation need, and lending institutions have indicated that if these issues are not addressed, they will jeopardize the museum's ability to continue borrowing and displaying works from these institutions in its galleries.

The project's second phase will safely house the balance of the museum's ceramics collection in its storage facility. IMLS funds will enable the museum to purchase and install an additional compact storage unit (CSU) designed to protect works from the kinds of sharp and sudden motion associated with seismic events.

Since 2001, the museum has used a range of consultants to conduct a series of assessments of its facilities and collections. Given the historical significance of its building, the museum recognizes the unique challenges it faces in ensuring the safety of its collections while maintaining the character of the structure that houses them. The museum received support from the Institute of Museum and Library Services in 2001 to engage a team of professional conservation specialists, including a ceramic and decorative arts conservator, a textile conservator, a book and paper conservator, and an architectural preservationist. Between 2002 and 2004, the team performed a general conservation survey of the museum's collections and the historic structure within which they are stored and displayed. Each consultant rated current museum conditions and practices and recommended specific areas for improvement. These were divided into categories for immediate, mid- and long-range implementation.

General Assessment: The building consultant, Michael Henry of Watson & Henry Associates, conducted an assessment of the building envelope, the site, and building systems, including electrical, mechanical, and fire detection/protection, with an emphasis on the effects of these components on the conservation of the collections and the historic building. His report identified issues and made recommendations for immediate, near-term, and long-term actions to improve the interior environment in particular. Among these was a detailed proposal and budget for monitoring environmental conditions inside as well as outside the building. He also recommended that the museum have an engineer evaluate the structure for strength in event of a major earthquake. Both of these recommended projects were subsequently implemented, funded by a grant from the Getty Foundation's Preserve LA initiative.

Collections Assessments: Given the history of seismic activity in the region, the ceramics and decorative arts conservator, Maureen Russell, made seismic mitigation her top priority. At the time of her assessment (2003), there were "no practices in place at PAM to render objects, cases and storage safe in the event of an earthquake." Since her assessment was completed, however, the museum has begun to implement a number of her recommendations, including re-mounting works on display, and the museum intends to implement all of them as part of its plan to renovate its storage facilities and galleries.

The paper conservator, JoAnn Page, surveyed an important collection of 18th and 19th century Japanese works on paper, acquired over ten years ago, that includes many pieces that are too fragile to be displayed in their current condition. The museum hopes to secure funds to restore the entire collection in order to exhibit it as an entity. In the meantime, the museum has begun to implement her recommendations on a case-by-case basis, as items are selected for exhibition. Based on her report, a project to improve overall storage conditions for all the Japanese prints, scrolls, and screens was funded by IMLS and completed in 2006. (See below.) Her survey of the museum's library and rare book collection yielded projects for library volunteers that have improved preventive conservation.

The textile conservator, Cara Varnell, produced an extremely comprehensive evaluation, including photo documentation, of the museum's seriously overcrowded textile storage conditions. Ms. Varnell's recommendations for increasing the overall square footage of textile storage and available work space have provided much-needed guidance for staff. Her report was used to support another IMLS-supported project that focused on re-packing and re-storing the Chinese textile collection to relieve overcrowding, a project which was completed in December 2007.

In addition, in May 2007, as part of a larger planning effort funded by the Getty Foundation, Pacific Asia Museum hosted a two-day planning retreat involving all of the museum's staff, eight eminent curators from across the U.S., and eight leaders in museum education, conservation, and graphic design. This group looked at all aspects of the museum's collections, particularly as they related to finding new ways to reach target audiences. The conservation experts who attended agreed that the museum's "collection storage area is in critical condition." Storage conditions are inadequate and severely overcrowded. Providing for improved storage for long-term care and stabilization, and making the collection accessible cannot wait. All the curators agreed that this should be the top priority for the museum.

The results of these assessments led the museum's staff and Trustees to incorporate collections care and conservation into the museum's current Strategic Plan as a major priority. As a result, a series of projects was launched in 2005 with extensive work on the collections storage facility in the museum's lower level. Once completed in 2012, all the museum's collections will be stored in conditions that follow the consultants' recommendations.

Until recently, approximately 75% of the permanent collections were stored in the lower level of the museum, which is divided into three distinct areas, the East, Central, and West Sections, each with its own temperature control system. In 1999, recurrent seasonal flooding forced relocation of most of the collection to temporary storage in other parts of the museum, resulting in seriously overcrowded conditions. Since then, the water intrusion problem has been solved through major excavation and waterproofing of the basement's subterranean exterior. The collection has been relocated to the lower level.

While the lower level storage facility is protected from exterior moisture, it is still subject to water hazards from overhead pipes. To deal with potential water leakages in the storage facility, the museum has replaced a complete section of water bearing pipe in the facility's overhead area and will install floor water alarms, 95-decibel indicators that will be audible in the galleries immediately above the art storage area. The lower level also still has a water-based fire suppression system (which will eventually be replaced by a gas suppression system as part of the museum's long-range plan). However, the CSUs to be used in this project can be securely closed, which would help to deflect water that might infiltrate the unit. In addition, areas at risk for leakage will be permanently covered with polyethylene sheeting.

The facility's East Section has also been the focus of an IMLS grant to create improved storage for the museum's important collection of Japanese paintings, prints and drawings, works that had been housed in a small vault on the ground floor with no climate control. This project, which included the renovation and sealing of the storage area and the installation of a limited number of new storage units, was completed in fall 2006, and the remainder of the Japanese artwork (approximately 1,000 works) was transferred to the East Section. Although the museum's other storage areas and galleries all have temperature control, this and the Special Exhibitions Galleries are the only areas in the museum that have both temperature and humidity control. The area is continuously monitored by electronic data loggers that record relative humidity (RH) and temperature. RH remains stable at the recommended 50% +/- 5% and temperature ranges between 70 and 72 degrees F. All storage areas are dark unless staff is working in the area. The lower level has a sprinkler system throughout. Smoke and heat detectors are audible alarm only.

Approximately 990 ceramics, about one-third of the museum's ceramics collection, are stored in the Central and West Sections of the lower level storage facility. (The balance of the collection is on display in the museum's galleries.) Less than half the objects in storage (430 works) are currently housed in archival boxes in enclosed metal cabinets bolted to the walls. Conservators consider them safe from the effects of severe seismic activity. Another 260 works are stored in a recently installed (summer 2008) compact storage unit (CSU) in the West Section. This unit was purchased with private funds and is designed to withstand severe seismic forces. The balance of the ceramics (about 300) are on shelves or pallets, off the floor, but not protected from earthquakes. The consensus of the conservators who have assessed the conditions is that protecting the stored ceramics from the effects of seismic activity should be the museum's highest collections priority. (The museum will address the safety of the ceramics on display in the next phase of this multi-phase project. See 2., below.)

The museum devotes considerable resources to conservation, given its size and operating budget. During the past five years, the museum spent more than \$300,000 on projects related to improving the environment for the collections. In addition, the museum has been spending approximately \$14,000 per year on conservation activities related to specific works. Much of this funding comes from private donations designated for conservation.

2. Project Design

The museum is in the midst of a long-term project to protect all the works in its ceramics collection – those on display as well as those in storage – from the effects of seismic activity. It is requesting support for the second phase of this project. During the first phase, the museum stabilized a portion of its ceramics collection in storage, moving 430 works to boxes in enclosed metal cabinets bolted to the wall of the lower level storage area and housing another 260 works in three ranks of a recently purchased SpaceSaver Four-Post mobile CSU.

During the second phase, for which the museum is now requesting IMLS funding, the museum will purchase and install one additional SpaceSaver Four-Post mobile CSU, a storage unit that will mitigate the effects of seismic activity on the balance of ceramics stored in its lower-level storage facility. The objective of this phase is to use the new unit to provide safe storage for approximately the 300 unprotected ceramic works currently in the Central and West Sections of its lower-level storage facility. Because they are mobile and use space more efficiently, the CSUs purchased in the first and second phases will also increase the museum's ceramics storage capacity by 50% over the long term. At the end of the second phase, not only will all 990 ceramic works currently in the museum's storage facility be housed in cabinets that can withstand severe seismic activity, *there will be enough room in the new CSU for hundreds of ceramics moved to storage during phase three.*

In the third and final phase of the project, which is part of the museum's long-range plan, the museum will stabilize and protect the approximately 2,000 ceramics on display in its permanent galleries, including the Snukal Family Ceramics Study Gallery. Plans call for all works to be deinstalled from the Snukal Gallery, the Gallery's glass shelving to be replaced with Plexiglas, individual mounts to be built for each object on view, and all objects to be labeled. The museum will be re-installing all its permanent collections galleries over the next four years. It will be moving away from the dense, connoisseur-model displays and towards incorporating context and thematic approaches, which require fewer individual examples. Each work will have a specially designed seismic mount. *(Many works no longer on display will be stored in the CSU purchased for phase two.)* The museum's objective for the third phase is to have all the ceramics on view in its galleries protected from seismic activity in accordance with standard practices in the field. The museum will seek funding from two major Los Angeles foundations and longtime supporters of the museum to underwrite the project's third phase.

The museum recognizes that the scope of the overall project is much greater than the phase for which it is requesting support. However, given the size of the museum's staff and the resources it has at its disposal, the

museum has adopted this multi-phase strategy to manage the work effectively and addresses what has been determined to be the most pressing conservation need first.

Objects conservator Irena Calinescu has been retained to help plan and supervise the installation of the unit and the moving and rehousing of the objects. She is working closely with the museum's collections staff to develop a methodology that will ensure the safety of the objects during the move. As much of the work will be carried out by outside contractors, the museum does not anticipate any disruptions to normal museum operations. Work on the project will be integrated into the regular oversight activities of the collections manager and her staff. Because none of the work in this phase will affect the museum's public areas, the museum and all its galleries will be open for business as usual.

As indicated above, the museum's ceramics collection comprises approximately 3,000 works. The museum's strong collection of East Asian ceramics exceeds 1,000 pieces, including over 600 Chinese ceramics from the Neolithic era through the Qing dynasty. The Han, Tang, Song and Ming dynasties are strongly represented, as are Imperial porcelains from the Qing dynasty. Also significant are 350 Southeast Asian ceramics from the Margot and Hans Ries Collection (published in a 1982 catalog); approximately 40 Vietnamese ceramics from the collection of the late Ambassador and Mrs. Jack Lydman (12th century to early 20th century). Japanese folk ceramics, *satsuma* and *kutani* wares number approximately 400; the small (40) but important group of Korean pieces provide historic continuity for this area. In early 2000, the museum opened the Snukal Family Ceramics Study Gallery that includes open storage for selected Asian ceramics in the permanent collection as well as materials from the Ceramics Study Collection. Based on the needs assessments of the conservation experts who have surveyed the museum's collections and facilities, the museum has chosen to focus exclusively on its ceramics collection for this project. It is the museum's policy to group all ceramics together in storage, regardless of geographic origin.

The SpaceSaver Four-Post mechanical-assist mobile CSUs that are being used in this project have been tested under conditions simulating an earthquake and have received the highest seismic safety rating from the State of California, Health and Human Services Agency, Office of Statewide Health Planning and Development, Facilities Development Division. With welded steel construction, they have the industry's strongest and most rigid carriage system. All SpaceSaver carriages have a minimum 1,000 lb. per foot load capacity. These units are widely used in museums on the West Coast due to their archival quality, durability, and flexibility, and the fact that they have an anti-tip device designed into their frame. The units' powder-coated steel shelving does not promote off-gassing. Their coating specs exceed the most stringent scuff, scratch and chip requirements of the American Library Association. The unit's shelving and cabinets will not shift, move, or lose their alignment due to seismic activity.

In the second phase, one new SpaceSaver CSU will be assembled and installed in the West Section. This new unit, which measures approximately 62" h x 17' w x 15'd, is designed to take into consideration the Section's low ceiling and overhead sprinkler system, which has pipes suspended from the ceiling. The CSU has five ranks, four of which have five storage bays, and one has four, for a total of 29 bays. Each bay measures approximately either 16" h x 36" w x 24" d or 16" h x 48" w x 24" d. and is adjustable to custom fit, up to a point, what the museum chooses to house there, accommodating up to 550 objects. *The unit is bolted to decking which is, in turn, bolted to the concrete floor.* When closed, the unit is essentially sealed: items stored on its shelves are held securely in place and will not fall out. (The units will be closed except when the curators are working with the collection.)

During the recently completed first phase, the museum developed its own methodology for moving and recording the location of the works. Staff moved the objects into temporary storage locations for the installation phase of the CSU. This protected the objects from any possible contact or environmental impact during the

construction of the storage unit. All location changes were tracked and entered into the museum's Willoughby iO collections database. Once the compact unit was installed, the staff then grouped and carefully packed the ceramics in foam, padding and boxes (all archival), placing the boxes snugly on the shelves of the storage unit, in order to ensure that boxes will not be able to shift on the shelves on which they were placed. Locations were again tracked and updated in the database.

In the second phase, consulting conservator Irena Calinescu will provide museum staff with training to ensure that all procedures conform to best practices in the field for handling, moving, and housing the objects. She has outlined a design for the project that incorporates some elements of the first phase but underscores the importance of following generally accepted procedures for this work. Her input will improve the museum staff's ability to more thoroughly plan the move, execute a safe transition of objects into a temporary staging area, and select the best archival materials for housing the objects in their boxes on the shelves.

A 15' x 10' Temporary Storage Area in the east end of the West Section will be established, and will be separated from the rest of the storage area by a wall of polyethylene sheeting. Though a short distance from the rest of the storage facility, the well-lit, climate-controlled Temporary Storage Area is removed from other areas of work, protecting the pieces from any incidental impact, and the entire storage area will remain secure, with Collections and Curatorial staff only permitted access. The pieces will be covered to protect them from any construction dust that might arise. Sandbags will be placed around larger, less stable objects such as vases, and padding will be inserted between smaller objects.

Collections Management Assistants (CMAs) hired specifically for the project and trained by our consulting move conservator will use the following procedure to move the approximately 150 objects from their current places on the open shelving units in the West Section, shelving units that will be displaced by the new CSU, to the Temporary Storage Area. The 150 works not moved to the Temporary Storage Area (because they are not in the immediate vicinity of the new CSU) will also be stabilized, padded, and covered with polyethylene sheeting.

The CMAs will carefully move each object from the displaced shelving units to a 3' x 10' table set up less than 5' from the shelving units, the "Processing Area." In the Processing Area, CMAs will, in the following order,

- remove superficial dust from each piece through soft brushing, and directing removed dust into a vacuum in order to prevent the spread of the acidic and abrasive dust. The museum's practice is to wear nitrile gloves while handling ceramics.
- using archival-quality padding, Ethafoam, and tissue, place each clean object into an archival box in the most stable position and in such a way that prevents contact with any other ceramic surface. Objects will be grouped according to their appropriateness to be housed together (for example, larger objects will be housed in their own box or tub and smaller objects will be housed with smaller objects in the same archival box). Smaller works will be stored in archival boxes with dividers, both during and after the move. Larger objects will be housed in inert plastic tubs and bins. Each object will have an acid-free tissue barrier between it and the Ethafoam and/or other padding. For objects that were previously housed in acidic boxes, they will be placed into new, archival boxes. The museum's practice is to label box exteriors with their accession ID numbers and thumbnail photographs of each object contained within the box in order to reduce future handling. One team member will handle the object and the other will act as recorder, noting information about condition and location. For larger objects, the appropriate number of team members will work together to safely move the artwork.
- briefly note in a spreadsheet any conservation or condition concerns related to the objects. This is a process developed during the museum's comprehensive inventory, and it creates a record of objects that

require further attention from a conservator. This spreadsheet is then used as the basis for entries to the Collections database. Because the museum does not have a database terminal in the lower-level storage area, this work must be done in two phases (information recording and then data entry).

- load the boxes onto a plastic service cart and roll them to the Temporary Storage Area, approximately 20 feet away.

The boxes will be placed on 8'x 4'x 8' three-level shelving units in the Temporary Storage Area, stabilized, padded, and covered, *with their temporary locations tracked in the Collections database*, while the open shelving is disassembled and removed, the area is cleaned, and the new CSU is assembled and installed. Ceramics that are currently on open shelves and pallets in other parts of the lower-level storage area will remain in place (stabilized, padded, and covered) until the new CSU is installed so that the pieces only need to be moved one time. Using the procedure detailed above, they will be lightly cleaned (to remove superficial dust only) during this move to the new CSU.

The new CSU will be assembled and installed by McMurray-Stern installation technicians, who will also break down and remove the open shelving that is currently in its place. Once the CSU is in place and tested, the CMAs will use the following procedure to move the objects into the new unit:

- The boxes with objects will be loaded onto a plastic service cart and rolled from the Temporary Storage Area approximately 20 feet to the new CSU. The CMAs will methodically place the works in the unit's bays, working under the supervision of senior Collections Department staff and carefully noting the location of each work. The boxes, bins, and tubs will be placed snugly against the back wall of each bay, with the larger bins and tubs in the taller, lower bays. The ranks of the CSUs are designed to close against each other and lock. Once in the locked position, the boxes placed in the units' bays are completely enclosed and cannot fall or shift significantly. To prevent the possibility of any boxes shifting during opening and closing of the unit, strips of webbing or elastic cords will be secured across the open front of each shelf.
- The CMAs will then update changes to each work's location in the museum's Collections database.

Based on this procedure – and in consultation with the move conservator – Collections Department staff has estimated that the average processing time (which includes brief examination to note condition, dust removal, re-housing with proper padding, moving, tracking location changes, shelving on new CSU, and updating database) will be approximately 15 minutes per object or 4 objects per hour per person (i.e. with two people working simultaneously, 8 objects will be processed in an hour, or 64 in a day), with fluctuations based on size and condition.

3. Project Resources: Time, Personnel, Budget

Pacific Asia Museum's Collections Manager/Assistant Curator, Assistant Registrar, and Exhibition Production Manager will staff the project, working with two qualified and fully trained part-time Collections Management Assistants hired specifically for the project. (See position description.) Outside contractors include a consulting move conservator and a storage furniture design and manufacturing firm. The Collections Manager/Assistant Curator will act as Project Manager.

Objects conservator Irena Calinescu will serve as move conservator, helping plan the project and providing all necessary staff training to ensure that the project is carried out following procedures that conform to standards of the field. Ms. Calinescu is a well respected conservator, and her work with institutions planning collections

moves is particularly noteworthy. She was highly recommended by Conservation Department staff at the Los Angeles County Museum of Art for her expertise in projects such as the one the museum is planning.

The new CSU will be designed by McMurray-Stern, the highly recommended firm which designed collections storage for the Asian Art Museum in San Francisco and the Seattle Asian Art Museum. McMurray-Stern will also remove the shelves on which the works are currently stored. McMurray-Stern successfully installed three ranks of SpaceSaver Four-Post CSUs during phase one of the museum's ceramics storage upgrade project. Based on the museum's experience during phase one, it is estimating that it will take three months for McMurray-Stern to fabricate the unit from the time it is ordered.

Once the unit has been ordered, the CMAs will establish the Temporary Storage Area and begin moving many of the ceramic works there, including those that are stored on the open shelving that is currently located where the new compact unit will be installed. The objective is to accomplish this part of the work before installation of the compact unit begins. Based on phase one of the project, the museum estimates that it will take approximately two weeks (working part-time) to finish this part of the project.

The removal of the existing storage racks and the assembly and installation of the new CSU (all work undertaken by McMurray-Stern) will take place over two weeks, following the detailed design and installation plan developed specifically for the project (see McMurray Stern Design Plan, Attachment #14c). McMurray-Stern representatives will then provide at least four hours of staff training for safe use of the CSU.

The Collections Manager/Assistant Curator and the Assistant Registrar, assisted by the Exhibition Production Manager, will oversee the work of the two CMAs, who will move the artwork to the new CSUs according to categories of size and material. The Assistant Registrar will create a detailed map of the new storage area and record all changes to each work's location in the museum's electronic collections database.

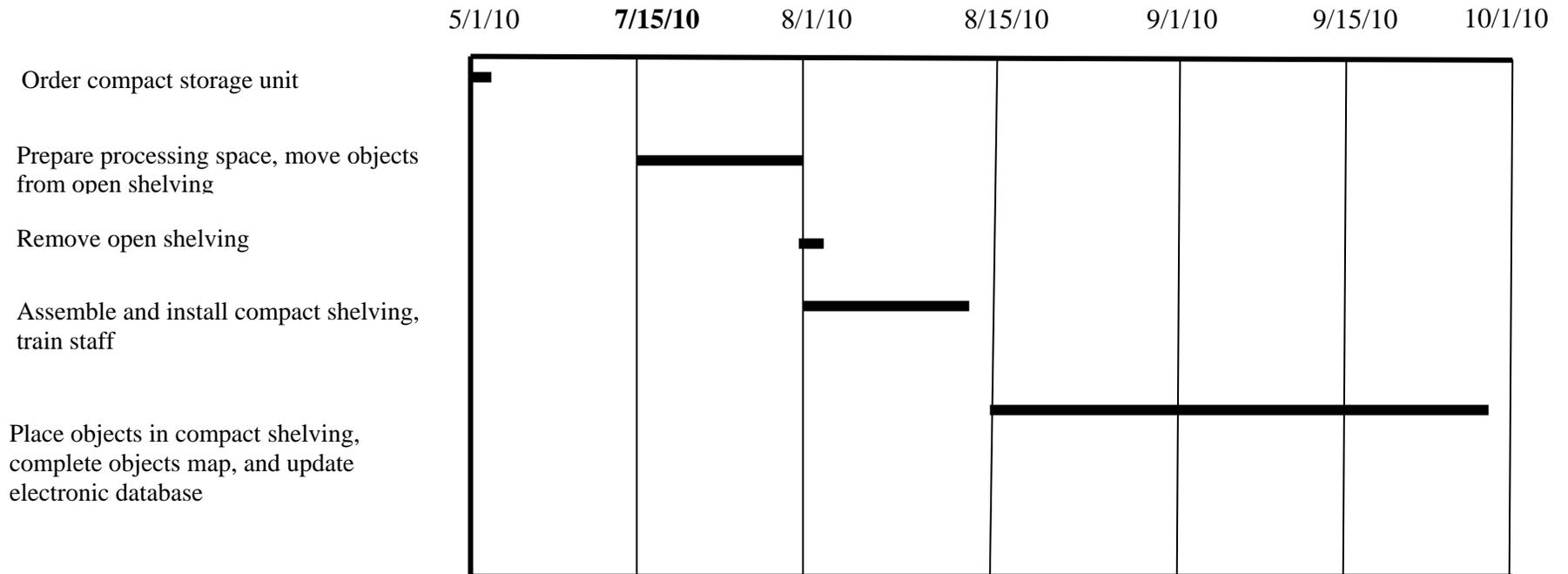
The process of shelving the works, labeling the locations, creating a detailed map of the new storage area, and updating the database is expected to take approximately four to six weeks (working part time). Based on the completed first phase, the museum estimates that one staff person can accomplish these tasks for about four objects per hour or about 32 objects per day per person, working full time. Given that the CMAs will be working part time, the museum anticipates it will take approximately four to six weeks to shelve, label, map, and update the database for the 300 objects that will be processed during this phase.

4. Impact

By creating the optimum environment in which to store these fragile works, including providing a substantial layer of protection against the effects of seismic activity, the museum will extend their useful life for both exhibition and study, thus providing the public with greater opportunity to access these original works. By consolidating the works in one location, staff and visiting curators will have much readier access to the works. Increased access will allow staff to do an updated inventory and condition check as well as update information on the works in the electronic database. Moving the works to the CSU will free up storage space for the larger, more durable works that are now crowded onto open shelving. *The CSU will also provide storage space for hundreds of ceramics removed from the permanent collections galleries as part of the reinstallation plan.*

Pacific Asia Museum
Earthquake-Secure Collections Storage Environment

Schedule of Completion



BUDGET FORM - PAGE FOUR

Section B: Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	9,112.00	9,113.00	18,225.00
2. Fringe Benefits	1,972.00	1,972.25	3,944.25
3. Consultant Fees	2,000.00	2,000.00	4,000.00
4. Travel			0.00
5. Supplies and Materials	1,600.00	1,600.00	3,200.00
6. Services			0.00
7. Student Support			0.00
8. Other Costs	30,883.00	30,884.00	61,767.00
TOTAL DIRECT COSTS (1–8)	45,567.00	45,569.25	91,136.25
9. Indirect Costs	2,577.00	2,578.35	5,155.35
TOTAL COSTS (Direct and Indirect)	48,144.00	48,147.60	96,291.60

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	48,144.00
2. Cost Sharing:	
a. Cash Contribution	48,147.60
b. In-Kind Contribution	
c. Other Federal Agencies*	
d. TOTAL COST SHARING	48,147.60
3. TOTAL PROJECT FUNDING (1+2d)	96,291.60
% of Total Costs Requested from IMLS	50.00%

* If funding has been requested from another federal agency, indicate the agency's name:

IMLS Conservation Project Support 2010

The SCAD Museum of Art seeks a two-year Conservation Project Support grant of \$149,300 to rehouse its painting collections in a new storage facility with new storage furnishings. This storage with an optimal museum environment will be located in a rehabilitated 1853 historic annex connected to the museum (both structures original components of the National Historic Landmark Central of Georgia Railroad complex, the only surviving antebellum railroad complex in the country). At present, the entire collection of approximately 365 paintings--16th- 20th-c. British and American paintings including portraits by Van Dyck, Lely, Kneller, Gainsborough, Reynolds, and Hogarth from the Newton Collection, and 19th- 20th-c. African-American paintings with works by Duncanson, Bannister, Aaron Douglas, Jacob Lawrence, and Romare Bearden in the Walter O. Evans Collection--is housed off site in temporary storage. The teaching museum serves the 9,500 students and more than 600 faculty members of the Savannah College of Art and Design as well as the wider community of Savannah (about 334,353 in metropolitan area according to 2008 Census estimates, 57% African American).

1. STATEMENT OF NEED

The SCAD Museum of Art's mission (to preserve its collections; to exhibit, interpret and research the art works and artifacts; and to provide educational programming and professional development) is also very closely aligned with the proposed environmental improvement project for improved paintings storage.

The museum has had five studies of its historic building's structural, environmental, and collection conditions undertaken since it was established in 2002 as well as having detailed conservation reports for all Old Master paintings in its collection prepared. These studies informed the museum's planning and activities to improve overall collections care as well as to plan for the new storage facility. They document that the proposed CPS project for rehousing the important painting collections in a stable and secure environment is among the highest conservation priorities. The summaries of these studies are outlined below:

- 1.1. Structural Analysis, May 2003 (Getty Trust Campus Heritage Preservation Planning Project), DPK&A preservation architects of Philadelphia, Kern-Coleman engineers, which included the 1856 museum building and the 1853 railroad depot that is undergoing rehabilitation to house the storage facility.
- 1.2. Conservation Assessment Survey, Sept. 2005 (IMLS/Heritage Preservation CAP grant), Part 1, paintings conservator Rustin Levenson. Part 2, preservation architects Lord, Aeck & Sargent.
- 1.3. Environmental Improvement Conservation Project Study, Sept. 2005, mechanical engineer. The Rosser Int'l engineer Charles Hanning, P.E., who evaluated museum environmental conditions.
- 1.4. Conservation Assessment Survey, Oct. 2008 (CAP update), paintings conservator Rustin Levenson (including recommendations for annex).
- 1.5. Storage Facility Design (as part of museum annex design), June 2008-March 2009, museum consultant/exhibit designer Elroy Quenroe of Quenroe Associates, Boulder, and architects Lord, Aeck & Sargent of Atlanta (including recommendations from paintings conservator Rustin Levenson and textile conservator Cara Varnell).

How the project ties into the museum's previous and current collections care activities: As a new museum founded in 2002, the museum has focused its collection care on three concurrent areas of activity: conserving collections according to physical condition and curatorial significance; creating a stable physical setting for its collections with appropriate exhibition and storage space while respecting its landmark building; and acquiring appropriate materials, staff and equipment as well as establishing/maintaining safe museum practices for handling, exhibiting, and storing art. Conservation work, the first of these priorities is an ongoing activity and was begun when the Newton Collection was donated in 2001. The proposed CPS environmental improvement project provides a more permanent solution for the temporary storage problems identified in the studies.

The CPS project also reflects responsible collections care and is part of an overall improvement program. The CAP survey by the conservator noted the high quality of collection care provided by the museum, despite its newness, and the museum was in fact nominated for a national conservation award. The executive director was selected to participate as one of two representatives of small museums from the state of Georgia for the 2007 “Connecting to Collections” national summit. An aggressive program of conservation began with the initial donation of the Newton Collection of British and American art in 2001, an “at risk” collection. The primary focus has been on the paintings, all of which received conservation treatment from the beginning (an on site conservator visit before the Newton Collection was moved from Vermont, unpacking and preliminary cleaning of the collection in Savannah, emergency stabilization, condition reports for all paintings and period frames, ongoing intensive treatment). The 2005 CAP survey noted that the museum’s mission statement emphasizes collections care and the preservation of the permanent collection; that “The Newton collection has been stabilized and is being conserved...”; and that the college “has been consistently supportive of collections care and conservation concerns.”

The SCAD Museum of Art and its collections care have directly benefited from three important IMLS grants across the past few years, some of which results have led to the currently proposed CPS project:

- 1.6. The 2005 Conservation Assessment Program grant received from the IMLS and Heritage Preservation helped the museum to identify its priorities. The majority of the recommendations were implemented, including the improvement of the off-site temporary storage area to meet museum standards.
- 1.7. A generous *Save America’s Treasures* grant was received from the IMLS, NPS, NEH, NEA, and the President’s Commission on the Arts and Humanities. This grant assisted with a major exterior preservation project across 2006-2008 (completed May 2008, recipient of Historic Savannah Foundation award for excellence in preservation). (See online exhibition “Saving a National Treasure: Bricks, Mortar and Metal” <http://www.scad.edu/auxiliary/museum/exterior-preservation.cfm>.)
- 1.8. The museum’s executive director was invited to attend the IMLS national summit in Washington held in June 2007, “Connecting to Collections.” The museum was the recipient of a Connecting to Collections Bookshelf. Both the conference information and the reference materials have been used extensively across the past year to improve the museum’s disaster planning, staff awareness of current museum issues, collection care activities, and museum annex planning.

The SCAD Museum of Art and the college are deeply committed to improving collection care, as demonstrated by the resources dedicated to developing the museum and caring for the collections, as documented in the studies noted above. Since 2002, the museum has had approximately 690 of its works on paper mounted in museum quality mats and frames with UV plexi or museum glass. In addition to the preliminary conservation work on the entire painting collection of approximately 300 extremely fragile, Old Master paintings (assessment before move, unpacking, preliminary cleaning, emergency stabilization, and preparation of condition reports); 57 paintings and 39 period frames have received intensive conservation treatment from external conservators as have 31 prints and drawings, 7 19th-c. photographs; and an early 19th-c. table. Two panel paintings from the early 17th c. have been encased in microenvironments for additional protection. A textile conservator has made three work trips to the museum to assist with collection care for recently donated costume collections (20th-21st c.). Lectures and workshops have been presented to the students and community by the paintings and frame conservators, and preservation architects.

The museum and governing authority’s overall financial commitment to conservation: After acquiring the Newton Collection in 2001, the college made art conservation a separate line item on the budget. Major expenditures have been made for the direct conservation of art works and for the museum building, as well as for museum operations and technology. The *Save America’s Treasures* external preservation project (\$1.3 m) addressed serious structural and moisture problems with the museum building that adversely affected the art work as well as endangered the historic fabric. During the project, the museum was closed, and art was in

storage. There are five permanent staff members at the museum, with plans to add more when the annex is completed. Other large departments at the college supplement the staff, particularly in infrastructure areas (housekeeping, facilities, galleries staff, campus printing, photography, business office, institutional advancement, events, communications, human resources, information technology, etc.) The museum annex under development is an extremely major capital project for the college which will add significant museum storage, infrastructure and exhibition space as well as academic spaces. This history of a multi-million dollar commitment to collection care across the past several years as well as the annex project demonstrate both the museum's and the college's dedication to preserving its collections and sharing them with the public and with the college community.

2. PROJECT DESIGN

Project Tasks, goals and objectives: There are several primary project activities which will be scheduled across a 24-month project timeline from August 2010-July 2012:

- 2.1. Conduct planning meetings for storage facility (finalize layout, priorities) and on-site visits/workshop in art handling and packing (Aug.-Sept. 2010; paintings conservator, museum staff, workshop by conservator in Sept. to include museum staff, art handlers/exhibition designers from other departments).
- 2.2. Create comprehensive move inventory by transferring painting collection information from existing database to new collection management software system (TMS) which has additional fields and modules (Sept. 2010-May 2011; registrar to create new fields, enter information; museum assistant to assist with research and scanning reports/archival materials/images; chief curator to approve content; collection manager to assist with image database from existing images). [40-45 paintings per month in TMS with related archival materials/images]
- 2.3. Document existing storage facilities; document paintings and their current condition as needed (June-August 2011; college photographers with assistance of collection manager, registrar for photography; collection manager to integrate photographs into museum image database; creation of new material for museum website on project).
- 2.4. Acquire packing materials for collection move; develop punch lists for smooth transfer (Sept. 2011-Feb. 2012; collection manager, museum managing director, other involved personnel).
- 2.5. Begin monitoring new storage environmental conditions with data loggers, pest management and other conditions, analyze data to identify any problems in space or related spaces such as new loading dock, ensure lighting and security is in place for new storage, bring in painting conservator for site visit to review space and do condition check on Evans Collection of African American Art and miscellaneous paintings, hold small workshop; make improvements to space if needed (Jan.-May 2012; museum staff, painting conservator, college construction project director, architects/contractors/museum engineers).
- 2.6. Acquire and install new storage furnishings for paintings storage (Jan.-May 2012; museum staff, college construction project director, designer/architects/contractors, working with firm Crystalizations Systems Inc. (CSI) for storage furnishings consisting of 32 moving painting storage units 12' high x 11 ½' wide and 2 wall mounted painting storage areas 16' x 14' for oversize paintings). See attached preliminary drawings and specs.
- 2.7. Pack paintings for transfer, photo document (Jan.-May 2012; collection manager, registrar, assistance/oversight from chief curator) [c. 70-75 per month].
- 2.8. Transfer paintings to new storage, photo document (June 2012; 6 days; collection manager, registrar, art handlers/exhibition designers (4 additional professional art handlers)).
- 2.9. Unpack paintings, label locations, and update all collection records with new locations and any condition changes, update project website, photo document, produce educational print materials on project (June-July 2012; collection manager, registrar to lead unpacking; registrar to update records;

chief curator to draft info materials, assist with paintings; campus photographers to document; campus designers to update website, assist with print materials).

- 2.10. Evaluate new storage and collections, have presentation on project, have tours for appropriate visitors such as museum studies faculty and students, building arts faculty, administration/board/donors (July 2012; external painting conservator for presentation and evaluation; director/chief curator to provide tours; support materials to be developed by museum director and staff for communications; institutional effectiveness department to develop survey for presentation/website; AAM facility report to document improved storage conditions (collection manager/registrar); final project meetings and final report to be drafted by museum director).

Ongoing meetings (minimum of one per quarter) by museum staff will ensure project is on track, that problems are identified and addressed, and that goals and outcomes are met. The staff will also meet with the conservator once each year, and hold an annual planning and evaluation retreat. Progress reports and an annual report will be drafted (by the museum executive director). The museum executive director will remain in communication with various project participants to ensure that the paintings' collection care and the quality of storage remain top priorities within the wider construction project.

The above project activities have the following goals:

Goal 1. The primary project goal is to rehouse the entire painting collection from its current temporary off site location to an optimal museum storage environment, that will protect fragile and important painting collections.

Goal 2. These improved conditions will also make the paintings more accessible for research and exhibition.

Goal 3. The project will also raise awareness of collection care issues and appropriate environmental conditions, serving as a model for conservation and collection care within a historic building (one within a historic urban setting with hurricane concerns) for the college community, especially those in art history, architecture, historic preservation, interior design, arts administration, and related minors including museum studies.

Specific objectives for the above goals are the following:

Objective 1. Improve storage conditions for 100% of the museum's painting collections within a newly constructed storage facility (minimum 1,500 sq. ft.) which will include 32 moving painting storage units and 2-3 large wall mounted units for oversize paintings. (See attached preliminary specs and drawings from Crystalizations and museum designer.) The storage facility will meet the following museum environmental criteria: 45% and 55% RH with +/- 5% RH daily fluctuations maximum; 68° to 72° F +/- 3° maximum within a day; air filtration levels to 95% to HEPA; appropriate lighting and security for storage; fire hazard, flood and disaster planning (Specs have been provided to museum annex engineers as part of project.)

Objective 2. Fully document in a complete move inventory the painting collection in updated records transferred to new collection management software; pack and transport 100% of painting collection from current temporary storage to new permanent storage, following museum best practices and ensuring the safety of the collection. More than 350 paintings to receive updated documentation and improved inventory, and to be safely transferred by the end of the project.

Objective 3. Present a workshop on art handling and packing by conservator in Sept. 2010 for museum staff and other college art professional exhibition designers who may help with the project (approximately 10 people), workshop on collection care and conservation (Jan. 2011), and a presentation by the conservator at the conclusion of the project (open to museum studies, art history, and school of buildings arts students, student members of ASHRAE, and others interested). The museum director and staff to provide focused tours on collection care and environmental conditions to similar selected small groups upon project completion (including donors, administration/board, Coastal Museum Association, etc.), without compromising collection security (minimum of 5 tours to be provided).

Objective 4. Provide ongoing information to the campus community about the project through a variety of support materials (drafting and develop print materials, photograph project stages and artworks and other

visuals, design and print support materials including handouts/brochures for students, ongoing discussions to museum studies classes each quarter; press releases/articles through Communications Department, including for college online newspaper; online materials on website through Campus Satellite department).

Museum's plan to ensure that normal museum operations are not disrupted: The temporary paintings storage area where many of the activities will take place is off site, and consequently will cause minimal disruption. The annex will not be complete until close to the end of the project period, and most activities will parallel and complement annex construction progress. Museum staff will incorporate their portion of the project within their schedules and goals with a percentage of their time devoted to the project, and the project will be coordinated within museum planning of events and exhibitions. For this reason, some project activities are distributed across several months. The two staff members with the heaviest project responsibilities (the collection manager and the registrar) will have other work reassigned to other staff members to free up project time. Some activities are scheduled during college break periods when the museum can be closed, or operated with a smaller staff. If needed, museum volunteers or work study students will supplement regular museum duties. The museum also has the capacity to request assistance from other college departments with art experience (galleries and special projects staff, facilities, and others).

Conditions to which the museum collections and historic structure are currently exposed and why they merit attention at this time: There is no paintings storage space in the current museum. The temporary off-site storage where the paintings collection is currently housed is inadequate for long-term permanent storage, and the space is not available to the museum on a permanent basis as it is needed for other institutional purposes. Many of the 16th-19th c. paintings are in very fragile condition, sensitive to environmental changes, vibrations, and other hazards. While all the paintings have been stabilized and have received initial cleaning, their rehousing in storage that meets a higher standard is critical. There are condition reports on all paintings, and intensive treatment for the collection is ongoing. Approximately 150 17th-19th c. period frames, most original to the paintings, are also in fragile condition. The frame collection has been the subject of a comprehensive condition survey by a frame expert in addition to being surveyed by the painting conservators.

The current paintings storage space was set up to serve only as interim storage. Conditions are becoming crowded, and with the rapid growth of the collection, the painting storage has had to include a section for works on paper and work tables as well as important art that is stored in packing crates on pallets for lack of other adequate space. The paintings are presently in acid-free foam core-lined wooden racks (constructed to the conservator's specs) and are wrapped in Dartek. However, the paintings must be pulled out every time they are examined, studied, or exhibited, causing additional movement for the fragile paintings, more physical handling, and more wear on the frames, thus exposing them to greater risk as well as possible vibration damage to flaking canvases and brittle frames. Upon occasion, when there is a problem in the temporary storage area (such as a fire alarm in the building where it is located), museum staff have to rush over to check the space and admit emergency personnel or arrange for repair (upon one occasion, due to a flood from a wall problem). To have higher quality permanent storage upon the museum's own premises will permit ongoing control, access and monitoring. It will consequently be a critical improvement.

Conditions in the temporary storage room include industrial humidifier and dehumidifier units, portable air filter machines, fans, shelving, and painting racks (vertical and horizontal). The room includes an alarm system, magnetic card access, and security cameras, as well as a smoke alarm and sprinkler system. Environmental conditions are monitored with a HOBO system, and the collection manager uses an integrated pest control system. The temporary storage has been included in previous museum assessment studies including a 2005 CAP study and a 2008 update to the CAP. [See attached CAP summaries and photographs.]

New dedicated painting storage of approximately 1,000 sq. ft. also will meet recommended museum environmental parameters, security including security cameras, magnetic card access, concrete (sealed), aluminum ceiling-mounted movable panels, temperature and light control (latter with motion detectors), data

logging devices, fire system (museum sprinkler system, smoke detectors, fire extinguishers); fireproof floor, walls, double doors; integrated pest management; network ports for registrar's access to server; telephone; no active water pipes overhead to pose future problems. Following multi-year planning for a new museum annex that incorporates improved collection storage, the new painting storage area will meet museum environmental conditions, have high security with reinforced walls and disaster provisions (including a fire detection and suppression system and emergency generator system). The new storage area is near the permanent galleries.

A description of the objects and historic structure that are the focus of the project: The CPS project will provide an optimal museum environment for significant painting collections of approximately 365 paintings and their 150 period frames. Among them are portraits by renowned 17th-c. court artists such as Van Dyck, Kneller and Lely, and 18th-c. English and American artists including Hogarth, Reynolds, Ramsay, Romney, Gainsborough, Wright of Derby, Smibert, and Gilbert Stuart. The Evans Collection of African-American Art includes 19th-c. paintings by Duncanson and Bannister, and 20th-c. works by Aaron Douglas (e.g., *God's Trombones*), the iconic *Genesis Creation* series of paintings by Jacob Lawrence, and major works by Bearden (such as *The Piano Lesson*). The collection also includes paintings by William Merritt Chase and Picasso.

Conservation methods in terms of efficiency, reliability, and safety: The environmental improvement project follows the recommendations made by conservators and by preservation architects in the 2005 CAP and the 2008 updated CAP report and incorporates the advice of an experienced museum design consultant. Upon research (and the initial advice of a museum environmental consultant—Steve Weintraub of APS), the storage furnishings (ceiling mounted movable panels and wall-mounted panels for oversize works) will be acquired from Crystalizations Systems (CSI) whose clients include the Metropolitan Museum, the National Portrait Gallery, and other museums with similarly fragile Old Master paintings. Such a system will make the paintings more accessible, will minimize vibration damage and will limit damage from frequent handling. The museum's lead paintings conservator will make two site visits during the project (the second to be a final evaluation). A third site visit mid project (prior to packing the artwork) will be made by the lead conservator or her senior conservator to conduct a condition check of the Walter O. Evans Collection of African American Art, a facility review as well as a small workshop. The physical rehousing of the paintings collection will be accompanied by the registrar's creation of a move inventory by transferring records from the existing database to the recently acquired collection management software (TMS) as well as by additional photographs of the paintings.

3. PROJECT RESOURCES—TIME, PERSONNEL, BUDGET

Time: The proposed project time is two years. This includes initial planning sessions and three on-site visits by a paintings conservator at the beginning, midpoint, and end of the project (the latter to be an evaluation). The first year will include preparation activities ensuring the painting collection is ready to be transferred (updating documentation in the form of a comprehensive move inventory, updating photo documentation, acquiring supplies, conducting an art handling/packing workshop, reviewing storage plans for the future storage facility). Year 2 will involve a condition check of the Evans Collection of African American Art (to supplement condition reports from its frequent previous exhibition), the packing of all paintings, collecting data from the new storage facility and ensuring conditions are appropriate, the physical transfer of the paintings, unpacking the works, and updating records. Throughout the project, there will be check points: initial planning meetings (with the conservator), quarterly project meetings by museum staff and relevant personnel, and a final project meeting and evaluation by an external evaluator (painting conservator). Throughout the project photo documentation will take place, and information will be posted on a website. Print materials, select facility tours, and a public presentation on the project and related issues by the conservator will ensure information reaches both the college and external community. The project schedule will be closely coordinated with the college's academic calendar to minimize disruption to classes who use the museum and to take advantage of break periods. Some activities are staggered to ensure that museum staff members can balance project activities with other responsibilities. The museum has previous experience with packing collections due to the prior

construction project that affected all works on paper and other works stored or exhibited at the museum as well as partial evacuation packing of the paintings during previous hurricane warnings, which have provided some time guidelines for the activities, equipment and supplies necessary for a major art transfer. More than a year of planning time for the annex project has guided the plans for the storage furnishings and facility.

Personnel: The project director will be Maureen Burke, the executive museum director and dean of academic initiatives, who will devote 8% of her time the first year and 10% the second year. She holds a Ph.D. and M.A. in art history from the Institute of Fine Arts, NYU, as well as a certificate in museum training from the Metropolitan Museum of Art and the Institute of Fine Arts and certificates in higher education administration from Harvard, Bryn Mawr, and the American Council of Education. She was an NEH Fellow, a Fulbright Scholar in Italy, regional director for “Save Outdoor Sculpture!,” advisory board member for the National Trust’s national meeting in Savannah, board member for the Savannah Civil Rights Museum, participant in the IMLS 2007 national summit “Connecting to Collections,” and project director on diverse grants including the Getty Campus Heritage Preservation Planning Project, “Save America’s Treasures,” and NEA Challenge America for a Richard Hunt exhibition and presentation.

The paintings conservator is Rustin Levenson, FAIA, FIIC (B.A., Wellesley College, Diploma in Paintings Conservation, Fogg Art Museum, and Harvard) with years of experience at the Fogg Museum, the Canadian Conservation Institute, the National Gallery of Canada, and the Metropolitan Museum. Additional museum staff who will be involved in the project are Summer Orndorff, registrar (B.F.A., art history/studio art, University of North Texas; M.F.A. art history, SCAD; six years at the Smithsonian American Art Museum, collection database assistant; two years, curator, SCAD Galleries); Ahmad Jackson, collection manager (B.F.A., graphic design, SCAD; eight years, exhibitions designer and support, SCAD Galleries); Audrey Dillon, museum assistant (B.A., M.A. candidate, art history, SCAD). (See attached résumés for project personnel.)

Budget: The CPS grant request for rehousing the painting collection in the new storage facility is for \$149,300, with the total project costs totaling \$323,228. The SCAD match is greater than 1:1, and includes museum staff and other college staff time, conservator expenses, web design, print costs, and packing supplies, as well as other support. The specific focus of the CPS funding is for the storage furniture (e.g., the moveable panels and two wall-mounted units) in the painting storage area. The storage estimates were developed in conjunction with the museum consultant for the annex design. SCAD is committing substantial funding to the new annex.

4. IMPACT

An external evaluation at the project’s conclusion will be conducted by the paintings conservator who did the 2005 CAP study and the 2008 update. As a consequence, she is familiar with the temporary storage facility and can analyze the improved physical conditions as well as the condition of the paintings and the improved accessibility to staff members and researchers. The safe transfer of all 365 paintings is one measure of success, as well as the outfitting of the new facility to meet all professional standards, as documented by the completion of an AAM facility report. High quality storage furnishings will minimize dangers from moving and handling the art too much as well as ensuring minimal vibration. Proximity to permanent galleries, study and work areas, and to staff offices, is integral to the project as is ensuring higher security and hardened storage for disaster conditions. Success will also be measured by whether the new painting storage area meets the environmental target numbers for humidity, filtration, temperature, and light levels, as well as how well the system can be controlled. Using previous years of environmental data in the temporary facility as the baseline, data collected monthly from the new paintings storage will indicate improvements. Attendance at workshops, presentation, and tours will be recorded, and surveys of participants after the events will be conducted. Traffic on the museum website, distribution of print materials, and the number of presentations given to museum studies classes or others will be documented. Online communications, press releases, and articles will also measure the success in reaching the campus and wider communities. The ongoing photo documentation of the project and a final written report will also document the improvements and project success.

SCHEDULE OF COMPLETION

PROJECT ACTIVITIES	YEAR 1 (2010-11)											
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1. Conduct planning meetings (finalize layout priorities); conservator conducts on-site visit plus a workshop in art handling and packing (in September).												
2. Create comprehensive move inventory by transferring painting collection information from existing database to new collection management software system (TMS) with additional fields; research & scan reports/archival materials/ images; approve content; complete image database from existing photos. [40-45 paintings per month in TMS; 50% or 183 paintings to be in system by end of January 2011; 100% or 365 by end of May.]												
3. Photo document existing storage facilities; document paintings and their condition as needed; integrate new photographs into museum image database; create new project info materials for museum website. 100% of paintings to have supplementary materials/images within 3 months.												
Quarterly project meetings (museum staff, other appropriate personnel). 1 st year report written.												

SCHEDULE OF COMPLETION

PROJECT ACTIVITIES	YEAR 2 (2011-12)											
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July
Quarterly project meetings (museum staff, other appropriate personnel)												
Complete photo documentation of existing storage and paintings; integrate photographs into image database. By 9/1(new academic year), have updated website.												
4. Acquire packing materials for collection move; develop punch lists and plans.												
5. Monitor new storage environmental and other conditions; identify problems and make improvements. Conservator site visit, condition review of Evans paintings, review of space. Write status reports.												
6. Acquire and install new storage furnishings for paintings storage.												
7. Pack paintings for transfer, photo document (c. 70-75 per month)												
8. Transfer paintings to new storage, photo document. 6 days for transport.												
9. Unpack paintings; update all collection records; update website; photo document; produce educational print materials.												
10. Evaluate new storage; have public presentation and tours; disseminate project info; develop and conduct survey for presentation/website; document in AAM facility report; have final meetings; write final report.												

BUDGET FORM: Section B, Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	\$0.00	\$61,550.00	\$61,550.00
2. Fringe Benefits	\$0.00	\$7,738.00	\$7,738.00
3. Consultant Fees	\$0.00	\$12,000.00	\$12,000.00
4. Travel	\$0.00	\$3,450.00	\$3,450.00
5. Supplies and Materials	\$149,300.00	\$56,700.00	\$206,000.00
6. Services	\$0.00	\$20,000.00	\$20,000.00
7. Student Support			
8. Other Costs			
TOTAL DIRECT COSTS (1-8)	\$149,300.00	\$161,438.00	\$310,738.00
9. Indirect Costs			
TOTAL COSTS (Direct and Indirect)	\$149,300.00	\$161,438.00	\$310,738.00

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	\$149,300.00
2. Cost Sharing:	
a. Applicant's Contribution	\$72,150.00
b. Kind Contribution	\$89,288.00
c. Other Federal Agencies*	
d. TOTAL COST SHARING	\$161,438.00
3. TOTAL PROJECT FUNDING (1+2d)	\$310,738.00
Percentage of total project costs requested from IMLS	48 %

*If funding has been requested from another federal agency, indicate the agency's name:

Proposal to the Institute for Museum and Library Services
New England Aquarium Life Support System Upgrade

1. STATEMENT OF NEED

The New England Aquarium (NEAq) proposes to upgrade the life support system for its centerpiece exhibit, the Giant Ocean Tank (GOT), a 200,000 gallon circular tank containing our largest and most significant collection representing a Caribbean reef community.

The New England Aquarium's primary concern is the health and presentation of its live animal collection. Efficient, modern life support systems are critical to maintaining optimal environmental quality in aquatic exhibits and the health of the animals within. Continuing to upgrade the life support systems and replacing outdated equipment will support the Aquarium's highest conservation need by guaranteeing that the animals are provided with the best possible environment. As the largest NEAq exhibit, the GOT's Caribbean Reef exhibit is one of the highest priorities.

Institutional Commitment to Conservation of Collections

NEAq is, by its nature, a capital-intensive institution. Now nearly 40 years old, it is in need of consistent modernization, repairs, and upgrades. Each year's board-approved operating budget includes funding for capital projects, and when an operating surplus is achieved—as has been true each year since 2003—additional funds are added to these efforts. We seek further capital funding from individuals, corporations, and foundations. Between 2004 and the present, NEAq has invested more than \$10 million into building modernization projects. While many of these projects concern facilities and systems—such as electrical upgrades and structural repairs—highest priority is given to life support for our valuable living collections.

Conservation Planning and Evaluation

During 2006 and 2007, the New England Aquarium undertook three major planning and evaluative efforts: development of a five-year strategic action plan (launched January 2007), application for American Zoo and Aquarium accreditation (granted September 2006), and renewal application for American Association of Museums accreditation (renewed October 2007). Through these processes, NEAq completed a rigorous self-evaluation that included programs, operations, exhibits, and facilities.

We revised our *Institutional Collection Plan* (excerpts attached) as an important element of the accreditation applications. A new strategic document, *Action Plan 2007-2011* was created to guide the institution. As part of this effort, we updated our Capital Plan, which originally was developed in 2002, when consultants worked with staff to evaluate and prioritize capital needs. Although much has already been accomplished, this plan continues to guide improvements. Capital projects of all kinds—exhibit renovation, life support system (“LSS”) upgrades, structural repairs—are now scheduled and budgeted within our five year Action Plan (see Capital Plan update attached –all figures have been removed except for the GOT).

Action Plan 2007-2011 confirms the institution's commitment to responsible care of its living collections. The Plan's first priority is centered on the exhibit pathway and includes all capital needs. The first stated assumption for all capital projects is that NEAq will “Prioritize infrastructure improvements affecting environmental quality needed to maintain the health of the animal collection” (see attached excerpt from Action Plan).

Previous and Current Collections Care activities

The New England Aquarium continuously looks for ways to provide optimal care for its collections. As the institution ages, this often means repairing and enhancing older equipment or introducing new technology to our life support systems. In April 2008, NEAq received a \$42,120 Conservation Project Support Grant from IMLS, through which we improved environmental conditions for the living collections in our cold-water exhibits. We upgraded heat exchangers and installed monitoring equipment. By maintaining target temperatures more consistently, we will reduce stress and potential mortality of the animals and eliminate the need for emergency chillers, thereby reducing electricity use.

The project proposed herein represents the final steps in a conservation effort for our Giant Ocean Tank collection that began in 2000 with a Conservation Project Support grant from IMLS. At that time, we made improvements to the GOT's life support system aeration chamber in a successful effort to improve water quality and clarity. We added two protein skimmers and a more efficient means of aerating the water. This improvement was critical and had an immediate positive effect for the living collection.

We then turned our focus to the filtration system. Both the GOT and our large penguin exhibit receive treated water from Boston Harbor. Originally, this water circulated through 13 open filter beds in the Aquarium's basement. In 2001, a condition survey identified deterioration of the filter beds as priority for repair and renovation. (Portions of survey attached.) The walls of the filter bays were built in 1969 of concrete with uncoated rebar reinforcement. In many places, the concrete is crumbling and the exposed rebar has oxidized and is deteriorating. With the open design of the filter beds, exposure to salt water has exacerbated the situation.

NEAq developed a multi-phased plan to repair the concrete and replace the entire filtration system with state of the art technology. In 2003, a set of filters failed when their concrete walls became unstable. NEAq completely renovated the space, converting it to a modern filtration plant (see attached photo). The benefits were soon obvious: water quality improved, less space was needed, and there was a reduction in water usage.

Unfortunately, due to financial difficulties at that time, NEAq was not then in a position to move ahead with the remaining filters. In early 2008, with a complete turnaround well behind us and four years of solid finances, strong fundraising, and a track record of completing other important capital projects, NEAq began to move ahead with the project. We received a matching grant of \$455,000 from the Massachusetts Cultural Facilities Fund (CFF) to support this effort. In early 2008, while renovating the floor of the penguin exhibit, we also replaced the exhibit's two filters through this funding and matching support from other donors. With the remaining CFF funding, an IMLS Conservation Project Support grant, and funding from individual donors, we will be able to complete the full renovation of the GOT's life support by early 2010.

Current Conservation Need: improvements to water filtration for Giant Ocean Tank

A grant from IMLS will provide the GOT with more efficient filtration technology. It will contribute to a healthier environment for the animals, improve water clarity, and prepare us for complete renovation of the exhibit tank and habitat, scheduled for 2010. *Action Plan 2007-2011* incorporates GOT renovation and refurbishment that, in addition to life support upgrades, will include replacement of the viewing windows, renovation of habitat, updated interpretation, and introduction of new species. Our goal is to have all of the behind-the-scenes needs taken care of before major work begins on the exhibit itself.

When NEAq first opened in 1969, the life support system for the tank consisted of eleven open sand-bed filters that provided biological filtration, and an aeration chamber to oxygenate the filtered water as it returned to the exhibit (see attached photo). At that time, this system was state-of-the-art. Thirty nine years later, it has exceeded its life expectancy and two filters have already failed. In addition, the water quality and clarity no longer meet the higher standards of today's modern aquariums.

Compared with modern alternatives, the old sand-bed filters are high maintenance, requiring constant adjustment by staff, and take up more space than modern alternatives. Most importantly, they create a less-than-ideal environment for the hundreds of animals within the GOT. A number of factors affect the stability of the system and could have negative impact on the health of the exhibit's inhabitants. The sand-bed filters collect detritus from the exhibit and thus carry a substantial organic load, which decreases pH levels and consumes large amounts of oxygen. While aeration keeps dissolved oxygen levels just under 90%—above a safe minimum—we fall short of our goal of a much healthier 95%.

The current system's inefficiency requires extensive ongoing maintenance and monitoring. The pH in the exhibit must be adjusted frequently and diving staff are kept busy scrubbing algae. In addition, sand-bed filters are suspected by NEAq veterinarians to harbor harmful pathogens that lay dormant in the media, are resistant to

treatment, and could put the collection at risk. Replacement of the old sand-beds with modern filtration technology will eliminate this risk, and will allow us to maintain higher oxygen levels and a healthy pH more easily. New technology will also remove nutrients that contribute to algae growth and bacterial blooms.

2. PROJECT DESIGN

The Project in Context

Originally, the GOT had 11 sand-bed filters. The new system will occupy the space of 5 of these filter bays¹ (see filter diagram attached). To date, we have filled 1 bay with equipment and completed 1 sump bay with biological filtration media. This proposal requests support toward converting 3 additional bays—2 equipment and 1 sump. We are asking IMLS to provide a matching grant to specifically support the purchase and installation of equipment, and subsequent start up and testing of the system. We describe the entire renovation to put the project in context, but it is the installation and start up of this new equipment that will allow us to accomplish our goals for the GOT collection.

Goals

The New England Aquarium will improve environmental conditions for the living collections in its Giant Ocean Tank through upgraded filtration. This environmental improvement project will allow the Aquarium to achieve the following goals:

- To consistently maintain target pH and oxygen levels;
- To eliminate the risk of harmful pathogens possibly lying dormant in current filters;
- To reduce algae growth by more effectively removing nutrients;
- To eliminate risks associated with deteriorating concrete walls; and
- To decrease staff time and attention spent making adjustments.

To achieve the above goals, NEAq will:

Remove sand beds to make room for new filtration plants. We will remove sand from the remaining nine filter beds and use three to house the new system. Two bays will be cleared to make room for a large protein skimmer and pressure sand filter. One will become a sump bay with biological filtration media.

Repair and reinforce bay walls. The concrete walls surrounding these three bays will require significant repair (see photos). We will replace exposed and rusted rebar with epoxy coated rebar, which is rustproof. In areas where existing rebar is in good condition, we will coat with epoxy to ensure it remains sound. We will patch the concrete and cut portals to allow access to the new equipment.

Install new filtration systems and bring them on-line. An IMLS grant will support this step. The system will use 1) protein-skimming technology to eliminate heavy protein compounds, 2) high-rate sand filters to remove particulates, and 3) plastic media for biological filtration and aeration. This combination requires less space, uses less water, and is more efficient. Protein skimmers and pressure sand filters are simple in their construction and require only electric pumps to operate. The biological filtration media (in the sump bay) remove nitrogenous wastes, support de-gassing and aerating, and serve as reservoirs allowing gravity flow back into the main system. Once this equipment is installed and running, we will monitor water quality to ensure it is working correctly and accomplishing our goals for the exhibit.

These steps will lead to more consistent pH and oxygen levels, more effectively remove potentially harmful nutrients and pathogens, thereby reducing staff time required to manually maintain healthy conditions

¹ The remaining 6 filters will be emptied and the space available for other uses. These expenses are not included in this request.

Activities:

Prior to grant period:

Demolition and repair (Funded)

We will isolate the bays from the main system, install temporary bypass and then drain the bays. An environmental engineering company will vacuum out the sand and gravel. A general masonry contractor will repair and seal the concrete and cut portals—for equipment to be brought in and to provide access to the equipment for NEAq's mechanical systems operator.

During Grant Period:

Weeks 1-8: Installation phase

A life support system contractor, Aquatic Life Support Systems, Inc., will install protein skimmers, high-rate sand filters, pumps, meters, and associated equipment in two bays. The contractor will make plumbing connections within the space and with the main seawater manifold, which delivers water to and from the exhibit tank. (see attached Letter of Commitment for contract and estimate). In the sump bay, the contractor will construct a fiberglass framework to support the Brentwood biological filter. Plumbing from the protein skimmers and sand filter in the dry area will be run to the top of the Brentwood media. The piping will connect to a PVC manifold, which will distribute seawater from the protein skimmers over the media. Once the plumbing work is complete, NEAq's electrician will run electric power to the various pumps and controls (see equipment specifications).

Weeks 9-12: Start up, testing and evaluation phase

We will bring the new filtration plant on-line and test its operations and effectiveness. At the beginning of this phase, the reservoir in the wet area underneath the biological media will be filled with salt water. The new sand filter will be tested and then run to clear the water. The temporary bypass piping will be removed, valves to the main exhibit tank headers will be opened, and the protein skimmers started. Controls and valves will be adjusted to achieve design flow rates and optimal protein skimmer foam characteristics. Mechanical systems operators will monitor the new system closely, and NEAq's water quality lab will monitor exhibit water quality parameters for potential problems. The lab will also look for indications that the system is improving the overall water quality when compared to baseline data.

Conservation Methods

Protein skimming has become an essential element of life support systems for large marine exhibits and has been successfully utilized at NEAq and other zoos and aquaria. Large capacity protein skimmers are now commercially available and are typically coupled with biological filtration media, where the effluent from the protein skimmer flows through the media and then returns to the exhibit. Pressure sand filters are used in conjunction with protein skimmers to remove particulates, thereby clarifying the water. This technology has become the currently accepted standard for marine life support systems. NEAq utilizes this protein skimmer, biomedica, sand filter combination on many of its exhibits, including the 60,000-gallon *Marine Mammal Exhibit* and the 45,000-gallon *Harbor Seal Exhibit*. All new saltwater exhibits designed at the New England Aquarium include protein skimmers as an integral part of the life support system.

In the GOT, the combined use of protein skimmers, pressure sand filters, and biological filter media is far more efficient than the sand-bed filter technology it will be replacing. Not only does this combination require less physical space than sand-bed filters to achieve the equivalent amount of filtration, it is an inherently more efficient. Whereas traditional methods of filtration either fail to remove entirely, or simply trap and retain certain organic and inorganic compounds within the system, protein skimming actually removes these compounds from the system. Of the various chemical filtration methods available, only protein skimming can physically remove most organics from the system before they begin to break down (Moe, 1989.)

The removal of organics reduces the load on the biological filters. Substances removed by protein skimming

include amino acids, proteins, fats, carbohydrates, phosphates, fatty acids, phenols, iodide, and metals such as copper, iron, and zinc complexed with the proteins, detritus, and leachates of plant and animal origin. Protein skimmers therefore lower biological oxygen demand, chemical oxygen demand, and nitrate build-up. The removal of organic acids also helps to maintain the pH of the system (Dwivedy, 1973). An additional benefit of protein skimming includes excellent aeration (Huguenin and Colt, 1992).

Protein skimmers and sand filters are simple in their construction and require only electric pumps to operate. Their simplicity makes them a reliable means of filtration. The Brentwood biomedica allows water to pass through easily without trapping residual organic detritus, a major shortcoming of sand-bed filters.

The Giant Ocean Tank

This conservation project will improve environmental conditions for the 152 species (775 individuals) in the Giant Ocean Tank's *Caribbean Reef* exhibit. The GOT rises four stories and forms NEAq's central attraction. It has a total volume of 315,000 gallons: 200,000 in the exhibit and 115,000 in the life support system.

Visitors have a multi-level view from 52 large windows along a spiral walkway. The effect of this tank rising through the center of the Aquarium is stunning and accomplishes one of NEAq's primary goals: to engage people with the beauty and wonder of the aquatic world. Once we have captured the visitor's attention, we present information and promote conservation through interpretive exhibits and staff and volunteer educators. This combination of awe-inspiring living exhibits, written and graphic panels, and human contact allows the Aquarium to provide a meaningful experience for each of the more than 1.3 million people who visit every year.

The GOT's Living Collection

The GOT contains an elaborate replica of a coral reef from a simulated depth of 80 feet to the reef crest at the surface. The collection within the GOT is NEAq's largest and most diverse permanent exhibit. Some of the animals have lived in the GOT since the Aquarium opened in 1969, including one of our most valuable and popular specimens, a female green sea turtle who is about 60 years old and weighs more than 500 pounds.

The exhibit contains both reef-hugging and open water animals. With its caves, coral outcroppings and overhangs, the reef provides shelter for small reef fish such as wrasse and royal grammas so they may coexist with sharks, sea turtles, barracudas, and moray eels. Species rarely found in aquariums include African pompano and flat needlefish. Other tropical fishes in the exhibit include both large open water species such as tarpons and jacks, and reef species such as damselfishes, butterflyfishes, and hamlets. The animals thrive and reproduce in this recreated habitat.

Plans to ensure that normal museum operations are not disrupted

All of the work proposed here will take place far from both animals and visitors. The filters are in the basement of the building so that neither visitors nor most of the staff will see or hear the activity. The noisy concrete chipping will take place at night. As each filter is taken off-line for renovation, it will be isolated from the main life support system. There is redundancy in the system to sufficiently maintain water quality during the renovation. An emergency plan is in place to maintain safe dissolved oxygen levels, using air stones, should an active filter fail when another is offline being renovated.

3. PROJECT RESOURCES: TIME, PERSONNEL, BUDGET

Timeline

The proposed system improvements will take place over a 12-week period beginning in mid-2009. The schedule of completion is appropriate for this project based on our experience with the 2003 and 2008 renovations, the scope of which was almost identical to this project. The only unknown with all of these renovations is the condition of the concrete walls within the filters. This condition is something that we will not know until the old filters are emptied. Additional structural work of the concrete could create a slight delay and postpone installation. In a worse case scenario, it would delay the project by only two or three weeks.

Key Staff and Contractors

Aquarium personnel will serve primarily supervisory roles with minimal time commitment, while contractors perform the bulk of the work. Aquarium staff have extensive experience designing, specifying and installing complex life support systems with protein skimming technology. In early 2008, two filters for the Penguin exhibit were converted in exactly the same manner as the proposed project. This project was completed as planned, on time, and with expected results. These are normal responsibilities for the staff listed below.

The time commitments listed refer to the activities related to installation of equipment, start up and monitoring/evaluation.

Jim Duffey, NEAq Director of Planning. 20 hrs.

Mr. Duffey will serve as project manager, responsible for the budget and managing the contractor. He has been at NEAq for seven years, a period in which many capital projects have been completed, including the renovation and upgrade of four filter beds.

John Dayton, Director of Animal Husbandry. 10 hrs.

Mr. Dayton will monitor any affects on the collections and evaluate outcomes in terms of water quality and animal health. He has over 30 years of experience managing complex aquarium systems. He has overseen the design and installation of all new live animal exhibits and life support systems, including the recent filter renovations for the Penguin exhibit.

Chris Fernald, Facilities Director. 30 hrs.

Mr. Fernald has overseen the daily operations of NEAq's life support systems for more than 15 years. He will work with the contractor, monitor progress, handle logistics, and address problems. He will also supervise the NEAq staff mechanic (40 hrs) involved in the installation and start-up.

Thruston Wright, **Aquatic Life Support Systems, Inc.**

Contractor Aquatic Life Support Systems, Inc. has completed many projects at the New England Aquarium, most recently the installation of equipment in the conversion of the sand bed filters for our penguin exhibit. We have a signed contract for this project that includes an estimate of expenses and a list of equipment (see Letter of Commitment).

Budget

The total budget for this project is \$330,873 and covers the equipment, its installation, start up and monitoring. The largest portion is from an estimate from Aquatic Life Support Systems, Inc. listing equipment at \$247,000 and labor at \$80,000. Staff, fringe benefits, and overhead make up the rest. We are requesting \$150,000, representing 45% of the budget.

We will match this grant with staff time and cash that has already been identified from a state grant and the operating budget. The MA Cultural Facilities Fund (CFF) provided a grant pledge of \$455,000 for filter replacement. We put approximately half of this grant toward the Penguin filters. We will use the remaining funds to empty and repair filter-beds and for this proposed conservation project. The 2009 NEAq operating budget, which being currently being developed, will include funding for this project as well.

Because we have just completed a very similar project with the same contractor, we are confident that this budget is accurate.

4. IMPACT

Benefits to collection

The overall improvement in water quality and clarity that will result from the renovation of the GOT life support system will be dramatic. Ultimately, we expect to see pristine water quality throughout the day;

stabilized pH levels; dissolved oxygen reaching at least 95%; and an increase in total water turnover cycle from the current 100 minutes to 60 minutes, which will more quickly remove of waste products. This project, which is the final step in complete renovation, will have the following benefits to the animal collection:

- Further stabilization and improvement in exhibit water quality and clarity that was initiated in earlier projects. Improved water quality reduces the stress on animals that often leads to disease.
- Further improvement in dissolved oxygen levels through replacement of sand-bed filters (which consume large amounts of oxygen) and the addition of an efficient aeration system.
- Further stabilization of pH through replacement of sand-bed filters. Sand-bed filters are reservoirs of pH-reducing organic materials. Optimal exhibit pH should be kept above 8.0.
- Increased total water turnover through the exhibit. Increasing turnover will help improve the efficiency of filtration and improve water clarity by removing ‘dirty’ water more quickly from the exhibit.
- Reduction of nutrient levels that contribute to algae growth and bacterial blooms in the exhibit. Protein skimmers will contribute to the reduction of nutrients.
- Elimination of possible sources of pathogens harmful to collection, suspected in the sand bed filters.

Benefits to the New England Aquarium

Upgrading the filtration system will reduce the amount of maintenance required to keep the environment in optimal conditions. Divers will be able to reduce the frequency with which they clean windows and scrub algae off the reef, and pH levels will be easier to maintain. Staff will be freed up for other tasks. Potentially, animals will live longer, reducing the cost of replacements.

Benefits to audience

This upgrade will improve water clarity in the exhibit. Algae growth will decrease, making the exhibit more attractive and improving visibility.

Dissemination and products

The knowledge and experiences gained from this project will be disseminated to the museum community through presentations at conferences or other means of informal communication. No written products are planned other than reports required by IMLS.

The complete GOT renovation planned for 2010 will be highly publicized. There will be many opportunities to inform the public about each element in the renovation and the donors who make this important project possible.

New England Aquarium

Giant Ocean Tank Caribbean Reef Exhibit Life Support System Renovations

TASKS		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Aprx. budget allocation
Prior to Grant Period	Demolition and Repair Phase													\$0
	Isolate filters #9 and #10 from main system													
	Drain filters													
	Removal of sand/gravel media from filters													
	Install bypass piping on 12" header													
	Cut portal into filter #10 area													
	Implement concrete repairs													
	Cover walls with fiberglass panels													
	Install overhead lighting in filter #10 (dry area)													
	Core hole for sand filter intake into reservoir area													
IMLS Grant Period	Installation Phase													\$328,644
	Move in & position protein skimmers, pumps, filter													
	Make all plumbing connections within equipment bays													
	Construct framework for biomedica in 'sump' area													
	Install Brentwood biomedica onto frame in 'sump' area													
	Make plumbing connections from equipment bays to 'sump' area													
	Plumbing connections to main exhibit tanks headers													
	Bring electrical service to area													
	Install motor controllers													
	Install process control devices													
	Make electrical connections to pumps, controllers													
	Startup, Testing and Evaluation													\$2,230
	Fill 'sump' area reservoir with seawater													
	Test sand filter loop / filter seawater in reservoir													
	Open main header valves and test protein skimmers													
	Adjust system to achieve design flow rates													
	Adjust protein skimmers for proper foam characteristics													
	System operational													
	Monitor system operation for potential problems													
	Monitor water quality for potential problems													
Evaluate effectiveness in meeting project objectives														
Final Report														
Total Budget													\$330,874	

BUDGET FORM - PAGE FOUR

Section B: Summary Budget

	\$ IMLS	\$ Cost Share	\$ TOTAL COSTS
1. Salaries and Wages	0.00	2,865.00	2,865.00
2. Fringe Benefits	0.00	716.25	716.25
3. Consultant Fees	150,000.00	177,005.00	327,005.00
4. Travel			0.00
5. Supplies and Materials			0.00
6. Services			0.00
7. Student Support			0.00
8. Other Costs			0.00
TOTAL DIRECT COSTS (1–8)	150,000.00	180,586.25	330,586.25
9. Indirect Costs	0.00	286.60	286.60
TOTAL COSTS (Direct and Indirect)	150,000.00	180,872.85	330,872.85

Project Funding for the Entire Grant Period

1. Grant Funds Requested from IMLS	150,000.00
2. Cost Sharing:	
a. Cash Contribution	177,005.00
b. In-Kind Contribution	3,869.00
c. Other Federal Agencies*	
d. TOTAL COST SHARING	180,874.00
3. TOTAL PROJECT FUNDING (1+2d)	330,874.00
% of Total Costs Requested from IMLS	45.33%

* If funding has been requested from another federal agency, indicate the agency's name: