



Clara Barton House Rehabilitation Project
Environmental Assessment

Clara Barton National Historic Site

March 2015

PROJECT SUMMARY

Introduction

The National Park Service (NPS), Clara Barton National Historic Site (NHS) proposes to undertake rehabilitation efforts of the Clara Barton House, including installing fire suppression, fire alarm and detection systems, and a climate management system; and rehabilitating a failing metal roof. These proposed actions are the subject of this environmental assessment (EA). This EA demonstrates compliance with the National Environmental Policy Act of 1969 (NEPA), as amended.

Purpose of and Need for the Action

The purpose of the project is to preserve the historic house and the museum collections on exhibit and in museum storage by installing a fire suppression system, a climate management system, and by rehabilitating a failing metal roof in a manner that is consistent with the Secretary of the Interior's standards related to historic preservation.

Action is needed because the historic structure greatly exceeds building and fire code limitations for an unprotected wooden-framed structure and has an estimated "burn time" of only five to six minutes. The existing fire alarm and detection system in the house consists of smoke and heat detectors, manual pull stations, and audiovisual notification appliances that are no longer manufactured. The availability of spare components will become increasingly limited in the future.

The action is also needed because the existing hot water heating system is inadequate and inefficient. The hot water heating system is at the end of its 25-year life cycle, the exterior condensing unit supplies limited air conditioning for museum archival storage in the basement, and individual room air conditioners currently provide inadequate cooling. With the inadequate temperature and humidity control of the current hot water heating system, the historic wood structure and museum collections stored in the house are adversely affected. Additionally, the current system does not provide adequate mechanical ventilation, as required by the Maryland building code, for public tours and use of the historic house.

Lastly, the action is needed because the low-pitched metal roofs have experienced frequent failures from seasonal expansion and contraction, due to built-on-top roof gutters and lack of expansion joints, causing damage to the interior ceilings and walls. Portions of the existing wooden roof structure are rotting and the rafters are bowed by deflection causing the ponding of water and leaking. Furthermore, there is currently minimal insulation in the roof, exacerbating climate control problems within the house.

Overview of the Alternatives

The NPS explored and objectively evaluated a range of alternatives. One action alternative and the no action alternative were carried forward for further analysis.

- Alternative A: No Action
- Alternative B: Repair and Rehabilitate the Clara Barton House
 - Preservation of Historic Roof Structure – Alternative B includes preservation of the historic roof rafters and all ceilings below, modifications to the roof structure to comply with current building code load bearing capacity, insulation of the rafter cavity, providing a new roof deck, and replacing the standing seam metal roof in kind.

- Installation of a Fire Protection and Alarm System – Alternative B includes installation of a fire protection system with new wet-pipe sprinkler suppression capabilities and replacement of existing fire detection alarms.
- Installation of a Geothermal Climate Management System – Alternative B includes installation of a new climate management system that prevents damage from extreme temperature fluctuations, lack of ventilation, and high levels of humidity.

Summary of Impacts

Impacts of the proposed alternatives were assessed in accordance with the NEPA, NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making*, and the National Historic Preservation Act (NHPA). Several impact topics were dismissed from further analysis because the proposed action would result in no impacts or negligible to minor and/or short-term impacts to those resources. No major impacts are anticipated as a result of this project.

How to Comment

Agencies and the public are encouraged to review and comment on the contents of this EA during a 30-day public review and comment period. We invite you to comment on this document and you may do so by any one of following methods. The preferred method of providing comments is on the park's Planning, Environment and Public Comment (PEPC) website: <http://parkplanning.nps.gov/GWMP>. You may also submit written comments to the following address:

Superintendent
George Washington Memorial Parkway
Attn: Clara Barton House Rehabilitation Project
Turkey Run Headquarters
McLean, Virginia 22101

Only written comments will be accepted. Please submit your comments within 30 days of the posting of the notice of availability on PEPC. If you wish to remain anonymous, please clearly state that within your correspondence. However, before including your address, phone number, e-mail address, or other personal identifying information in your comment, please be aware that your entire comment - including your personal identifying information - may be made publicly available at any time. While you can request that your personal identifying information be withheld from public review, it cannot be guaranteed.

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Acronyms

ABA	Architectural Barriers Act of 1968
ABAAS	Architectural Barriers Act Accessibility Standard
ADA	Americans with Disabilities Act of 1990
ACHP	Advisory Council on Historic Preservation
APE	area of potential effect
BMP	best management practice
CBA	Choosing by Advantages
CEQ	Council on Environmental Quality
EA	environmental assessment
HVAC	heating, ventilating, and air conditioning
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NHS	national historic site
NPS	National Park Service
National Register	National Register of Historic Places
PEPC	Planning, Environment, and Public Comment
SHPO	state historic preservation office
THPO	tribal historic preservation officer

CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

INTRODUCTION

The National Park Service (NPS) is proposing a project to rehabilitate several sections of the Clara Barton House including installing fire suppression, fire alarm and detection systems, and a climate management system; and rehabilitating a failing metal roof. The Clara Barton House is part of the Clara Barton National Historic Site (NHS) located on 5801 Oxford Road, Glen Echo, Maryland, adjacent to the Clara Barton Parkway, Chesapeake and Ohio Canal, and Glen Echo Park. The Clara Barton NHS is managed by the George Washington Memorial Parkway. The project area is shown in figure 1-1.

The Clara Barton NHS commemorates the life and work of Clara Barton, an American humanitarian who was the founder of the American Red Cross. During a life of service, Miss Barton collected medical supplies for soldiers during the Civil War, risked her life on the battlefield to provide aid to the wounded at several important conflicts, and participated in relief efforts during the Franco-Prussian War, the Spanish American War in Cuba, and peacetime disasters such as the Johnstown Flood. Constructed in 1891, the site became the first permanent headquarters of the American Red Cross in 1897 and was used by them until 1904 (NPS 2004).

An environmental assessment (EA) analyzes the proposed action and alternatives and their impacts on the environment. This EA has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and implementing regulations, 40 CFR 1500–1508, and NPS Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* and Handbook (NPS 2011a; 2001). Compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, including consultation with the Maryland Historical Trust and preparation of the assessment of effect, is being closely coordinated with the EA but is being conducted separately.

PURPOSE OF AND NEED FOR ACTION

The purpose of the project is to preserve the historic house and the museum collections on exhibit and in museum storage by installing a fire suppression system, a climate management system, and by rehabilitating a failing metal roof in a manner that is consistent with the *Secretary of the Interior’s Standards for the Treatment of Historic Properties*.



FIGURE 1-1. CLARA BARTON HOUSE REHABILITATION PROJECT AREA

Action is needed for the following reasons:

- The historic structure greatly exceeds building and fire code limitations for an unprotected wooden-framed structure and has an estimated “burn time” of only five to six minutes. The existing fire alarm and detection system in the house consists of smoke and heat detectors, manual pull stations, and audiovisual notification appliances that are no longer manufactured. The availability of spare components will become increasingly limited in the future. Fire extinguishers are also available on-site.
- The existing hot water heating system is inadequate and inefficient. The hot water heating system is at the end of its 25-year life cycle, except for a new propane boiler installed in 2009. Cooling is provided to limited areas of the house by a central chilled water system. A split air-cooling condensing unit is located on the south of the house and rejects heat to the atmosphere. A chilled water supply pump and loop system in the basement supplies water to branch risers and water coils which pipe chilled water and air to the following rooms: the basement apartment living room on the southwest wall; the two offices on the southeast wall and exhibit room on the northwest wall on the first floor; and one office on the northwest wall and one office on the east corner of the second floor. The cooling system is past its useful life. With the inadequate temperature control and lack of humidity control, cooling, or mechanical ventilation of the current hot water heating system, the historic wood structure and museum collections displayed and stored in house are adversely affected. Additionally, the current system does not provide adequate ventilation required by building code for public tours and use of the historic house museum. There is no humidity control or ventilation system in the house. The existing systems are unable to maintain a constant temperature as the outside temperature fluctuates. (NPS 2004)
- The low-sloped metal roofs have experienced frequent failures from seasonal expansion and contraction, due to built-on-top roof gutters and lack of expansion joints, causing damage to the interior ceilings and walls. Portions of the existing wooden roof structure are rotting and the rafters are bowed by deflection causing the ponding of water and leaking. There is currently minimal insulation in the roof, exacerbating climate control problems within the house. Furthermore, the current roof condition suggests it will likely fail under a heavy snow load. During snow periods, NPS staff must perform manual snow load removal to mitigate the risk of roof collapse.

PROJECT BACKGROUND

The Clara Barton House was constructed in 1891; Ms. Barton moved into it in 1897 and was used by the American Red Cross until 1904. Congress declared the Clara Barton House a national historic landmark on January 12, 1965, and in 1974 passed legislation establishing the house and its grounds, which amounted to just over an acre of land, as the Clara Barton NHS (Public Law 93-486). The following year, in 1975, the NPS began administering the site

Since 1975, the building has undergone several subsequent periods of planning, design, and restoration. Today, multiple upgrades and repairs are needed to rehabilitate elements in the house that are either insufficient or nearing the ends of their useful life. Table 1.1 delineates a timeline for improvements, studies, and planning efforts at the house.

TABLE 1-1. PROJECT BACKGROUND

1891	Clara Barton House constructed.
1965	Clara Barton House declared a national historic landmark.
1974	Congress passes legislation establishing the house and its grounds as the Clara Barton NHS.
1975	NPS begins administering the Clara Barton House.
1979	Roof replacement including installation of standing metal seam roof complete.
1993	Glen Echo Park Utilities Services, Surveys, Evaluation and Investigations document prepared studying the utilities and services at the house.
1997	Physical History and Condition Assessment prepared by Oehrlein & Associates Architects. Document provides a technical evaluation of the structural, electrical, mechanical, and protection systems in the house.
2004	Historic Structures Report documents the historic repairs and condition of the house and identifies the insufficient layout of the heating system to provide capacity to the house. Also documents the cooling system as past its useful life.
2006	HVAC system replacement investigated and alternatives report prepared.
2008	Inventory and Analysis of Existing Water Distribution System and Electrical Site Utilities completed.
2012	Partial designs completed for fire suppression system and climate management system.
2013	Clara Barton House Rehabilitation Project and Environmental Assessment commences.

PURPOSE AND SIGNIFICANCE OF THE PARK

The Clara Barton NHS commemorates the life of Clara Barton, founder of the American Red Cross. The house in Glen Echo was constructed in 1891 and initially served as a warehouse for disaster relief supplies. Beginning in 1897, it also served as Miss Barton's home and the headquarters for the American Red Cross. From Glen Echo, she organized and directed American Red Cross relief efforts for victims of natural disasters and war until she resigned as president in 1904. Barton lived in the house until her death in 1912. The Clara Barton House was made a National Historic Landmark in 1965 and the Clara Barton NHS was established in 1974 by Congress to interpret the life of Clara Barton. Administration of the site by NPS started in 1975 (NPS 2011c).

RELATIONSHIP TO LAWS, EXECUTIVE ORDERS, POLICIES, AND OTHER PLANS

The NPS is governed by laws, regulations, and management plans before, during, and after any management action considered under any NEPA analysis. The following are applicable to the proposed action.

APPLICABLE STATE AND FEDERAL LAWS

National Environmental Policy Act of 1969, as Amended

NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation established this country's environmental policies, including the goal of achieving productive harmony between

human beings and the physical environment for present and future generations. It provided the tools to implement these goals by requiring that every federal agency prepare an in-depth study of the impacts of “major federal actions having a significant effect on the environment” and alternatives to those actions, and required that each agency make that information an integral part of its decisions. NEPA also requires that agencies make a diligent effort to involve the interested members of the public before making decisions that affect the environment.

Besides setting environmental planning policy goals, the Council on Environmental Quality (CEQ), an agency of the president’s office, was created to oversee the implementation of NEPA. The CEQ published NEPA regulations in 1978 (40 CFR 1500–1508). These regulations apply to all federal agencies. In them, the CEQ requires each federal agency to “implement procedures to make the NEPA process more useful to agency decision makers and the public” (40 CFR 1500.2). Agencies are to review and update these regulations as necessary. The NPS has, in turn, adopted procedures to comply with NEPA and the CEQ regulations, as found in Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2011a).

National Historic Preservation Act of 1966, as Amended

The NHPA of 1966, as amended (54 U.S.C. 300101 et seq.), protects buildings, sites, districts, structures, and objects that have significant scientific, historic, or cultural value. The act established affirmative responsibilities of federal agencies to preserve historic and prehistoric resources. Effects on properties that are listed in or eligible for the National Register of Historic Places (National Register) must be taken into account in planning and operations. Any property that may qualify for listing in the National Register must not be inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate.

Section 106 of the National Historic Preservation Act of 1966, as Amended

Section 106 of the NHPA, as amended (36 CFR 800) requires federal agencies to consider the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP), state historic preservation office (SHPO), and other consulting parties a reasonable opportunity to comment on such undertakings. Through this process, concerns associated with historic properties are addressed at the early stages of project planning. Overall, the objective of consultation is to identify historic properties potentially affected by the undertaking; assess the effects of the project on these properties; and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

Section 110 for the National Historic Preservation Act of 1966, as Amended

Section 110 of the NHPA, as amended (36 CFR 800.10) requires federal agencies to assume responsibility for historic properties owned or controlled by that agency and establish a preservation program. In addition, Section 110(f) requires the responsible federal agency to minimize harm to National Historic Landmarks and provide the Advisory Council on Historic Preservation the opportunity to comment on undertakings that may impact such properties. Special requirements for protecting National Historic Landmarks are provided in 36 CFR 800.10.

Archaeological Resources Protection Act of 1979

The Archeological Resources Protection Act was enacted in 1979. The act prohibits unauthorized excavation on federal and Indian lands, establishes standards for permissible excavation, prescribes civil and criminal penalties, requires agencies to identify archeological sites, and encourages cooperation between federal agencies and private individuals.

Historic Sites Act of 1935

This act declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It authorizes the Secretary of the Interior and NPS Director to restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archeological significance.

National Park Service Organic Act of 1916

By enacting the NPS Organic Act of 1916, Congress directed the U.S. Department of the Interior and the NPS to manage units “to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations” (16 USC 1). Despite this mandate, the Organic Act and its amendments afford the NPS latitude when making resource decisions that balance resource preservation and visitor recreation.

Because conservation remains predominant, the NPS seeks to avoid or minimize adverse impacts on park resources and values. However, the NPS has discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park (NPS 2006, Section 1.4.3). Although some actions and activities cause impacts, the NPS cannot allow an adverse impact that would constitute impairment of the affected resources and values (NPS 2006). The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for the acts (16 USC 1a-1). An action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2006). To determine impairment, the NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS 2006).

National Parks Omnibus Management Act of 1998

The National Parks Omnibus Management Act (16 USC 5901 et seq.) underscores NEPA and is fundamental to NPS park management decisions. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available and provide options for resource impact analysis, should this be the case.

The National Parks Omnibus Management Act directs the NPS to obtain scientific and technical information for analysis. The NPS Director’s Order 12 handbook states that if “such information cannot be obtained due to excessive cost or technical impossibility, the proposed alternative for decision would be modified to eliminate the action causing the unknown or uncertain impact, or other alternatives would be selected” (NPS 2001, Section 4.4).

Americans with Disabilities and Architectural Barriers Act Guidelines

Pursuant to the Americans with Disabilities Act of 1990 (ADA) and the Architectural Barriers Act of 1968 (ABA), all public buildings, structures, and facilities must comply with specific requirements related to architectural standards, policies, practices, and procedures that accommodate people with hearing, vision, or other disability; and other access requirements. Public facilities and places must remove barriers in existing buildings and landscapes, as necessary and where appropriate. The NPS must comply with the Architectural Barriers Act Accessibility Standard (ABAAS) as well as ADA standards for this project.

Redwood National Park Act of 1978, as Amended

All national park system units are to be managed and protected as parks, whether established as a recreation area, historic site, or any other designation. This act states that the NPS must conduct its actions in a manner that would ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.”

2012 International Building Code

Internationally, code officials recognize the need for a modern, up-to-date building code addressing the design and installation of building systems through requirements emphasizing performance. The International Building Code®, 2012 edition, is designed to meet the need for a modern, up-to-date building code addressing the design and installation of building systems through requirements emphasizing performance, through code regulations that safeguard the public health and safety in all communities, large and small. The comprehensive building code establishes minimum regulations for building systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new building designs.

Code of Maryland Regulation (26.17.01) for Erosion and Sediment Control

An erosion and sediment control plan would be prepared and implemented in accordance with *Maryland Erosion and Sediment Control Guidelines for State and Federal Projects* (MDE 2010). The plan would include resource protection measures that conform to *Maryland Standards and Specifications for Erosion and Sediment Control* (MDE 2011) and would be submitted to the Maryland Department of the Environment, Water Management Administration, for approval. Coverage under Maryland’s General Permit for Construction Activity would be obtained by submitting a Notice of Intent to the Maryland Department of the Environment.

EXECUTIVE ORDERS AND DIRECTOR’S ORDERS

Executive Order 11593, “Protection and Enhancement of the Cultural Environment”

This executive order directs the NPS to support the preservation of cultural properties and to identify and nominate to the National Register cultural properties in the park and to “exercise caution ... to assure that any NPS-owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered.”

Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making and Handbook

NPS Director’s Order 12 and its accompanying handbook (NPS 2001, 2011a) lay the groundwork for how the NPS complies with NEPA. Director’s Order 12 and the handbook set forth a planning process for incorporating scientific and technical information and establishing a solid administrative record for NPS projects.

Director’s Order 12 requires that impacts to park resources be analyzed in terms of their context, duration, and intensity. It is crucial for the public and decision makers to understand the implications of those impacts in the short and long term, cumulatively, and within context, based on understanding and interpretation by resource professionals and specialists. Director’s Order 12 also requires that an analysis of impairment to park resources and values be made as part of the NEPA document.

Director's Order 24: NPS Museum Collections Management

Director's Order 24 (NPS 2008c) and its accompanying *Museum Handbook* (NPS 1990) provides additional guidance, above the *NPS Management Policies 2006*, on policy, standards, and requirements for preserving, protection, documenting, providing access to, and use of, NPS museum collections. NPS museum collections are key resources for educators, students, researchers, park managers, park neighbors, and the general public. Accessibility of museum collections is a prime component of museum management.

Director's Order 28: Cultural Resource Management

Director's Order 28 (NPS 1998) calls for the NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the *NPS Management Policies 2006* (NPS 2006). This order also directs the NPS to comply with the substantive and procedural requirements described in the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*, the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Treatment of Cultural Landscapes*, and the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. Additionally, the NPS would comply with the 2008 NPS Programmatic Agreement with the ACHP and the National Conference of State Historic Preservation Officers (NPS 2008a). The accompanying handbook to this order addresses standards and requirements for research, planning, and stewardship of cultural resources, as well as the management of archeological resources, cultural landscapes, historic and prehistoric structures, museum objects, and ethnographic resources.

LOCAL PLANS

Comprehensive Plan for the National Capital: Federal Elements, 2004

In August 2004, the National Capital Planning Commission adopted the Comprehensive Plan for the National Capital: Federal Elements (NCPC 2004). The plan is a statement of goals, principles, and planning policies for the growth and development of the National Capital during the next 20 years. The plan encompasses all federal lands in Washington, D.C., and the surrounding areas, including Montgomery and Prince George's Counties in Maryland; Arlington, Fairfax, Loudoun, and Prince William Counties in Virginia; and all cities within the boundaries of those counties. The Comprehensive Plan for the National Capital includes federal elements that identify and address the current and future needs of federal employees and visitors to the Nation's Capital; provide policies for locating new federal facilities and maintaining existing ones; guide the placement and accommodation of foreign missions and international agencies; promote the preservation and enhancement of the region's natural resources and environment; protect historic resources and urban design features that contribute to the image and functioning of the Nation's Capital; and, working with local, state, and national authorities, support access into, out of, and around the Nation's Capital that is as efficient as possible for federal and nonfederal workers.

NATIONAL PARK SERVICE MANAGEMENT POLICIES 2006

The *NPS Management Policies 2006* (NPS 2006) is the basic NPS-wide policy document, adherence to which is mandatory unless specifically waived or modified by the NPS Director or certain departmental officials, including the U.S. Secretary of the Interior. Actions described in this EA are in part guided by these management policies. Sections that are particularly relevant to this project follow.

Section 5.3.1, Protection and Preservation of Cultural Resources

The NPS will endeavor to protect cultural resources against overuse, deterioration, environmental impacts, and other threats without compromising the integrity of cultural resources.

Section 5.3.5.1, Archeological Resources

The management of archeological resources will be managed in place unless the removal of artifacts or physical disturbance is justified by research, consultation, preservation, protection, or interpretive requirements.

Section 5.3.5.2, Cultural Landscapes

The treatment of cultural landscapes will preserve significant physical attributes, biotic systems, and uses when those uses contribute to historical significance. Treatment decisions will be based on a cultural landscape's historical significance over time, existing conditions, and use. The three types of treatment for cultural landscapes are preservation, rehabilitation, and restoration.

Section 5.3.5.4, Historic and Prehistoric Structures

The treatment of historic and prehistoric structures will be based on sound preservation practice to enable the long-term preservation of a structure's historic features, materials, and qualities. There are three types of treatment for extant structures: preservation, rehabilitation, and restoration.

Section 8.2.1, Visitor Carrying Capacity

The NPS will identify visitor carrying capacities for managing public use and will identify ways to monitor and address unacceptable impacts on park resources and visitor experiences.

Section 8.2.5.1, Visitor Safety

The NPS strives to protect human life and provide for injury-free visits. As a result, the NPS will apply national safety codes and standards to prevent injuries or recognizable threats to visitor safety and will reduce or remove known hazards. Examples of visitor safeguards include the installation of artificial lighting or paved walking surfaces.

RELATED PLANS AND STUDIES

Several studies have been conducted for Clara Barton House. These studies include the following:

- *Glen Echo Park, Utility Services Surveys, Evaluation and Investigations* (Grieves Worrall Wright and O'Hatnick 1993). The study included surveys, site analysis, and evaluation of heating and cooling loads for various buildings within Glen Echo Park, including Clara Barton House. Five different types of heating, ventilating, and air conditioning (HVAC) systems were evaluated. Based on a 25-year life cycle cost analysis, a variable air volume central unit with ice storage and a central plant was found to have the lowest first, energy, operating, and life cycle costs.
- Automatic Fire Suppression Systems, Title I Analysis (in NPS 2004). Three alternatives for a fire suppression system were examined: conventional fire suppression system, residential sprinkler system, and high-pressure mist system. The study recommended installation of either the conventional fire suppression system or high-pressure mist system.

- *Clara Barton National Historic Site Historic Structures Report* (NPS 2004). This is a collection of reports and documentation drawings produced between 1976 and 2002 as a three-volume set. Together the set presents the ever-increasing knowledge gained about the property and reflects the changes in NPS management of the site between the mid-1970s and early 2000s.
 - Volume 1, *Developmental History*, covers the development of the Red Cross House at Glen Echo, Maryland.
 - Volume 2, *Physical History and Condition Assessment*, records the condition of the building and recommends treatment for its preservation.
 - Volume 3, *Collection of Documentation. Investigation & Treatment Reports 1976-2002*, contains supplemental documents ranging from the first structural analysis of the building's framing system and the 2002 *Interior Finishes Analysis: Dr. Hubbell's Room and Clara Barton's Sitting Room* to drawings from the late 1970s for proposed restoration of the front facade and two sets of Historic American Building Survey records.
- *Clara Barton National Historic Site HVAC System Replacement, National Park Service, George Washington Memorial Parkway. Revised Subtask 0101 HVAC System Alternatives Report* (Henry Adams 2006). This report analyzed and compared two alternative HVAC systems for the Clara Barton House. The alternatives examined were: (1) variable air volume air-handling unit, located in the remote bunker, with cooling provided by a chilled water coil, chilled water pumps, and a remote air-cooled chiller; and (2) a similar variable air volume air-handling unit, also located in the remote bunker. However, alternative 2 would use a direct expansion-cooling coil and a remote air-cooled condenser to provide cooling. An electric-resistance heating coil would be installed in the air-handling unit to provide re-heating for humidity control.
- Schematic design alternatives were based on previous Arlington House design work. All alternatives involve a remote bunker with large air handler, and large diameter underground ducts under medium pressure to variable air volume boxes in the basement of Clara Barton House, and large low-pressure duct risers to first and second floors. Because the Washington Aqueduct precludes natural gas to the site, the proposed alternative heat sources were limited to fuel oil and propane. Air source heat pumps and electric reheat were ruled impractical for the size of the uninsulated house.
 - While Arlington House construction consists of masonry walls and heavy timber framing, NPS deemed the Arlington House Choosing by Advantages (CBA) session applicable to the rehabilitation of Clara Barton House. Arlington House designs were based on a conventional wet pipe fire suppression system. A dry pipe system has a time delay of up to 60 seconds for water discharge once a sprinkler head is opened by heat from fire, which for a flammable wood structure like Clara Barton House with an only 5-6 minute burn time could be disastrous. A dry pipe component requires high maintenance and air compressors which frequently generate noise that could disrupt museum interpretation.
- *The Inventory and Analysis of the Existing Water Distribution System and Electrical Site Utilities* (Dewberry 2008) found the domestic water line to the Clara Barton NHS lacks adequate water pressure and volume for a proposed fire suppression system. It also found that the NHS lacks an adequate electrical supply for a proposed climate management system. The study found an 8-inch water line in Oxford Street from the Washington Aqueduct at the site boundary with adequate water pressure and volume for the fire suppression system. The report listed different options for providing increased water pressure and volume to the NHS as well as alternatives for a new electric service of increased capacity to support a proposed new climate management system.
- *Clara Barton National Historic Site Collections Management Plan* (NPS 2008b). The Collections Management Plan was created to assist NPS staff in the identification of problematic collections

management issues and in the identification of solutions on a short-term and long-term basis for the day-to-day preservation, protection, use, staffing, and funding of collections management.

- *Design Fire Suppression System, Water & Electrical Upgrades, and Climate Management System Report of Findings Geothermal Well Point Test, Analysis and Field Layout* (NPS 2012). The study included a geothermal test well. The proposed climate management system uses high-velocity air handlers in the basement with small-diameter piping following fire suppression system piping in closets on the first and second floors. The geothermal field would be large and the number of geothermal pumps, heat pump, and air pump to be located in the basement would be high due to the total lack of insulation and high air infiltration rate of the historic structure. The overall size of the climate management system could be reduced by up to one-third if the roof were insulated. Because the low-sloped roofs of the structure have leaked for years and the NPS had planned on roof repair and rehabilitation, the NPS decided to include roof insulation or replacement in the scope of work.
- *Clara Barton House Rehabilitation Project Final Roof Replacement Concepts* (NPS 2014a). The report outlined three feasible options for strengthening the existing low-sloped roof at Clara Barton NHS in order to bring its load-carrying capacity and stiffness up to current International Building Code requirements. The options are also intended to maintain the historic character of the house to the greatest extent possible.
- *Value Analysis Study for Clara Barton House Rehabilitation Project, Roof Design Concepts* (Kirk Value Planners 2014). A value analysis workshop was held on March 6, 2014, to examine the three roof replacement options outlined in the *Clara Barton House Rehabilitation Project Final Roof Replacement Concepts* (NPS 2014a). The purposes of the VA Workshop were (1) to develop a roof rehabilitation preferred alternative through team consensus using the CBA evaluation method (natural resources, cultural resources, management and other perspectives will all be considered); (2) seek ideas to help maximize the value improvements of the project; (3) review and discuss other key focus areas of the project; and (4) evaluate other factors including insulating the roofs to reduce summer heat gain and reduce winter heat loss, which could reduce the size of the climate management system in basement as well as the number of well points in geothermal field by up to 30 percent. The value analysis workshop report included recommendations for the roof design concepts at Clara Barton House.

SCOPING

NEPA regulations require an “early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.” To determine the scope of issues to be analyzed in depth in this EA, meetings were conducted with park staff and the public.

INTERNAL SCOPING

On July 18, 2013, park staff members held an internal meeting with the NPS and the consultant team to identify key issues and potential impact topics and to discuss alternatives. Alternatives were developed and refined by the project team using the input from public scoping, discussed below, at a value analysis workshop on March 6, 2014. The value analysis workshop, led by a value analysis technical expert, focused on choosing a “preferred” alternative for rehabilitating the failing metal roof by using CBA.

PUBLIC SCOPING

In addition to internal and agency scoping, public scoping for the Clara Barton House Rehabilitation Project EA began December 3, 2013, and concluded January 3, 2014. Notice of the public scoping period

was posted on the Planning, Environment, and Public Comment (PEPC) website. A public scoping meeting was held on December 4, 2013, at Glen Echo Park, Glen Echo, Maryland, in the Arcade Building from 6:00 p.m. to 8:00 p.m. Notice for the public meeting was also posted on the PEPC website. The purpose of this meeting was to solicit public input on the purpose, need, and objectives of the project, major issues, and potential alternatives. This meeting served to satisfy the public involvement requirements under Section 106 of the NHPA. One person attended the meeting.

At the public meeting and during the 30-day public scoping period, NPS received two comments from the public via the PEPC website regarding the proposed action. Both commenters expressed their support for the proposed rehabilitation. One commenter expressed concern about the lack of a fire suppression system.

ISSUES AND IMPACT TOPICS

Issues describe problems or concerns associated with current impacts from environmental conditions or current operations as well as problems that may arise from the implementation of any of the alternatives. Park staff identified potential issues associated with the rehabilitation of the Clara Barton House during internal scoping. The issues and concerns identified during scoping were grouped into impact topics that are discussed in “Chapter 3: Affected Environment” and are analyzed in “Chapter 4: Environmental Consequences.”

IMPACT TOPICS ANALYZED IN THIS ENVIRONMENTAL ASSESSMENT

CULTURAL RESOURCES

The NHPA, as amended (16 USC 470 et seq.), NEPA, NPS Organic Act, *NPS Management Policies 2006* (NPS 2006), Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2011a), and Director’s Order 28: *Cultural Resource Management* (NPS 1998a) require the consideration of impacts to any cultural resources that might be affected and are either listed, or eligible to be listed in the National Register.

As defined by the NPS-28 Cultural Resource Management Guidelines (NPS 1998b), cultural resources are aspects of a cultural system that are valued by or significantly representative of a culture or that contain significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register, and as archeological resources, cultural landscapes, structures, museum objects (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens), and ethnographic resources for NPS management purposes. As a result of potential impacts to historic districts and structures, cultural landscapes, archeological resources, and museum collections, these resources have been carried forward for analysis.

Historic Districts and Structures

The NHPA, NEPA, NPS 1916 Organic Act, *NPS Management Policies 2006*, Director’s Order 12 and Director’s Order 28 require the consideration of impacts on any cultural resources that that might be affected and are either listed, or eligible to be listed in the National Register. The Clara Barton House was listed as a National Historic Landmark in 1965. By virtue of its listing as a National Historic Landmark, the Clara Barton House was automatically added to the National Register following the passage of the NHPA. The first National Register inventory form was completed in 1972 and an update followed in

1980. The latter identified the Clara Barton NHS as nationally significant based upon its association with the life and work of Clara Barton, the American Red Cross, and the 53rd National Chautauqua of Glen Echo.

The Clara Barton House falls within the geographic boundary of the George Washington Memorial Parkway historic district. However, the relationship is purely geographic and the house is not considered an element of the historic district; the house and the district represent different historic themes and therefore are not connected. The contributing elements of the George Washington Memorial Parkway historic district are located a sufficient distance away from the proposed project and the district will not be impacted. As a result, historic districts are not analyzed in this EA.

The series of projects in the proposed action include elements of repair and rehabilitation and must be carried out in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and NPS preservation briefs, which provide guidance on preserving, rehabilitating historic buildings. The projects also constitute an undertaking with regard to Section 106 of NHPA. As a result of the potential impacts of the proposed projects on historic structures, specifically the Clara Barton House itself, historic structures are analyzed in this EA.

Cultural Landscapes

According to NPS-28, *Cultural Resources Management Guideline*, a cultural landscape is

...a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

The Clara Barton House is part of the Glen Echo Park-Clara Barton House Cultural Landscape (NPS 2011b). The cultural landscape comprises two contiguous national park system units: Glen Echo Park and the Clara Barton NHS. Administratively, the Clara Barton NHS is an independent NPS holding and Glen Echo Park is under the jurisdiction of the George Washington Memorial Parkway (NPS 2011b). There is the potential for impacts on the cultural landscape during exterior renovation and repairs to the Clara Barton House and therefore, this topic has been carried forward for analysis.

Archeological Resources

The primary source for archeological resources is the Archeological Sites Information Management System, a database maintained by the NPS for registration and management of archeological resources. The archeological investigation around the Clara Barton House has been limited to the side yard around the driveway. These surveys have identified one archeological site (18MO154) that consists of historic materials related to the construction of the Clara Barton House and prehistoric lithic artifacts, including an Archaic period projectile point. This site has not been evaluated for eligibility for listing in the National Register but is considered potentially eligible pending additional research. Given the potential for archeological resources to be negatively impacted by ground disturbance, in particular, the utility trench, this resource topic has been carried forward for analysis.

Museum Objects

The NPS legal mandate for acquiring and preserving museum collections is contained in the Antiquities Act of 1906 (16 USC 431-433); the Organic Act of 1916 (16 USC 1 et seq.); the Historic Sites Act of

1935 (16 USC 461-467); the Management of Museum Properties Act of 1955, as amended (16 USC 18f); the Reservoir Salvage Act of 1960, as amended (16 USC 469-469c); the Archeological and Historic Preservation Act of 1974 (16 USC 469-469c); the NHPA, as amended (16 USC 470-470t, Sec. 110); the Archaeological Resources Protection Act of 1979 (16 USC 470aa-mm); the National Parks Omnibus Management Act of 1998 (16 USC 5901), the NPS Museum Handbook Parts I and II; and the Department of the Interior Departmental Manual (411 DM, Volume 1) Museum Property Handbook.

The Clara Barton NHS maintains an extensive collection of items that are original to the structure or are period pieces that have been obtained to provide interpretation of Clara Barton's life and efforts, and the American Red Cross. A total of 3,300 artifacts are housed in the Clara Barton NHS, many of which can be directly tied to Clara Barton herself (NPS 2008b). The site is accredited by the American Alliance of Museums (NPS 2008b). Given the current state of the house infrastructure and the proposed renovations, there is the potential for impacts to the museum collections. Therefore, this resource topic has been carried forward for analysis.

SOILS

Soils located in the side yard area of Clara Barton House would be impacted from the installation of geothermal wells and piping for the wells as part of the climate control system. The area was a parking lot from the 1940s to early 1980s but was filled in with up to 4 feet of fill to achieve the grassy area that is currently present (Saraira pers. comm. 2014). Constructing the wells would require drilling of up to 350 feet. Approximately 22,000 square feet of soils in the grassed area adjacent to the house would be disturbed as a result of construction of the well field for the climate control system. As a result, this resource area has been carried forward for analysis.

VISITOR USE AND EXPERIENCE

The rehabilitation of certain elements of Clara Barton House would result in impacts on visitor use and experience. The lack of climate control has impacted the historic fabric of the building and museum collections and impacts the comfort levels of visiting members of the public. Prior to the initiation of the fire suppression system and roof rehabilitation projects, the Clara Barton House museum collections would be safely moved to secure storage. The duration of these projects is expected to be approximately two years. Additionally, the Clara Barton House would be closed during the construction period. Moving the museum collections out of the house and closing the house to visitors could impact overall visitor use and experience of the Clara Barton NHS. As a result of potential impacts on visitor use and experience that could occur from both the no action and action alternatives, this resource topic has been carried forward for analysis.

HUMAN HEALTH AND SAFETY

Although the Clara Barton House has fire safety measures in place that adequately protect visitors and staff, the rehabilitation of Clara Barton House would improve the current fire detection and alarm system. A new fire suppression system would provide protection for the means of egress and greatly improve the chance of exiting in case of a fire. In addition, repairing the leaking, low-sloped metal roof would reduce the roof's susceptibility to collapse from heavy snow loads and reduce the need for NPS staff to manually remove snow, which could result in impacts on public safety, as well as staff safety. As a result, the topic of human health and safety has been carried forward for analysis.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

The following impact topics were eliminated from further analysis in this EA. A brief rationale for dismissal is provided for each topic. Potential impacts to these resources would be none or negligible, localized, and most likely immeasurable.

GEOLOGY, GEOLOGIC HAZARDS, AND TOPOGRAPHY

There are no known geohazards located within the proposed project area. Construction of the geothermal wells would require drilling 6-inch diameter wells; however, it would not result in alternations to geological or topographical resources. As a result, these topics were dismissed from further analysis.

WATER QUALITY

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; enhance the quality of water resources; and prevent, control, and abate water pollution. The NPS *Management Policies 2006* provides direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries. The NPS seeks to restore, maintain, and enhance the water quality within the parks consistent with the 1972 Federal Water Pollution Control Act, as amended, and other applicable federal, state, and local laws and regulations. There are no surface waters within the project area. Additionally, the project will meet Maryland standards for soil and erosion control during construction. Therefore this impact topic was dismissed from further analysis.

AIR QUALITY

The 1963 Clean Air Act, as amended (42 USC 7401 et seq.), requires federal land managers to protect air quality in national parks. The project site is located in the Washington Metropolitan Area nonattainment zone for ozone. During rehabilitation, local air quality would be temporarily affected by dust and construction vehicle emissions. Overall, there would be a slight and temporary degradation of local air quality due to dust generated from rehabilitation activities, but these effects would be localized and negligible. The current level of air quality at the park would not be affected by the proposed project; therefore, this impact topic was dismissed from further analysis.

FLOODPLAINS

Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and the potential risk involved in placing facilities within floodplains. The NPS *Management Policies 2006*, Section 4.6.4, Floodplains, and NPS Director's Order 77-2: *Floodplain Management Guidelines* (NPS 2003) provide guidelines for development proposed in floodplains. The Clara Barton House is not within a designated floodplain; therefore, this impact topic was dismissed from further analysis.

VEGETATION

Vegetation within the project area is composed of grass around the parking area and in the yard, various deciduous trees surrounding the property, and shrubbery. There is no existing rare or unusual vegetation. Vegetation, mainly grass, may be impacted by the installation of the climate management system, but the impacts would be negligible. Areas of grass removed for the installation of the geothermal wells would be replaced after construction.

Trees greater than 3 inches diameter-at-breast-height (dbh) will be enclosed with protective fencing to prevent equipment damage to the cambium. Any damaged shrubs will be replanted with local genotype replacement plants purchased and installed by the contractor, as directed by George Washington Memorial Parkway natural resource management staff.

All wheeled equipment and tools used for soil disturbing activities (such as shovels, trenching tools, etc.) will be power-washed to remove all soil and seed material prior to arriving on NPS lands. Equipment will be inspected by George Washington Memorial Parkway natural resource management staff for soil and seed material before work may commence. If equipment leaves the NPS work site and returns, it will be re-inspected by George Washington Memorial Parkway natural resource management staff before work can commence.

In addition, impacts would be limited to the rehabilitation efforts and mitigated by replanting disturbed grass areas. Due to the negligible impacts to vegetation, this topic was dismissed from further analysis.

WILDLIFE

The project area is in a residential suburban setting with frequent visitor and resident activity. It is adjacent to heavily used roads with attendant vehicle noise. As a result, wildlife in the project area is limited to adapted urban species, such as squirrels, songbirds, and deer. Although construction-related activities may temporarily displace wildlife from the area, the proposed action would not result in greater than negligible effects on wildlife or wildlife habitat. Due to the area's suburban context, level of human activity, and minimal habitat value, this topic was dismissed from further analysis.

RARE, THREATENED, AND ENDANGERED SPECIES

Because the proposed actions would take place within the Clara Barton House and its adjacent side yard and parking area, no rare, threatened, or endangered species or known habitat would be impacted. Therefore, this impact topic was dismissed from further analysis.

ETHNOGRAPHIC RESOURCES

Ethnographic resources are defined by the NPS as any "site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence or other significance in the cultural system of a group traditionally associated with it" (NPS 1998b). In this analysis, the NPS term "ethnographic resource" is equivalent to the term "traditional cultural property" which is more widely used in cultural resource management. Guidance for the identification of ethnographic resources is found in National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998). The key considerations in identifying Traditional Cultural Properties are their association with cultural practices or beliefs of a living community that are rooted in the community's history and are important in maintaining the continuing cultural identity of the community (Parker and King 1998). Based on current information at the park and the best professional opinion of park staff, there are no known ethnographic resources in the area of potential effect (APE) that would be affected by the reconstruction and rehabilitation activities. Therefore, this impact was dismissed from further analysis.

ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This order directs agencies to address environmental and human health conditions in minority and low-income communities to avoid

the disproportionate placement of adverse effects from federal policies and actions on these populations. Local residents may include low-income populations, but these populations would not be particularly or disproportionately affected by activities associated with the rehabilitation of the Clara Barton House; therefore, this impact topic was dismissed from further analysis.

PARK MANAGEMENT AND OPERATIONS

The rehabilitation of Clara Barton House would involve the closure of Clara Barton House during the construction period, potentially impacting park operations and management. Additionally, the proposed climate management system could result in improved heating efficiency and increased temperature and humidity control, which would help with the protection and management of historic and museum resources. The proposed new roof structure would reduce the need for snow removal and lessen the potential for leaks and the resulting damage and repair to interior walls and historic resources. The resulting impacts, beneficial and adverse, would be negligible and as a result this impact topic was dismissed from further analysis.

CHAPTER 2: ALTERNATIVES

INTRODUCTION

The National Environmental Policy Act (NEPA) requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for the action. The alternatives under consideration must include a “no action” alternative as prescribed by Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1502.14).

The alternatives analyzed in this document, in accordance with NEPA, are based on preliminary design and the result of internal scoping and public scoping. These alternatives, described in this section, meet the overall purpose of and need for action. Alternatives that were considered but were not technically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts to cultural or natural resources, and/or conflicted with the overall management of the park or its resources were dismissed from further analysis and are also described in this chapter.

The National Park Service (NPS) explored and objectively evaluated a range of alternatives. One action alternative and the no action alternative were carried forward for further analysis.

- Alternative A: No Action
- Alternative B: Repair and Rehabilitate the Clara Barton House
 - Preservation of Historic Roof Structure – Alternative B includes preservation of the historic roof rafters and all ceilings below, modifications to the roof structure to comply with current building code load-bearing capacity, insulation of the rafter cavity, providing a new roof deck, and replacing the standing seam metal roof in kind.
 - Installation of a Fire Protection and Alarm System – Alternative B includes installation of a fire protection system with new wet-pipe sprinkler suppression capabilities and replacement of existing fire detection alarms.
 - Installation of a Geothermal Climate Management System – Alternative B includes installation of a new climate management system that prevents damage from extreme temperature fluctuations, lack of ventilation, and high levels of humidity.

Alternative B is based on preliminary designs and information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternatives are estimated based on good engineering practice and may change during the actual design. If changes during any approved design are not consistent with the intent and effects of the selected alternative, additional compliance may be required prior to project implementation to ensure that NEPA guidelines are met.

DESCRIPTIONS OF ALTERNATIVES

ALTERNATIVE A: NO ACTION

Alternative A, the no action alternative, is the continuation of current management of the Clara Barton House. It does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The no action alternative provides a baseline of existing conditions and actions and provides a basis for evaluating the changes and impacts of the action alternatives. If the no

action alternative were selected, the NPS would respond to future needs and conditions without substantial action or policy change.

Under alternative A, exterior and interior rehabilitation and repair of the Clara Barton House would not occur, installation of a new fire suppression system, construction of a climate management system, and rehabilitation of the failing metal roof would not occur.

Current fire management and suppression include a fire alarm system consisting of manual pull stations, bells, and smoke detectors throughout the building. The house is not currently protected with an automatic fire sprinkler system. (NPS 2004)

Climate control in the house includes a heating and cooling system. The building is heated by a single oil-fired sectional induced-draft hot water boiler (H.B. Smith, Model 2500L with Carlin Model 301 CRD burner) in a separate freestanding shed located near the northwest site boundary. The hot water produced from this boiler is pumped underground to the house where it extends to various heating terminal devices containing a hot water coil. The existing hot water heating system is inadequate and inefficient. The hot water heating system is at the end of its 25-year life cycle, except for a new propane boiler installed in 2009. Various heating terminal devices are scattered throughout the basement, first, and second floors. Cooling is provided to limited areas of the house by a small water chiller, condensing unit, and individual room air conditioners. A split air-cooling condensing unit is located on the south of the house and rejects heat to the atmosphere. A chilled water supply pump and loop system in the basement supplies water to branch risers and water coils which pipe chilled water and air to the following rooms: the basement apartment living room on the southwest wall; the two offices on the southeast wall and exhibit room on the northwest wall on the first floor; and one office on the northwest wall and one office on the east corner of the second floor. The cooling system is past its useful life. (NPS 2004)

Water damage from roof leaks and lack of temperature and humidity control would continue to further impact the historic fabric of the building and present difficulties in preserving the museum collections. In addition, the lack of a mechanical ventilation system required by building code for public assembly and use, creates conditions conducive to growth of mold in the historic house. Normal, but limited levels of maintenance would continue at the Clara Barton National Historic Site (NHS). It would be inadequate to prevent further deterioration from water damage and temperature and humidity fluctuations (figure 2-1).

Under the no action alternative, the Clara Barton House would continue to exceed building and fire code limitations for an unprotected wooden-framed structure. The existing fire alarm and detection system would remain in place and it will be difficult to acquire spare components, which are no longer manufactured.

ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Water damage and lack of temperature control and fluctuating relative humidity over the years have impacted the historic fabric of the Clara Barton House, affecting both the interior and exterior of the house. The house receives more than 20,000 visitors annually and the public rooms are furnished with period pieces and artifacts from Clara Barton's life (NPS 2014b). Comments, though not formal complaints, have been made about too much heat in the summer months, too little heat in the colder months, and high humidity levels.

Alternative B proposes multiple improvements to replace the low-pitched metal roof, install a new fire suppression system, and install a climate control system. All work on the interior and exterior of the house would be conducted in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.



*Existing condition of plaster ceiling below metal roof
(Room 211, Dr. Hubbell's Bedroom)*



*Lack of expansion joints on low-sloped roof results in frequent failures
(Southeast Side)*



*Existing conditions of muslin ceiling
(Room 303, Bedroom)*



*Clerestory windows on the third level restrict roof rehabilitation options
(Room 202, Hall)*

FIGURE 2-1. EXISTING ROOF CONDITIONS UNDER THE NO ACTION ALTERNATIVE

It is expected that the roof rehabilitation projects and fire suppression system installation would be accomplished before the climate management system for the house could be installed. Construction activities related to the fire suppression system and roof rehabilitation projects are expected to last approximately one year and replacing the climate management system is expected to last another year, for a total of two years. During this time, the Clara Barton House would be closed to the public. The section below describes the proposed repair and rehabilitation components.

Preservation of Historic Roof Structure

The failing, low-sloped metal roofs would be replaced in kind (figure 2-2). The roof rehabilitation would seek to address three issues:

- Strengthen and/or replace the low-sloped roof, rafters, and roof deck to meet the loading requirements of the 2012 International Building Code (International Code Council 2011). The low-sloped roof has not been upgraded since its original construction and currently does not have adequate strength to support design snow loads per the International Building Codes associated with the location of the house, and the profile of the high- and low-sloped roof elevations.
- Provide insulation in the low-sloped roof rafter cavity so that a new climate management system can effectively operate in the house. Currently, the roof is not insulated and has no thermal barrier to restrict heat loss in winter or heat gain in summer.
- Replace the extent standing seam/flat seam tin coated steel roof system and all associated flashing, rain diverters, downspouts, underlayment, etc., in kind with new zinc/tin alloy coated field formed and finished metal roof system.

This alternative would preserve the existing roof rafters and would maintain the interior finishes while reinforcing the roof with new structural members. This alternative involves strengthening the roof by installing new wood rafters in between the existing wood rafters. The existing wood rafters and ceiling finishes would remain in place. Existing damaged rafters would be repaired or replaced in kind (figures 2-3 and 2-4). New rafters would provide structural support for the new roof. The existing metal roof system and wood plank sheathing would be replaced with new 3/4-inch plywood sheathing and new standing/flat seam metal roof system. Insulation would be placed between the new and existing rafters. The new rafters would be designed as sawn lumber members, consisting of solid wood timbers or engineered lumber, resulting in a final roof thickness approximately the same thickness as the existing roof system. The existing roof slope would be maintained.

This alternative requires shoring below of the existing plaster ceiling at the start of the operation in order to ensure that the integrity of the ceiling is maintained during construction. After shoring is in place, the existing metal roof and 1-inch wood sheathing would be removed and the new framing members would be installed. The end connections would need to be verified and possibly upgraded to ensure adequate support for the new rafters. It is also likely that there is extensive deterioration in the existing rafters projecting past the exterior wall plate due to long-term persistent leaks in the roof, specifically at the southeast area of the low-slope roof. The damaged portions of the existing rafters would be removed at the overhang and a new wood member spliced onto the existing roof rafter. The intent is to install the new wood rafters so that the top of the member sits at approximately 1/2-inch minimum above the top of the existing rafters at their ends, or highest elevation. This elevation is intended to ensure that these new members will relieve the existing rafters of any roof loading, such that the existing rafters will support only the ceiling itself.

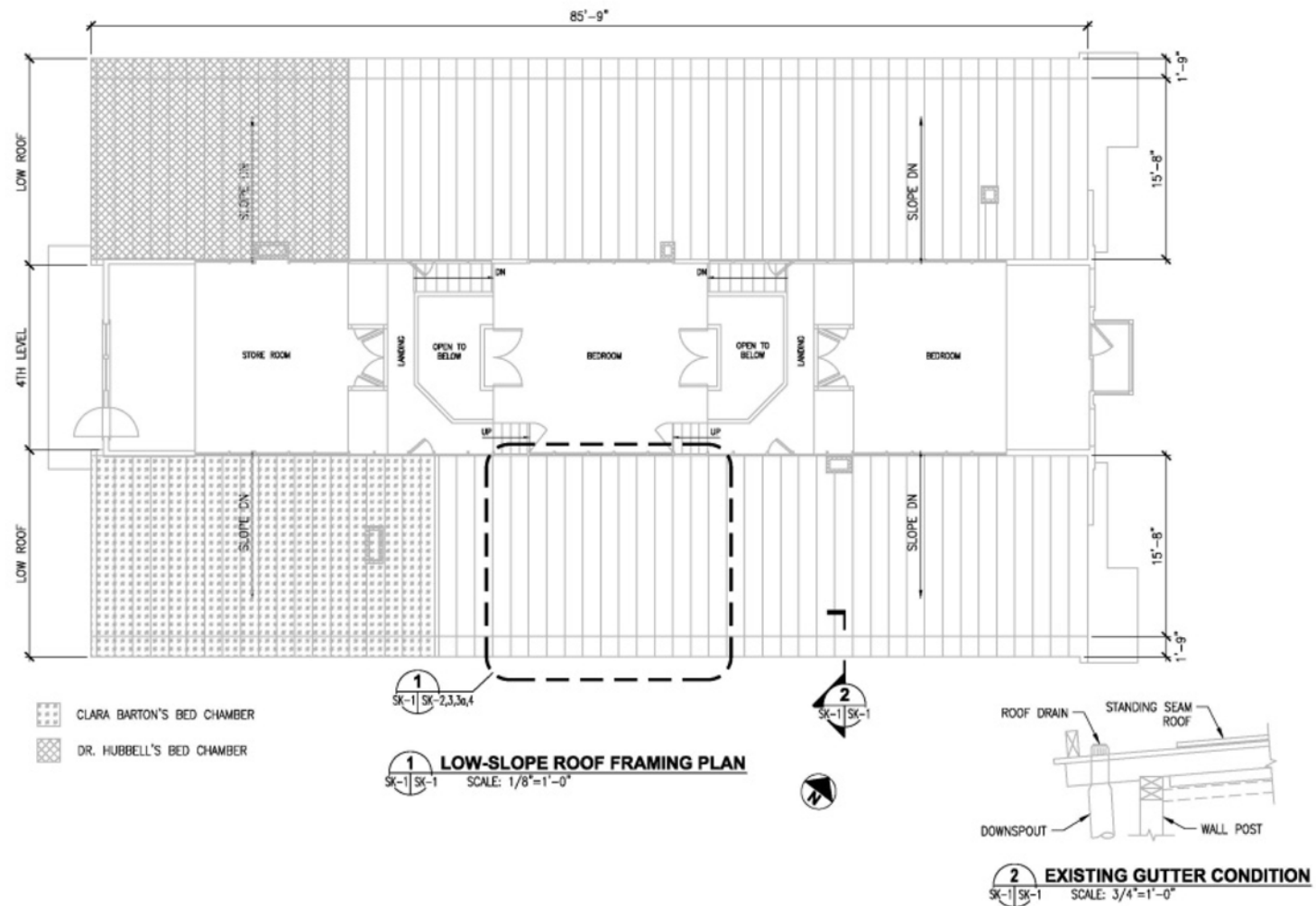


FIGURE 2-2. EXISTING CONDITION OF ROOF

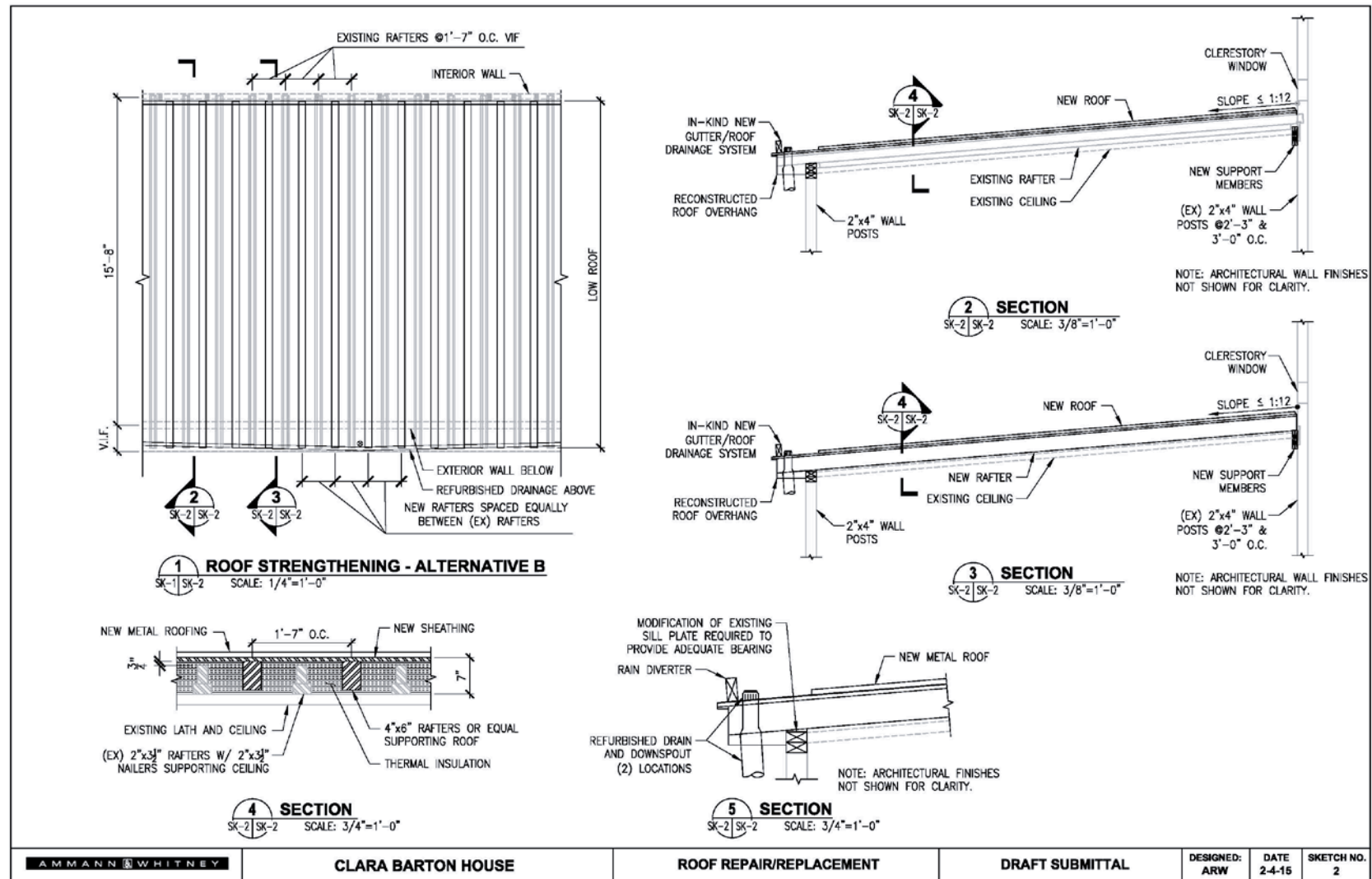


FIGURE 2-3. ROOF STRENGTHENING

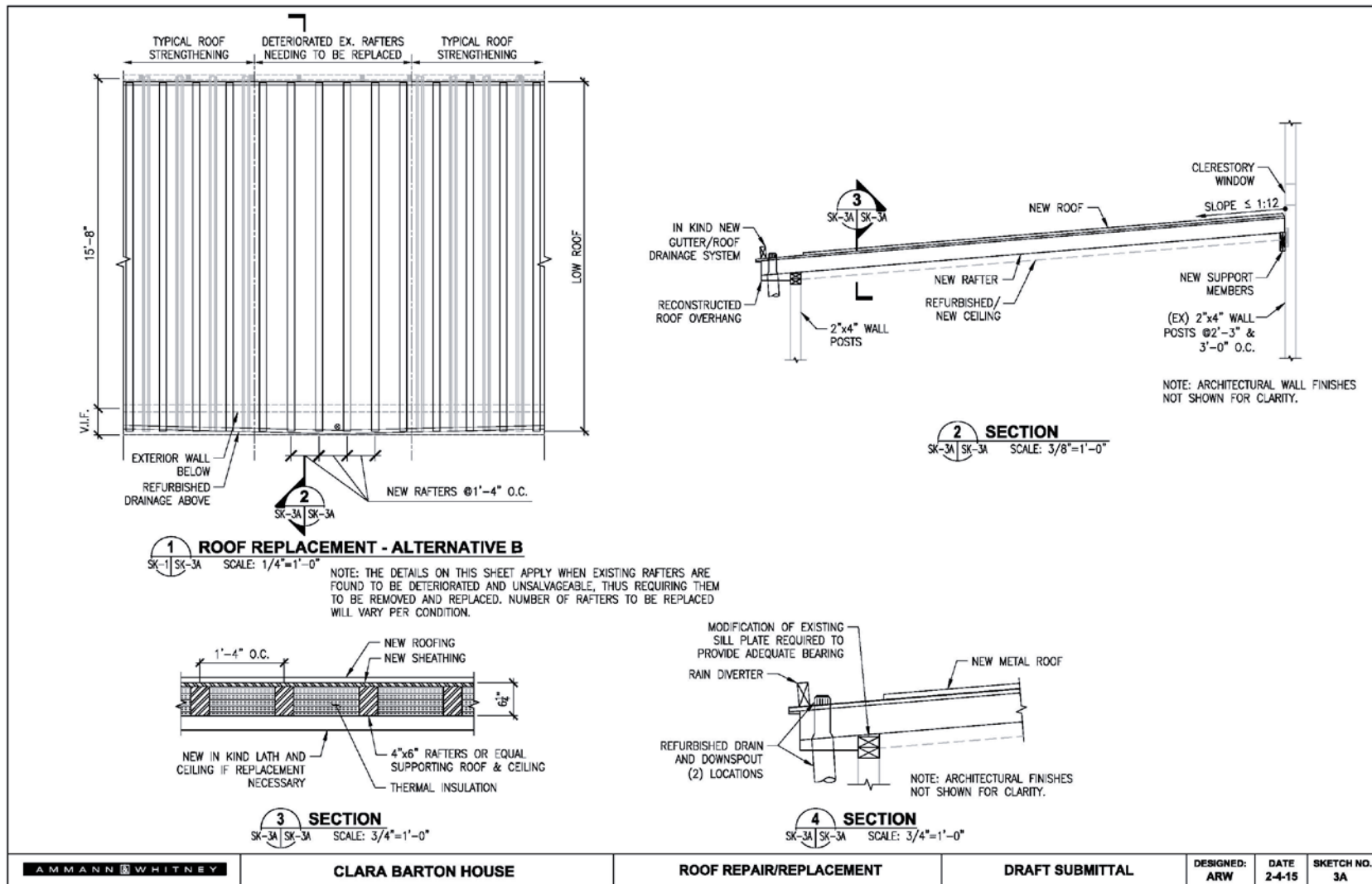


FIGURE 2-4. ROOF REPLACEMENT

New Fire Suppression and Replacement Fire Alarm System

The proposed fire protection system includes a new wet-pipe sprinkler suppression system and replacement of an existing fire detection and alarm system. Installation of a fire protection system would help the Clara Barton House meet building and fire code limitations for an unprotected wooden-framed structure. A new fire suppression system would also allow more time for visitors and park personnel to safely exit the structure, as well as more time for local firefighters to arrive and extinguish the fire.

The fire suppression system would include a complete automatic sprinkler system with use of multiple small diameter risers to minimize horizontal distribution lines on the first and second floors and short dry-pipe extensions to the front porch and unheated central attics. The system would include piping, water flow alarm switches, valve supervisory switches, check valves, control valves, piping, hangers, sprinklers, and associated equipment. All sprinkler pipes within the building would be concealed, with the exception of the third floor, where it is not physically feasible. Specifically, lateral sprinkler pipes on the ground floor would be concealed with a soffit system, lateral sprinkler pipes on the first floor would be concealed between the ceiling joists, and lateral risers would be channeled into the walls. Consistent with the *Secretary of Interior's Standards for the Treatment of Historic Properties*, the new soffits would only be placed in areas of low historic sensitivity to avoid adding new features within historically significant areas.

A new fire detection and alarm system would be installed throughout the Clara Barton House. All ceiling and wall-mounted alarms would be coordinated and placed near the sprinkler pipe to minimize disturbance to the interior finishes. Fire alarm conduit and cabling would be routed along the same path as the sprinkler piping to minimize disturbance to the ceilings and walls. The existing fire alarm and detection system in the house, consisting of smoke and heat detectors, manual pull stations, and audiovisual notification appliances, would be removed.

The fire suppression system would require installation of a new 6-inch diameter ductile iron pipe waterline in the existing 36-inch-wide utility trench (figure 2-5). The water line would be placed in the trench below the geothermal pipes (figure 2-6). A temporary construction entrance and staging area would be located in a regraded, grassed area adjacent to Clara Barton House (figure 2-5).

New Climate Control System

Installation of a geothermal climate management system would prevent further damage from extreme temperature fluctuations, lack of ventilation, and high levels of humidity. Currently the house does not have central air conditioning and is subject to severe heat and humidity in the summer months. Individual air conditioning units are currently used and would be removed when the new climate control system is in place. The existing hot water heating system would be removed, including historic radiators, the remote boiler located in a non-historic shed and aboveground propane tanks.

Elements of the new geothermal climate control system would include installation of mechanical equipment, wiring, ductwork, geothermal piping, and geothermal wells (figure 2-7). All mechanical equipment related to the climate control system (geothermal pumps, ground source heat pumps, and air handlers) as well as new electrical panels and wiring would be located in the unfinished basement of the Clara Barton House, and would involve high-velocity, small-diameter (3/4-inch to 1 inch) supply ductwork throughout the historic structure (figures 2-8, 2-9, and 2-10).



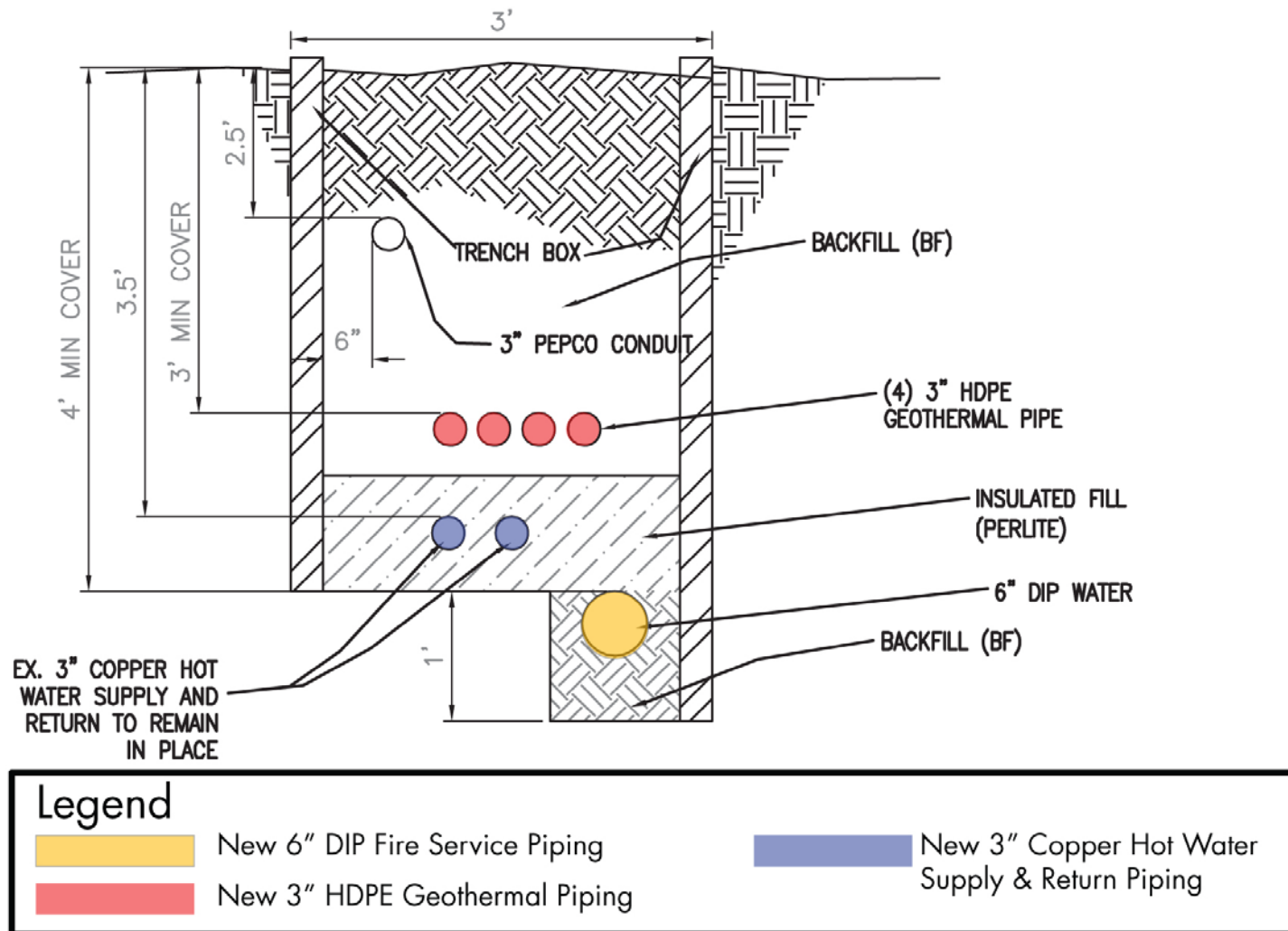


FIGURE 2-6. UTILITIES TRENCH DETAILS



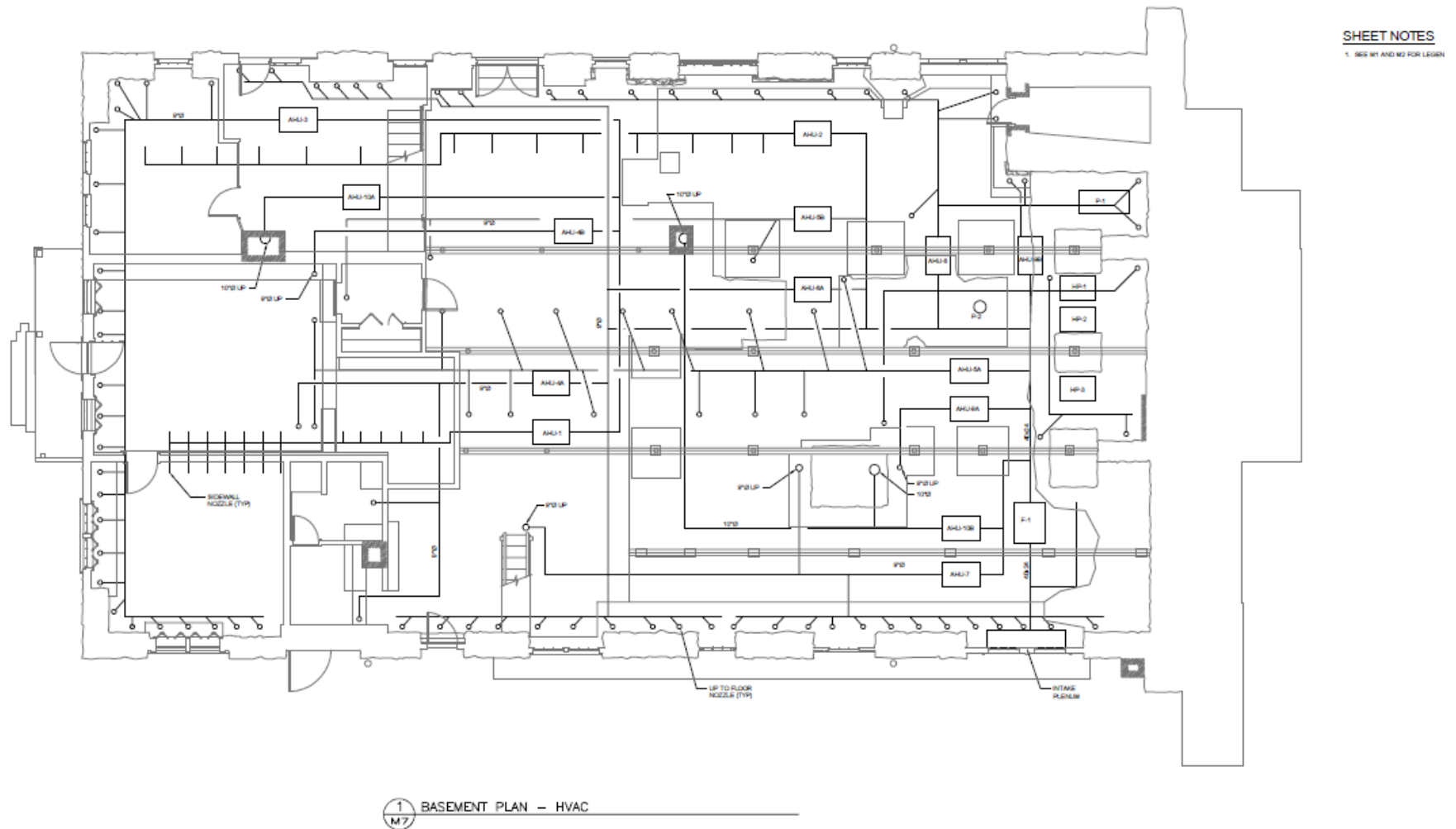


FIGURE 2-8. BASEMENT PLAN (HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)) FOR CLIMATE CONTROL SYSTEM

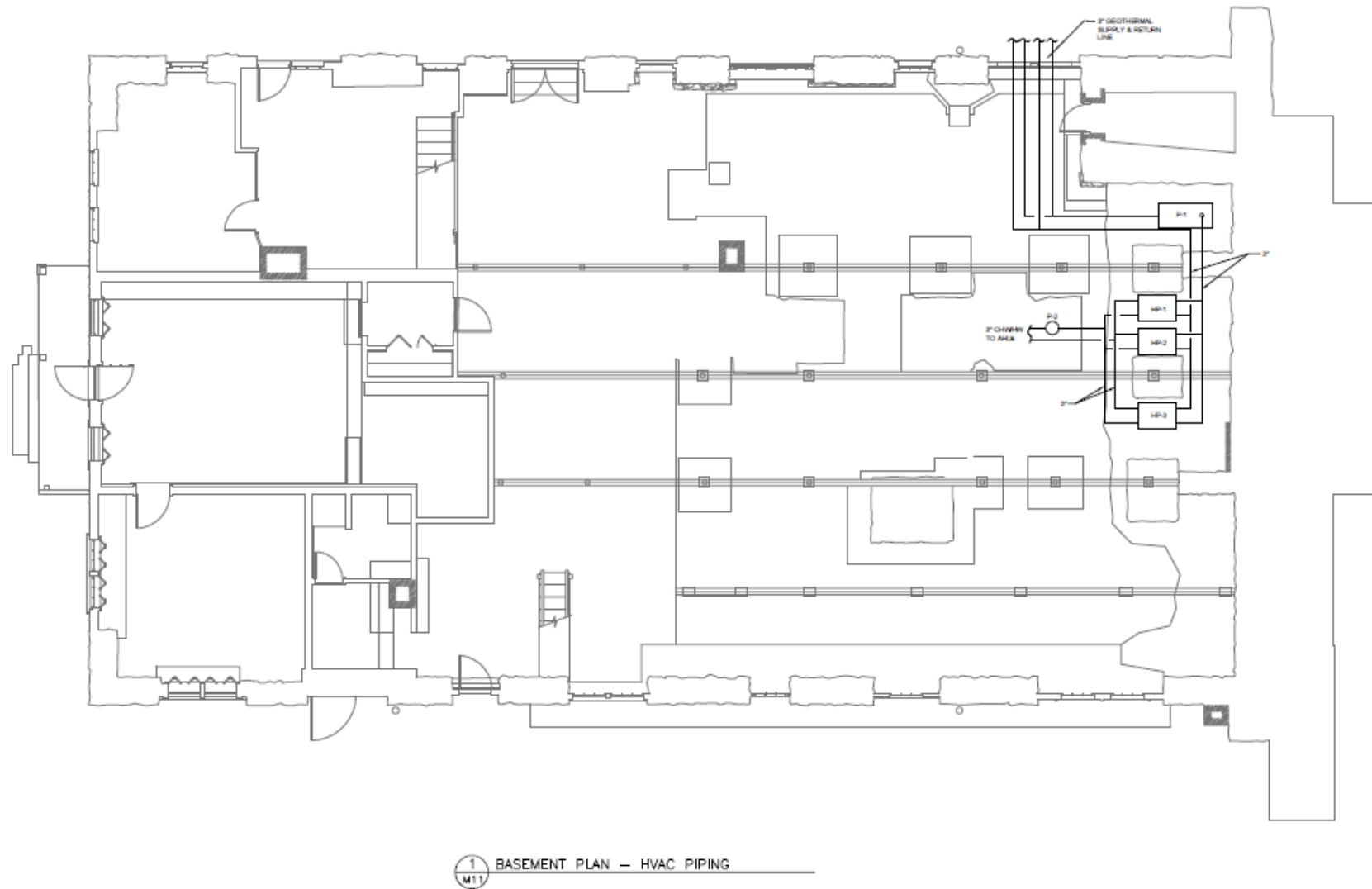


FIGURE 2-9. BASEMENT PLAN (HVAC PIPING) FOR CLIMATE CONTROL SYSTEM

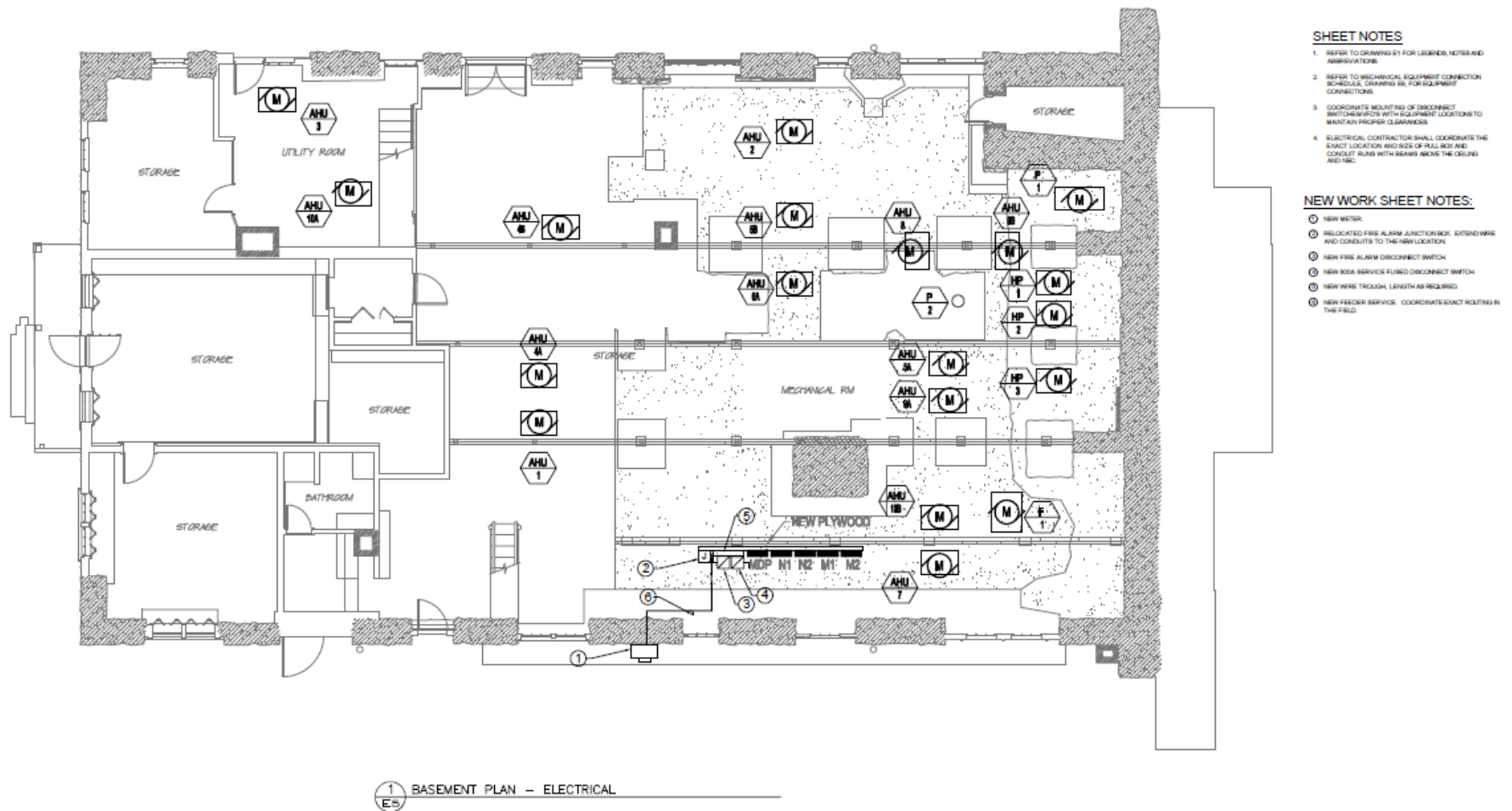


FIGURE 2-10. BASEMENT PLAN (ELECTRICAL) FOR CLIMATE CONTROL SYSTEM

The geothermal climate management system would require installation of a geothermal field in the regraded grassed area adjacent to the Clara Barton House. The geothermal field would include 22 geothermal wells each with a 1-1/4-inch diameter loop coiling to approximately 350 feet deep. Approximately 22,000 square feet of soils in the grassed area adjacent to the house would be disturbed as a result of construction of the well field for the climate control system. Four, 3-inch diameter supply and return geothermal pipes (high density polyethylene pipe) would run within an existing 36-inch-wide utilities trench from the geothermal field back to the Clara Barton House (figure 2-6). Improvements would be made to the electrical service to accommodate new mechanical equipment and would require upgrading to underground electric service to replace existing overhead electric service on poles. Construction of the geothermal wells would use the small parking lot adjacent to the overflow parking lot for construction staging (figure 2-7).

MITIGATION MEASURES OF THE ACTION ALTERNATIVE

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures would be implemented as part of the selected action alternative. The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended results.

HISTORIC STRUCTURES

- Park staff would oversee every stage of construction activities to ensure that historic fabric is not unduly disrupted by the contractors, and the Clara Barton House is rehabilitated according to the *Clara Barton National Historic Site Historic Structures Report* (NPS 2004).
- Existing fire and security protection for the Clara Barton House would not be disabled during construction. The contractor would be responsible for making sure existing fire detection and alarm systems remain operational and fire extinguishers are in place during construction.
- The interior of the building will be protected during construction. Construction will be conducted during summer-fall period. Roof design documents will require the contractor to protect the interior of the building from weather, dust, and construction debris, during construction.
- All work would be carried out in conformance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Structures* (Weeks and Grimmer 1995) and *NPS Management Policies 2006* (NPS 2006).
- Additional interpretation and education appropriate to the historic context of the project and the site would be developed.
- Construction would be carried out in a way that is least aesthetically disruptive to the adjacent and nearby historic district.
- Ongoing consultation with regulating agencies, including the Maryland Historical Trust and the Advisory Council on Historic Preservation (ACHP) within the design refinement, and the Section 106 process would ensure that the proposed actions blend as harmoniously as possible with the existing scale and character of the Clara Barton House.

MUSEUM OBJECTS

- The interior of the building would be protected during construction and construction will be conducted during summer-fall period.
- Prior to construction, park curatorial staff and professional art handlers would pack museum objects and transport them to a climate-controlled, secured storage facility, in accordance with Director's Order 24, *NPS Museum Collections Management* (NPS 2008c).
- Objects that would need to be protected in place because of its size or the object's fragility would be coordinated with the park curatorial staff. Select architectural features including doors will be removed as needed and stored onsite by park staff.
- Roof design documents would require the contractor to protect the interior of the building from weather, dust, construction debris at all times during construction.
- Fixtures and paintings would be protected or removed for safety or security as a part of the initial preparatory preservation work to be performed by park staff.
- Objects would be returned and reinstalled in the Clara Barton NHS as identified in the updated Historic Furnishing Plan only after construction documents indicate that all repairs and rehabilitation activities are complete and operating.
- All museum objects handling would be performed by qualified, trained personnel, using proper equipment and tools, and collections would be protected at all stages of transport from potential environmental threats including water damage, rapid fluctuations in temperature and/or relative humidity, theft, excessive vibration, or other as noted by NPS museum standards.

ARCHEOLOGICAL RESOURCES

- Given the presence of one previously recorded archaeological site within the project area (18MO154), a Phase I archaeological investigation will be conducted of all previously unsurveyed areas prior to construction. If resources are identified during Phase I, a Phase II evaluation study will be undertaken to determine if the resources are eligible for listing in the National Register of Historic Places (National Register).
- Should any archeological resources be identified during construction, work would stop until NPS archeologists evaluated the resources. These resources would be avoided whenever possible, with minimization and documentation pursued only if avoidance proved unfeasible. The significance of these finds would be assessed in consultation with the Maryland Historical Trust (Maryland State Historic Preservation Office (SHPO)) and consulting parties.

SOILS

- An erosion and sediment control plan would be prepared and implemented, consistent with the *Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE 2011).
- Erosion containment controls such as silt fencing and sediment traps (for example, weed-free straw bales) would be used to contain sediment on site.
- Any soil excavated during construction would be stockpiled and reused as fill if needed.
- Disturbed soil or soil stockpiles would be covered with plastic sheeting, jute matting, erosion netting, straw, or other suitable cover material.

- Temporary best management practices (BMPs) would be used to minimize erosion and sedimentation from ground-disturbing activities that expose bare soil. The BMPs may include the use of silt fence or erosion matting. These BMPs would be used only during construction and would be removed once the disturbed area has been permanently stabilized.
- Erosion and sediment control BMPs would be inspected on a regular basis and after each measurable rainfall to ensure that they are functioning properly and to maintain BMPs (repair and clean) as necessary to ensure that they continue to function properly.
- BMPs would be installed and removed in coordination with earth-disturbing activities.
- Any off-site soil used for fill material must be certified as clean and weed-free.

VISITOR USE AND EXPERIENCE

- The NPS would close the Clara Barton House to the public for the duration of the repairs, rehabilitation, and construction activities. During this time some interpretive materials would be provided at Glen Echo Park. In addition, the NPS may consider providing grounds tours to the public.
- Interpretive and museum exhibits would be provided at Glen Echo Park or George Washington Memorial Parkway Headquarters.

HUMAN HEALTH AND SAFETY

- The NPS would close the Clara Barton House to the public for the duration of the construction period for all repairs and renovations. Construction is expected to last approximately two years.
- The NPS would require the construction contractor to follow NPS construction contract standards and other applicable standards during construction, including implementation of an accident prevention program, installation of warning signs at the construction site and along nearby roads, and installation and maintenance of construction fences around the construction sites to prevent non-contractors and the public from entering the construction areas.
- Prior to construction, the NPS would determine if lead-based paints and asbestos would need to be abated and/or encapsulated.

ALTERNATIVES CONSIDERED BUT DISMISSED

Several options or alternative elements were identified during the preliminary design process and internal and public scoping. Some of these were determined to be unreasonable, or much less desirable than similar options included in the analysis, and were therefore not carried forward for analysis in this environmental assessment (EA). Justification for eliminating alternatives from further analysis was based on factors relating to

- conflict with established site uses
- conflict with the statement of purpose and need, or conflict with policy
- severe impact on environmental or historic resources

Roof Rehabilitation Concepts

A value analysis workshop conducted by NPS on March 6, 2014, examined roof rehabilitation options outlined in the *Clara Barton House Rehabilitation Project Final Roof Replacement Concepts* (NPS 2014a) using the Choosing by Advantages (CBA) evaluation method. Additionally, several new alternatives to roof rehabilitation were developed during the value analysis workshop but ultimately dismissed. Table 2-1 presents the roof rehabilitation alternatives examined in the value analysis workshop.

TABLE 2-1. ROOF REHABILITATION ALTERNATIVES EXAMINED IN VALUE ANALYSIS WORKSHOP

Roof Rehabilitation Alternative	Description
Alternative 1 (alternative B in this EA)	Preservation of Historic Roof Structure (keep existing interior ceiling; add supplemental framing). This alternative includes preservation of the damaged historic rafters with attached ceilings, including the modern gypsum board.
Alternative 2A (DISMISSED)	Complete Roof Replacement (traditional stick built with 4 x 6-inch sawmill lumber). This option involves replacing the entire low-slope roof of the house. The existing roof, including the plaster/wood lathing and reproduction muslin ceiling, inverted tee rafters, 1-inch board sheathing, and standing seam metal roofing would be removed. Depending on the condition of the existing bearing connection for the rafters at both ends, dismantling of these supports may be included, which would include the need to install new members supported by the existing wall posts to make adequate connection possible. The new rafters would comprise No. 1 grade southern pine sawn lumber using 4 x 6-inch members.
Alternative 2B (DISMISSED)	Complete Roof Replacement (traditional stick built with 2 x 8-inch glue laminate framing). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would be comprised of structural engineered laminated lumber using 1-¾ x 7-¼-inch members.
Alternative 2C (DISMISSED)	Complete Roof Replacement (traditional stick built with 2 x 8-inch sawmill lumber). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would comprise structural engineered laminated lumber using 1-¾ x 7-¼-inch members.
Alternative 3 (DISMISSED)	Complete Roof Replacement (structurally insulated panels). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would comprise structurally insulated panels.
Alternative 4 (DISMISSED)	Preservation and Roof Replacement (preservation of sound historic rafters supporting historic lime plaster and reproduction muslin ceilings; roof replacement for higher insulation value, removal of modern gypsum board ceilings and deteriorated/damaged rafters areas)
Alternative 5 (DISMISSED)	Complete Roof Replacement (light-gauge metal framing). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would comprise light gauge metal framing.

Additional investigation of existing conditions through exploratory demolition on October 2, 2014, provided the project team with some clarification of the roof system's deficiencies. As a result, alternative 4 was determined to not meet the NPS purpose and need for historic preservation of the historic fabric of the Clara Barton House including historic rafters and the attached ceilings. Alternatives 2A, 2B, 2C, 3, and 5 entail complete roof structure replacement and were also determined to not meet the NPS purpose and need for historic preservation of the historic fabric of the house. As a result, those alternatives/options were dismissed from further consideration in this EA.

Climate Management System

Previous studies (see the “Related Plans and Studies” section in chapter 1) recommended installing a fuel oil or propane system because there is no natural gas available because the Washington Aqueduct blocks access to the natural gas pipeline. The recommended fuel system would include a remote fuel storage bunker. This concept was rejected by the NPS because of the cost and intrusive ductwork involved.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. In accordance with the Department of the Interior policies contained in the Departmental Manual (516 DM 4.10) and the CEQ’s *NEPA’s Forty Most Asked Questions*, the NPS defines the environmentally preferable alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (Section 101(b) (516 DM 4.10)). In the *Forty Most Asked Questions* document, the CEQ further clarifies the identification of the environmentally preferable alternative, stating “Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (Q6a).

After completing the environmental analysis, the NPS identified “Alternative B: Repair and Rehabilitate the Clara Barton House” to be the environmentally preferable alternative in this EA because it most closely satisfies the policy goals detailed above. Through the rehabilitation of the Clara Barton House, installation of a new climate control system, and installation of a new fire suppression system as proposed under this alternative, criteria 1 and 2 would be fulfilled. In addition, alternative B would preserve the maximum amount of existing roof system and protecting the historic fabric of the roof system as much as possible. These actions would protect the historic house for future generations. Preservation of roof structure would require leaving the modern gypsum board ceilings in place, as removal of firmly attached gypsum board ceiling would damage/break weak historic roof structure and release friable asbestos from adhesive.

NPS PREFERRED ALTERNATIVE

The CEQ regulation, Section 5.4 (d), requires the NPS to identify a preferred alternative in the EA if one has been identified. The preferred alternative is the alternative the NPS believes would best accomplish its goals, objectives, and purpose and need. In selecting a preferred alternative, the NPS must consider the associated impacts to natural and cultural resources.

The NPS evaluated a range of factors including but not limited to

- Minimizing impacts to visitor experience by limiting time required to complete construction efforts.
- Limiting impacts to cultural resources, cultural landscapes, historic structures, and museum collections by retaining original lime-plaster ceilings and reproduction muslin ceilings, maintaining existing rafters, and avoiding changes to the Clerestory windows, interior walls, interior ceiling heights, and roof profile.
- Protecting and improving natural resources and archeology by limiting potential damage to resources.
- Supporting sustainable practices.

- Limiting risks related to asbestos removal, additional wall framing required, and limiting staff snow removal efforts requiring staff to be on the roof.
- Reducing energy needs by improving thermal performance.
- Minimizing operational and maintenance needs.

Following internal NPS decision-making processes and additional investigations since the completion of the CBA evaluation process, alternative B was selected as the preferred alternative. NPS investigated the existing conditions of the low-sloped standing seam metal shed roof sections of the house, the associated roof framing and the ceiling finishes below on October 2, 2014. The findings of the investigation concluded that a complete roof structure replacement may not be required. Based on this limited observation it appeared that there are more original, or at least early historic fabric, present in the ceiling finishes of the house than previously thought. Alternative B would preserve as much historic fabric as possible, while reinforcing the roof with new structural members.

SUMMARY OF ENVIRONMENTAL IMPACTS

Table 2-2 provides a summary of environmental consequences for each resource area analyzed in “Chapter 4: Environmental Consequences.” Alternatives are determined to have beneficial or adverse impacts for each area of analysis, and adverse impacts are rated as negligible, minor, moderate, or major. Impacts are also assessed as to whether they are short-term (duration of construction) or long-term (greater than the duration of construction). Threshold definitions for each topic are listed in chapter 4.

TABLE 2-2. SUMMARY OF IMPACTS (ENVIRONMENTAL CONSEQUENCES)

Resource Area	Alternative A: No Action	Alternative B: Repair and Rehabilitate the Clara Barton House (Preferred)
Cultural Resources		
Historic Structures	The continuation of existing conditions under the no action alternative would have a moderate impact on the Clara Barton House, a national historic landmark. This alternative would have potentially moderate impacts on the historic structure, particularly due to the existing roof problems and leaks.	<p>This alternative would result in minor to moderate impacts to the historic Clara Barton House, most of which would occur during construction of the various systems. There are long-term minor impacts associated with the installation of modern features such as sprinklers, fire detectors, and vents into significant areas of the house as a result of the fire suppression system and climate control system. However, placing these features in discrete locations and blending them into the surrounding features should minimize these impacts. Despite these impacts, all of the proposed changes to the house would result in better potential for long-term preservation of the structure, resulting in beneficial impacts.</p> <p>With preservation of the roof, there would be short-term, and temporary, moderate impacts on the structure during construction activities associated with the roof rehabilitation. Overall, the long-term impacts would be beneficial.</p>
Cultural Landscapes	The continuation of the existing conditions would result in a minor impact on the cultural landscape due to the potential deterioration of the Clara Barton House from an inadequate roofing system.	<p>Although there would be short-term, temporary moderate impacts associated with the proposed construction activities, the implementation of this alternative would have a long-term beneficial impact on the Glen Echo-Clara Barton House cultural landscape.</p> <p>Roof repair would have a long-term beneficial impact on the cultural landscape by preserving the roofline and maintaining the architectural and visual components of the Clara Barton House that make it an important element to the overall landscape. The preservation of the roof would also aid in the long-term preservation of the house itself and minimize the potential for deterioration that could impact the integrity of the cultural landscape.</p> <p>There would be short-term, temporary moderate impacts on the cultural landscape during the roof repair.</p>

Archeological Resources	Implementation of the no action alternative would result in no impacts on archeological resources in the study area.	There is the potential for archeological resources to be negatively impacted by ground disturbance. In particular, if the current utility trench in the area of 18MO154 requires widening, it has the potential to adversely impact site 18MO154. Prior to construction, as needed, additional archeological investigation and continuing Section 106 consultation would be completed to determine the exact nature of the effects on this resource and other unknown archeological sites.
Museum Objects	Under this alternative, museum collections would continue to be at risk from water damage, potential fires, and fluctuating climate within the house, resulting in long-term moderate adverse impacts on museum collections, particularly wooden pieces or artwork.	Alternative B would have a beneficial impact on museum collections by removing some of the existing risks and allowing for adequate climate control to preserve museum pieces. The roof would be repaired, preventing further water damage on the interior of the structure and protecting the museum collections.
Soils	Under the no action alternative, soil conditions would not change and the implementation of this alternative would result in negligible impacts on soil resources.	Under alternative B, soils would be impacted as a result of construction of the geothermal wells and the piping for the climate control system and fire suppression system. However, because soils at the site have been previously disturbed, overall soil conditions would not change and the implementation of this alternative would result in minor impacts on soil resources. No impacts on soils would be expected from the rehabilitation of the roof because all construction activities would be contained to the house.
Visitor Use and Experience	Implementation of the no action alternative would result in long-term, moderate, adverse impacts on visitor use and experience from the continued interior and exterior damage due to the failing roof at Clara Barton House, a lack of climate control system, and a lack of a sufficient fire suppression system.	Implementation of alternative B would result in short-term moderate adverse impacts on visitor use and experience as a result of construction activities. However, this alternative would have long-term beneficial impacts on visitor use and experience from the interior and exterior improvements at the Clara Barton House, including long-term beneficial impacts from the preservation of historic ceilings while addressing rotting and support problems of the current roof.

Table 2-2. Summary of Impacts (Environmental Consequences)

Human Health and Safety	The no action alternative would have long-term minor adverse impacts on human health and safety. This is particularly seen in the long term where the lack of fire suppression and water damage puts the larger structure, as well as the people within it, at risk in the case of a test on the already stressed system.	Alternative B would result in short-term negligible adverse and long-term beneficial impacts on human health and safety at the Clara Barton house. There would be short-term negligible adverse impacts on the structure during reconstruction of the roof; however, repairs of the roof would solve current issues of water leaks. Additionally, the replacement of the entire metal roofing would greatly improve the structural integrity of the low-sloped roof and would lessen chances of a roof collapse from heavy snow load. Rehabilitation of the roof would result in long-term beneficial impacts on health and safety of both visitors and park personnel.
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CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes existing environmental conditions in the areas potentially affected by the alternatives evaluated. This section describes the following resource areas: cultural resources, including historic structures, cultural landscapes, archeological resources, and museum objects; soils; visitor use and experience; human health and safety; and park management and operations. Potential impacts are discussed in the same order in “Chapter 4: Environmental Consequences.”

CULTURAL RESOURCES

Cultural resources for federal agency planning and environmental review purposes are primarily those resources that qualify for the National Register of Historic Places (National Register) as well as those addressed by certain other laws protecting archeological sites and Native American properties. The National Historic Preservation Act (NHPA), as amended, is the principal legislative authority for managing cultural resources associated with National Park Service (NPS) projects. Generally, Section 106 of the NHPA, as amended, and as implemented in 36 CFR 800, requires all federal agencies to consider the effects of their actions on cultural resources listed and/or determined eligible for listing in the National Register. Such resources are also termed “historic properties.”

Moreover, the federal agency must afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment in the event that an undertaking will have an adverse effect on a cultural resource that is eligible for or listed in the National Register, and must consult with the state historic preservation office (SHPO) and other interested parties in an effort to avoid, minimize, or mitigate adverse effects.

Eligibility for the National Register is established according to the official criteria of evaluation (36 CFR 60.4) issued by the U.S. Department of the Interior. The criteria relate to the following:

The quality of significance in American history, architecture, archeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That has yielded, or may be likely to yield, information important in prehistory or history.

Other important laws and regulations designed to protect cultural resources are listed below:

- Native American Graves Protection and Repatriation Act, 1990
- American Indian Religious Freedom Act, 1978
- National Environmental Policy Act (NEPA), 1969
- Archeological Resources Protection Act, 1979
- Executive Order 11593: Protection and Enhancement of the Cultural Environment, 1971.

Lastly, the NPS has a unique stewardship role in the management of its cultural properties, reflected in its own regulations and policies. In these policies, the NPS categorizes cultural resources by the following: archeological resources, cultural landscapes, historic structures, museum objects, and ethnographic resources. (The NPS categories, particularly the last two, take into account a somewhat wider scope of cultural resources than those typically eligible for listing on the National Register.)

Under the regulations implementing NHPA Section 106 the NPS determined that the repair and rehabilitation of Clara Barton House would constitute an “undertaking.”

Regulations implementing NHPA require the NPS, as the agency responsible for the undertaking, to assess, in consultation with the cognizant SHPO and/or tribal historic preservation officer (THPO), the undertaking’s area of potential effect (APE) on historic properties eligible for or listed on the National Register. The NPS has proposed in correspondence to the Maryland Historic Trust that the APE for the undertaking should be the property boundaries of Clara Barton House, the side yard, and the grassy area adjacent to the house (figure 3-1). Coordination with a THPO is not required because the undertaking would not be conducted on tribal lands.

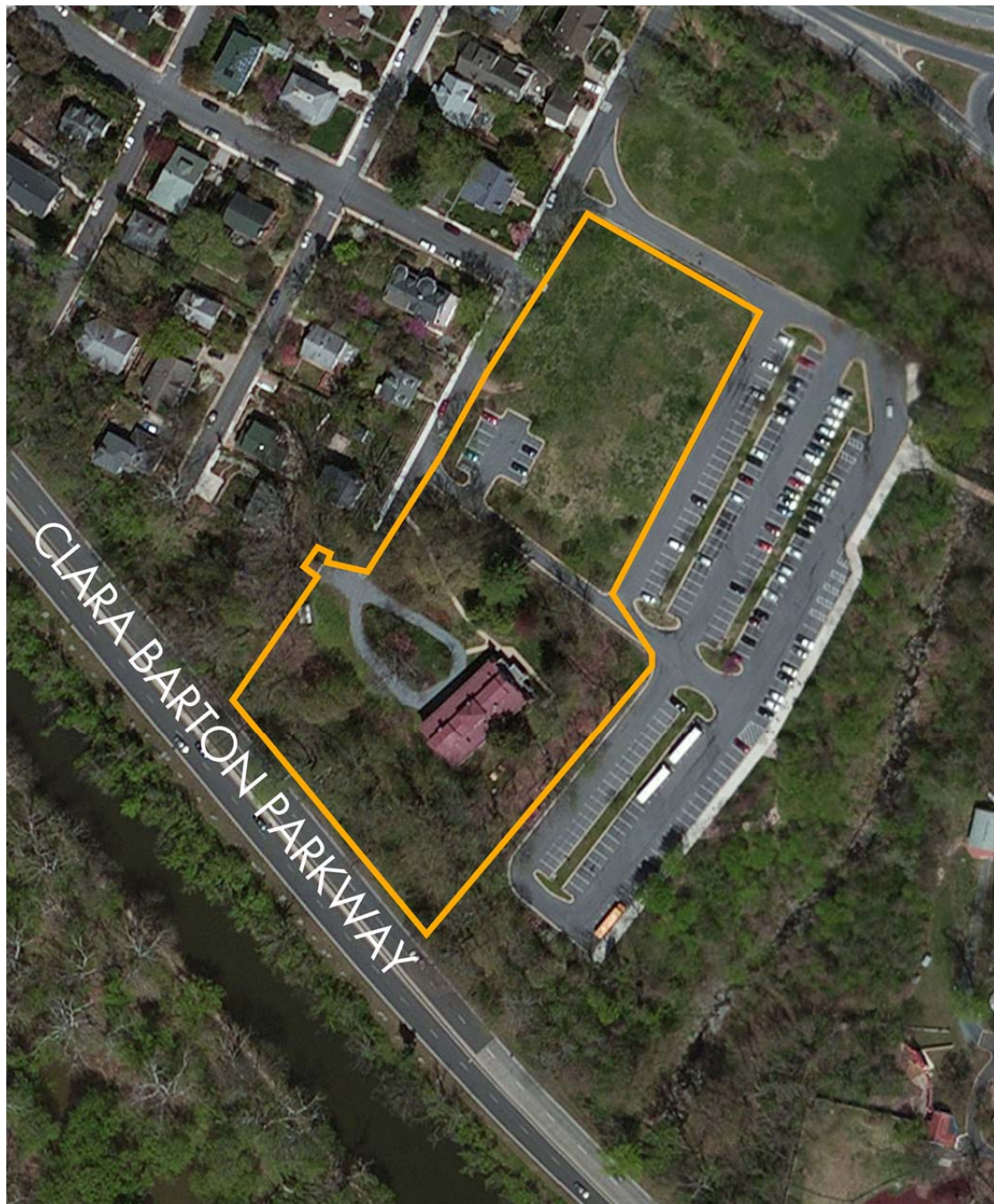
The regulations implementing NHPA outline special requirements for protecting National Historic Landmarks (36 CFR 800.10). These requirements include undertaking planning and actions to minimize harm to any National Historic Landmarks that may be directly and adversely affected by an undertaking, request the ACHP’s participation in resolving adverse effects, notifying the Secretary of Interior of any consultation involving an National Historic Landmark and invite the Secretary to participate if there may be an adverse effect, and if the ACHP chooses to participate in consultation, report the outcome of the Section 106 process to the Secretary and head of the agency responsible for the undertaking.

BACKGROUND OF CLARA BARTON NATIONAL HISTORIC SITE

Clara Barton was a dedicated humanitarian who devoted her energies to caring for others at home and abroad. Her role as a caregiver started at an early age when her brother fell from the roof of a barn and although he appeared uninjured, developed fevers and headaches. Clara cared for him for two years, rarely leaving his side, and he eventually fully recovered (NPS 2004, volume 1). From this experience she developed a need to be of service to others and upon the advice of a family friend, went to school to become a teacher. However, she did not teach for long and left the profession in 1854 and moved to Washington, D.C., to work for the patent office (NPS 2004, volume 1). During her tenure with the patent office, the Civil War broke out. Clara recognized the need to provide care and supplies to the wounded and not only organized the collection and distribution of supplies but also devoted countless hours to caring for the injured. This experience launched her career as a humanitarian but also had a severe effect on her physical and mental health.

By 1868, her health had deteriorated significantly (NPS 2004, volume 1). She was encouraged to go abroad to recuperate and she ultimately landed in Geneva. It was during her time in Europe that she learned about the International Red Cross and realized that their goals closely resembled her own. When the Franco-Prussian War started she volunteered for the International Red Cross (NPS 2004, volume 1).

In 1873, she learned that her sister was dying of cancer and returned to the United States to care for her. However, she arrived at her sister’s home ten hours too late and given her still fragile health, suffered a complete collapse that left her an invalid for two years (NPS 2004, volume 1). Her search for wellness eventually took her to the Jackson Sanitarium, in Dansville, NY, where she began to recover. During her time in Dansville she eventually established her own residence and became the American representative of the International Red Cross. In Dansville, she became acquainted with Dr. Julian Hubbell, the man who would become her closest friend and partner in establishing the Red Cross in America.



LEGEND



Area of Potential Effect

NORTH



FIGURE 3-1. AREA OF POTENTIAL EFFECT

It was not until 1877 that Clara found herself sufficiently healthy to begin working towards her goal of the United States' adoption of the Treaty of Geneva and the development of an American Red Cross. She spent much time in Washington, D.C., during the following years, lobbying President James A. Garfield to ratify the Treaty of Geneva and laying the groundwork for the establishment of the Red Cross in America. The Treaty of Geneva was eventually ratified by President Chester Alan Arthur in 1882.

By 1881, Clara had established a headquarters for the Red Cross in Dansville and shortly after administered aid to victims of a large wildfire in eastern Michigan (NPS 2004, volume 1). With Dr. Hubbell as her second in command, they spent the next eight years working to obtain funding and make the Red Cross commonly known to the public. In 1889, the American Red Cross provided disaster relief after a large flood in Johnstown, Pennsylvania, and the organization became known and acclaimed across the country (NPS 2004, volume 1).

After this event, Clara realized she would need to find a more permanent headquarters and began searching for a location in Kalorama, Washington, D.C. However, in 1890, Edwin and Edward Baltzley (founders of Glen Echo) offered her land in Glen Echo, Maryland, and offered to construct whatever building she desired if she agreed to establish the headquarters of the Red Cross there. She accepted the offer and in 1891 The Red Cross House, now known as the Clara Barton House, was constructed to serve as a warehouse for supplies for the American Red Cross. Clara Barton designed the structure to serve multiple purposes and lived there briefly after its construction. She ultimately decided she needed to be closer to urban life to carry out her work. It was not until 1897 that she returned to the house permanently and it became the headquarters for the Red Cross until 1904 and her home until her death in 1912.

HISTORIC STRUCTURES

Congress declared the Clara Barton House a National Historic Landmark on January 12, 1965. By virtue of its listing as a National Historic Landmark, the Clara Barton House was automatically added to the National Register following the passage of the NHPA of 1966. The first National Register inventory form was completed in 1972 and an update followed in 1980. The latter identified the Clara Barton National Historic Site (NHS) as nationally significant according to National Register Criterion B, based upon its association with the life and work of Clara Barton, the Red Cross, and with the National Chautauqua of Glen Echo¹. Additionally, the building itself was constructed using materials that had been used in the construction of emergency shelters at Johnstown, Pennsylvania.

The property is significant because it was the home of Clara Barton from 1897 to 1912, with special emphasis on the years 1897 to 1904 when it also served as the executive headquarters of the American Red Cross. Miss Barton's personal direction of the 1897 remodeling made the house uniquely hers in design as well as occupancy.

¹ The Chautauqua was an educational movement that sought to unify the Protestant churches by bringing people together for classes, discussions, entertainment, and physical activity. The movement started in 1874 with the first Chautauqua Assembly at Lake Chautauqua, NY. The Baltzley brothers deeded 80 acres of their land to the National Chautauqua of Glen Echo, which became the 53rd Chautauqua Assembly (Town of Glen Echo n.d.).

At the time the National Register inventories were completed, the house itself was considered “vernacular in character” and not particularly unique architecturally (NPS 2004, volume 1). However, since then the NPS has recommended that the nomination be revised to include Criterion C because “the work is a strong piece of vernacular architecture, drawing inspiration from summer and Chautauqua cottages and from purely functional prototypes like warehouses” (NPS 2004, volume 1). The goal of revising the nomination was to ensure the preservation of the physical fabric of the structure and the interpretive collection (NPS 2004, volume 1).

The Clara Barton House has been modified several times, including one important renovation by Clara herself prior to returning in 1897 to take up permanent residence. Although little is known about the original appearance of the structure, the changes since then have been extensively documented (NPS 2004, volume 2). The house itself has a simple rectangular floor plan with a large central hall and rooms opening off the hall on each side. The building is three stories tall with a basement/crawlspace. With the exception of the basement, the brick vault, and the stone piers at the front of the house, the structure is constructed entirely of wood and has a metal roof.

The interior and exterior of the house have been divided into three zones of historic significance: primary, secondary, and no significance. Significant zones can include spaces as well as features that date from the period of importance. Significant features can be located in non-significant spaces; all of these features are listed in volume 2 of the Historic Structure Report for the house (NPS 2004, volume 2). Preservation recommendations have been identified for each zone of significance.

Areas of primary significance are of special architectural or documented historical significance and should be preserved, restored, reconstructed, and maintained. These places are usually the primary public and private spaces in the building and usually have a higher level of architectural detail than others.

Areas of secondary significance are also of architectural or documented historical significance but contain a lower level of detail or finish, or have been altered and cannot be returned to their original form. Alterations in these areas are acceptable as part of rehabilitation but significant materials and details should be retained. These areas may contain significant original features that should be preserved in the same manner as those of primary significance.

Areas of no significance lack architectural or historical importance and/or do not support interpretation of the site. There are areas of the building which are utilitarian in function and finish or have been so completely altered that they contain little to none of the original fabric of the building. Although these spaces may not be significant, there may be significant original features that require treatment similar to areas of primary significance. Otherwise, these spaces may be rehabilitated, altered, or redesigned as long as changes do not adversely affect significant features.

The interior and exterior areas of significance are detailed in tables 3-1 and 3-2. All of the areas within the house have been assigned to a significance category with the exception of Clara Barton’s bedroom (room 213) and a meeting room on the second floor (room 218), because those two rooms have not been evaluated for significance. Figures 3-2, 3-3, 3-4, and 3-5 depict the interior zones of significance for each level of the house.

Additional study of the ceiling finishes at the second floor rooms by the National Capital Region's Historic Architect in October 2014 determined that there are likely more intact historic fabric than originally documented in 2004. The rooms with plaster ceilings all appear to date from the same era and could include original, or early, finishes. These include several rooms such as the library alcove (rooms 203 and 203a), the stair and park offices (rooms 205-207), the kitchen and bathroom (rooms 208-209),

Dr. Hubbell's and Clara Barton's Chambers (rooms 211 and 23), as well as several guest rooms, and other spaces (rooms 214-218).

TABLE 3-1. INTERIOR ZONES OF SIGNIFICANCE

Primary Significance	Secondary Significance	No Significance
Room 101, Vestibule	Room B-3, Utility Room,	Room B-1, Basement
Room 102, Hall	Room B-4, Store Room	Room B-2, Mechanical Room
Room 104, Vault	Room B-8, Vault	Room B-5, Living Room/Kitchen
Room 107, Main Stairway	Room 108, Visitor Orientation	Room B-6, Bedroom
Room 111, Kitchen	Room 110, Back Stair Up and Back Stair Down	Room B-7, Bathroom
Room 112, Dining Room	Room 204, Vault	Room 103, Gift Shop
Room 113, Red Cross Office	Room 209, Bathroom	Room 105, Storage
Room 114, Red Cross Office	—	Room 106, Toilet
Room 118, Rear Parlor	—	Room 109, Office
Room 119, Front Parlor	—	Room 115, Office
Room 201, Library	—	Room 116, Office
Room 202, Hall	—	Room 117, Storage
Room 203 and 203a, Library and Kitchen	—	Room 206, Office
Room 211, Dr. Hubbell's Bedroom	—	Room 207, Office
Room 212, Clara Barton's Sitting Room	—	Room 208, Kitchen
Room 301, Bedroom	—	Room 210, Stair Hall
Room 302, Landing	—	Room 214, Bedroom
Room 303, Bedroom	—	Room 215, Bedroom
Room 304, Landing	—	Room 216, Closet
Room 305, Store Room	—	Room 217, Bathroom

TABLE 3-2. EXTERIOR ZONES OF SIGNIFICANCE

Primary Significance	Secondary Significance	No Significance
Northeast (Front) Elevation	Southeast (Side) Elevation	Front Porch
Northwest (Side) Elevation	Southwest (Rear) Elevation	—

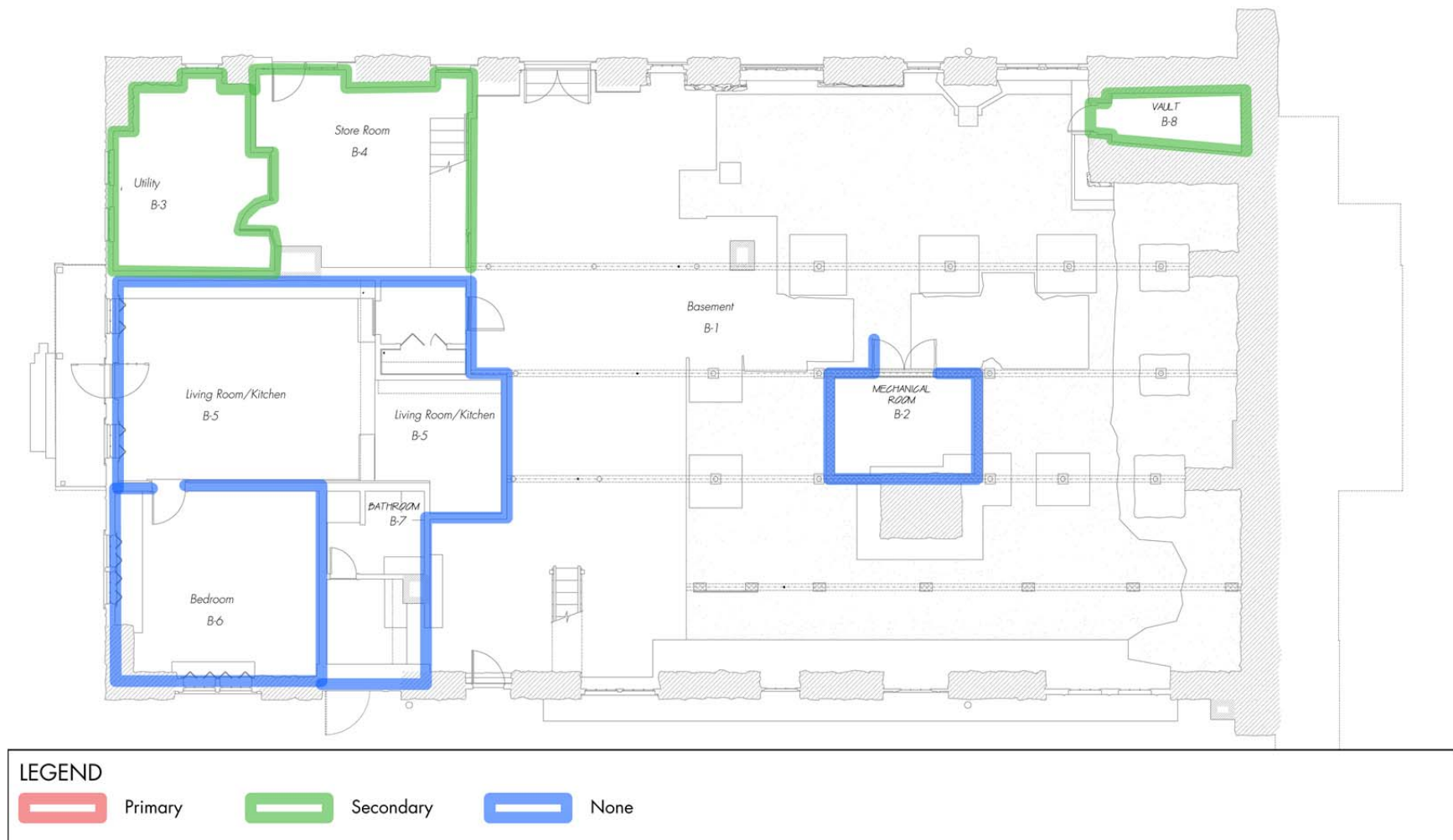


FIGURE 3-2. INTERIOR ZONES OF SIGNIFICANCE (BASEMENT PLAN)

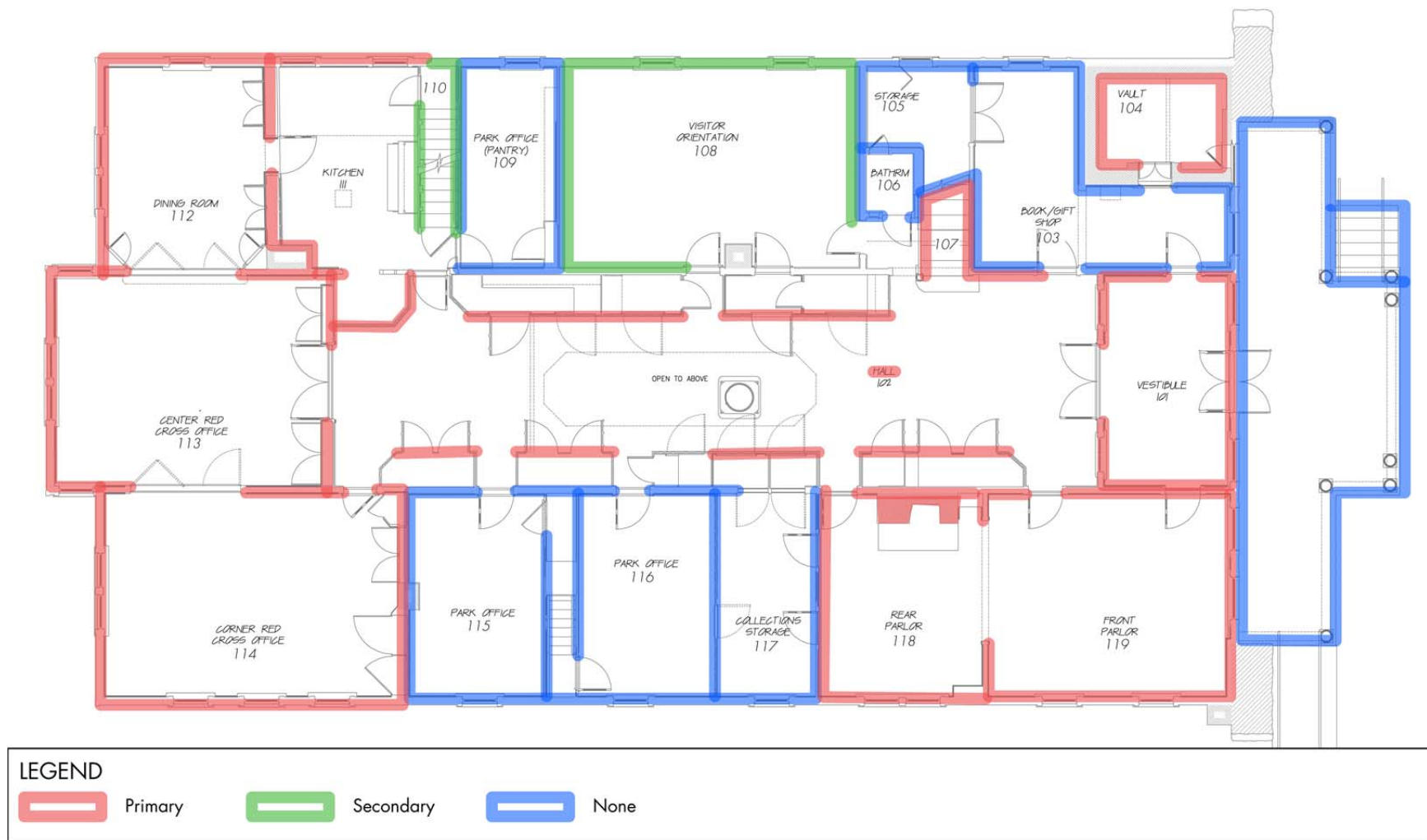
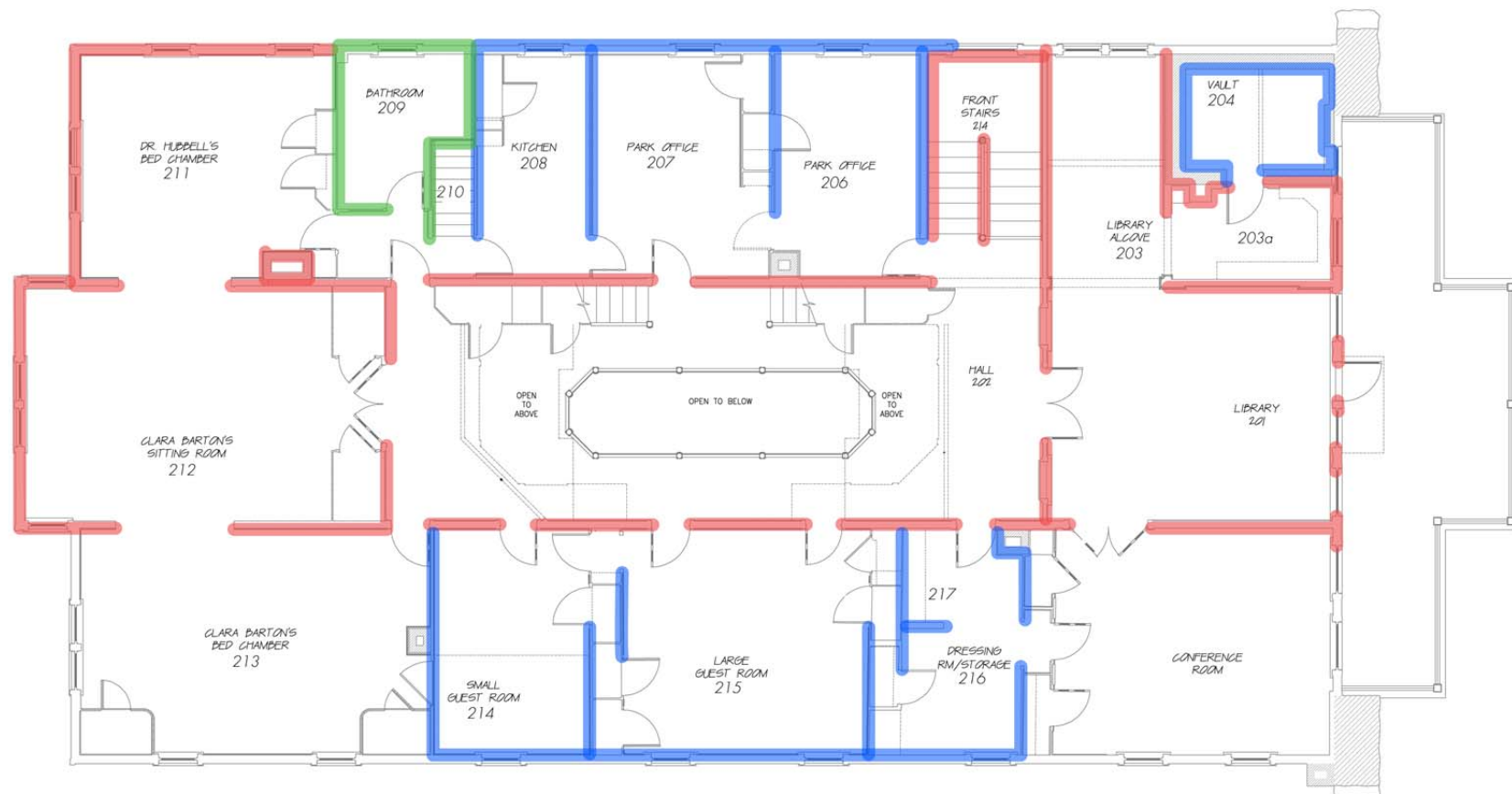


FIGURE 3-3. INTERIOR ZONES OF SIGNIFICANCE (FIRST FLOOR PLAN)


LEGEND


Primary



Secondary



None

FIGURE 3-4. INTERIOR ZONES OF SIGNIFICANCE (SECOND FLOOR PLAN)

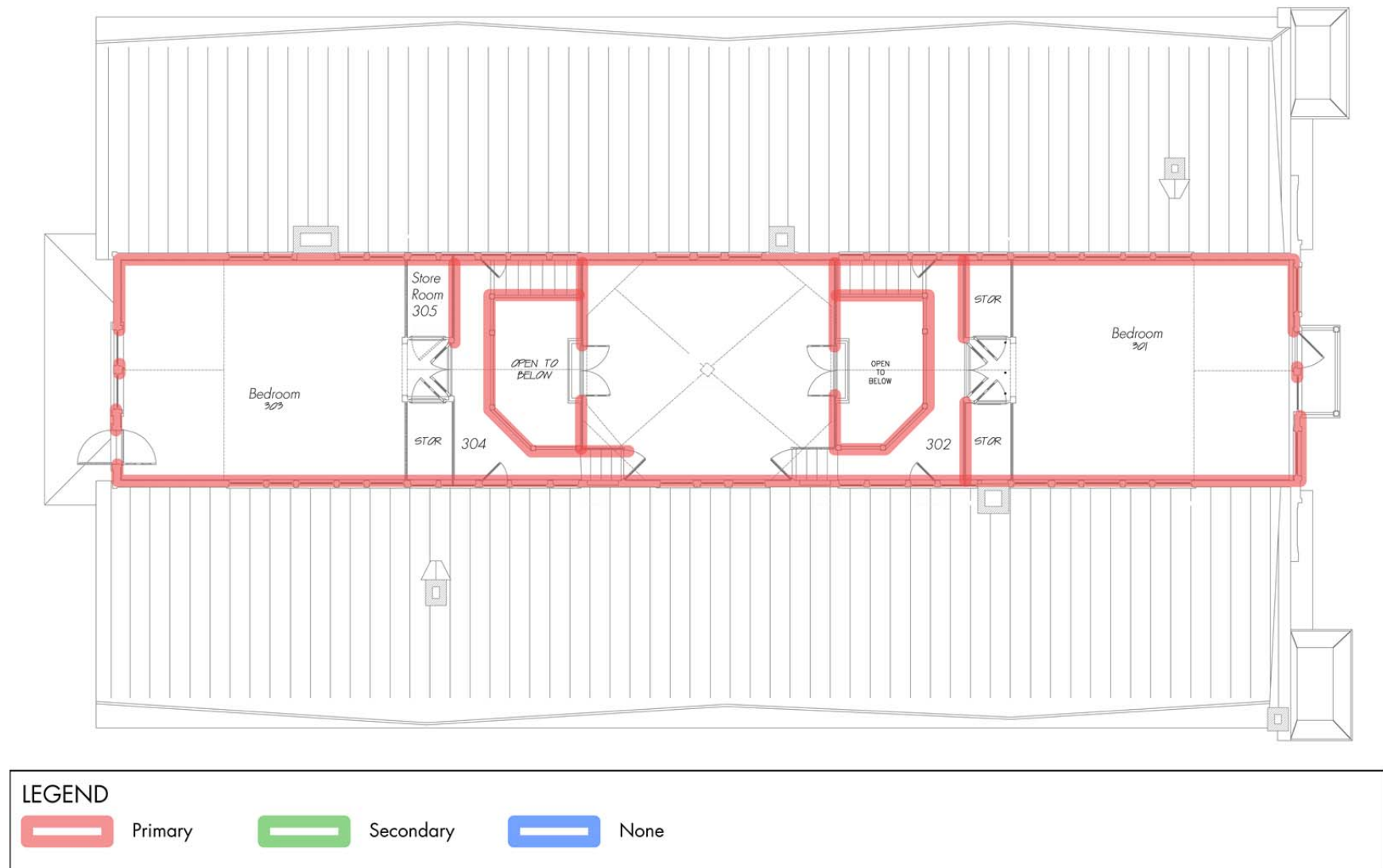


FIGURE 3-5. INTERIOR ZONES OF SIGNIFICANCE (THIRD FLOOR PLAN)

All four exterior sides of the house are considered to be of primary or secondary significance, however, the northwest side of the house is considered particularly important because they would have been the portions of the house first seen by visitors. The front porch was added to the house by Dr. Hubbell in 1917 or 1918, and therefore falls outside of the period of significance for this site.

CULTURAL LANDSCAPES

The Clara Barton House is part of the Glen Echo Park – Clara Barton House Cultural Landscape (NPS 2011b). The cultural landscape comprises two contiguous national park system units: Glen Echo Park and the Clara Barton NHS. Administratively, the Clara Barton NHS is an independent NPS holding and Glen Echo Park is under the jurisdiction of the George Washington Memorial Parkway (NPS 2011b). Although it is important to note that Glen Echo Park and the Clara Barton NHS are indeed two separate national park system units, these distinctions actually amount to very little. The two sites have a shared history that stretches back to 1888 and a single district ranger is currently in charge of both properties. For more than a century, Glen Echo Park and the Clara Barton House have been extensions of one another, and for these reasons both sites were recorded as a single cultural landscape.

The Glen Echo Park – Clara Barton House Cultural Landscape retains integrity to its historic period of significance (1888–1968). Many of the historic structures remain, including the Clara Barton House and the stylized Art Deco buildings that lend Glen Echo Park its signature appearance. The historic Dentzel Carousel, installed in 1921, continues to operate seasonally. The circulation routes between the amusement park buildings are the same as during the historic period, and the circular driveway established by Barton to the west of the house is still present today. Historic and specimen trees grow in the Picnic Grove section of Glen Echo Park, shading modern-day visitors just as these trees have done for more than a century. There have been alterations to the landscape, and several, such as the removal of all of Clara Barton’s outbuildings and the majority of the amusement park rides, have impacted both the form and character of the cultural landscape. Overall, however, continuity outweighs change.

This cultural landscape inventory finds that the Glen Echo Park – Clara Barton House Cultural Landscape retains integrity to the period of significance and is in good condition overall (NPS 2011b). While there have been some changes to the property and the loss of several important features, all seven aspects of integrity remain represented on the landscape today. The period of significance for the Glen Echo Park – Clara Barton House Cultural Landscape is 1888–1968. These dates represent the initial purchase of the land by Edward and Edwin Baltzley in 1888, and extend through the tenure of Clara Barton, the brief existence of the National Chautauqua of Glen Echo, and the founding and expansion of the Glen Echo amusement park. The period ends with the permanent closure of the amusement park in 1968.

ARCHEOLOGICAL RESOURCES

The archeological investigation around the Clara Barton House has been limited to the side yard around the driveway. These surveys have identified one archeological site (18MO154) that consists of historic materials related to the construction of the Clara Barton House and prehistoric lithic artifacts, including an Archaic period projectile point. This site has not been evaluated for eligibility for listing in the National Register, but is considered potentially eligible pending additional research.

The proposed locations of the new geothermal wells and staging areas have not been surveyed for archeological resources. These areas may have been previously disturbed and/or filled during construction of the parking lot; however, these actions may have been minimal. Given the previously identified archeological site, there is the potential for intact subsurface cultural deposits in this location.

MUSEUM OBJECTS

When the ownership of the building was transferred to the NPS in 1975, the transfer included all of the furniture and furnishings that were not the personal belongings of the tenants. Many of these items were originally owned by Clara Barton or Dr. Julian Hubbell, who inherited the house after her death, and all of the items were catalogued and described as part of the transfer. A total of 2,959 items were accessioned during the transfer to the NPS (NPS 2008b). Additional acquisitions have been made since 1975 and include donations from individuals, period pieces that were purchased from antique stores, and pieces transferred from other NPS held collections (NPS 2008b). The collections also include an archeology collection, the archives, and resource management records (NPS 2008b). There are currently almost 4,000 artifacts housed in the Clara Barton House collections. These collections are integral for telling the story of Clara Barton and her association with the American Red Cross.

SOILS

Under NPS *Management Policies 2006*, the NPS actively seeks to understand and preserve the soil resources of its parks and properties and to prevent unnatural erosion, physical removal, or contamination of the soil to the extent possible (NPS 2006). The Soil Survey Geographic Database, produced by the U.S. Department of Agriculture Natural Resources Conservation Service, was consulted to identify soils in the project area. The Soil Survey for Montgomery County, Maryland (NRCS 2013) shows four soil map units in the project area: Glenelg-Urban land complex, 0 to 8 percent slopes; Glenelg-Urban land complex, 8 to 15 percent slopes; Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes; and Blocktown channery silt loam, 25 to 45 percent slopes, very rocky. The slopes indicated by the Natural Resources Conversation Service soil survey is generally greater than what exists at the project site, as a result of previous construction projects that placed fill over existing grade. The majority of the project area consists of soils in the Glenelg-Urban land complex, 0 to 8 percent slopes or Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes map units. None of the map units is considered prime farmland or farmland of statewide importance. Two map units are considered to have nonhydryc soils (Glenelg-Urban land complex, 0 to 8 percent slopes and Glenelg-Urban land complex, 8 to 15 percent slopes). Only 5 percent of the other two map units have hydryc soil components (Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes and Blocktown channery silt loam, 25 to 45 percent slopes, very rocky). Due to the small percentage within each individual map unit, it is likely that these hydryc components would not be found within the project location. Locations of the soil map units relative to the project area are shown on figure 3-6.

VISITOR USE AND EXPERIENCE

The Clara Barton NHS includes the Clara Barton House. The site offers free, guided tours of the house and grounds. This is the only means by which visitors can enter the historic house, although visitors are welcome to walk the grounds without a guide (NPS 2014c). The house, which combines a collection of historic artifacts with a variety of original diaries and papers, tells the story of Clara Barton's service and dedication (NPS 2014c).

The Clara Barton NHS hosts on average, 15,400 visitors annually. The number of annual visitors fluctuates, from a low of 2,900 in 1975, the first year the park kept records on visitation numbers, to a record 55,500 in 1990. In three of the last four years (2010–2013) annual visitation numbers were over 20,000. In 2013, there were approximately 22,737 visitors to the Clara Barton NHS (NPS 2014d).

The Clara Barton House is open daily from 10:00 a.m. to 4:00 p.m., with guided tours starting each hour. Reservations must be made for groups of 10 or more (NPS 2014c). Tours are limited to 30 visitors at a

time and are led by a single tour guide (Wenchel pers. comm. 2014). Because there is only one means of egress from the house down the front stairs and out the front door, there is an occupancy limitation of 50 people in the house and 10 allowed on the third floor at a time (restricted by the width of the stairs for egress), based on fire and building codes. There is no admission charge to enter the Clara Barton House (LaRocca pers. comm. 2014).

At the Clara Barton House, interpretive staff provides guided tours to assist visitors in their enjoyment and understanding of the house. Visitors taking the walk-through tour learn about the how the Red Cross operated out of the house and can see the Red Cross Office, containing period equipment such as typewriters and letter presses. The original items in the offices are the books, select desks and bookcases, and the seal on Clara Barton's desk. There are also cabinets and rooms for storing first-aid and other pertinent items (NPS 2014e). Tour staff in the interior of the house welcome visitors and provide a short interpretive program about the house, owner, and what occurred within the various rooms that visitors can walk through (NPS 2014c). The tour of the house includes rooms with historic furnishings, Civil War memorabilia and souvenirs, framed artwork and decorative materials, a third of which belonged to Miss Barton (NPS 2014f).

Visitors enter the Clara Barton House and are taken to the center of the first floor hallway or the visitor orientation room to commence tours. They are directed through the vestibule to the front and back parlor areas where Clara Barton hosted guests, workers, and volunteers of the American Red Cross (NPS 2014e). From the parlor area, visitors enter into the main hallway of the house, which features an open-air walk to the third floor. From here, visitors are guided into Clara Barton's Office as well as the Red Cross Office, which contain original equipment used by Miss Barton and volunteers. From here, the tour heads back down the hallway to the main staircase where visitors then access the second and third floors. The second floor hosts a trio of bedrooms, including Clara Barton's bedchamber, where she passed away on April 12, 1912 (NPS 2014g). The tour also goes to the third floor, which includes two storerooms and another bedroom.

VISITOR COMFORT

The Clara Barton Historic Site has limited amenities, but neighboring Glen Echo Park has public restroom facilities, seasonal drinking water fountains, and limited food services. There is a small bookstore in the house as well.

HUMAN HEALTH AND SAFETY

The NPS is committed to providing high quality opportunities for visitors and employees to enjoy parks in a safe and healthy environment. Furthermore, the NPS strives to protect human life and provide for injury-free visits. Safety applies to park visitors and park employees.

A visitor incident is defined as an unintentional event or mishap affecting any person, other than an NPS employee, that results in serious injury or illness requiring medical treatment. In this particular project area, there have been no visitor incidents within the last three years (since 2011) (LaRocca pers. comm. 2014). This statistic includes first-aid response.

Although there have been no recorded incidences, there is one loose floorboard on the third floor of the Clara Barton House. Additionally, there are major leaks in portions of the metal roof. This compounded with the weakened structural integrity of the low-sloped roof increases its susceptibility to collapse from heavy snow loads, which is why NPS staff currently manually remove snow buildup from the roof (LaRocca pers. comm. 2014).

Tours of the house are limited to 30 visitors in order to ensure the safety of all present in the building. Only 10 people at a time are allowed on the third floor (LaRocca pers. comm. 2014).

At present, the site has a standard intrusion alarm system in place including elements such as door contacts, tamper alarms, and motion sensors in exhibit and storage areas. The alarm system that is divided into multiple zones and further protection of the collections and building is provided by interior and exterior closed-circuit television cameras in various exhibit rooms and on the sides of the Clara Barton House. The intrusion alarm system reports to the U.S. Park Police, who monitors the site 24 hours a day. The rooms are barricaded with corded rope and all visitors are accompanied at all times. A site-specific Emergency Operations and Salvage Plan and a Quick Guide were completed in 2004. In 2014, a George Washington Memorial Parkway-wide Emergency Operations Plan was completed but it does not delve into specific site information (LaRocca pers. comm. 2014). Emergency Quick Guides are displayed in staff areas. There is one automatic emergency defibrillator present in the building

There have not been any incident reports involving issues caused by lead-based paints; however, there is lead-based paint in the interior and exterior of the house that is peeling (Satterfield 2013) and could potentially cause harm to visitor or employee health if ingested. There is also asbestos in at least one room (the original bathroom).

The house is of construction “Type 5 – unprotected structure.” A two-story wood structure on stone basement walls/foundation plus 1/3 story roof monitor. It is open framed like a 19th century barn or warehouse with wide spaced 4 × 4-inch studs each side of windows two stories high with horizontal girts, and vertical board siding on exterior. Later, horizontal board siding was added on the exterior for a residential appearance, and on the interior, a mix of balloon and platform 2 × 4-inch studs were added between 4 × 4-inch studs on perimeter walls for interior finishes depending on whether flooring was already in place. Partition walls on interior running southeast to northwest are all board walls (1-inch thick). The interior walls and ceiling are covered with muslin cloth tacked to the 2 × 4-inch frame and, in a few places, the NPS has covered the walls and ceiling with sheetrock. Rolled up newspaper was placed between the outer clapboard and the interior walls as an insulating material. Most, if not all, of the original newspaper was removed by the NPS during the original restoration in the late 1970s. This overall construction type and material of the building has a complete structure burn time of 5–6 minutes (NPS 2008b).

The fire alarm system in the Clara Barton House uses bright strobe lights and the fire horn is at 89 decibels, which is slightly above the 85 decibels required by Americans with Disabilities Act. Under the best of conditions and no traffic, firefighters from the Glen Echo Volunteer Fire Department (the closest responding station), can respond in three minutes; eight minutes during heavy traffic. The existing fire and security system is connected to the building telephone lines (NPS 2008b).

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this environmental assessment (EA). This chapter also includes definitions of impact thresholds (e.g., negligible, minor, moderate, and major), methods used to analyze impacts, and the analysis methods used for determining cumulative impacts. As required by the Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA), table 2-2 in chapter 2 provides a summary of the environmental consequences for each alternative. The resource topics presented in this chapter and the organization of the topics correspond to the resource discussions in “Chapter 3: Affected Environment.”

GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS BY RESOURCE

The following elements were used in the general approach for establishing impact thresholds and measuring the effects of the alternatives on each resource category:

- General analysis methods as described in guiding regulations, including the context and duration of environmental effects;
- Basic assumptions used to formulate the specific methods used in this analysis;
- Thresholds used to define the level of impact resulting from each alternative;
- Methods used to evaluate the cumulative impacts of each alternative in combination with unrelated factors or actions affecting park resources; and
- Methods and thresholds used to determine if impairment of specific resources would occur under any alternative.

These elements are described in the following sections.

GENERAL ANALYSIS METHODS

The analysis of impacts follows CEQ guidelines and Director’s Order 12 procedures (NPS 2011a) and is based on the underlying goal of providing for long-term protection, conservation, and restoration of historic resources at the Clara Barton House and Clara Barton National Historic Site (NHS). This analysis incorporates the best available literature applicable to the setting and the actions being considered in the alternatives. For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including assumptions and impact intensity thresholds.

ASSUMPTIONS

Several guiding assumptions were made to provide context for this analysis. These assumptions are described below.

Analysis Period. The analysis period for this assessment is the expected period of construction to implement the proposed repairs and rehabilitation activities at the Clara Barton House. Construction is expected to last approximately two years; the start and end dates are not set at this time. The analysis period for some resource areas may extend beyond the period of construction. The specific analysis period for each impact topic is defined at the beginning of each topic discussion.

Geographic Area Evaluated for Impacts (Area of Analysis). The geographic study area (or area of analysis) for this assessment is the Clara Barton House, its side yard, and the grassed area adjacent to the house. The area of analysis may extend beyond the Clara Barton NHS boundaries for some cumulative impact assessments. The specific area of analysis for each impact topic is defined at the beginning of each topic discussion.

IMPACT THRESHOLDS

Determining impact thresholds is a key component in applying National Park Service (NPS) *Management Policies 2006* and Director's Order 12 (NPS 2006; 2011a). These thresholds provide the reader with an idea of the intensity of a given impact on a specific resource. The impact threshold is determined primarily by comparing the effect to a relevant standard based on applicable or relevant/appropriate regulations or guidance, scientific literature and research, or best professional judgment. Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document. Intensity definitions are provided throughout the analysis for negligible, minor, moderate, and major impacts. In all cases, the impact thresholds are defined for adverse impacts. Beneficial impacts are addressed qualitatively.

The potential impacts of all alternatives are described in terms of type (beneficial or adverse); context; duration (short or long term); and intensity (negligible, minor, moderate, major). Definitions of these descriptors include:

Beneficial. A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse. A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

Context. The affected environment in which an impact would occur, such as local, park wide, regional, global, affected interests, society as whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic. As such, the impact analysis determines the context, not vice versa.

Duration. The duration of the impact is described as short-term or long-term. Duration is variable with each impact topic; therefore, definitions related to each impact topic are provided in the specific impact analysis narrative.

Intensity. Because definitions of impact intensity (negligible, minor, moderate, and major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed.

CUMULATIVE IMPACTS ANALYSIS METHOD

The CEQ regulations for implementing NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact to the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7). As stated in the CEQ handbook, *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ 1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected, and the analysis should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the no action alternative.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects and plans at Clara Barton NHS and, if applicable, in the surrounding area. Table 4-1 summarizes the actions that could affect various park resources, along with the plans and policies of the park and surrounding jurisdictions that were discussed in “Chapter 1: Purpose of and Need for Action.”

TABLE 4-1. ACTIONS THAT CONTRIBUTE TO CUMULATIVE IMPACTS

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions
Historic Structures	Clara Barton NHS Cultural Landscape	MacArthur Boulevard Shared-Use Path at Glen Echo Park Cultural Landscape Inventory for Glen Echo Park-Clara Barton House Cultural Landscape Reconstruction of parking lot between Glen Echo Park and Clara Barton NHS Restoration of Minnehaha Branch	None	None
Cultural Landscapes	Glen Echo Park-Clara Barton House Cultural Landscape	MacArthur Boulevard Shared-Use Path at Glen Echo Park Cultural Landscape Inventory for Glen Echo Park-Clara Barton House Cultural Landscape Closure of Glen Echo Amusement Park Establishment of Glen Echo Park Partnership for Arts and Culture Abandonment of trolley and removal of tracks Reconstruction of parking lot between Glen Echo Park and Clara Barton NHS Restoration of Minnehaha Branch	None	Replace roofs of Bumper Car Pavilion and the Carousel Repave pathways in Glen Echo Park
Archeological Resources	Clara Barton NHS	MacArthur Boulevard Shared-Use Path at Glen Echo Park Reconstruction of parking lot between Glen Echo Park and Clara Barton NHS Restoration of Minnehaha Branch	None	None
Museum Objects	Clara Barton NHS	None	None	None

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions
Soils	Clara Barton NHS	Reconstruction of parking lot between Glen Echo Park and Clara Barton NHS Restoration of Minnehaha Branch	None	None
Visitor Use and Experience	Clara Barton NHS	MacArthur Boulevard Shared-Use Path at Glen Echo Park	None	None
Human Health and Safety	Clara Barton NHS	MacArthur Boulevard Shared-Use Path at Glen Echo Park	None	None
Park Management and Operations	Clara Barton NHS	Reconstruction of parking lot between Glen Echo Park and Clara Barton NHS Restoration of Minnehaha Branch Cultural Landscape Inventory for Glen Echo Park-Clara Barton House Cultural Landscape	None	None

The analysis of cumulative impacts was accomplished using four steps:

Step 1. Identify resources affected. Fully identify resources affected by any of the alternatives. These include the resources addressed as impact topics in chapters 3 and 4 of this document.

Step 2. Set boundaries. Identify an appropriate spatial and temporal boundary for each resource. The temporal boundaries are noted in table 4-1, and the spatial boundary for each resource topic is listed under each topic.

Step 3. Identify past, present, and reasonably foreseeable future actions. Determine which past, present, and reasonably foreseeable future actions to include with each resource. These are listed in table 4-1 and described below.

Step 4. Perform cumulative impact analysis. Summarize impacts of these other actions (x) plus impacts of the proposed action (y), to arrive at the total cumulative impact (z). This analysis is included for each resource.

The following provide detail on past and future actions listed in table 4-1.

MacArthur Boulevard Shared-Use Path at Glen Echo Park. The George Washington Memorial Parkway, an administrative unit of the NPS is providing a special use permit to Montgomery County, Maryland, for the relocation of approximately 800 feet of the MacArthur Boulevard Shared-Use Path onto NPS administered property at Glen Echo Park. The project includes the construction of an 8-foot-wide asphalt path on the remnants of the Cabin John Trolley right-of-way, which is the abandoned right-of-way of the Washington Railway and Electric Company (also known as the Brookmont Trolley right-of-way).

Reconstruction of Parking Lots. In 1956, owners of the park paved the entire area between the park and Oxford Drive and from the train tracks to the Clara Barton House. During this time, Minnehaha Branch was carried through a culvert. In 1989, a major storm caused the culvert to collapse and in 1991 the parking area was completely reconfigured to the current layout.

Restoration of Minnehaha Branch. After the 1989 storm, the NPS removed the portion of the parking lot that was over the stream, removed the culvert, and restored the streambed.

Closure of Glen Echo Amusement Park. Glen Echo Park began in 1891 as a National Chautauqua Assembly “to promote liberal and practical education.” By 1911, it transformed into the premier amusement park in Washington D.C. until it closed in 1968 (NPS 2014h).

Establishment of Glen Echo Park Partnership for Arts and Culture. The Glen Echo Park Partnership for Arts and Culture was established to manage the arts and dance programs, produces festivals and special events, and assists with the management and maintenance of park facilities.

Abandonment of Trolley and the Removal of Track. Trolleys stopped running on the line between Washington, D.C., and Glen Echo in 1961. The tracks and ties were removed shortly thereafter.

Development of the Cultural Landscape Inventory for Glen Echo Park and the Clara Barton NHS. This project, which was also in progress during the development of the EA and assessment of effect, documents the various elements of the cultural landscape, including historic structures, vegetation, and transportation routes.

Replace the Roof of the Bumper Car Pavilion and the Carousel. These projects would involve removing the existing roofs and replacing them in their entirety.

Repave Pathways at Glen Echo Park. This project would involve a new layer of pavement on existing pathways.

CULTURAL RESOURCES

GENERAL METHODOLOGY AND ASSUMPTIONS

The NPS categorizes cultural resources by the following categories: archeological resources, cultural landscapes, prehistoric and historic structures (including historic districts), museum objects, and ethnographic resources. Only impacts on historic structures, cultural landscapes, archeological resources, and museum objects are of potential concern for this project. As noted in chapters 1 and 3, historic districts and ethnographic resources has been dismissed from further analysis.

The analyses of effects on cultural resources that are presented in this section respond to the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA), as amended. In accordance with Advisory Council on Historic Preservation (ACHP) regulations implementing Section 106 (36 CFR 800, Protection of Historic Properties), impacts on cultural resources were identified and evaluated by (1) determining the area of potential effect (APE); (2) identifying cultural resources present in the APE that are either listed in or eligible to be listed in the National Register of Historic Places (National Register) (i.e., historic properties); (3) applying the criteria of adverse effect to affected historic properties; and (4) considering ways to avoid, minimize, or mitigate adverse effects. The assessment of effects on cultural resources is also taking place through coordination with the Maryland Historical Trust, other interested federal agencies, and consulting parties invited by the NPS. Section 106 consultation letters were sent to the Maryland Historical Trust and the ACHP (see appendix A).

Under the implementing regulations for Section 106, a determination of either *adverse effect* or *no adverse effect* must also be made for affected historic properties. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register (e.g., diminishing the integrity of the resource’s location, design, setting,

materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the proposal that would occur later, be farther removed in distance, or be cumulative (36 CFR 800.5). A determination of *no adverse effect* means there is either no effect or that the effect would not diminish, in any way, the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and Director's Order 12 also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, for example, reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. Cultural resources are nonrenewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an *adverse effect* under Section 106 may be mitigated, the effect remains adverse.

The NPS guidance for evaluating impacts, Director's Order 12 (NPS 2011a) requires the impact assessment to be scientific, accurate, and quantified to the extent possible. For cultural resources, it is rarely possible to measure impacts in quantifiable terms; therefore, impact thresholds must rely heavily on the professional judgment of resource experts.

A Section 106 summary is included at the end of the cultural resources impact analysis section for historic structures cultural landscapes, and archeological resources. The impact analysis is an assessment of the effect of the undertaking (implementation of the alternatives) on National Register-eligible or listed cultural resources only, based upon ACHP criteria of adverse effect. An assessment of effect for Section 106 analysis has been prepared and is located in appendix B.

HISTORIC STRUCTURES

Historic structures are classified as buildings, structures, sites, objects, or districts (i.e., all the various types of historic property, except for archeological sites) that are potentially eligible for listing in the National Register.

STUDY AREA

The study area for historic structures is the Clara Barton NHS. The Clara Barton House is a National Historic Landmark and has the potential to be impacted by the proposed activities. The APE for the analysis of effects on the historic structure is the house itself and immediate environs.

IMPACT THRESHOLDS

The following thresholds were used to determine the magnitude of effects on historic structures under NEPA and their equivalent determination of effect under Section 106 of NHPA:

Negligible. The impact would be at the lowest level of detection or barely perceptible and not measurable. For the purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor. Alteration of a character-defining feature(s) would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be *no adverse effect*.

Moderate. Alteration of a character-defining feature(s) would diminish the overall integrity of the resource. The determination of effect for Section 106 would be an *adverse effect*. A memorandum of

agreement / programmatic agreement would be executed between the NPS and applicable state historic preservation office (SHPO) and, if necessary, the ACHP in accordance with 36 CFR 800.6(b). Measures identified in the memorandum of agreement / programmatic agreement to minimize or mitigate adverse impacts would reduce the intensity of impact under NEPA from major to moderate.

Major. Alteration of a character-defining feature(s) would diminish the overall integrity of the resource. The determination of effect for Section 106 would be an *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed on and the NPS and applicable SHPO and/or the ACHP are unable to negotiate and execute a memorandum of agreement / programmatic agreement in accordance with 36 CFR 800.6(b).

Beneficial. No levels of intensity for beneficial impacts are defined. Beneficial impacts can occur under the following scenarios: when character-defining features of the historic district or structure would be stabilized/preserved in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (Weeks and Grimmer 1995), to maintain its existing integrity; when the historic district or structure would be rehabilitated in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to make possible a compatible use of the property while preserving its character defining features; or when a historic district or structure would be restored in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* to accurately depict its form, features, and character as it appeared during its period of significance. For purposes of Section 106, a beneficial effect is equivalent to *no adverse effect*.

Duration. Short-term impacts would occur during all or part of the action alternative implementation; long-term impacts would extend beyond the implementation of the alternative.

IMPACTS OF ALTERNATIVE A: NO ACTION

The continuation of existing conditions under the no action alternative would have a major impact on the Clara Barton House, a National Historic Landmark. Normal maintenance would continue to be conducted but the larger issues that could impact the structure, such as the failing roof and inadequate climate control, would not be addressed. The roof leaks would continue and could worsen over time, leading to deterioration of the structural system and potential failure of key structural elements. Additionally, leaking water would cause damage to the interior of the structure, particularly the muslin and plaster ceilings directly below the roof and important museum objects stored within the house.

Most of this damage would occur in the rooms immediately below the roof line on the second and third floor of the structure. Many of the rooms on the second floor and all of the rooms on the third floor are considered to be of primary significance to the house. Rooms of primary significance on the second floor that could be impacted by water damage include Dr. Hubbell's bedroom (room 211), the library/kitchen (room 203), and the meeting room (room 218). Other second-floor rooms that would require some protection include Clara Barton's sitting room (room 212) and the library in room 201. Clara Barton's bedroom has not been evaluated for significance; however, it could also be impacted by water damage. Not only would leaks cause structural damage, the damage would be visible to visitors and would impact the overall interpretation of Clara Barton and the house itself.

The lack of a fire suppression and climate control system at the house could have long-term moderate impacts on the structure. A fire would be difficult to extinguish and large portions of the house could be lost. Also, the current lack of climate control allows the house to expand and contract with the weather, impacting the structural integrity of the building and possibly necessitating more frequent and extensive

repair projects. However, the existing climate control may alleviate some of these issues by minimizing some, if not all, of the climate fluctuations within the structure.

Cumulative Impacts

None of the past or reasonably foreseeable future projects included in the cumulative impact analysis would have any effect on the Clara Barton House; therefore, there would be no cumulative effects under the no-action alternative.

Conclusion

This alternative would have potential moderate impacts on the historic structure, particularly due to the existing roof problems and leaks. Although the existing climate control may alleviate some issues, in the long term, the lack of fire suppression and climate control puts the larger structure at risk from loss to fire or extensive deterioration from most intense exposure to the elements. There would be no cumulative impacts.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Preservation of Historic Roof Structure

Under this alternative, the existing roof rafters and interior finishes would be preserved and the roof would be reinforced with new structural members. New rafters would be installed between the existing rafters to strengthen the roof. Existing wood rafters and ceiling finishes would remain in place. The existing tin coated steel roof system and all associated flashing, rain diverters, downspouts, underlayment, etc., would be replaced in-kind with a new zinc/tin coated field formed and finished roof. It is possible that some of the existing rafters have suffered from extensive deterioration due to water leakage. The damaged portions of the rafters would be removed. After this work, the new rafters will support the roof and the existing rafters will remain in place but only support the ceilings.

Although there would be short-term, and temporary minor to moderate impacts on the structure during construction activities associated with the roof rehabilitation. The long-term impacts would be beneficial. The roofline and appearance would not be altered, maintaining this important structural element that contributes to the overall eligibility of the building. The entire metal roof would be replaced, which would ensure that the public view of the roof remains consistent and seamless. Also, the repairs to the roof would solve current water leaking problems, preserving the overall structural integrity of the building as well as protecting the primary zones of significance on the second and third floors (table 4-2).

Additionally, two unevaluated rooms that are potentially significant (Clara Barton's bedroom [room 213] and the meeting room [room 218]) would be protected. There are no secondary zones of significance on the third floor.

TABLE 4-2. PRIMARY ZONES OF SIGNIFICANCE ON THE SECOND AND THIRD FLOORS

Room Number	Description
203	Library/Kitchen
211	Dr. Hubbell's Bedroom
212	Clara Barton's Sitting Room
301	Bedroom
302	Landing
303	Bedroom
304	Landing
305	Store Room

New Fire Suppression System and Replacement Fire Alarm System

The proposed fire suppression system would be installed on all levels of the house. The system would include piping, water flow alarm switches, valve supervisory switches, check and control valves, sprinklers, fire detectors, and associated equipment. All of the piping and fire alarm conduit and cabling would be concealed within the closets on the first and second floors and would be placed within close proximity to one another to minimize disturbance. On the third floor, some wet pipe sprinkler piping would be placed under the ceilings for dry-pipe extensions into small, concealed attic space. The only visible intrusion into the rooms would be the sprinkler heads and fire detectors. The installation of the fire suppression system would have a long-term minor impact on the historic structure. Short-term and temporary moderate impacts would include the removal of portions of walls and floors to install the piping and associated features. Following the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Restoring, and Reconstructing Historic Structures* (Secretary's Standards) (Weeks and Grimmer 1995), these disturbances would be repaired in a manner that retains the original features and character of the house and does not introduce new materials. When possible, the boards from the walls and floors should be removed in a manner that would allow them to be reused during the rehabilitation of construction efforts. Any historic materials that cannot be reused would be replaced in kind. These impacts would last until the construction of the system is complete.

Fire alarms and sprinklers would be installed in all of the rooms identified as primary and secondary areas of significance (table 4-3). In most cases, these would be placed discretely near closets or doorways and would be minimally intrusive. Fire alarms are limited to one per room but there are often multiple sprinkler heads depending on the size of the room. With the exception of the basement, the majority of the sprinkler heads would be placed high on walls and not in the ceiling. These pieces of equipment are also discretely located, usually near doors, to minimize visual intrusions.

The fire suppression system would have a long-term minor impact by introducing modern components into rooms that have been identified as significant to the overall integrity of the house. However, these features could be removed in the future and the house returned to its original state. Additionally, the park will follow the Secretary's Standards to ensure that the placement of these features does not impact significant features and are as visibly unobtrusive as possible while ensuring their functionality.

There are also beneficial impacts associated with the installation of the fire suppression system. Despite moderate, short-term and minor, long-term impacts, the fire suppression system could prevent the loss of portions or all of the structure in the event of a fire. The benefit of long-term preservation of the structure would outweigh the impacts.

TABLE 4-3. LOCATION OF FIRE ALARMS AND SPRINKLERS IN AREAS OF PRIMARY AND SECONDARY ZONES OF SIGNIFICANCE

Room Number	Description
Primary Zones of Significance	
101	Vestibule
102	Hall
104	Vault
111	Kitchen
112	Dining Room
113	Red Cross Office
114	Red Cross Office
118	Rear Parlor
119	Front Parlor
201	Library
202	Hall
203	Library/Kitchen
211	Dr. Hubbell's Bedroom
212	Clara Barton's Sitting Room
213*	Clara Barton's Bedroom
218*	Meeting Room
301	Bedroom
302	Landing
303	Bedroom
304	Landing
305	Store Room
Secondary Zones of Significance	
B-3	Utility Room
B-4	Store Room
B-8	Vault
108	Visitor Orientation
204	Vault
209	Bathroom

Note: * unevaluated rooms that are potentially significant.

New Climate Control System

The proposed climate control system would replace the existing hot water heating system and provide much needed humidity control and ventilation within the structure. The vast majority of the climate control equipment, including new electrical panels and wiring, would be located in the unfinished portion of the basement. This portion of the basement is considered 'non-significant' to the overall integrity of the

structure and modifications in these areas are allowed (NPS 2004, volume 2). Small diameter (3/4 to 1 inch), high velocity ductwork would be installed within the walls and floors of the structure with vents opening into rooms.

Like the fire suppression system, the climate control system would have short- and long-term minor to moderate impacts on the historic structure. Short-term and temporary moderate impacts would occur during the installation of the system and would be particularly prevalent in significant areas where walls or flooring would have to be removed to accommodate small diameter ductwork. However, work in these areas would follow the Secretary's Standards and would be repaired to match the historic character of the room and would only be visible for a short duration. When possible, the boards from the walls and floors should be removed in a manner that would allow them to be reused during the rehabilitation of construction efforts. If this is not possible the materials will be replaced in kind.

The installation of vents would introduce modern elements into significant areas within the house, resulting in long-term minor impacts on these areas. However, the vents would be placed in a manner that makes them visually unobtrusive and vent covers would be used to blend the new feature with the surroundings. Although a modern intrusion, these vents would be a positive improvement over the current use of the stand-alone air conditioning units throughout the house.

Overall, the climate control system would have long-term beneficial impacts on the historic structure by regulating the impacts from extreme fluctuations of heat and cold. This could lessen the overall wear and tear on the house caused by expanding and contracting seasonally and prevent the need for other repairs of the house.

Cumulative Impacts

None of the past or future projects included in the cumulative impact analysis would have any effect on the Clara Barton House site; therefore, there would be no cumulative effects under alternative B.

Conclusion

This alternative would result in short-term, minor to moderate adverse to long-term beneficial impacts on the historic Clara Barton House, most of which would occur during construction. The short-term, temporary moderate impacts would have no adverse impacts on the historic structure because they adhere to the Secretary's Standards. Roof rehabilitation would result in short-term moderate adverse impacts from construction and long-term beneficial impacts as a result of the reduction of water damage and increased structural stability. There are long-term moderate impacts associated with the installation of modern features such as sprinklers, fire detectors, and vents into significant areas of the house. However, placing these features in discrete locations and blending them into the surrounding features should minimize these impacts. Despite these impacts, all of the proposed changes to the house would result in better potential for long-term preservation of the structure. There would be no cumulative impacts.

CULTURAL LANDSCAPES

METHODOLOGY AND ASSUMPTIONS

Cultural landscapes are composed of two principal organizational elements, spatial organization and land patterns, and several character-defining landscape features. These character-defining features include topography, vegetation, circulation, water features, structures, site furnishings, and objects. The paramount attribute of the organizational elements and the character-defining features is their interrelationships in space. Individual features of the landscape are never examined alone but only in

relationship to the overall landscape. In this EA, impacts on cultural landscapes are described in terms of type, context, duration, and intensity, which is consistent with the CEQ regulations. As described in the “Historic Structures” section above, these impact analyses are intended to comply with the requirements of both NEPA and Section 106 of the NHPA, as amended. In addition, under the ACHP regulations, a determination of either *adverse effect* or *no adverse effect* must be made for affected cultural resources eligible for or listed in the National Register.

STUDY AREA

The study area for cultural landscapes is the Glen Echo Park-Clara Barton House Cultural Landscape as defined by the NPS Cultural Landscape Inventory (NPS 2011b). The Clara Barton House is a contributing element to the landscape and the analysis focuses on potential exterior visual changes that could impact the overall integrity of the cultural landscape. Interior modifications, such as the fire suppression system and climate control system, were not analyzed. However, exterior construction in support of these systems was analyzed.

IMPACT THRESHOLDS

The following thresholds were used to determine the magnitude of effects on cultural landscapes:

Negligible. The impact would be at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be *no adverse effect*.

Minor. The alteration of a pattern(s) or feature(s) of the landscape would not diminish the overall integrity of the landscape. The determination of effect for Section 106 would be *no adverse effect*.

Moderate. Alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for Section 106 would be an *adverse effect*. A memorandum of agreement / programmatic agreement would be executed between the NPS and applicable SHPO and, if necessary, the ACHP in accordance with 36 CFR 800.6(b). Measures identified in the memorandum of agreement / programmatic agreement to minimize or mitigate adverse impacts would reduce the intensity of impact under NEPA from major to moderate.

Major. Alteration of a pattern(s) or feature(s) of the cultural landscape would diminish the overall integrity of the landscape. The determination of effect for Section 106 would be an *adverse effect*. Measures to minimize or mitigate adverse impacts cannot be agreed on and the NPS and applicable SHPO and/or the ACHP are unable to negotiate and execute a memorandum of agreement / programmatic agreement in accordance with 36 CFR 800.6(b).

Beneficial. Restoration of a cultural landscape or its patterns and features in accordance with the *Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The determination of effect for Section 106 would be *no adverse effect*.

Duration. Short-term impacts would occur during all or part of the action alternative implementation; long-term impacts would extend beyond the implementation of the alternative.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under this alternative, the roof would not be repaired and water leaks would continue to occur, potentially damaging the substructure and resulting in visual deterioration of the house. Since the house is a major

component of the cultural landscape, the deterioration of the structure, particularly the exterior, would have a long-term moderate impact on the overall landscape. There would be no ground disturbance under this alternative and therefore, the cultural landscape would not be impacted by these actions.

Cumulative Impacts

Past and reasonably foreseeable future actions that have the potential to impact the cultural landscape include the closure of the Glen Echo Amusement Park, the abandonment of the trolley and removal of the tracks at Glen Echo, the reconstruction of the parking lot between the two parks, and the restoration of Minnehaha Creek. These projects have reduced access or removed historic features from within the cultural landscape, resulting in long-term moderate adverse impacts. However, other projects, including the cultural landscape inventory for Glen Echo Park-Clara Barton House Cultural Landscape and establishment of the Glen Echo Park Partnership for Arts and Culture, would result in long-term beneficial impacts on the cultural landscape. The lack of repair and rehabilitation efforts at Clara Barton under the no action alternative would have an adverse impact on the larger cultural landscape preservation efforts. Therefore, when combined with the long-term beneficial and moderate adverse impacts from cumulative actions, the no action alternative would have a noticeable adverse contribution to overall long-term cumulative impacts.

Conclusion

The continuation of the existing conditions would result in a moderate impact on the cultural landscape due to the potential deterioration of the Clara Barton House from an inadequate roofing system. There would be long-term beneficial and moderate adverse cumulative impacts; the no action alternative would have a noticeable adverse contribution to these impacts.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Preservation of Historic Roof Structure

Roof repair under alternative B would have a long-term beneficial impact on the cultural landscape by preserving the roofline and maintaining the architectural and visual components of the Clara Barton House that make it an important element to the overall landscape. The preservation of the roof would also aid in the long-term preservation of the house itself and minimize the potential for deterioration that could impact the integrity of the cultural landscape.

There would be short-term, temporary moderate impacts on the cultural landscape during the roof rehabilitation. Construction equipment would not only be visible but audible and could detract from the cultural landscape. However, these impacts would be restricted to the period of construction.

New Fire Suppression System and Replacement Fire Alarm System

There would be short-term, temporary moderate impacts on the cultural landscape during the construction of the fire suppression and climate control systems. Ground-disturbing activities and construction equipment would not only be visible but audible and could detract from the cultural landscape. However, these impacts would be restricted to the period of construction and all areas of disturbed ground would be rehabilitated to match the existing conditions.

New Climate Control System

Impacts on the cultural landscape from implementation of the climate control system would be the same as for implementation of the fire suppression system.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions potentially impacting the cultural landscape would be the same as those described in the no action alternative, resulting in long-term beneficial impacts. Although implementation of alternative B could have a short-term moderate adverse impact on the cultural landscape, overall this alternative would have long-term beneficial impacts as a result of long-term preservation of the house. Therefore, when combined with the long-term beneficial and moderate adverse impacts from cumulative actions, alternative B would have a noticeable beneficial contribution to overall cumulative impacts.

Conclusion

Although there would be short-term, temporary moderate impacts associated with the proposed construction activities, the implementation of this alternative would have a long-term beneficial impact on the Glen Echo-Clara Barton House Cultural Landscape. Roof repair would have a long-term beneficial impact on the cultural landscape by preserving the roofline and maintaining the architectural and visual components of the Clara Barton House. When combined with the long-term beneficial and moderate adverse impacts from cumulative actions, alternative B would have a noticeable beneficial contribution to overall cumulative impacts.

ARCHEOLOGICAL RESOURCES

METHODOLOGY AND ASSUMPTIONS

There has been limited archeological survey at the Clara Barton NHS and one archeological site (18MO154) has been identified. There is the potential for archeological sites to be located within the project area in areas where archeological testing has not yet been conducted. Potential impacts on archeological resources could occur in those areas where there would be ground-disturbing activities such as excavation or grading, as well as areas where equipment and materials are staged and moved without adequate ground protection.

STUDY AREA

The APE for archeological resources specifically is limited to the location of the geothermal field, utility line installation for the fire suppression system and geothermal piping, a small area from which an existing shed and boiler would be removed, and the staging area for construction equipment and lay down. The staging area for the new fire suppression system would be located in a regraded, grassed area adjacent to Clara Barton House. The staging area for the new geothermal climate control system would be at the small parking lot adjacent to the overflow parking lot.

IMPACT THRESHOLDS

Impacts on archeological resources occur when the proposed alternative results in whole or partial destruction of the resource, which is termed a loss of integrity in the context of Section 106. Impact thresholds for archeological resources consider both the extent to which the proposed alternative results in

a loss of integrity and the degree to which these losses can be compensated by mitigating activities, such as preservation or archeological data recovery. The process begins with assessment of a resource according to its eligibility for the National Register, because only sites considered significant enough for listing in the National Register are considered in the NHPA, Section 106 process.

Under federal guidelines, resources are eligible for listing in the National Register if they possess integrity and meet one or more of the criteria of eligibility for inclusion in the National Register. Most archeological resources found eligible for the National Register are determined to be significant under criterion D because they have the potential to provide important information about the history or prehistory. However, in some circumstances, archeological resources might be found significant because (i) they are associated with events that have made a significant contribution to the broad patterns of our history (National Register criterion A), or (ii) because they are associated with the lives of persons significant in our past (National Register criterion B), or (iii) because they embody distinctive characteristics of a type, period, or method of construction (National Register criterion C). Criterion A can encompass ongoing “events,” such as “the ongoing participation of an ethnic or social group in area’s history, reflected in a neighborhood’s streetscapes, or patterns of social activity.”

For purposes of analyzing impacts on archeological resources, thresholds of change for the intensity of an adverse impact are based on the foreseeable loss of integrity. All of these discussions consider only the direct impacts of construction, because operation of the facilities should have no ground disturbance activities and no additional effect on archeological resources under any of the alternatives under consideration. All impacts are considered long-term impacts (e.g., lasting longer than the period of construction).

Negligible. The impact is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be *no adverse effect*.

Minor. Disturbance of a site results in little, if any, loss of integrity. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate. Disturbance of a site results in loss of integrity to the extent that there is a partial loss of the character-defining features and information potential that form the basis of eligibility for the National Register. Mitigation is accomplished by a combination of archeological data recovery and in place preservation. The determination of effect for Section 106 would be *adverse effect*.

Major. Disturbance of a site results in loss of integrity to the extent that it is no longer eligible for the National Register. Its character-defining features and information potential are lost to the extent that archeological data recovery is the primary form of mitigation. The determination of effect for Section 106 would be *adverse effect*.

Beneficial. A beneficial impact would occur when actions were taken to actively preserve or stabilize a site in its pre-existing condition, or when it would be preserved in accordance with the *Secretary of the Interior’s Standards for the Treatment of Historic Properties* to accurately depict its form, features, and character as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Duration. Short-term impacts would last for the duration of construction activities associated with the proposed alternative; long-term impacts would last beyond the construction activities. All impacts on archeological resources are considered long-term impacts.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no action alternative, there would be no impacts on this resource because the current practices regarding visitor use, operations, and maintenance would continue. Because none of these activities would involve ground-disturbing activities, any existing archeological resource would remain undisturbed.

Cumulative Impacts

Since there would be no impacts on archeological resources under the no action alternative, there would be no cumulative impacts.

Conclusion

Implementation of the no action alternative would result in no impacts on archeological resources in the study area. Under the no action alternative, there would be no cumulative impacts on archeological resources.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Preservation of Historic Roof Structure

Construction activities involving the use of heavy equipment to shuttle supplies to the house or to the roof may impact site 18MO154 by disturbing the ground. Impacts would be greater if the equipment was used during or after a rain or snow event and the ground was particularly soft. However, the materials are deeply buried and should not be impacted by heavy equipment. Restricting heavy equipment to paved or graveled areas would ensure that any impacts to 18MO154 are avoided.

The use of heavy equipment outside of previously surveyed areas, such as in the grassed staging areas or as transportation between roads and the house, could negatively impact unknown archeological resources. Again, these impacts could be avoided by restricting heavy equipment use to paved or graveled areas. Any impacts would be avoided or minimized through the Section 106 consultation and the preparation of a Memorandum of Agreement, to include further archeological investigation of the area.

New Fire Suppression System and Replacement Fire Alarm System

Archeological survey at Clara Barton has been limited and the proposed areas of ground disturbance have never been surveyed for archeological resources. The placement of the water piping would take place in previously disturbed soils of an existing 36-inch-wide utility trench, portions of the driveway along Oxford Road and leading to the house. Widening of the existing 3' utility trench could have an adverse impact on site 18MO154. These impacts could be avoided or minimized by completing archeological inventories of the unsurveyed areas of disturbance prior to construction and monitoring of the area where the trench bisects site 18MO154. The NPS will execute a Memorandum of Agreement as part of the Section 106 consultation. Any impacts would be avoided or minimized through the Section 106 consultation and the preparation of a Memorandum of Agreement, to include further archeological investigation of the area.

The staging area that would be located on the regraded, grassed area adjacent to Clara Barton House has not been previously surveyed. Given that previous survey has identified both prehistoric and historic

archeological components within the project area, there is the potential for archeological resources to be present at the staging area. These resources could be impacted by the use of this staging area. These impacts would be avoided or minimized by completing an archeological inventory of the area and NHPA, Section 106 consultation.

New Climate Control System

Ground disturbance would occur as a result of construction of supply and return lines for the climate control system. Similar to construction of the water pipes for the fire suppression system, the placement of the water piping would take place in previously disturbed soils of the existing 36-inch-wide utility trench, portions of the driveway along Oxford Road and leading to the house, and in a trench extension from where the fire suppression pipes connect at Oxford Road down to the grass field area. The current 3' wide utility trench is not planned to be widened. The impacts to site 18MO154 from the expansion of the utility trench would be the same as those listed in the section "Fire Suppression and Replacement Fire Alarm System."

Additionally, construction of the geothermal wells would require ground disturbance in the grassy area adjacent to the house. Native soils within the adjacent grassy area have been covered by approximately 4 feet of excavated soil followed by site regrading after the removal of the parking lot that was in existence in the 1970s and 1980s. The removal of the parking lot may have resulted in some ground disturbance however, NPS observations suggest that this area does not appear to have been highly altered and therefore is a potential for archeological resources to exist at the site. As a result, construction of the climate control system under alternative B could have a long-term moderate adverse impact on archeological resources. Any impacts would be avoided or minimized through the Section 106 consultation and the preparation of a Memorandum of Agreement, to include further archeological investigation of the area.

The staging area for the climate control system installation would be at the small parking lot adjacent to the overflow parking lot. No impacts to archeological resources would occur as no ground disturbance would occur.

Cumulative Impacts

Past projects at the site that could have impacted archeological resources include parking lot construction and reconfiguration of the lot between Glen Echo Park and Clara Barton NHS. In the mid-1950s, the area bounded by Glen Echo Park, Oxford Road, the Clara Barton House, and MacArthur Road was paved for a parking lot. Due to the collapse of a culvert in the Minnehaha Branch under the original area, the location and size of the parking lot was changed and condensed to its current position.

These past projects could have resulted in long-term moderate adverse impacts because limited archeological surveys have been conducted around the Clara Barton House. Alternative B would have long-term moderate adverse impacts on archeological resources. When combined with impacts from cumulative actions, alternative B would have a noticeable contribution to overall long-term moderate adverse impacts.

Conclusion

There is the potential for moderate impacts to archeological resources as a result of ground disturbance, particularly from the installation of the geothermal wells. Prior to construction, a Phase I archeological identification study will be conducted. If resources are identified during Phase I, a Phase II evaluation study will be undertaken to determine if the resources are eligible for listing in the National Register.

When combined with impacts from cumulative actions, alternative B would have a noticeable contribution to overall long-term moderate adverse impacts.

If archeological resources are discovered during construction, all work in the immediate vicinity of the discovery will be halted until the resources can be identified and documented and an appropriate mitigation strategy developed. If necessary, consultation with the Maryland Historical Trust, NPS, or NPS Regional Archeologist will be coordinated to ensure that the protection of resources is addressed. In the unlikely event that Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) will be followed. If Euro-American human remains are discovered during construction, the NPS shall determine the appropriate course of action following the Department of Interior's guidelines on human remains.

MUSEUM OBJECTS

METHODOLOGY AND ASSUMPTIONS

Potential impacts on museum objects are assessed according to the conditions under which they are displayed or stored. Environmental conditions such as temperature and relative humidity are important factors governing the stability of museum objects. Museum objects are most stable and secure when they are stored in a facility that meets museum standards. They are subject to physical damage or loss when they must be moved or when they are stored or displayed in settings with inadequate or outdated environmental controls.

STUDY AREA

The study area for museum objects consists of the Clara Barton House where the collections are displayed or stored.

IMPACT THRESHOLDS

Museum objects (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens) can be listed in the National Register; however, the Clara Barton collection has not been evaluated for its eligibility for listing. The collections are considered potentially eligible pending a formal determination. Museum objects may be threatened by fire, theft, vandalism, natural disasters, and careless acts, as well as the gradual deterioration that results from fluctuating environmental conditions. The preservation of objects is an ongoing process of preventative conservation, supplemented by conservation treatment, when necessary. The primary goal is preservation of artifacts in as stable condition as possible to prevent damage and minimize deterioration.

For the purpose of analyzing potential impacts, the thresholds of change for the intensity of an impact on museum collections are defined as follows:

Negligible. The impact is at the lowest levels of detection, barely measurable with any perceptible consequences, either adverse or beneficial, to museum collections.

Minor. The impacts would affect the integrity of few items in the museum collection, but would not degrade the usefulness of the collection for future research and interpretation.

Moderate. The impacts would affect the integrity of many items in the museum collection and diminish the usefulness of the collection for future research and interpretation.

Major. The Impacts would affect the integrity of most items in the museum collection and destroy the usefulness of the collection for future research and interpretation.

Beneficial. No levels of intensity for beneficial impacts are defined. Beneficial impacts would occur when the condition of the collection as a whole or its constituent components from the threat of further degradation is secure.

Duration. In the short term, the impacts on museum objects would be related to the activity and disruption associated with construction. The long-term impacts would be related to changes following construction.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no action alternative, the museum collections at the Clara Barton House would remain within the house in conditions that are less than ideal. The collections would continue to be at risk from water damage, particularly in the second and third floor rooms where the above roofing conditions are deteriorating. The collections would also be at risk from fire, which could lead to the loss or extensive damage of museum objects. Inadequate heating and cooling would continue, which exposes the collections to fluctuations in temperature that may cause damage. Subject to expansion during hot, humid summers and contraction during cold, dry winters, wooden pieces could crack. These fluctuations could have similar impacts on artwork. Glass, metal, and ceramic pieces would be less likely to be impacted by the continuing fluctuations in climate. The existing conditions of the house would continue to have a long-term moderate adverse impact on museum collections.

Cumulative Impacts

None of the past and future projects included in the cumulative impact analysis would have any impact on the museum objects at the Clara Barton House; therefore, there would be no cumulative effects under the no-action alternative.

Conclusion

Under this alternative, museum collections would continue to be at risk from water damage, potential fires, and fluctuating climate within the house, resulting in long-term moderate adverse impacts on museum collections, particularly wooden pieces or artwork. There would be no cumulative effects.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Preservation of Historic Roof Structure

Under this alternative, the roof would be repaired, preventing the likelihood of further water damage on the interior of the structure and protecting the museum collections. As a result, there would be long-term beneficial impacts to museum collections.

New Fire Suppression System and Replacement Fire Alarm System

The installation of the fire suppression system would allow for the quick suppression of any structural fires and preservation of collections, however, the sprinkler system could have moderate adverse impacts on museum objects that are particularly susceptible to water damage. The park would take immediate

action to appropriately care for these items in the event that a fire or a malfunction sets off the sprinkler system.

New Climate Control System

The climate control system would also have a beneficial impact on the museum collection by regulating temperatures and allowing for climate settings that aid in the preservation of museum objects. As a result, there would be long-term beneficial impacts to museum collections.

As stated in the mitigation measures, all museum collections would be packed and moved off site prior to construction or protected in place following Director's Order 24, *NPS Museum Collections Management*. Although there is always some risk associated with moving museum collections, relocation would protect the collections from potential damage during construction and moving them would have a negligible adverse impact overall. Additionally, there is the possibility that a very small percentage of objects may need to be protected in place because of their size or fragility or both. This strategy would be subject to review depending on the security, safety, and environmental controls present in the house during construction. Objects that would need to be protected in place because of size or fragility would be coordinated with the park curatorial staff resulting in negligible adverse impacts.

Cumulative Impacts

None of the past and future projects included in the cumulative impact analysis would have any impact on the museum objects at the Clara Barton House; therefore, there would be no cumulative effects under alternative B.

Conclusion

This alternative would have a beneficial impact on museum collections by removing some of the existing risks and allowing for adequate climate control to preserve museum objects. The roof would be repaired, preventing further water damage on the interior of the structure and protecting the museum collections and resulting in beneficial impacts. There would be no cumulative effects.

SOILS

METHODOLOGY AND ASSUMPTIONS

NPS Management Policies 2006 states that the NPS actively seeks to understand and preserve the soil resources of its parks and properties, and prevent unnatural erosion, physical removal, or contamination of the soil to the extent possible (NPS 2006). Analysis of possible impacts on soil resources was based on a review of existing literature and maps, information provided by the NPS and other agencies, and professional judgment. The majority of soils in the project area are disturbed in nature, especially within the grass field adjacent to the house and within existing utility trenches.

STUDY AREA

The study area for soil resource impacts is the project area for the repair and rehabilitation of the Clara Barton House. This includes the limit of disturbance required for roof repair and replacement, installation of the fire suppression and climate control systems, and any necessary staging areas for stockpiling and staging material and construction equipment.

IMPACT THRESHOLDS

The following thresholds were used to determine the magnitude of impacts on soils:

Negligible. The action would result in a change to soil resources, but the change would be so small it would not be of measurable or perceptible consequence.

Minor. The action would result in impacts on soil resources, but the change would be small and local and of little consequence. Mitigation would be needed to offset adverse impacts. The mitigation would be relatively simple to implement and would likely be successful.

Moderate. The action would result in a change to soil resources. The change would be measurable and of consequence. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.

Major. The action would result in a noticeable change to soil resources. The change would be measurable and would result in a severely adverse impact. Mitigation measures necessary to offset adverse impacts would be needed and would be extensive, and their success would not be guaranteed.

Duration. Short-term impacts on soils would occur during the construction activities. Long-term impacts on soils would extend after completion of the project.

IMPACTS OF ALTERNATIVE A: NO ACTION

Alternative A, the no action alternative, represents the current conditions at the project site. Soil at the site has been disturbed previously. Portions of the driveway to the house contain existing underground water lines and associated disturbed soils. Soils within the adjacent grassy area have been disturbed by the placement of approximately 4 feet of excavated soil followed by site regrading after the parking lot that was in existence in the 1970s and 1980s was removed. There are no impacts to soils under the no action alternative.

Cumulative Impacts

Because there are no impacts to soils from the no-action alternative, there would be no cumulative impacts to soils.

Conclusion

Under the no action alternative, soil conditions would not change and the implementation of this alternative would result in no impacts on soil resources.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Preservation of Historic Roof Structure

No impacts on soils would be expected from the repair of the roof because all construction activities would be contained to the house.

New Fire Suppression System and Replacement Fire Alarm System

There would be impacts on soils during soil excavation for the fire suppression water pipes. However, the placement of the piping for both the systems would take place in previously disturbed soils of existing 36-inch-wide utility trenches, portions of the driveway along Oxford Road and leading to the house, and in the grass field area. This would minimize impacts on undisturbed soils. During construction, soils would be exposed, increasing the erosion potential. However, construction best management practices (BMPs) such as silt fencing and other appropriate sediment control techniques to prevent, minimize, and avoid soil impacts on site and off site would be implemented. Therefore, placement of the pipes for the fire suppression systems would result in short-term minor adverse impacts on soils due to soil disturbance and excavation within previously disturbed soils. A staging area for construction equipment and materials would be located on the grass field adjacent to the house. Although these actions would impact soils due to compaction, the area is currently composed of previously disturbed soils. Therefore, the presence of the equipment and supplies during construction would lead to short-term negligible adverse impacts.

New Climate Management System

Construction of the climate control system would disturb soils within the proposed geothermal well field as well as soils within existing utility trenches for new piping. Construction of the geothermal well field for the climate control system would require drilling of 22 boreholes within the adjacent regraded grass field. These are typically 350 feet deep and 6 inches in diameter (NPS 2012). Approximately 22,000 square feet of soils in the grassed area would be disturbed as a result of construction of the well field for the climate control system. Excavation of soils and other materials would occur during construction resulting in temporary soil disturbance. Additionally, soil may be exposed thereby potentially increasing erosion. Sediment control BMPs and measures, such as silt fence or erosion matting, would be used during construction (see the “Mitigation Measures of the Action Alternative” section in chapter 2). Following construction, any usable soil would be backfilled and waste soils would be removed from the site. Restoration of the well area would consist of placement of soil, regrading, and reseeded. These actions would prevent short-term and long-term soil erosion impacts in the well field. Because of the disturbed nature of the soils and the use of BMPs during construction of the well field, there would be short-term minor adverse impacts on soils.

There would also be impacts on soils during soil excavation for the climate control geothermal supply and return pipes. Similar to construction of the water pipes for the fire suppression system, the placement of the water piping would take place in previously disturbed soils of existing 36-inch-wide utility trenches, portions of the driveway along Oxford Road and leading to the house, and in the grass field area. This would minimize impacts on undisturbed soils. During construction, soils would be exposed, increasing the erosion potential. However, construction BMPs, similar to those used for installation of the fire suppression system piping, would be implemented to prevent, minimize, and avoid soil impacts on site and off site. Therefore, placement of the pipes for the climate control system would result in short-term minor adverse impacts on soils due to soil disturbance and excavation within previously disturbed soils. The staging area for construction equipment and materials for the new geothermal climate control system would be at the small parking lot adjacent to the overflow parking lot. There would be no impacts to soils as the area is paved.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions potentially impacting soil resources are the same as those described in the no action alternative, resulting in long-term beneficial impacts on soils. Implementation of alternative B would impact soils due to previous disturbance and compaction, resulting

in short-term minor adverse impacts. Therefore, when combined with impacts from cumulative actions, alternative B would have a minimal adverse contribution to overall long-term beneficial impacts.

Conclusion

Under alternative B, soils would be impacted as a result of construction of the geothermal wells and the piping for the climate control system and fire suppression system. However, because soils at the site have been previously disturbed, overall soil conditions would not change and the implementation of this alternative would result in minor impacts on soil resources. No impacts on soils would be expected from the rehabilitation of the roof because all construction activities would be contained to the house. There would be long-term beneficial cumulative impacts; alternative B would have a minimal contribution to these impacts.

VISITOR USE AND EXPERIENCE

METHODOLOGY AND ASSUMPTIONS

The purpose of this impact analysis is to assess the effects of the alternatives on the visitor experience at Clara Barton House and visitor experience in the areas that would be affected by the renovation and repair of the roof and installation of fire suppression and climate control systems. To determine impacts, the current uses of the house were considered and the potential effects of the construction and implementation of the proposed actions on visitor experience and use were analyzed. Activities and the type of visitor experience and use / visitation that occur in the Clara Barton House which might be affected by the proposed actions, as well as the visual character of the area and noises experienced by the visitors, were considered.

STUDY AREA

The study area for visitor use and experience is the Clara Barton House. The study area for cumulative impacts analysis encompasses the Clara Barton NHS and surrounding properties, including the shared parking lot with Glen Echo Park.

IMPACT THRESHOLDS

The following thresholds were defined for visitor use and experience:

Negligible. Visitors would likely be unaware of impacts associated with implementation of the alternative. There would be no noticeable change in visitor use and/or experience or in any defined indicators of visitor satisfaction or behavior.

Minor. Changes in visitor use and/or experience would be slight and detectable, but would not appreciably limit or enhance critical characteristics of the visitor experience. Visitor satisfaction would remain stable. If mitigation were needed, it would be relatively simple and would likely be successful.

Moderate. A few critical characteristics of the desired visitor experience would change and/or the number of participants engaging in a specified activity would be altered. Some visitors who desire their continued use and enjoyment of the activity/visitor experience might pursue their choices in other available local or regional areas. Visitor satisfaction would begin to decline. Mitigation measures would probably be necessary and would likely be successful.

Major. Multiple critical characteristics of the desired visitor experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. Visitors who desire their continued use and enjoyment of the activity/visitor experience would be required to pursue their choices in other available local or regional areas. Visitor satisfaction would markedly decline. Extensive mitigation measures would be needed, and success would not be guaranteed.

Duration. Short-term impacts would be immediate, occurring during implementation of the alternative. Long-term impacts would persist after implementation of the alternative.

IMPACTS OF ALTERNATIVE A: NO ACTION

Under the no action alternative, rehabilitation and repair of the Clara Barton House would not occur. Visitors would continue to experience the Clara Barton House in its current condition, with a failing roof, an ineffective climate control system, and inadequate fire suppression systems.

Visitors would continue to be subjected to high temperatures reaching upwards of 100°F in the summer months. Only The Red Room in the Clara Barton House is moderately air-conditioned, leaving a majority of the house without climate control (LaRocca pers. comm. 2014). The winter months subject visitors to lower temperatures that could be uncomfortable, and the 25-year old heating system has reached the end of its life cycle. Higher temperatures during the summer months could cause deterioration of museum collections of the house, causing the potential for long-term moderate adverse impacts on the overall visitor experience. The lack of adequate climate control under the no action alternative could lead to long-term moderate adverse impacts on visitor use and experience.

The no action alternative would leave the non-insulated, aging metal roof without repairing leaks or addressing roof failures due to seasonal expansion and contraction. The roof would remain as-is, and water would continue to pool on bowed rafters and expedite rotting, compromising the structure and appearance of the historic ceiling. The lack of insulation would continue to exacerbate problems of climate control in the house, leading to long-term minor adverse impacts on visitor use and experience.

Under the no action alternative, visitors to the Clara Barton House would continue to experience the site in its current state and may continue to experience discomfort because the building is cool in the winter months and humid in the summer. Discomfort of visitors would likely continue, affecting visitor satisfaction of the Clara Barton House experience. The no action alternative would result in long-term moderate adverse impacts on visitor use and experience.

Cumulative Impacts

Actions within the vicinity of the Clara Barton House, such as the MacArthur Boulevard Shared-Use Path at Glen Echo Park are complete and would have long-term beneficial impacts on visitor use and experience by improving facilities surrounding the NHS. Recreation areas located in proximity to the Clara Barton NHS such as Glen Echo Park provide additional services and recreational opportunities for visitors.

The no action alternative would have long-term moderate adverse impacts on visitor use and experience. When combined with the long-term beneficial impacts from the cumulative actions, the no action alternative would have a noticeable adverse contribution to the overall long-term beneficial impact on visitor use and experience.

Conclusion

Implementation of the no action alternative would result in long-term moderate adverse impacts on visitor use and experience from the continued interior and exterior damage due to the failing roof at Clara Barton House, a lack of climate control system, and a lack of a sufficient fire suppression system. There would be long-term beneficial cumulative impacts; the no action alternative would have a noticeable adverse contribution to these impacts.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

With this alternative, the Clara Barton House and portions of the NHS would be closed for tours during the construction of the projects; estimated at a total of two years. The park is considering providing grounds tours during the repairs, and interpretive materials could be provided at adjacent Glen Echo Park. Construction activities would add noise pollution from heavy machinery and air pollution from the operation of construction vehicles and could be noticeable to neighbors and people visiting the grounds and in the adjacent Glen Echo Park. The closure of the house and portions of the NHS during renovations would cause short-term moderate adverse impacts on visitor use and experience.

Preservation of Historic Roof Structure

The roof would be repaired in a manner consistent with historic preservation, maintaining interior space as much as possible while reinforcing the roof with new structural members. The new rafters would be installed between existing wood rafters. The existing rafters would support the existing plaster ceiling and new rafters would support the new roof.

Replacing the metal roof and wood plank sheathing with updated plywood sheathing and a new metal roof would cease the pooling of water that is currently contributing to rotting and ceiling damage inside the house. There would be long-term beneficial impacts on visitor use and experience because this alternative would preserve historic ceilings while addressing rotting and support problems of the current roof.

The new roof would be insulated between new and existing rafters, providing better climate control for the Clara Barton House. The insulated roof combined with a new climate control system would cultivate a more comfortable experience, resulting in long-term beneficial impacts on visitor use and experience.

New Fire Suppression System and Replacement Fire Alarm System

Under this alternative, a new fire suppression system would be installed in the Clara Barton House. This updated system would better equip the site in case of fire. The installation of new fire suppression system components, such as fire alarms and sprinklers, would have the potential for long-term negligible adverse impacts on the overall visitor experience as these pieces of equipment would be discretely located, usually near doors, to minimize visual intrusion.

New Climate Control System

Under this alternative, a new geothermal climate control system would be installed at the Clara Barton House. The mechanical equipment, wiring, and duct system would be located in the basement of the Clara Barton House and the geothermal field would be located in the regraded grass area adjacent to the Clara Barton House.

The new geothermal system would provide adequate heating and cooling year-round. This would result in a more natural historic landscape on the grounds of the site, leading to long-term beneficial impacts on visitor experience.

With this alternative, the geothermal system would provide beneficial impacts on visitor use and experience by keeping the Clara Barton House climate-controlled and comfortable for visitors. The mechanics of the geothermal system would not impact visitor use and experience because it would be located in the basement, which is not open to the public. Once construction of the geothermal wells are completed, the area would be restored to former conditions by the placement of soil, regrading, and reseeded, resulting in long-term negligible adverse impacts on visitor use and experience.

Cumulative Impacts

Impacts on visitor use and experience from completed cumulative actions would be similar to those under the no action alternative, resulting in long-term beneficial impacts on visitor use and experience. Recreation areas located in proximity to the Clara Barton NHS such as Glen Echo Park provide additional services and recreational opportunities for visitors. Alternative B would cause short-term moderate adverse impacts on visitor use and experience due to the closure of the Clara Barton House during the construction period. However, there would be long-term beneficial impacts on visitor use and experience as a result of the rehabilitated roof and improved climate control system and fire suppression system. When combined with the long-term beneficial impacts from the cumulative actions, alternative B would have a noticeable beneficial contribution to an overall long-term beneficial impact on visitor use and experience.

Conclusion

Implementation of alternative B would result in short-term moderate adverse impacts on visitor use and experience as a result of construction activities. However, this would have long-term beneficial impacts on visitor use and experience from the interior and exterior improvements at Clara Barton House. Alternative B would result in long-term beneficial impacts from the preservation of historic ceilings while addressing rotting and support problems of the current roof. There would be long-term beneficial cumulative impacts on visitor use and experience; alternative B would have a noticeable beneficial contribution.

HUMAN HEALTH AND SAFETY

METHODOLOGY AND ASSUMPTIONS

The analysis of human health and safety considers risks to NPS staff and the general public that are associated with hazards in the project area as well as the proposed rehabilitation and repair. Impacts for this resource area were analyzed qualitatively, using information provided by NPS staff familiar with the current operation and maintenance within the project area.

STUDY AREA

The study area for human health and safety is the Clara Barton NHS.

IMPACT THRESHOLDS

The impact intensities for the assessment of impacts on health and safety follow. Where impacts on health and safety become moderate, it is assumed that current visitor satisfaction and safety levels would begin to decline, and some of the long-term visitor goals for the site would not be achieved.

Negligible. Impacts on health and safety would not be measurable or perceptible.

Minor. Impacts on health and safety would be measurable or perceptible, but it would be limited to a relatively small number of visitors or employees at localized areas. Mitigation could be needed, but would be relatively simple and likely to be successful.

Moderate. Impacts on health and safety would be sufficient to cause a change in accident rates at existing low-accident locations or in areas that currently do not exhibit noticeable accident trends. Mitigation measures would probably be necessary and would likely be successful.

Major. Impacts on health and safety would be substantial. Accident rates in areas usually limited to low accident potential are expected to substantially increase in the short and long term. Extensive mitigation measures would be needed, and success would not be guaranteed.

Duration. Short-term impacts would be immediate, occurring during implementation of the alternative. Long-term impacts would persist after implementation of the alternative.

IMPACTS OF ALTERNATIVE A: NO ACTION

Analysis

The existing water damage from roof leaks and lack of temperature and humidity control would continue to further compromise the structural integrity of the low-sloped roof of the building. The low-sloped roof structure has not been upgraded since its original construction and currently does not have adequate strength to support design snow loads associated with the location of the house. During snow periods, NPS staff would continue to manually remove snow to mitigate the risk of roof collapse, resulting in long-term minor adverse impacts on staff.

In addition, the climate management system would continue to not meet code required ventilation for public tours and use of the historic house by staff. Normal limited levels of maintenance would continue and would remain inadequate to prevent further deterioration from water damage and temperature and humidity fluctuations.

Under the no action alternative, Clara Barton House would continue to exceed building and fire code limitations for an unprotected wooden-framed structure. The existing dated fire alarm and detection system would remain in place, presenting future difficulty to NPS staff in acquiring system spare parts that are no longer manufactured. As a result, there is potential for long-term moderate adverse impacts.

Staff at Clara Barton would continue to warn visitors to be aware of the lone loose floorboard on the third floor of the Clara Barton House in order to prevent tripping and slipping incidents. Infrequent, minor incidents of tripping and slipping may occur; however, they would not be expected to cause injury.

The continuation of existing conditions under the no action alternative would have long-term minor adverse impacts on the level of human health and safety at the Clara Barton House.

Cumulative Impacts

Actions within the vicinity of the Clara Barton House, such as the MacArthur Boulevard Shared-Use Path at Glen Echo Park are complete and would have long-term beneficial impacts on human health and safety by improving facilities surrounding the NHS.

The no action alternative would have long-term moderate adverse impacts on human health and safety. When combined with the long-term beneficial impacts from the cumulative actions, the no action alternative would have a noticeable adverse contribution to an overall long-term beneficial impact on visitor use and experience.

Conclusion

This no action alternative would have long-term minor adverse impacts on human health and safety. This is particularly seen in the long term where the lack of fire suppression and water damage puts the larger structure, as well as the people within it, at risk in the case of a test on the already stressed system. There would be long-term beneficial cumulative impacts; the no action alternative would have a noticeable adverse contribution to these impacts.

IMPACTS OF ALTERNATIVE B: REPAIR AND REHABILITATE THE CLARA BARTON HOUSE

Preservation of Historic Roof Structure

Under this alternative, the existing roof would be preserved and the entire roof would be strengthened to meet loading requirements for low-sloped roofs. New rafters would be installed between the existing rafters to strengthen the roof. Insulation would be placed between the new and existing rafters. The existing rafter system would be retained in order to support the existing interior ceiling.

There would be short-term negligible adverse impacts on the structure during reconstruction of the roof, however, the long-term impacts of this alternative would be beneficial. Repairs of the roof would solve current issues of water leaks. This repair, in addition to the replacement of the entire metal roofing would greatly improve the structural integrity of the low-sloped roof and would lessen chances of a roof collapse from heavy snow load. Rehabilitation of the roof would result in long-term beneficial impacts on health and safety of both visitors and park personnel.

New Fire Suppression System and Replacement Fire Alarm System

The proposed fire suppression system would be installed on all levels of the house. The system would include piping, water flow alarm switches, valve supervisory switches, check and control valves, sprinklers, fire detectors, and associated equipment. The installation of this new system, would help the Clara Barton House meet building and fire code limitations for an unprotected wooden-framed structure. A new fire suppression system would allow more time for visitors and park personnel to safely exit the structure, as well as more time for local firefighters to arrive and extinguish the fire. Installation of a fire suppression system would therefore have a long-term beneficial impact on health and human safety.

New Climate Control System

The proposed climate control system would replace the existing hot water heating system and provide much needed air conditioning within the structure. The new climate control system could have long-term beneficial impact on health and safety as a result of more comfortable climate conditions within the

house, reducing the potential for any health-related issues for visitors and NPS personnel from warm conditions during the warmer months.

During construction (approximately two-year timeframe), the Clara Barton House would be closed to the public to protect visitors from any adverse impacts from construction activities. Additionally, the construction contractor would follow NPS construction contract standards, including implementation of an accident prevention program, installation of warning signs at the construction site and along nearby roads, and installation and maintenance of construction fences around the construction sites to prevent non-contractors and the public from entering the construction areas. Rehabilitation under alternative B would result in short-term negligible impacts on human health and safety during construction and overall long-term beneficial impacts.

Cumulative Impacts

Impacts on health and safety from completed cumulative actions would be similar to those under the no action alternative, resulting in long-term beneficial impacts. Alternative B would cause short-term negligible adverse impacts on health and safety during the construction period. However, there would be long-term beneficial impacts on health and safety as a result of the rehabilitated roof and improved climate control system and fire suppression system. When combined with the long-term beneficial impacts from the cumulative actions, alternative B would have a noticeable beneficial contribution to an overall long-term beneficial impact on human health and safety.

Conclusion

This alternative would result in short-term negligible adverse and long-term beneficial impacts on human health and safety at the Clara Barton house. There would be short-term negligible adverse impacts on the structure during construction, however, the replacement of the entire metal roofing would greatly improve the structural integrity of the low-sloped roof and would lessen chances of a roof collapse from heavy snow load, resulting in long-term beneficial impacts on health and safety of both visitors and park personnel. Cumulative impacts on human health and safety would be long-term and beneficial with alternative B having a noticeable beneficial contribution.

CHAPTER 5: CONSULTATION AND COORDINATION

The National Park Service (NPS) places a high priority on public involvement in the National Environmental Policy Act (NEPA) process and on giving the public an opportunity to provide input and comment on proposed actions. As part of the NEPA and Section 106 process, issues associated with the proposed action were identified during the internal scoping meeting held with NPS and have been communicated to other affected agencies and stakeholders. Coordination with local and federal agencies was conducted during the NEPA process to identify issues and/or concerns related to natural and cultural resources at the Clara Barton House National Historic Site (NHS). The NPS conducted a public meeting to solicit input and comment from members of the public. The meeting was held on December 4, 2013, at Glen Echo Park at 7300 MacArthur Blvd, Glen Echo, Maryland, from 6 p.m. to 8 p.m. These public scoping efforts are described in more detail in “Chapter 1: Purpose of and Need for Action.”

Compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, included consultation with the Maryland State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP). In addition, a number of agencies, organizations, stakeholders, including members of the public, were invited to participate in this process. The assessment of effect will be completed and documented separately from this environmental assessment (EA). The NPS began informal consultation with the SHPO on March 4, 2013. The NPS began early agency scoping and consultation with a meeting at the Clara Barton House on March 4, 2013. In attendance were Jonathan Sager of the Maryland Historical Trust, Katry Harris of the ACHP, Jeff Durbin, Section 106 Compliance Officer for the NPS Washington Office, and J. Paul Loether, NPS National Register of Historic Places (National Register) and National Historic Landmark Program Manager. Formal initiation of the Section 106 process started on September 17, 2013 (see appendix A); coordination and consultation are ongoing. A copy of this EA and the assessment of effect will be sent to the Maryland SHPO and and ACHP as part of the Section 106 compliance process.

In accordance with Section 7 of the Endangered Species Act, the park requested from the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources, by letter dated September 20, 2013 an updated list of rare, threatened, and endangered species known to be present in the project area. The U.S. Fish and Wildlife Service did not provide updates or comments in response to this letter. By letter dated November 6, 2013, the Maryland Department of Natural Resources responded that the Wildlife and Heritage Service has determined that there are no state or federal records for rare, threatened, or endangered species within the boundaries of the project site.

Public Comment Period

To comment on this EA, you may mail comments or submit them online at <http://parkplanning.nps.gov/CLBA> and follow the appropriate links. Please be aware that your comments and personal identifying information may be made publicly available at any time. While you may request that NPS withhold your personal information, we cannot guarantee our ability to do so. Please mail comments to:

Superintendent
Attn: Clara Barton House project
George Washington Memorial Parkway
Turkey Run Park Headquarters
McLean, Virginia 22101

One intent of NEPA is to encourage the participation of federal and state-involved agencies and affected citizens in the assessment procedure, as appropriate. This section describes the consultation that occurred during development of this draft EA, including consultation with scientific experts and other agencies. This chapter also includes a description of the public involvement process and a list of the recipients of the draft document.

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Juanita Barboa	Technical Editor	BS Technical Communication Responsible for editing document
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GLOSSARY

affected environment—The existing environment to be affected by a proposed action and alternatives.

archeological resource—Any material remnants or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research. Any material remnants of human life or activities which are at least 100 years of age, and which are of archeological interest (32 CFR 229.3(a)).

archeological survey—Archeological survey is the process of using explicitly specified methods to prospect for archeological sites- appropriate survey methods vary widely for different environments and archeological resource types.

artifact—A material object made or modified in whole or in part by man. Among the most common artifacts on archeological sites are fragments of broken pottery (sherds), stone tools, chips (debitage), projectile points, and similar lithic debris.

consultation—The act of seeking and considering the opinions and recommendations of appropriate parties about undertakings that might affect properties on the National Register of Historic Places (National Register). Appropriate parties ordinarily include the State Historic Preservation Officer and Advisory Council on Historic Preservation (ACHP). Consultation is very formal and procedurally oriented. Correct procedures are promulgated in 36 CFR 800.

contributing resource—A building, site, structure, or object that adds to the historic significance of a National Register property or district.

Council on Environmental Quality (CEQ)—Established by Congress within the Executive Office of the President with passage of the National Environmental Policy Act of 1969 (NEPA). CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

criteria of effect—Standards promulgated by ACHP in (36 CFR 800) and applied to determine whether an undertaking will affect any property listed on the National Register.

- **effect:** The federal action on a National Register property or eligible property that results in a change, beneficial or adverse, in the quality or characteristics that qualify the property for inclusion on the National Register.
- **adverse effect:** action that results in the total or partial destruction or alteration on a National Register property or eligible property. Adverse effect may also result if a property is isolated from its surrounding environment, if neglect of the property results in the deterioration or destruction of the property, and/or if the land occupied by the property is sold or transferred, and there are no provisions in the deed or transfer agreement to provide for the preservation, maintenance, or use of the property, etc.

cultural landscape—A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

cultural resources—Historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason.

environmental assessment (EA)—An environmental analysis prepared pursuant to the NEPA to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

ethnographic resource—A site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

Executive Order—Official proclamation issued by the President that may set forth policy or direction or establish specific duties in connection with the execution of federal laws and programs.

Finding of No Significant Impact (FONSI)—A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement. A FONSI is based on the results of an EA.

historic district—A geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, landscapes, structures, or objects, united by past events or aesthetically by plan or physical developments. A district may also be composed of individual elements separated geographically but linked by association or history.

historic fabric—Physical material remains of a historic structure or object, whether original materials or materials incorporated in a subsequent historically significant period.

historic property—A district, site, structure, or landscape significant in American history, architecture, engineering, archeology, or culture that meets National Register significance criteria.

integrity—The authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during its historic or prehistoric period; the extent to which a property retains its historic appearance.

museum object—Assemblage of archeological objects, objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so they can be preserved, studied, and interpreted for public benefit. Museum objects normally are kept in park museums, although they may also be maintained in archeological and historic preservation centers.

National Environmental Policy Act of 1969 (USC 432 1-4347) (NEPA)—The act as amended articulates the federal law that mandates protecting the quality of the human environment. It requires federal agencies to systematically assess the environmental impacts of their proposed activities, programs, and projects including the “no action” alternative of not pursuing the proposed action. NEPA requires agencies to consider alternative ways of accomplishing their missions in ways which are less damaging to the environment.

National Historic Preservation Act of 1966 (NHPA) (16 USC 470 et seq.)—An act to establish a program for the preservation of historic properties throughout the nation, and for other purposes, approved October 15, 1966 [Public Law 89-665; 80 STAT.915; 16 USC 470 as amended by Public Law 91-243, Public Law 93-54, Public Law 94-422, Public Law 94-458, Public Law 96-199, Public Law 96-

244, Public Law 96-515, Public Law 98-483, Public Law 99-514, Public Law 100-127, and Public Law 102-575].

National Register of Historic Places (National Register)—A register of districts, sites, buildings, structures, and objects important in American history, architecture, archeology, and culture, maintained by the Secretary of the Interior under authority of Section 2(b) of the Historic Sites Act of 1935 and Section 101(a) (1) of the NHPA, as amended. The National Register provides for three levels of significance: national, state, and local.

national historic landmark—A property designated by the Secretary of the Interior under authority of the Historic Sites Act of 1935 as having exceptional significance in the nation's history. National historic landmarks are automatically listed on the National Register and subject to all preservation requirements.

Organic Act—Enacted in 1916, this act commits the National Park Service (NPS) to making informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations.

period of significance—The span of time in which a property attained the significance for which it meets the National Register criteria.

Planning, Environment, and Public Comment (PEPC)—The NPS website for public involvement. This site provides access to current plans, environmental impact analyses, and related documents on public review. Users of the site can submit comments for documents available for public review.

programmatic agreement—A written agreement among a federal agency, State Historic Preservation Officer, and ACHP that stipulates how a program or a class of undertakings repetitive in nature or similar in effect will be carried out so as to avoid or mitigate adverse effects on cultural resources.

rehabilitation—The act or process of making possible an efficient compatible use for a historic structure or landscape through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural and architectural values.

scoping—Scoping, as part of the NEPA, requires examining a proposed action and its possible impacts; establishing the depth of environmental analysis needed; determining analysis procedures, data needed, and task assignments. The public is encouraged to participate and submit comments on proposed projects during the scoping period.

Section 106—Refers to Section 106 of the NHPA, which requires federal agencies to take into account the effects of their proposed undertakings on properties included or eligible for inclusion in the National Register and give the ACHP a reasonable opportunity to comment on the proposed undertakings.

significance—Significance of cultural resources is evaluated in terms of National Register criteria published in 36 CFR 60.

state historic preservation officer—Official appointed by the governor of each state and U.S. territory, responsible for certain responsibilities relating to federal undertakings within the state.

Glossary

APPENDIX A: CONSULTATION AND COORDINATION

Appendix A: Consultation and Coordination



United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Memorial Parkway
c/o Turkey Run Park
McLean, Virginia 22101

IN REPLY REFER TO:
GWMP (H4217)

September 17, 2013

Mr. J. Rodney Little, Director &
State Historic Preservation Officer
Maryland Historical Trust
100 Community Place, Third Floor
Crownsville, MD 21032-2023

ATTN: Mr. Jonathan Sager, Preservation Officer

Subject: Clara Barton National Historic Site Proposed Fire Detection and Suppression System, Climate Control System, and Roof Repairs, Glen Echo, Montgomery County, Maryland

Re: National Historic Preservation Act of 1966 Section 106 Compliance and National Environmental Policy Act of 1969 Environmental Assessment

Dear Mr. Little:

This correspondence serves to officially notify and inform the Maryland Historical Trust/Maryland State Historic Preservation Office that the George Washington Memorial Parkway (GWMP) of the National Park Service (NPS) is 1) proposing the subject undertaking and initiating compliance with your office in accordance with Section 106 of the National Historic Preservation Act (NHPA Section 106), as amended and 2) preparing an Environmental Assessment (EA) for the project in accordance with the National Environmental Policy Act (NEPA) of 1969. We appreciate, of course, that you have already provided informal assistance on the planning for this project in March of this year through the attendance of Preservation Officer Jonathan Sager at a Kick-Off meeting and through his review of drawings for the fire suppression component provided in a letter dated August 7, 2013.

At this point, the NPS is progressing with its planning to install the new fire suppression system, to construct a geothermal climate management system, and to develop alternatives for the repair or replacement of the leaking metal roof at the Clara Barton National Historic Site, a National Historic Landmark. The EA will address all three components of the project.

It is anticipated, however, that the fire suppression component, the design for which is near completion, is likely to be implemented as per the drawings, while the roof repair/replacement, which is still at the concept stage of development, will be shaped by the analysis of options generated in the EA and through the Section 106 process. The geothermal climate control system, now roughly at a 50% design stage, may be modified due to the requirements of the selected roof design. In total, the project will be designed to conform with the Secretary of Interior's Standards for the Treatment of Historic Properties.

As we have already indicated, this undertaking is needed because the Clara Barton House does not currently have a fire suppression system to protect the historic structure, historic furnishings, and museum collections from damage or loss by fire. The existing heating system is inadequate and at the end of its life cycle. Finally, the low-pitched standing seam metal roofs have experienced frequent failures at their solder joints and are frequently exposed to leaks.

A NEPA public scoping meeting has been scheduled to take place between 6:00 and 8:00 p.m. on Wednesday, October 16, 2013 at the Bumper Car Pavilion, Glen Echo Park in Glen Echo, Maryland to fulfill the requirement to take into account the views of the public under NEPA and NHPA Section 106. We will present an overview of the project at the meeting and continue to solicit input from the public as the NEPA process proceeds. Although the NPS intends to coordinate the NEPA and NHPA Section 106 processes, it does not intend to utilize the regulatory path to "substitute" NEPA for NHPA Section 106 compliance.

With regard to NHPA Section 106, please see the attached proposed area of potential effect (APE) which has been drawn to include the house, garden, and a pre-existing utility trench which will be utilized by the geothermal climate control system. For official Consulting Parties, we propose to invite: the Town of Glen Echo, the American Red Cross, and the Preservation Office of the Montgomery County Planning Department. The NPS hereby requests your comments or concurrence in the APE and list of proposed Consulting Parties.

A copy of the draft EA will be provided to your office for review when it becomes available. We also expect anticipate further consultation with your office as well as an official NHPA Section 106 Consulting Parties meeting when the concept alternatives for the roof repair/replacement are developed.

If there are any questions or you require additional information, please contact GWMP Historical Architect Andrew Wenchel (703-419-6403 or andrew_wenchel@nps.gov) or GWMP Cultural Resources Program Manager Matthew Virta (703-289-2535 or matthew_virta@nps.gov).

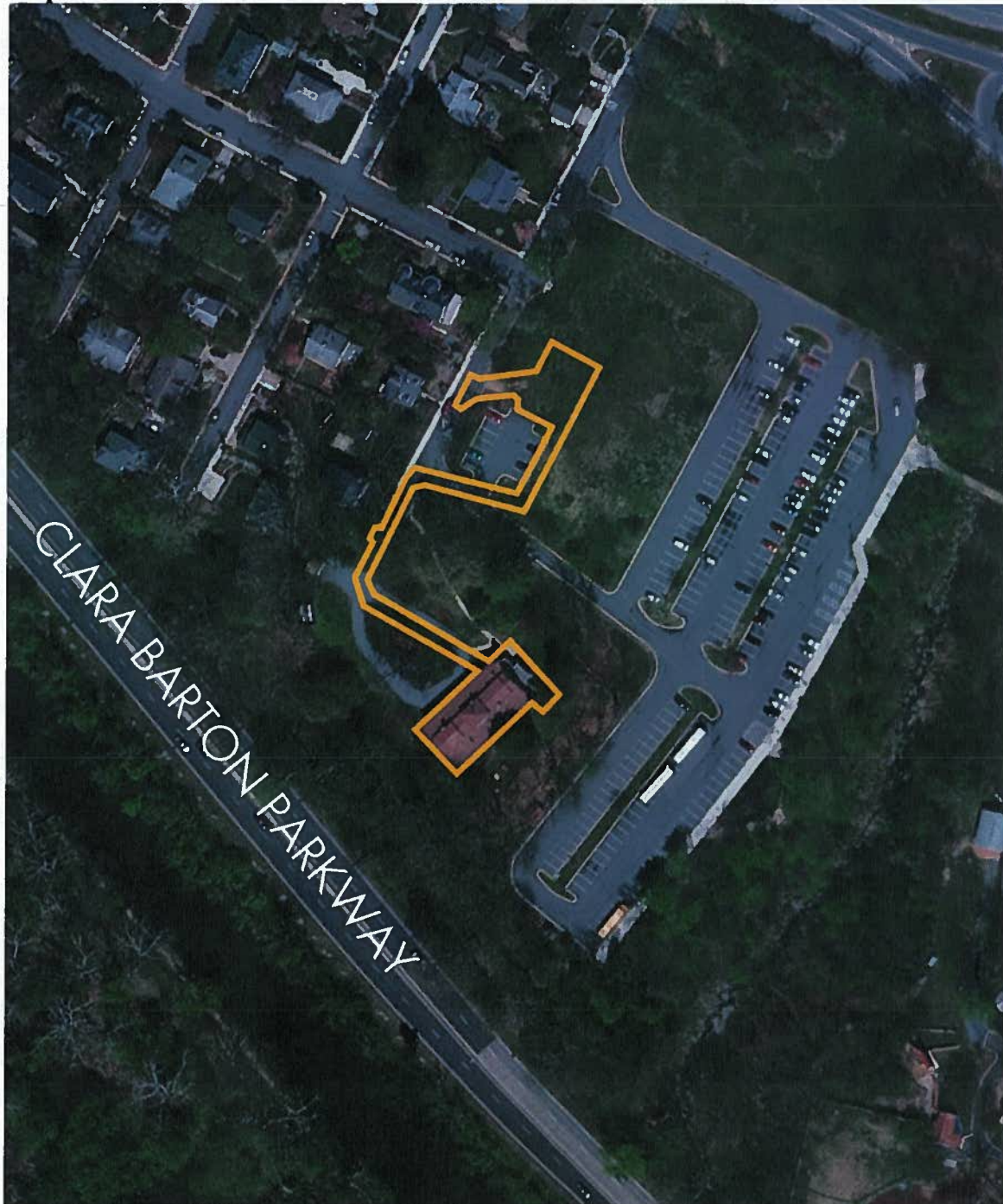
Sincerely,



 Alexcy Romero
Superintendent

Attachment

Proposed Draft Area of Potential Effect

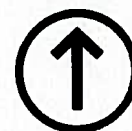


LEGEND



Proposed draft APE

NORTH



cc:

Mr. Jonathan Sager, Preservation Officer
Maryland Historical Trust
Office of Management, Planning,
and Educational Outreach
100 Community Place, Third Floor
Crownsville, Maryland 21032-2032

Mr. J. Paul Loether, Chief
National Register of Historic Places and
National Historic Landmarks Program
National Park Service
1201 Eye Street NW (2280)
Washington, DC 20005

Ms. Katry Harris, Program Analyst
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Old Post Office Building
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 20004

bcc:

GWMP-Files

GWMP-Project Files

IRRM-M. Virta

IRRM-Compliance Coordinator



United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Memorial Parkway
c/o Turkey Run Park
McLean, Virginia 22101

IN REPLY REFER TO:
D2400A (GWMP)

September 20, 2013

Ms. Lori Byrne
Maryland Dept. of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, MD 21401

Subject: Clara Barton National Historic Site Proposed Fire Detection and Suppression System,
Climate Control System, and Roof Repairs, Glen Echo, Maryland

Dear Ms. Byrne:

In accordance with the National Environmental Policy Act of 1969 (NEPA), the National Park Service (NPS) is preparing an Environmental Assessment (EA) for the installation of a new fire suppression system, the construction of a climate management system, and the rehabilitation of a failing metal roof at the Clara Barton National Historic Site in Glen Echo, Maryland.

The EA will address all three components of the project. It is anticipated, however, the fire suppression component, the design for which is near completion, is likely to be implemented, while the roof repair/replacement, which is still at the concept stage of development, will be shaped by the analysis of options generated in the EA and through the Section 106 process. The geothermal climate control system, now roughly at a 50% design stage, may be modified due to the requirements of the selected roof design.

This undertaking is needed because the Clara Barton House does not currently have a fire suppression system to protect the historic structure, historic furnishings, and museum collections from damage or loss by fire. The existing heating system is inadequate and at the end of its life cycle. Finally, the low-pitched standing seam metal roofs have experienced frequent failures at their solder joints and are frequently exposed to leaks.

A NEPA public scoping meeting has been scheduled to take place between 6:00 and 8:00 p.m. on Thursday evening, October 24, 2013 at the Bumper Car Pavilion, Glen Echo Park in Glen Echo, Maryland, to fulfill the requirement to take into account the views of the public under NEPA and NHPA Section 106. We will present an overview of the project at the meeting and continue to solicit input from the public as the NEPA process proceeds.

Although the NPS intends to coordinate the NEPA and NHPA Section 106 processes, it does not intend to utilize the regulatory path to "substitute" NHPA Section 106 compliance for NEPA.

We are writing you to request a list of federal and state listed species that may be impacted by this proposed project. Because of its location in a previously disturbed environment and the predominately interior nature of the repairs, it is unlikely the proposed improvements will affect any federal or state listed species. However, we would appreciate written confirmation from your office. A letter is also being sent to the U.S. Fish and Wildlife Service to solicit their input.

If you have any questions or require additional information, please contact GWMP Historical Architect Andrew Wenchel by phone at (703) 419-6403 or by email message at andrew_wenchel@nps.gov or GWMP Natural Resources Program Manager Brent Steury by phone at (703) 289-2541 or by email message at brent_steury@nps.gov. Our fax number is (703) 289-2598.

Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon G. James", written in a cursive style.

Jon G. James
Deputy Superintendent



United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Memorial Parkway
c/o Turkey Run Park
McLean, Virginia 22101

IN REPLY REFER TO:
D2400A (GWMP)

September 20, 2013

Ms. Genevieve LaRouche
Field Supervisor
Chesapeake Bay Field Office
U.S. Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Subject: Clara Barton National Historic Site Proposed Fire Detection and Suppression System,
Climate Control System, and Roof Repairs, Glen Echo, Maryland

Dear Ms. LaRouche:

In accordance with the National Environmental Policy Act of 1969 (NEPA), the National Park Service (NPS) is preparing an Environmental Assessment (EA) for the installation of a new fire suppression system, the construction of a climate management system, and the rehabilitation of a failing metal roof at the Clara Barton National Historic Site in Glen Echo, Maryland.

The EA will address all three components of the project. It is anticipated, however, the fire suppression component, the design for which is near completion, is likely to be implemented, while the roof repair/replacement, which is still at the concept stage of development, will be shaped by the analysis of options generated in the EA and through the Section 106 process. The geothermal climate control system, now roughly at a 50% design stage, may be modified due to the requirements of the selected roof design.

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We will present an overview of the project at the meeting and continue to solicit input from the public as the NEPA process proceeds. Although the NPS intends to coordinate the NEPA and NHPA Section 106 processes, it does not intend to utilize the regulatory path to "substitute" NHPA Section 106 compliance for NEPA.

We are writing you to request a list of federal and state listed species that may be impacted by this proposed project. Because of its location in a previously disturbed environment and the predominately interior nature of the repairs, it is unlikely the proposed improvements will affect any federal or state listed species. However, we would appreciate written confirmation from your office. A letter is also being sent to the Maryland Department of Natural Resources to solicit their input.

If you have any questions or require additional information, please contact GWMP Historical Architect Andrew Wenchel by phone at (703) 419-6403 or by email message at andrew_wenchel@nps.gov or GWMP Natural Resources Program Manager Brent Steury by phone at (703) 289-2541 or by email message at brent_steury@nps.gov. Our fax number is (703) 289-2598.

Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon G. James", written in a cursive style.

Jon G. James
Deputy Superintendent



Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Joseph P. Gill, Secretary
Frank W. Dawson III, Deputy Secretary

November 6, 2013

Jon James
National Park Service
George Washington Memorial Parkway
c/o Turkey Run Park
McLean, VA 22101

RE: Environmental Review for Clara Barton National Historic Site Proposed Fire Detection and Suppression System, Climate Control System, Roof Repairs, Glen Echo, preparation of EA, Montgomery County, MD.

Dear Mr. James:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2013.1459.mo

APPENDIX B: SECTION 106 ASSESSMENT OF EFFECTS



Clara Barton House Rehabilitation Project
Assessment of Effects on Historic Properties
Under Section 106, National Historic Preservation Act

Clara Barton National Historic Site

March 2015

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INTRODUCTION

The National Park Service (NPS), Clara Barton National Historic Site (NHS), is proposing to undertake rehabilitation efforts at the Clara Barton House, a historic structure listed on the National Register of Historic Places (NRHP) and a National Historic Landmark. The NPS has drafted an environmental assessment (EA) that assesses the impacts that could result from continuation of the current management (no action) or implementation of the action alternative.

The purpose of this report is to summarize the alternatives and assess the effects of those alternatives on historic properties. Compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, included consultation with the Maryland State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP). In addition, a number of agencies, organizations, stakeholders, including members of the public, were invited to participate in this process. The NPS began informal consultation with the SHPO on March 4, 2013. The NPS began early agency scoping and consultation with a meeting at the Clara Barton House on March 4, 2013. In attendance were Jonathan Sager of the Maryland Historical Trust, Katry Harris of the Advisory Council on Historic Preservation, Jeff Durbin, Section 106 Compliance Officer for the NPS Washington Office, and J. Paul Loether, NPS National Register and National Historic Landmark Program Manager. Formal initiation of the Section 106 process started on September 17, 2013 (see Appendix A). The Maryland Historical Trust/Maryland State Historic Preservation Office (SHPO) provided a no adverse effect for the installation of a new fire suppression system (see Appendix A). However, this report focuses on the effects of all the actions considered under the action alternative – installation of a new fire suppression system and climate control system and repairs to the roof.

PROJECT LOCATION AND BACKGROUND

The Clara Barton House, part of the Clara Barton NHS, is located on 5801 Oxford Road, Glen Echo, Maryland, adjacent to the Clara Barton Parkway, Chesapeake and Ohio Canal, and Glen Echo Park (Figure 1). Clara Barton took ownership of the property after accepting an offer from Edward and Edwin Baltzley to head up the Women's Executive Committee of the Chautauqua Assemble, a nationwide education and culture movement, in exchange for property within the tract of land above the Potomac River known as "Glen Echo on the Potomac." The house was constructed in 1891 and used as a warehouse for the Red Cross until 1897, when Clara Barton made it her home. When Miss Barton moved in permanently, she remodeled the structure to serve as the headquarters for the American Red Cross. Offices and living quarters for Red Cross staff, volunteers and guests, Miss Barton's personal rooms, and an abundance of storage closets for relief supplies were all housed in the building. Although Miss Barton resigned as the president of the American Red Cross in 1904 and the offices moved to temporary quarters in Washington, D.C., she continued to work and live in the house well into her later years. She died in the Clara Barton House on April 12, 1912 at the age of 90.

Congress declared the Clara Barton House a national historic landmark on January 12, 1965 and in 1974 passed legislation establishing the house and grounds, which amounted to just over an acre of land, as the Clara Barton NHS (Public Law 93-486). The following year, in 1975, the NPS began administering the site. By virtue of its listing as a national historic landmark, the Clara Barton House was automatically added to the NRHP following the passage of the NHPA (NPS 2011).



FIGURE 1. PROJECT LOCATION

At the Clara Barton NHS, visitors can tour the house, view the storage closets that housed relief supplies and see the typical office and personal living quarters during the period when it was used for the Red Cross. The park has preserved furnishings, photos, manuscripts, and letters for display, in addition to museum collections stored on the site. These displays and collections speak to the primary goal of the park, to tell the early story of the American Red Cross through the interpretation of the life and times of its founder: Clara Barton.

Since 1975, the building has undergone several subsequent periods of planning, design, and restoration. Today, multiple upgrades and repairs are needed to rehabilitate elements in the house that are either insufficient or nearing the ends of their useful life.

PURPOSE AND NEED

The purpose of the project is to preserve the historic house and the museum collections on exhibit and in museum storage by installing a fire suppression system, a climate management system, and by rehabilitating a failing metal roof in a manner that is consistent with the historic significance of the house. Action is needed for the following reasons:

The historic structure greatly exceeds building and fire code limitations for an unprotected wooden-framed structure and has an estimated “burn time” of only five to six minutes. The existing fire alarm and detection system in the house consists of smoke and heat detectors, manual pull stations, and audiovisual notification appliances that are no longer manufactured. The availability of spare components will become increasingly limited in the future. Fire extinguishers are also available on-site

The existing hot water heating system is inadequate and inefficient. The hot water heating system is at the end of its 25-year life cycle, except for a new propane boiler installed in 2009, and the small water chiller, condensing unit, and individual room air conditioners currently provide inadequate cooling. With the inadequate temperature control and lack of humidity control, cooling, or mechanical ventilation of the

current hot water heating system, the historic wood structure and museum collections displayed and stored in house are adversely affected. Additionally, the current system does not provide adequate ventilation required by the Maryland building code for public tours and use of the historic house museum. The house does not have central air conditioning and is subject to severe heat and humidity in the summer months. There is no humidity control or ventilation system in the house. Air conditioning units are limited to portable units positioned in the offices and house library, as well as the bookstore, conference room, and visitor orientation spaces. The existing systems are unable to maintain a constant temperature as the outside temperature fluctuates.

The low-sloped metal roofs have experienced frequent failures from seasonal expansion and contraction, due to built-on-top roof gutters and lack of expansion joints, causing damage to the interior ceilings and walls. Portions of the existing wooden roof structure are rotting and the rafters are bowed by deflection causing the ponding of water and leaking. There is currently minimal insulation in the roof, exacerbating climate control problems within the house. Furthermore, the current roof condition suggests it will likely fail under a heavy snow load. During snow periods, NPS staff must perform manual snow load removal to mitigate the risk of roof collapse.

ALTERNATIVES

The National Park Service (NPS) explored and objectively evaluated a range of alternatives. Several options or alternative elements were identified during the preliminary design process and internal and public scoping. Alternatives that were considered but were not technically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts to cultural or natural resources, and/or conflicted with the overall management of the park or its resources were dismissed from further analysis. As a result, one action alternative and the no action alternative were carried forward for further analysis.

- Alternative A: No Action
- Alternative B: Repair and Rehabilitate the Clara Barton House
 - Preservation of Historic Roof Structure – Alternative B includes preservation of the historic roof rafters and all ceilings below, modifications to the roof structure to comply with current building code load-bearing capacity, insulation of the rafter cavity, providing a new roof deck, and replacing the standing seam metal roof in kind.
 - Installation of a Fire Protection and Alarm System – Alternative B includes installation of a fire protection system with new wet-pipe sprinkler suppression capabilities and replacement of existing fire detection alarms.
 - Installation of a Geothermal Climate Management System – Alternative B includes installation of a new climate management system that prevents damage from extreme temperature fluctuations, lack of ventilation, and high levels of humidity.

Justification for eliminating alternatives from further analysis was based on factors relating to:

- conflict with established site uses
- conflict with the statement of purpose and need, or conflict with policy
- severe impact on environmental or historic resources

Roof Rehabilitation Concepts

A value analysis workshop conducted by NPS on March 6, 2014, examined roof rehabilitation options outlined in the *Clara Barton House Rehabilitation Project Final Roof Replacement Concepts* (NPS 2014a) using the Choosing by Advantages (CBA) evaluation method. Additionally, several new alternatives to roof rehabilitation were developed during the value analysis workshop but ultimately dismissed. Table 1 presents the roof rehabilitation alternatives examined in the value analysis workshop. Additional investigation of existing conditions through exploratory demolition on October 2, 2014 provided the project team with some clarification of the roof system's deficiencies.

TABLE 1. ROOF REHABILITATION ALTERNATIVES EXAMINED IN VALUE ANALYSIS WORKSHOP

Roof Rehabilitation Alternative	Description
Alternative 1 (alternative B in this EA)	Preservation of Historic Roof Structure (keep existing interior ceiling; add supplemental framing). This alternative includes preservation of the damaged historic rafters with attached ceilings, including the modern gypsum board.
Alternative 2A (DISMISSED)	Complete Roof Replacement (traditional stick built with 4 x 6-inch sawmill lumber). This option involves replacing the entire low-slope roof of the house. The existing roof, including the plaster/wood lathing and reproduction muslin ceiling, inverted tee rafters, 1-inch board sheathing, and standing seam metal roofing would be removed. Depending on the condition of the existing bearing connection for the rafters at both ends, dismantling of these supports may be included, which would include the need to install new members supported by the existing wall posts to make adequate connection possible. The new rafters would comprise No. 1 grade southern pine sawn lumber using 4 x 6-inch members.
Alternative 2B (DISMISSED)	Complete Roof Replacement (traditional stick built with 2 x 8-inch glue laminate framing). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would be comprised of structural engineered laminated lumber using 1-¾ x 7-¼-inch members.
Alternative 2C (DISMISSED)	Complete Roof Replacement (traditional stick built with 2 x 8-inch sawmill lumber). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would comprise structural engineered laminated lumber using 1-¾ x 7-¼-inch members.
Alternative 3 (DISMISSED)	Complete Roof Replacement (structurally insulated panels). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would comprise structurally insulated panels.
Alternative 4 (DISMISSED)	Preservation and Roof Replacement (preservation of sound historic rafters supporting historic lime plaster and reproduction muslin ceilings; roof replacement for higher insulation value, removal of modern gypsum board ceilings and deteriorated /damaged rafters areas)
Alternative 5 (DISMISSED)	Complete Roof Replacement (light-gauge metal framing). This option involves replacing the entire low-slope roof of the house, similar to alternative 2 A. The new rafters would comprise light gauge metal framing.

Additional investigation of existing conditions through exploratory demolition on October 2, 2014 provided the project team with some clarification of the roof system's deficiencies. As a result, alternative 4 was determined to not meet the NPS purpose and need for historic preservation of the historic fabric of the Clara Barton House including historic rafters and the attached ceilings. Alternatives 2A, 2B, 2C, 3, and 5 entail complete roof structure replacement and were also determined to not meet the NPS purpose and need for historic preservation of the historic fabric of the house. As a result, those alternatives/options were dismissed from further consideration in this EA.

Climate Management System

Previous studies (see the “Related Plans and Studies” section in chapter 1) recommended installing a fuel oil or propane system because there is no natural gas available because the Washington Aqueduct blocks access to the natural gas pipeline. The recommended fuel system would include a remote fuel storage bunker. This concept was rejected by the NPS because of the cost and intrusive ductwork involved.

Alternative A: No Action

Alternative A, the no action alternative, is the continuation of current management of the Clara Barton House. It does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The no action alternative provides a baseline of existing conditions and actions and provides a basis for evaluating the changes and impacts of the action alternatives. If the no action alternative were selected, the NPS would respond to future needs and conditions without substantial action or policy change.

Under alternative A, exterior and interior rehabilitation and repair of the Clara Barton House would not occur, installation of a new fire suppression system, construction of a climate management system, and rehabilitation of the failing metal roof would not occur.

Current fire management and suppression include a fire alarm system consisting of manual pullstations, bells, and smoke detectors throughout the building. The house is not currently protected with an automatic fire sprinkler system. (NPS 2004)

Climate control in the house includes a heating and cooling system. The building is heated by a single oil-fired sectional induced-draft hot water boiler (H.B. Smith, Model 2500L with Carlin Model 301 CRD burner) in a separate freestanding shed located near the northwest site boundary. The hot water produced from this boiler is pumped underground to the house where it extends to various heating terminal devices containing a hot water coil. The existing hot water heating system is inadequate and inefficient. The hot water heating system is at the end of its 25-year life cycle, except for a new propane boiler installed in 2009. Various heating terminal devices are scattered throughout the basement, first, and second floors. Cooling is provided to limited areas of the house by a small water chiller, condensing unit, and individual room air conditioners. A split air-cooling condensing unit is located on the south of the house and rejects heat to the atmosphere. A chilled water supply pump and loop system in the basement supplies water to branch risers and water coils which pipe chilled water and air to the following rooms: the basement apartment living room on the southwest wall; the two offices on the southeast wall and exhibit room on the northwest wall on the first floor; and one office on the northwest wall and one office on the east corner of the second floor. The cooling system is past its useful life. (NPS 2004)

Water damage from roof leaks and lack of temperature and humidity control would continue to further impact the historic fabric of the building and present difficulties in preserving the museum collections. In addition, the lack of a mechanical ventilation system required by building code for public assembly and use, creates conditions conducive to growth of mold in the historic house. Normal, but limited levels of maintenance would continue at the Clara Barton National Historic Site (NHS). It would be inadequate to prevent further deterioration from water damage and temperature and humidity fluctuations (figure 2).

Under the no action alternative, the Clara Barton House would continue to exceed building and fire code limitations for an unprotected wooden-framed structure. The existing fire alarm and detection system would remain in place and it will be difficult to acquire spare components, which are no longer manufactured.

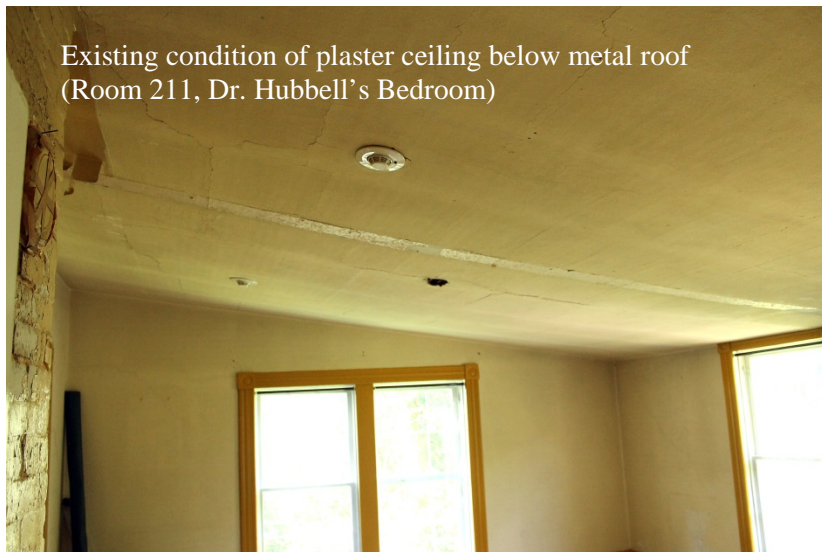


FIGURE 2. EXISTING ROOF CONDITIONS UNDER THE NO ACTION ALTERNATIVE

Alternative B: Repair and Rehabilitate the Clara Barton House

Water damage and lack of temperature control and fluctuating relative humidity over the years have impacted the historic fabric of the Clara Barton House, affecting both the interior and exterior of the house. The house receives more than 20,000 visitors annually and the public rooms are furnished with period pieces and artifacts from Clara Barton's life (NPS 2014b). Comments, though not formal complaints, have been made about too much heat in the summer months, too little heat in the colder months, and high humidity levels.

Alternative B proposes multiple improvements to replace the low-pitched metal roof, install a new fire suppression system, and install a climate control system. All work on the interior and exterior of the house would be conducted in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

It is expected that the roof rehabilitation projects and fire suppression system installation would be accomplished before the climate management system for the house could be installed. Construction activities related to the fire suppression system and roof rehabilitation projects are expected to last approximately one year and replacing the climate management system is expected to last another year, for a total of two years. During this time, the Clara Barton House would be closed to the public. The section below describes the proposed repair and rehabilitation components.

Preservation of Historic Roof Structure

The failing, low-sloped metal roofs would be replaced in kind (figure 3). The roof rehabilitation would seek to address three issues:

- Strengthen and/or replace the low-sloped roof, rafters, and roof deck to meet the loading requirements of the 2012 International Building Code (International Code Council 2011). The low-sloped roof has not been upgraded since its original construction and currently does not have adequate strength to support design snow loads per the International Building Codes associated with the location of the house, and the profile of the high- and low-sloped roof elevations.
- Provide insulation in the low-sloped roof rafter cavity so that a new climate management system can effectively operate in the house. Currently, the roof is not insulated and has no thermal barrier to restrict heat loss in winter or heat gain in summer.
- Replace the extent standing seam/flat seam tin coated steel roof system and all associated flashing, rain diverters, downspouts, underlayment, etc., in kind with new zinc/tin alloy coated field formed and finished metal roof system.

This alternative would preserve the existing roof rafters and would maintain the interior finishes while reinforcing the roof with new structural members. This alternative involves strengthening the roof by installing new wood rafters in between the existing wood rafters. The existing wood rafters and ceiling finishes would remain in place. Existing damaged rafters would be repaired or replaced in kind (figures 4 and 5). New rafters would provide structural support for the new roof. The existing metal roof system and wood plank sheathing would be replaced with new 3/4-inch plywood sheathing and new standing/flat seam metal roof system. Insulation would be placed between the new and existing rafters. The new rafters would be designed as sawn lumber members, consisting of solid wood timbers or engineered lumber, resulting in a final roof thickness approximately the same thickness as the existing roof system. The existing roof slope would be maintained.

This alternative requires shoring below of the existing plaster ceiling at the start of the operation in order to ensure that the integrity of the ceiling is maintained during construction. After shoring is in place, the existing metal roof and 1-inch wood sheathing would be removed and the new framing members would be installed. The end connections would need to be verified and possibly upgraded to ensure adequate support for the new rafters. It is also likely that there is extensive deterioration in the existing rafters projecting past the exterior wall plate due to long-term persistent leaks in the roof, specifically at the southeast area of the low-slope roof. The damaged portions of the existing rafters would be removed at the overhang and a new wood member spliced onto the existing roof rafter. The intent is to install the new wood rafters so that the top of the member sits at approximately 1/2-inch minimum above the top of the existing rafters at their ends, or highest elevation. This elevation is intended to ensure that these new members will relieve the existing rafters of any roof loading, such that the existing rafters will support only the ceiling itself.

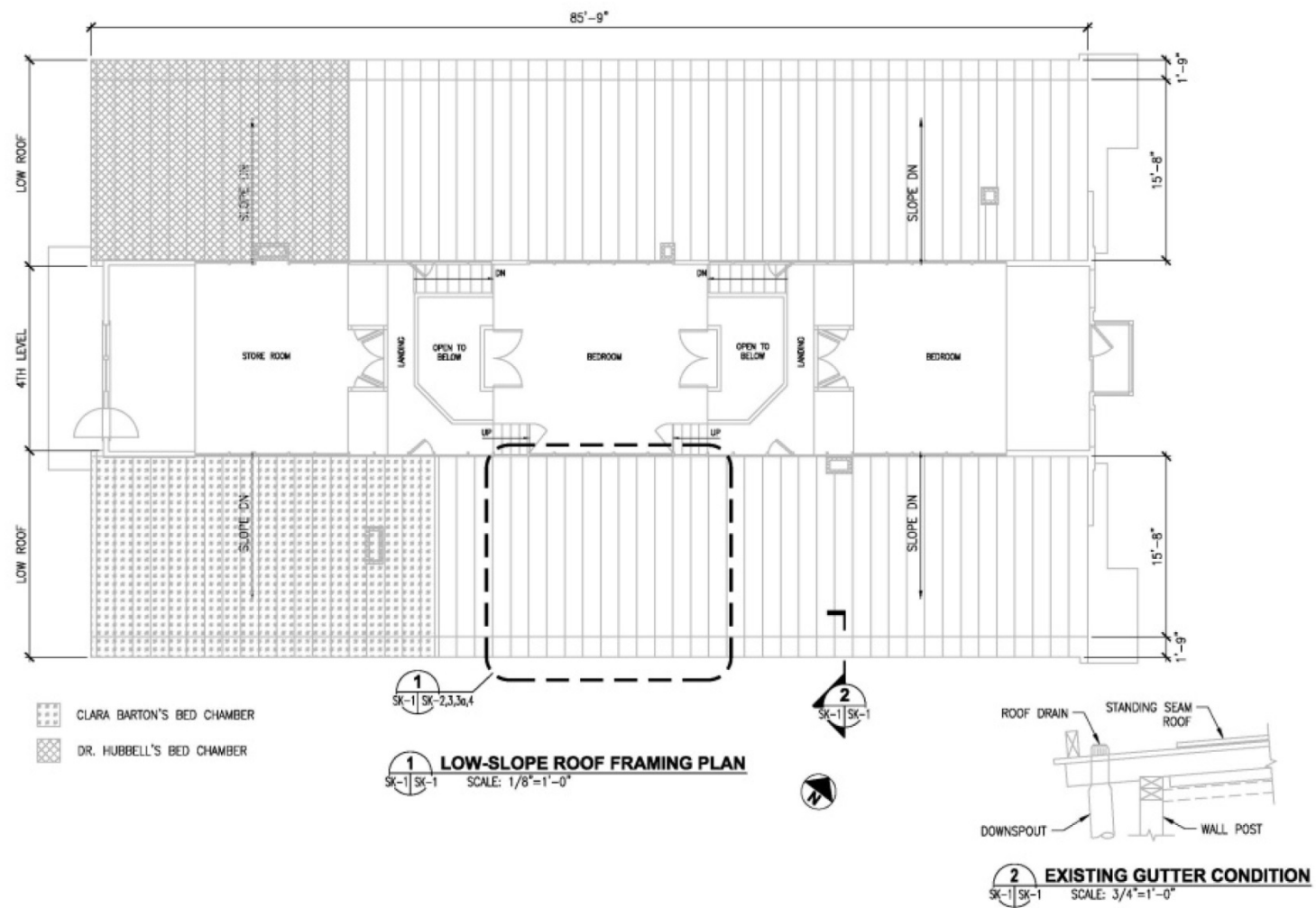


FIGURE 3: EXISTING ROOF

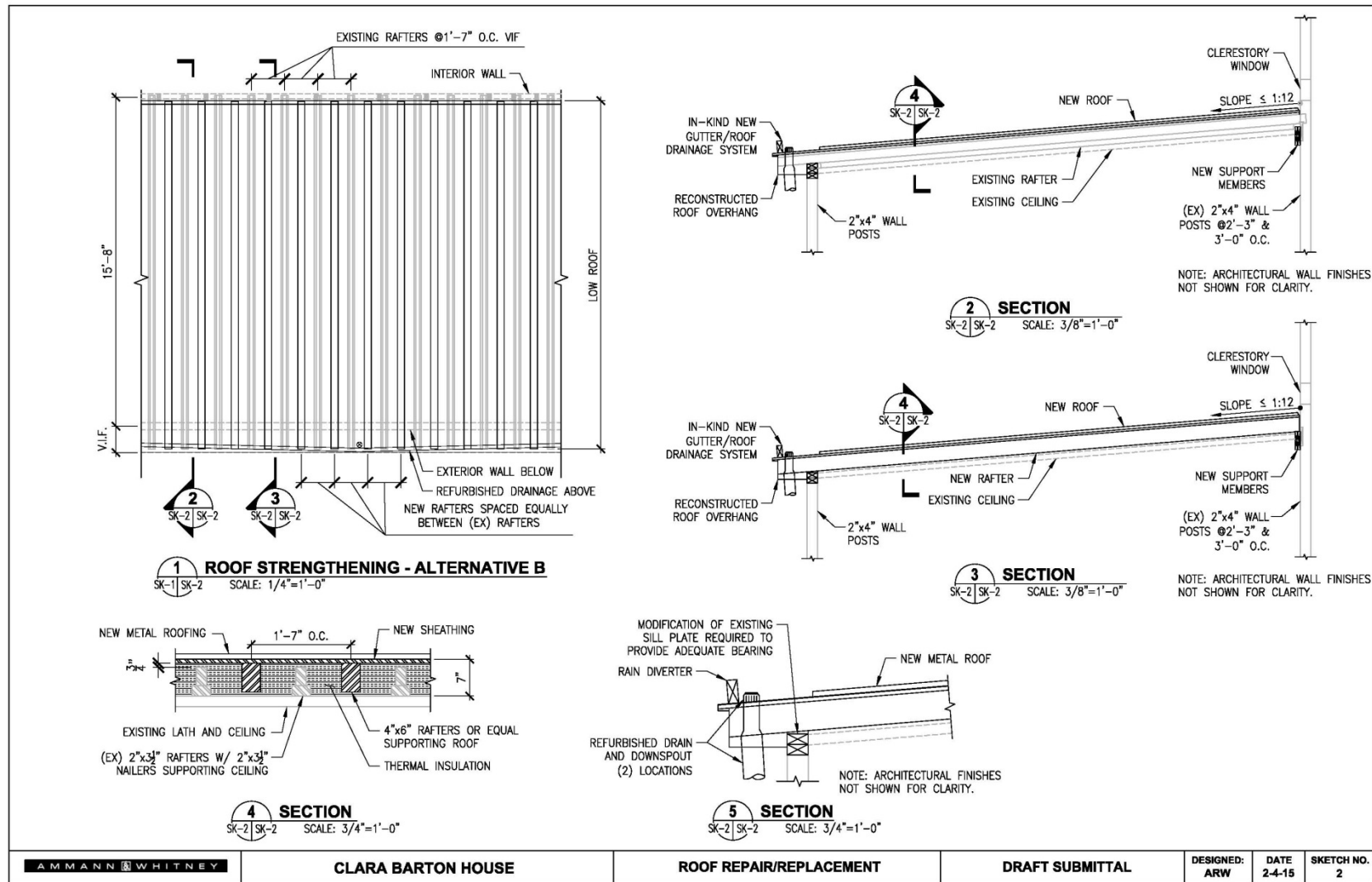


FIGURE 4: ROOF STRENGTHENING

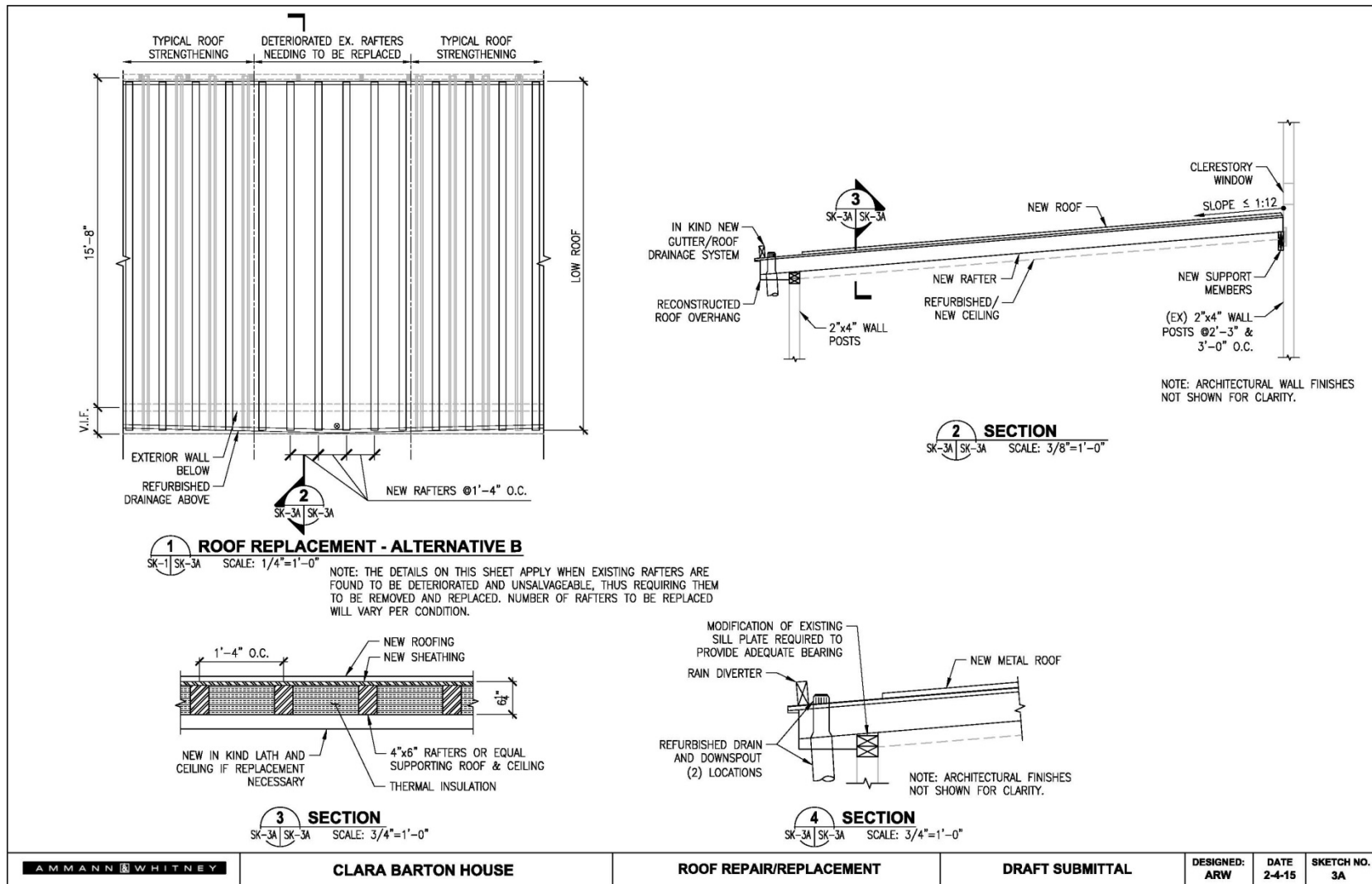


FIGURE 5: ROOF REPLACEMENT

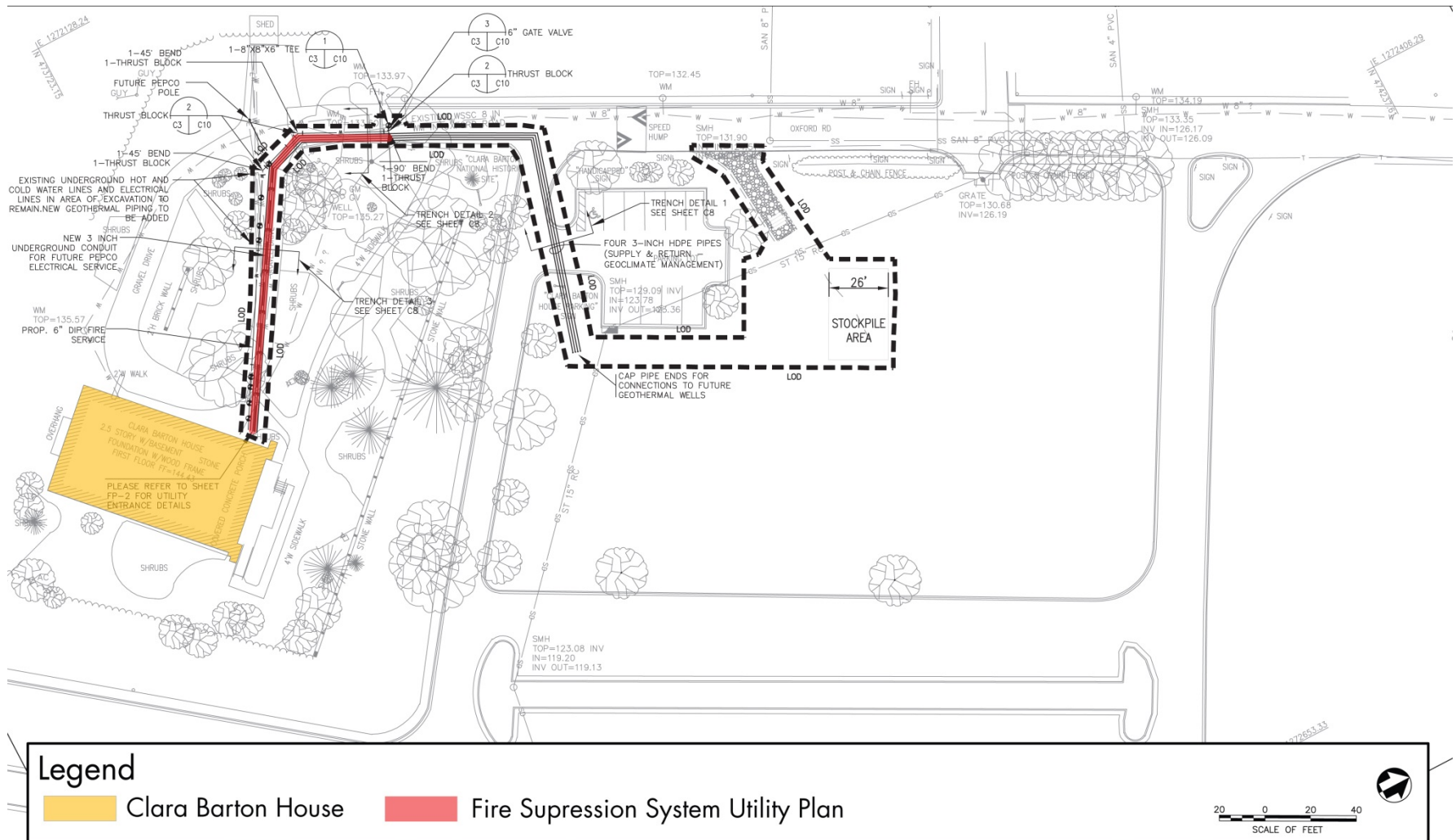
New Fire Suppression System

The proposed fire protection system includes a new wet-pipe sprinkler suppression system and replacement of an existing fire detection and alarm system. Installation of a fire protection system would help the Clara Barton House meet building and fire code limitations for an unprotected wooden-framed structure. A new fire suppression system would also allow more time for visitors and park personnel to safely exit the structure, as well as more time for local firefighters to arrive and extinguish the fire.

The fire suppression system would include a complete automatic sprinkler system with use of multiple small diameter risers to minimize horizontal distribution lines on the first and second floors and short dry-pipe extensions to the front porch and unheated central attics. The system would include piping, water flow alarm switches, valve supervisory switches, check valves, control valves, piping, hangers, sprinklers, and associated equipment. All sprinkler pipes within the building would be concealed, with the exception of the third floor, where it is not physically feasible. Specifically, lateral sprinkler pipes on the ground floor would be concealed with a soffit system, lateral sprinkler pipes on the first floor would be concealed between the ceiling joists, and lateral risers would be channeled into the walls. Consistent with the *Secretary of Interior's Standards for the Treatment of Historic Properties*, the new soffits would only be placed in areas of low historic sensitivity to avoid adding new features within historically significant areas.

A new fire detection and alarm system would be installed throughout the Clara Barton House. All ceiling and wall-mounted alarms would be coordinated and placed near the sprinkler pipe to minimize disturbance to the interior finishes. Fire alarm conduit and cabling would be routed along the same path as the sprinkler piping to minimize disturbance to the ceilings and walls. The existing fire alarm and detection system in the house, consisting of smoke and heat detectors, manual pull stations, and audiovisual notification appliances, would be removed.

The fire suppression system would require installation of a new 6-inch diameter ductile iron pipe waterline in the existing 36-inch-wide utility trench (Figure 6). The water line would be placed in the trench below the geothermal pipes (Figure 7). A temporary construction entrance and staging area would be located in a regraded, grassed area adjacent to Clara Barton House (Figure 6).



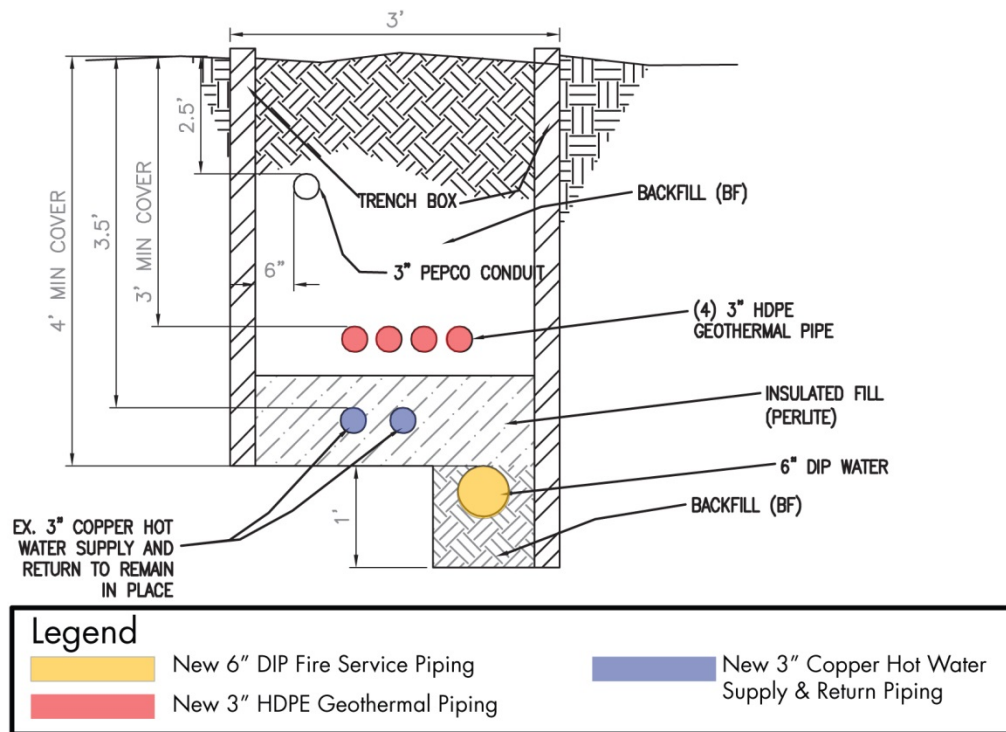


FIGURE 7. UTILITY TRENCH DETAILS

New Climate Control System

Installation of a geothermal climate management system would prevent further damage from extreme temperature fluctuations, lack of ventilation, and high levels of humidity. Currently the house does not have central air conditioning and is subject to severe heat and humidity in the summer months. Individual air conditioning units are currently used and would be removed when the new climate control system is in place. The existing hot water heating system would be removed, including historic radiators, the remote boiler located in a non-historic shed and aboveground propane tanks.

Elements of the new geothermal climate control system would include installation of mechanical equipment, wiring, ductwork, geothermal piping, and geothermal wells (figure 8). All mechanical equipment related to the climate control system (geothermal pumps, ground source heat pumps, and air handlers) as well as new electrical panels and wiring would be located in the unfinished basement of the Clara Barton House, and would involve high-velocity, small-diameter (3/4-inch to 1 inch) supply ductwork throughout the historic structure.

The geothermal climate management system would require installation of a geothermal field in the regraded grassed area adjacent to the Clara Barton House. The geothermal field would include 22 geothermal wells each with a 1-1/4-inch diameter loop coiling to approximately 350 feet deep. Approximately 22,000 square feet of soils in the grassed area adjacent to the house would be disturbed as a result of construction of the well field for the climate control system. Four, 3-inch diameter supply and return geothermal pipes (high density polyethylene pipe) would run within an existing 36-inch-wide utilities trench from the geothermal field back to the Clara Barton House (figure 6). Improvements would be made to the electrical service to accommodate new mechanical equipment and would require upgrading to underground electric service to replace existing overhead electric service on poles. Construction of the geothermal wells would use the small parking lot adjacent to the overflow parking lot for construction staging.

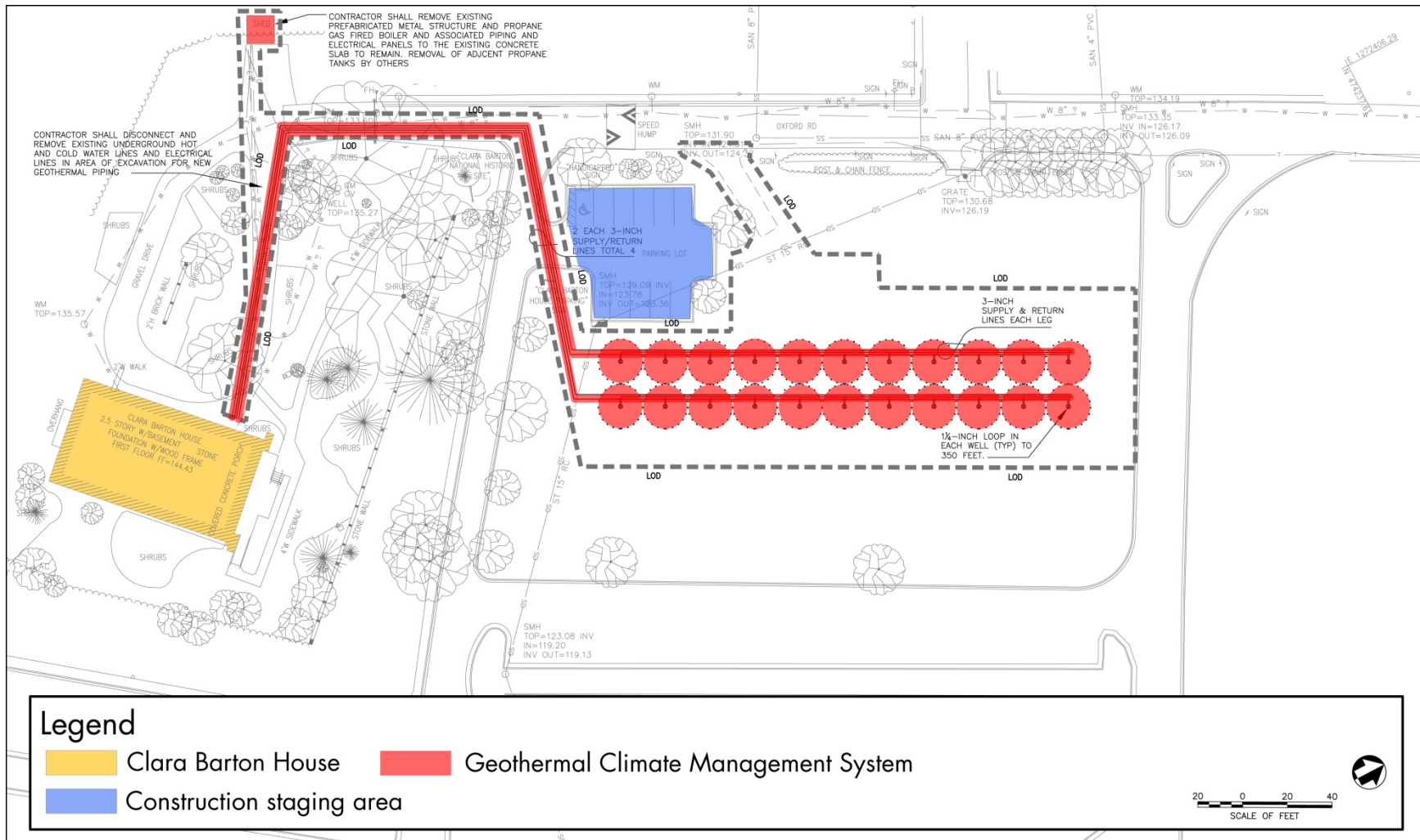


FIGURE 8: GEOTHERMAL CLIMATE MANAGEMENT PIPING AND FIELD

IDENTIFICATION OF HISTORIC PROPERTIES

Area of Potential Effect (APE)

Regulations implementing NHPA require the NPS, as the agency responsible for the undertaking, to assess, in consultation with the cognizant SHPO and/or tribal historic preservation officer (THPO), the undertaking's area of potential effect (APE) on historic properties eligible for or listed on the NRHP. The NPS has proposed in correspondence to the Maryland Historic Trust that the APE for the undertaking should be the property boundaries of Clara Barton House, the side yard, and the grassy area adjacent to the house (Figure 9).



LEGEND



Area of Potential Effect

NORTH



FIGURE 9. AREA OF POTENTIAL EFFECT (APE)

Historic Context

Clara Barton was a dedicated humanitarian who devoted her energies to caring for others at home and abroad. Her role as a caregiver started at an early age when her brother fell from the roof of a barn and although he appeared uninjured, developed fevers and headaches. Clara cared for him for two years, rarely leaving his side, and he eventually fully recovered (NPS 2004, volume 1). From this experience she developed a need to be of service to others and upon the advice of a family friend, went to school to become a teacher. However, she did not teach for long and left the profession in 1854 and moved to Washington, D.C., to work for the patent office (NPS 2004, volume 1). During her tenure with the patent office, the Civil War broke out. Clara recognized the need to provide care and supplies to the wounded and not only organized the collection and distribution of supplies but also devoted countless hours to caring for the injured. This experience launched her career as a humanitarian but also had a severe effect on her physical and mental health.

By 1868, her health had deteriorated significantly (NPS 2004, volume 1). She was encouraged to go abroad to recuperate and she ultimately landed in Geneva. It was during her time in Europe that she learned about the International Red Cross and realized that their goals closely resembled her own. When the Franco-Prussian War started she volunteered for the International Red Cross (NPS 2004, volume 1).

In 1873, she learned that her sister was dying of cancer and returned to the United States to care for her. However, she arrived at her sister's home ten hours too late and given her still fragile health, suffered a complete collapse that left her an invalid for two years (NPS 2004, volume 1). Her search for wellness eventually took her to the Jackson Sanitarium, in Dansville, NY, where she began to recover. During her time in Dansville she eventually established her own residence and became the American representative of the International Red Cross. In Dansville, she became acquainted with Dr. Julian Hubbell, the man who would become her closest friend and partner in establishing the Red Cross in America.

It was not until 1877 that Clara found herself sufficiently healthy to begin working towards her goal of the United States' adoption of the Treaty of Geneva and the development of an American Red Cross. She spent much time in Washington, D.C., during the following years, lobbying President James A. Garfield to ratify the Treaty of Geneva and laying the groundwork for the establishment of the Red Cross in America. The Treaty of Geneva was eventually ratified by President Chester Alan Arthur in 1882.

By 1881, Clara had established a headquarters for the Red Cross in Dansville and shortly after administered aid to victims of a large wildfire in eastern Michigan (NPS 2004, volume 1). With Dr. Hubbell as her second in command, they spent the next eight years working to obtain funding and make the Red Cross commonly known to the public. In 1889, the American Red Cross provided disaster relief after a large flood in Johnstown, Pennsylvania, and the organization became known and acclaimed across the country (NPS 2004, volume 1).

After this event, Clara realized she would need to find a more permanent headquarters and began searching for a location in Kalorama, Washington, D.C. However, in 1890, Edwin and Edward Baltzley (founders of Glen Echo) offered her land in Glen Echo, Maryland, and offered to construct whatever building she desired if she agreed to establish the headquarters of the Red Cross there. She accepted the offer and in 1891 The Red Cross House, now known as the Clara Barton House, was constructed to serve as a warehouse for supplies for the American Red Cross. Clara Barton designed the structure to serve multiple purposes and lived there briefly after its construction. She ultimately decided she needed to be closer to urban life to carry out her work. It was not until 1897 that she returned to the house permanently and it became the headquarters for the Red Cross until 1904 and her home until her death in 1912.

Identification of Historic Properties

The NPS has completed extensive documentation of the Clara Barton House, the only historic structure at the park. Additionally, a cultural landscape inventory has been completed for the area that resulted in the identification of the Glen Echo-Clara Barton Cultural Landscape. Archeological investigations within the APE have been limited but have identified one archeological site, 18MO154. This site consists of a prehistoric and historic component; the historic component is related to the occupancy of the house by Clara Barton.

Historic Structures

Congress declared the Clara Barton House a National Historic Landmark on January 12, 1965. By virtue of its listing as a National Historic Landmark, the Clara Barton House was automatically added to the NRHP following the passage of the NHPA of 1966. The first NRHP inventory form was completed in 1972 and an update followed in 1980. The latter identified the Clara Barton NHS as nationally significant according to NRHP Criterion B, based upon its association with the life and work of Clara Barton, the Red Cross, and with the National Chautauqua of Glen Echo¹. Additionally, the building itself was constructed using materials that had been used in the construction of emergency shelters at Johnstown, Pennsylvania.

The property is significant because it was the home of Clara Barton from 1897 to 1912, with special emphasis on the years 1897 to 1904 when it also served as the executive headquarters of the American Red Cross. Miss Barton's personal direction of the 1897 remodeling made the house uniquely hers in design as well as occupancy.

At the time the initial NRHP inventories were completed, the house itself was considered "vernacular in character" and not particularly unique architecturally (NPS 2004, volume 1). However, since then the NPS has recommended that the nomination be revised to include Criterion C because "the work is a strong piece of vernacular architecture, drawing inspiration from summer and Chautauqua cottages and from purely functional prototypes like warehouses" (NPS 2004, volume 1). The goal of revising the nomination was to ensure the preservation of the physical fabric of the structure and the interpretive collection (NPS 2004, volume 1).

The Clara Barton House has been modified several times, including one important renovation by Clara herself prior to returning in 1897 to take up permanent residence. Although little is known about the original appearance of the structure, the changes since then have been extensively documented (NPS 2004, volume 2). The house itself has a simple rectangular floor plan with a large central hall and rooms opening off the hall on each side. The building is three stories tall with a basement/crawl space. With the exception of the basement, the brick vault, and the stone piers at the front of the house, the structure is constructed entirely of wood and has a metal roof.

The interior and exterior of the house have been divided into three zones of historic significance: primary, secondary, and no significance. Significant zones can include spaces as well as features that date from the period of importance. Significant features can be located in non-significant spaces; all of these features

¹ The Chautauqua was an educational movement that sought to unify the Protestant churches by bringing people together for classes, discussions, entertainment, and physical activity. The movement started in 1874 with the first Chautauqua Assembly at Lake Chautauqua, NY. The Baltzley brothers deeded 80 acres of their land to the National Chautauqua of Glen Echo, which became the 53rd Chautauqua Assembly. (Town of Glen Echo n.d.)

are listed in volume 2 of the Historic Structure Report for the house (NPS 2004, volume 2). Preservation recommendations have been identified for each zone of significance.

Areas of primary significance are of special architectural or documented historical importance and should be preserved, restored, reconstructed, and maintained. These places are usually the primary public and private spaces in the building and usually have a higher level of architectural detail than others.

Areas of secondary significance are also of architectural or documented historical importance but contain a lower level of detail or finish, or have been altered and cannot be returned to their original form. Alterations in these areas are acceptable as part of rehabilitation but significant materials and details should be retained. These areas may contain significant original features that should be preserved in the same manner as those of primary significance.

Areas of no significance lack architectural or historical importance and/or do not support interpretation of the site. There are areas of the building which are utilitarian in function and finish or have been so completely altered that they contain little to none of the original fabric of the building. Although these spaces may not be significant, there may be significant original features that require treatment similar to areas of primary significance. Otherwise, these spaces may be rehabilitated, altered, or redesigned as long as changes do not adversely affect significant features.

The interior and exterior areas of significance are detailed in Tables 2 and 3. All of the areas within the house have been assigned to a significance category with the exception of Clara Barton's bedroom (room 213) and a meeting room on the second floor (room 218), because those two rooms have not been evaluated for significance. Figures 10, 11, 12, and 13 depict the interior zones of significance for each level of the house.

TABLE 2. INTERIOR ZONES OF SIGNIFICANCE

Primary Significance	Secondary Significance	No Significance
Room 101, Vestibule	Room B-3, Utility Room,	Room B-1, Basement
Room 102, Hall	Room B-4, Store Room	Room B-2, Mechanical Room
Room 104, Vault	Room B-8, Vault	Room B-5, Living Room/Kitchen
Room 107, Main Stairway	Room 108, Visitor Orientation	Room B-6, Bedroom
Room 111, Kitchen	Room 110, Back Stair Up and Back Stair Down	Room B-7, Bathroom
Room 112, Dining Room	Room 204, Vault	Room 103, Gift Shop
Room 113, Red Cross Office	Room 209, Bathroom	Room 105, Storage
Room 114, Red Cross Office	—	Room 106, Toilet
Room 118, Rear Parlor	—	Room 109, Office
Room 119, Front Parlor	—	Room 115, Office
Room 201, Library	—	Room 116, Office
Room 202, Hall	—	Room 117, Storage
Room 203 and 203a, Library and Kitchen	—	Room 206, Office
Room 211, Dr. Hubbell's Bedroom	—	Room 207, Office
Room 212, Clara Barton's Sitting Room	—	Room 208, Kitchen
Room 301, Bedroom	—	Room 210, Stair Hall

Primary Significance	Secondary Significance	No Significance
Room 302, Landing	—	Room 214, Bedroom
Room 303, Bedroom	—	Room 215, Bedroom
Room 304, Landing	—	Room 216, Closet
Room 305, Store Room	—	Room 217, Bathroom

TABLE 3. EXTERIOR ZONES OF SIGNIFICANCE

Primary Significance	Secondary Significance	No Significance
Northeast (Front) Elevation	Southeast (Side) Elevation	Front Porch
Northwest (Side) Elevation	Southwest (Rear) Elevation	—

All four exterior sides of the house are considered to be of primary or secondary significance, however, the northwest side of the house is considered particularly important because they would have been the portions of the house first seen by visitors. The front porch was added to the house by Dr. Hubbell in 1917 or 1918, and therefore falls outside of the period of importance for this site and is considered to have no significance.

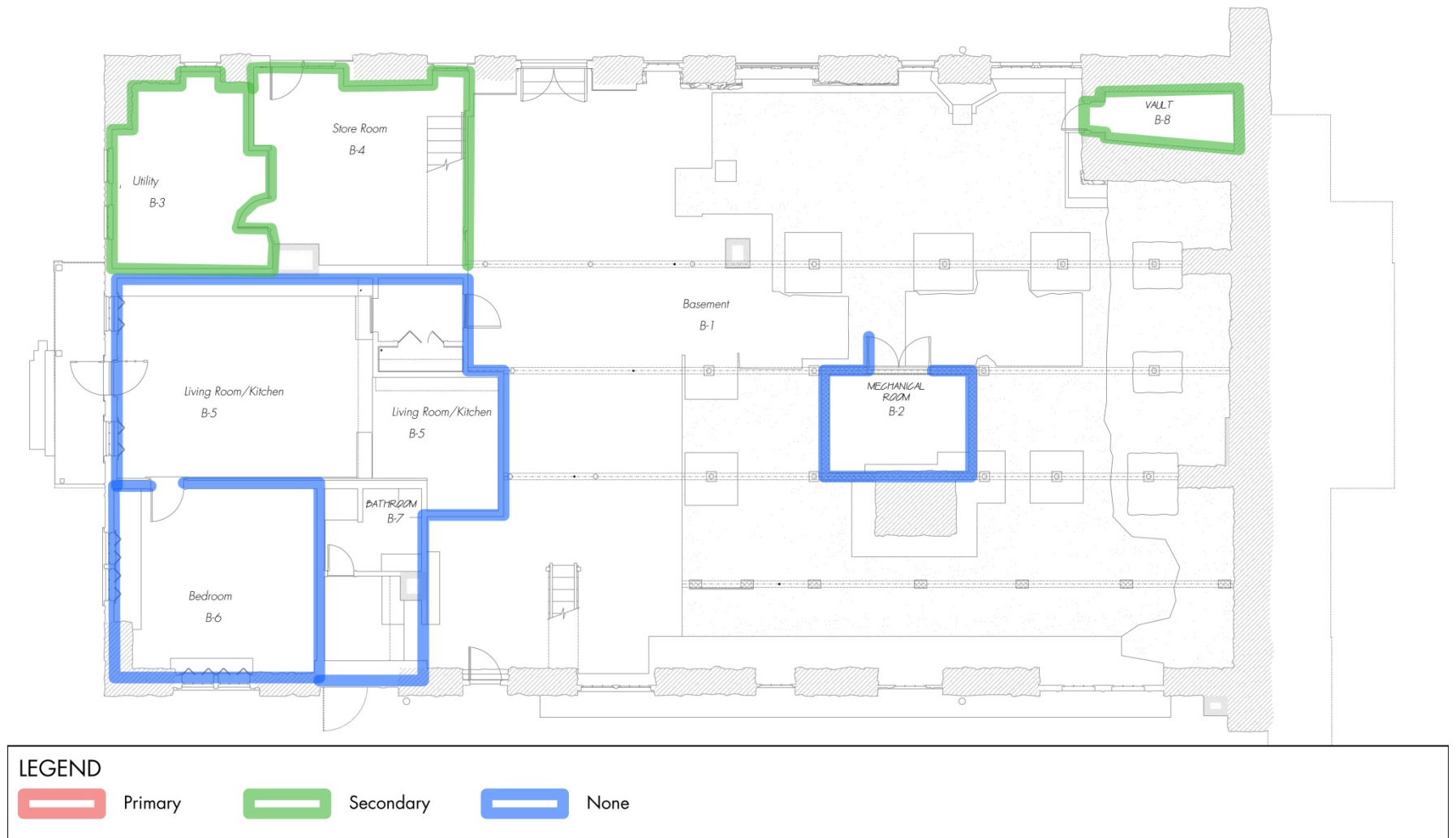
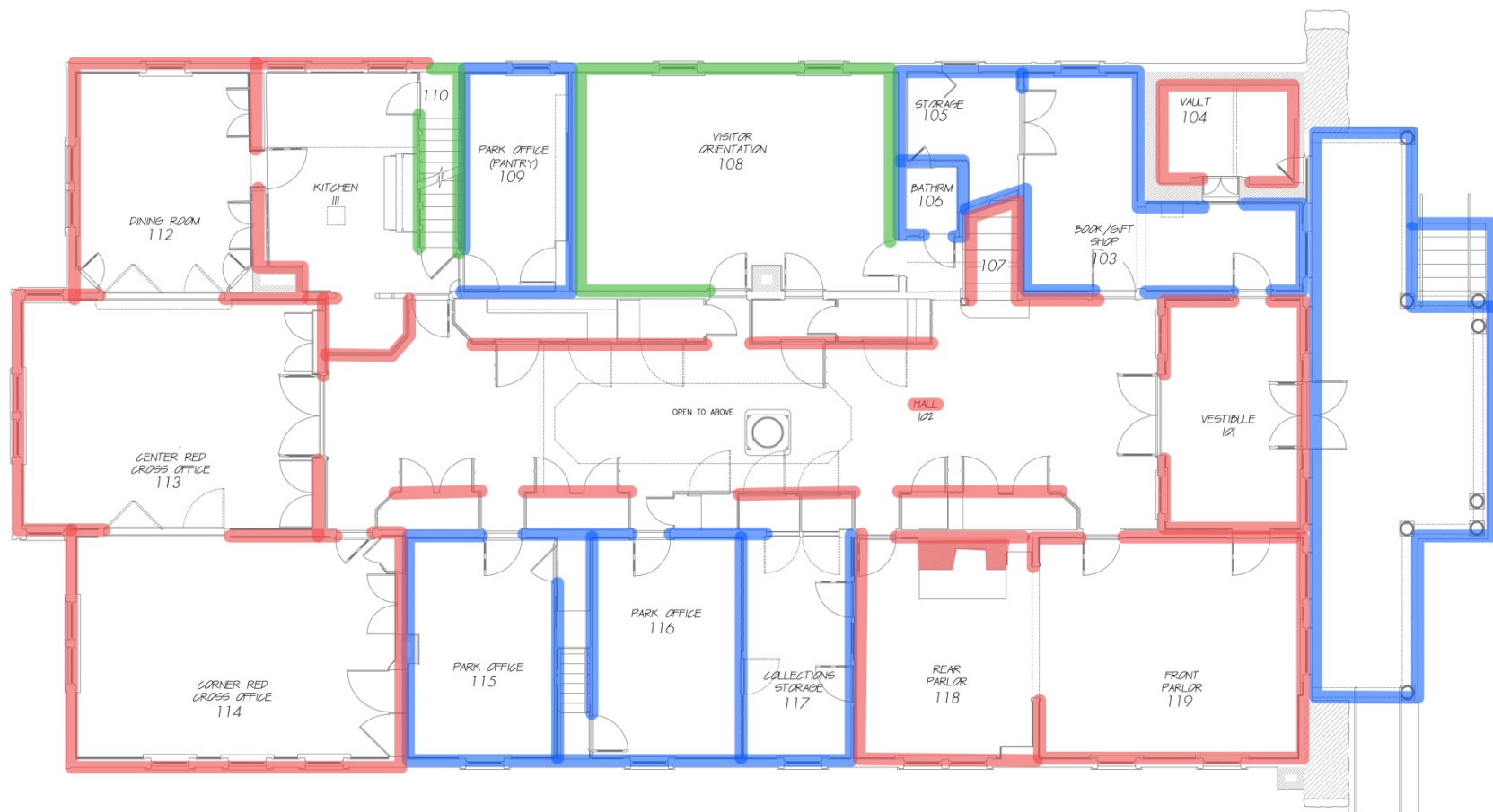


FIGURE 10. INTERIOR ZONES OF SIGNIFICANCE - BASEMENT



LEGEND



Primary

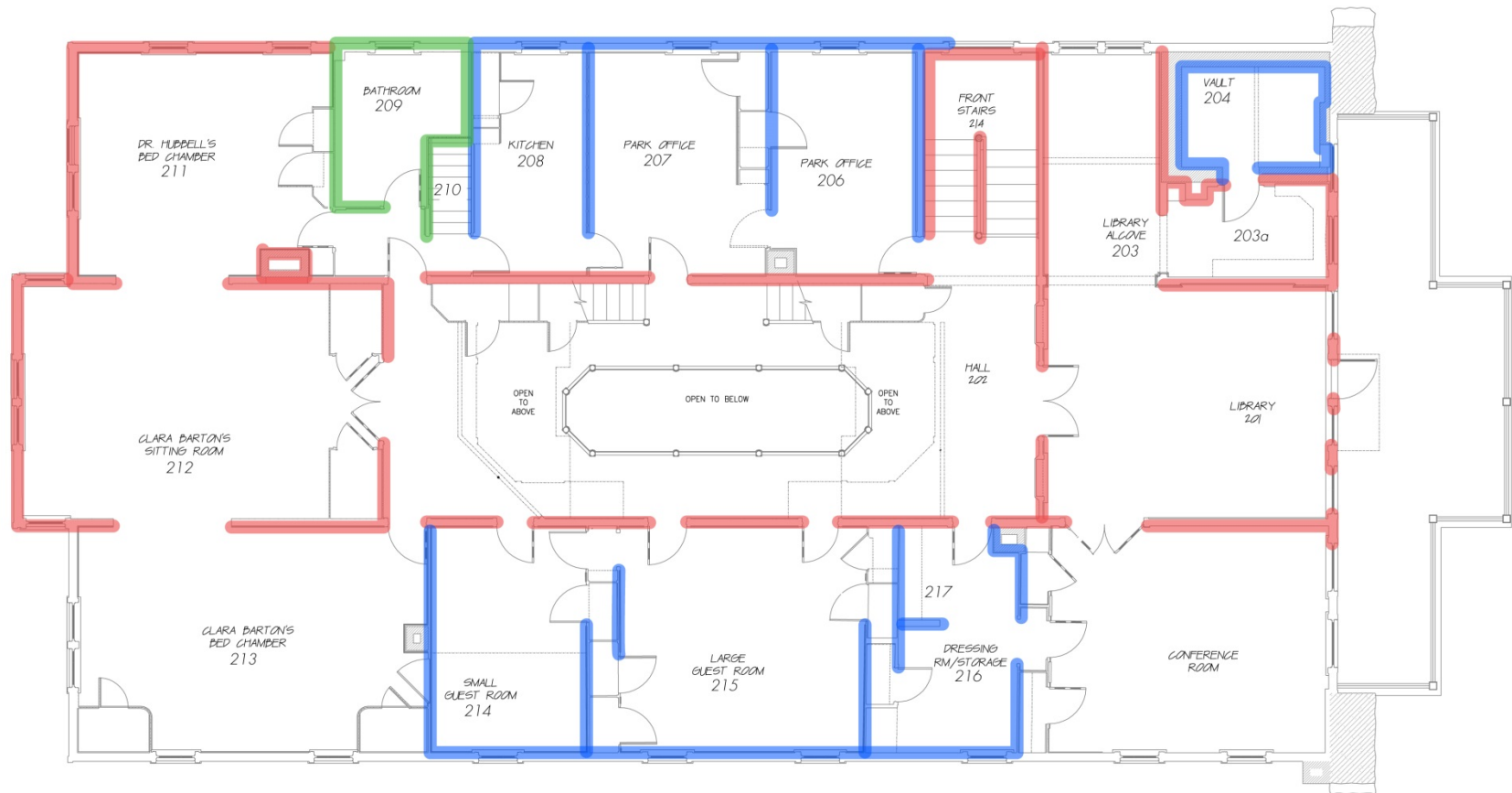


Secondary



None

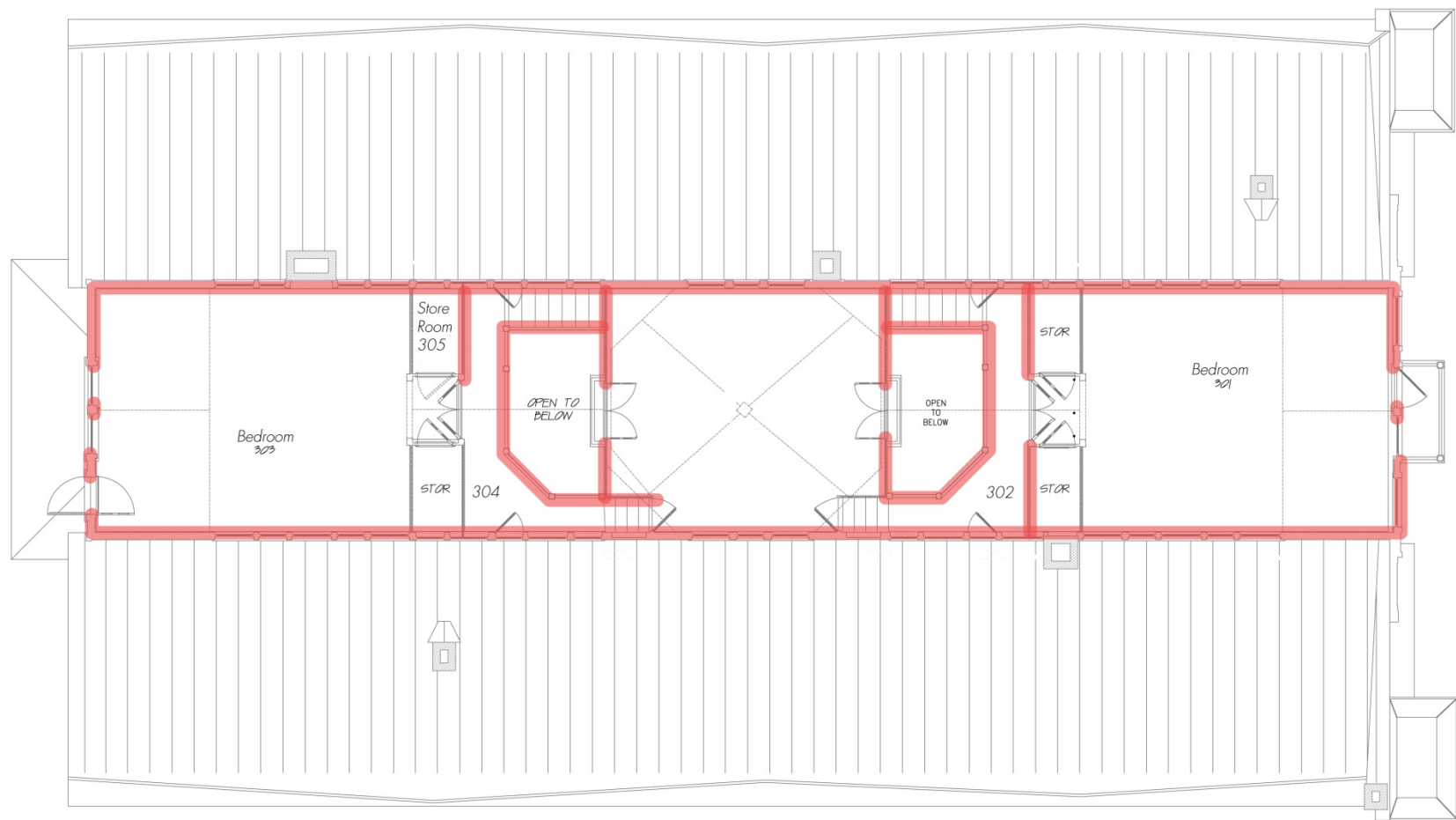
FIGURE 11. INTERIOR ZONES OF SIGNIFICANCE – FIRST FLOOR



LEGEND

Primary Secondary None

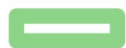
FIGURE 12. INTERIOR ZONES OF SIGNIFICANCE – SECOND FLOOR



LEGEND



Primary



Secondary



None

FIGURE 13. INTERIOR ZONES OF SIGNIFICANCE – THIRD FLOOR

Cultural Landscapes

The Clara Barton House is part of the Glen Echo Park – Clara Barton House Cultural Landscape (NPS 2011). The cultural landscape comprises two contiguous national park system units: Glen Echo Park and the Clara Barton NHS. Administratively, the Clara Barton NHS is an independent NPS holding and Glen Echo Park is under the jurisdiction of the George Washington Memorial Parkway (NPS 2011). Although it is important to note that Glen Echo Park and the Clara Barton NHS are indeed two separate national park system units, these distinctions actually amount to very little. The two sites have a shared history that stretches back to 1888 and a single NPS site manager is currently in charge of both properties. For more than a century, Glen Echo Park and the Clara Barton House have been extensions of one another, and for these reasons both sites were recorded as a single cultural landscape.

The Glen Echo Park – Clara Barton House Cultural Landscape retains integrity to its historic period of significance (1888–1968). Many of the historic structures remain, including the Clara Barton House and the stylized Art Deco buildings that lend Glen Echo Park its signature appearance. The historic Dentzel Carousel, installed in 1921, continues to operate seasonally. The circulation routes between the amusement park buildings are the same as during the historic period, and the circular driveway established by Barton to the west of the house is still present today. Historic and specimen trees grow in the Picnic Grove section of Glen Echo Park, shading modern-day visitors just as these trees have done for more than a century. There have been alterations to the landscape, and several, such as the removal of all of Clara Barton's outbuildings and the majority of the amusement park rides, have impacted both the form and character of the cultural landscape. Overall, however, continuity outweighs change.

This cultural landscape inventory finds that the Glen Echo Park – Clara Barton House Cultural Landscape retains integrity to the period of significance and is in good condition overall (NPS 2011). While there have been some changes to the property and the loss of several important features, all seven aspects of integrity remain represented on the landscape today. The period of significance for the Glen Echo Park – Clara Barton House Cultural Landscape is 1888–1968. These dates represent the initial purchase of the land by Edward and Edwin Baltzley in 1888, and extend through the tenure of Clara Barton, the brief existence of the National Chautauqua of Glen Echo, and the founding and expansion of the Glen Echo amusement park. The period ends with the permanent closure of the amusement park in 1968.

Archeological Resources

The archeological investigation around the Clara Barton House has been limited to the side yard around the driveway. These surveys have identified one archeological site (18MO154) that consists of historic materials related to the construction of the Clara Barton House and prehistoric lithic artifacts, including an Archaic period projectile point. This site has not been evaluated for eligibility to the NRHP, but is considered potentially eligible pending additional research.

The proposed locations of the new geothermal wells and staging areas have not been surveyed for archeological resources. These areas may have been previously disturbed and/or filled during construction of the existing parking lot; however, these actions may have been minimal. Given the previously identified archeological site, there is the potential for intact subsurface cultural deposits in this location.

Museum Objects

When the ownership of the building was transferred to the NPS in 1975, the transfer included all of the furniture and furnishings that were not the personal belongings of the tenants. Many of these items were originally owned by Clara Barton or Dr. Julian Hubbell, who inherited the house after her death, and all of the items were catalogued and described as part of the transfer. A total of 2,959 items were accessioned

during the transfer to the NPS (NPS 2008). Additional acquisitions have been made since 1975 and include donations from individuals, period pieces that were purchased from antique stores, and pieces transferred from other NPS held collections (NPS 2008). The collections also include an archeology collection, the archives, and resource management records (NPS 2008). There are currently almost 4,000 artifacts housed in the Clara Barton House collections. These collections are integral for telling the story of Clara Barton and her association with the American Red Cross.

ASSESSMENT OF EFFECTS

Methodology and Assumptions

To assess the potential effects of the proposed rehabilitation of Clara Barton House as an undertaking with the potential to effect historic properties this report applies the Criteria of Adverse Effect, as defined in 36 CFR 800.5, to each historic property within the APEs. The Criteria of Adverse Effect states, “An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the property’s location, design, setting, materials, workmanship, feeling, or association.” Additionally, “adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.” Examples of adverse effects include:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property that is not consistent with the *Secretary of the Interior’s Standards for the Treatment of Historic Resources* (36 CFR 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property’s use or physical features within the property’s setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features;
- Neglect of a property which causes its deterioration; and
- Transfer, lease, or sale of the property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property’s historic significance.

Each resource was analyzed independently in relationship to each of the proposed rehabilitation projects. The analysis of historic structures focused specifically on the impacts of the proposed projects on areas that have been defined as zones of primary and secondary significance inside and outside the house. It was assumed that the two areas that have not been assigned a significance category, Clara Barton’s bedroom (room 213) and a meeting room on the second floor (room 218) were considered to be areas of either primary or secondary significance.

The Clara Barton House is a contributing element to the Glen Echo – Clara Barton cultural landscape, which is eligible for listing on the NRHP (NPS 2011). The cultural landscape focuses on potential exterior visual changes that could impact the overall integrity of the cultural landscape. Interior modifications, such as the fire suppression system and climate control system, were not analyzed. However, exterior construction in support of these systems was analyzed.

The analysis of effects to archeological resources was restricted to areas outside the house where there was the potential for ground disturbance. These areas include the location of the geothermal field, utility line installation for the fire suppression system and geothermal piping, a small area from which an existing shed and boiler would be removed, and staging areas.

Potential impacts on museum objects are assessed according to the conditions under which they are displayed or stored. Environmental conditions such as temperature and humidity are important factors

governing the stability of museum objects. Museum objects are most stable and secure when they are stored in a facility that meets museum standards. They are subject to physical damage or loss when they must be moved or when they are stored or displayed in settings with inadequate or outdated environmental controls. The study area for museum objects consists of the Clara Barton House where the collections are displayed or stored.

The no action alternative *does not constitute an undertaking* under Section 106 but the potential effects of the continuation of existing conditions are presented below to provide a baseline to better understand the effects of the action alternatives.

Effects on Historic Structures

Historic structures are classified as buildings, structures, sites, objects, or districts (i.e., all the various types of historic property, except for archeological sites) that are potentially eligible for the NRHP. The Clara Barton House is a National Historic Landmark and has the potential to be impacted by the proposed activities. The APE for the analysis of effects on the historic structure is the house itself and immediate environs.

Alternative A: No Action

The continuation of existing conditions under the no-action alternative would have a major impact on the Clara Barton House, a National Historic Landmark. Normal maintenance would continue to be conducted but the larger issues that could impact the structure, such as the failing roof and inadequate climate control, would not be addressed. The roof leaks would continue and could worsen over time, leading to deterioration of the structural system and potential failure of key structural elements. Additionally, leaking water would cause damage to the interior of the structure, particularly the muslin and plaster ceilings directly below the roof and important museum pieces stored within the house.

Most of this damage would occur in the rooms immediately below the roof line on the second and third floor of the structure. Many of the rooms on the second floor and all of the rooms on the third floor are considered to be of primary significance to the house. Rooms of primary significance on the second floor that could be impacted by water damage include Dr. Hubbell's bedroom (room 211), the library/kitchen (room 203), and the meeting room (room 218). Third-floor rooms would some protection of Clara Barton's sitting room (room 212) and the library in room 201. Clara Barton's bedroom has not been evaluated for significance; however, it could also be impacted by water damage. Not only would leaks cause structural damage, the damage would be visible to visitors and would impact the overall interpretation of Clara Barton and the house itself.

The lack of a climate control system at the house would have long-term moderate impacts on the structure. The current lack of climate control allows the house to expand and contract with the weather, impacting the structural integrity of the building and possibly necessitating more frequent and extensive repair projects. However, the existing climate control may alleviate some of these issues.

The no action alternative does not constitute an undertaking under Section 106 of the NHPA.

Alternative B: Repair and Rehabilitate the Clara Barton House

Preservation of Historic Roof Structure

Under this alternative the existing roof rafters would be preserved and the entire roof would be strengthened to meet loading requirements for low-sloped roofs. New rafters would be installed between

the existing rafters to support a new roof that would consist of 3/4 inch plywood and metal roof. Existing wood rafters and ceiling finishes would remain in place. Ceiling that required replacement would be replaced using in-kind materials. The existing tin coated steel roof system and all associated flashing, rain diverters, downspouts, underlayment, etc. would be replaced in-kind with a new zinc/tin coated field formed and finished roof. It is possible that some of the existing rafters have suffered from extensive deterioration due to water leakage. The damaged portions of the rafters would be removed. In the end, the new rafters would support the roof and the existing rafters would remain in place but only support the ceilings.

Although there would be short-term, and temporary impacts on the structure during construction activities associated with the roof rehabilitation these impacts would have no adverse effect on the historic structure. The long-term impacts would be beneficial. The roofline and appearance would not be altered, maintaining this important structural element that contributes to the overall eligibility of the building. The entire metal roof would be replaced, which would ensure that the public view of the roof remains consistent and seamless. Also, the repairs to the roof would solve current water leaking problems, preserving the overall structural integrity of the building as well as protecting the primary zones of significance on the second and third floors (table 4).

Additionally, two unevaluated rooms that are potentially significant (Clara Barton's bedroom [room 213] and the meeting room [room 218]) would be protected. There are no secondary zones of significance on the third floor.

TABLE 4. PRIMARY ZONES OF SIGNIFICANCE ON THE SECOND AND THIRD FLOORS

Room Number	Description
203	Library/Kitchen
211	Dr. Hubbell's Bedroom
212	Clara Barton's Sitting Room
301	Bedroom
302	Landing
303	Bedroom
304	Landing
305	Store Room

New Fire Suppression System and Replacement Fire Alarm System

The proposed fire suppression system would be installed on all levels of the house. The system would include piping, water flow alarm switches, valve supervisory switches, check and control valves, sprinklers, fire detectors, and associated equipment. All of the piping and fire alarm conduit and cabling would be concealed within the closets on the first and second floors and would be placed within close proximity to one another to minimize disturbance. On the third floor, some wet pipe sprinkler piping would be placed under the ceilings for dry-pipe extensions into small concealed attic space. The only visible intrusion into the rooms would be the sprinkler heads and fire detectors. The installation of the fire suppression system would have no adverse effect on the historic structure. Short-term and temporary negative effects would include the removal of portions of walls and floors to install the piping and associated features. Following the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Restoring, and Reconstructing Historic Structures* (Secretary's Standards) (Weeks and Grimmer 1995), these disturbances would be repaired in a manner that retains the

original features and character of the house and does not introduce new materials. When possible, the boards from the walls and floors should be removed in a manner that would allow them to be reused during the rehabilitation of construction efforts. Any historic materials that cannot be reused would be replaced in kind. These negative effects would last until the construction of the system is complete.

Fire alarms and sprinklers would be installed in all of the rooms identified as primary and secondary areas of significance (table 5). In most cases, these would be placed discretely near closets or doorways and would be minimally intrusive. Fire alarms are limited to one per room but there are often multiple sprinkler heads depending on the size of the room. With the exception of the basement, the majority of the sprinkler heads would be placed high on walls and not in the ceiling. These pieces of equipment are also discretely located, usually near doors, to minimize visual intrusions.

TABLE 5. LOCATION OF FIRE ALARMS AND SPRINKLERS IN AREAS OF PRIMARY AND SECONDARY ZONES OF SIGNIFICANCE

Room Number	Description
Primary Zones of Significance	
101	Vestibule
102	Hall
104	Vault
111	Kitchen
112	Dining Room
113	Red Cross Office
114	Red Cross Office
118	Rear Parlor
119	Front Parlor
201	Library
202	Hall
203	Library/Kitchen
211	Dr. Hubbell's Bedroom
212	Clara Barton's Sitting Room
213*	Clara Barton's Bedroom
218*	Meeting Room
301	Bedroom
302	Landing
303	Bedroom
304	Landing
305	Store Room
Secondary Zones of Significance	
B-3	Utility Room
B-4	Store Room
B-8	Vault

Room Number	Description
108	Visitor Orientation
204	Vault
209	Bathroom

Note: * unevaluated rooms that are potentially significant.

The fire suppression system would introduce modern components into rooms that have been identified as significant to the overall integrity of the house. However, these features could be removed in the future and the house returned to its original state. Additionally, the park will follow the Secretary's Standards to ensure that the placement of these features does not impact significant features and are as visibly unobtrusive as possible while ensuring their functionality. Therefore, there would be no adverse effect to the historic structure.

There are also beneficial impacts associated with the installation of the fire suppression system. Despite the above effects, the fire suppression system could prevent the loss of portions or all of the structure in the event of a fire. The benefit of long-term preservation of the structure would outweigh the minimal negative effects.

New Climate Control System

The proposed climate control system would replace the existing hot water heating system and provide much needed humidity control and ventilation within the structure. The vast majority of the climate control equipment, including new electrical panels and wiring, would be located in the unfinished portion of the basement. This portion of the basement is considered 'non-significant' to the overall integrity of the structure and modifications in these areas are allowed (NPS 2004, volume 2). Small diameter (3/4 to 1 inch), high velocity ductwork would be installed within the walls and floors of the structure with vents opening into rooms.

Like the fire suppression system, the climate control system would have short- and long-term negative effects but would result in no adverse effects to the historic structure. Short-term and temporary negative effects would occur during the installation of the system and would be particularly prevalent in significant areas where walls or flooring would have to be removed to accommodate small diameter ductwork. However, work in these areas would follow the Secretary's Standards and would be repaired to match the historic character of the room and would only be visible for a short duration. When possible, the boards from the walls and floors should be removed in a manner that would allow them to be reused during the rehabilitation of construction efforts. If this is not possible the materials would be replaced in kind.

The installation of vents would introduce modern elements into significant areas within the house, resulting in long-term effects on these areas. However, the vents would be placed in a manner that makes them visually unobtrusive and vent covers would be used to blend the new feature with the surroundings. Although a modern intrusion, these vents would be a positive improvement over the current use of the stand-alone air conditioning units throughout the house.

Overall, the climate control system would have a beneficial effect on the historic structure by regulating the impacts from extreme fluctuations of heat and cold. This could lessen the overall wear and tear on the house caused by expanding and contracting seasonally and prevent the need for other repairs of the house.

This alternative would have *no adverse effect* on the Clara Barton House historic structure. Although the alternative would result in short-term negative effects, most of which would occur during construction, the overall long-term effects on the historic Clara Barton House would be beneficial.

Effects on Cultural Landscapes

Cultural landscapes are composed of two principal organizational elements, spatial organization and land patterns, and several character-defining landscape features. These character-defining features include topography, vegetation, circulation, water features, structures, site furnishings, and objects. The paramount attribute of the organizational elements and the character-defining features is their interrelationships in space. Individual features of the landscape are never examined alone but only in relationship to the overall landscape.

The study area for cultural landscapes is the Glen Echo Park-Clara Barton House Cultural Landscape as defined by the NPS Cultural Landscape Inventory (NPS 2011). The Clara Barton House is a contributing element to the landscape and the analysis focuses on potential exterior visual changes that could impact the overall integrity of the cultural landscape. Interior modifications, such as the fire suppression system and climate control system, were not analyzed. However, exterior construction in support of these systems was analyzed.

Alternative A: No Action

Under this alternative, the roof would not be repaired and water leaks would continue to occur, potentially damaging the substructure and resulting in visual deterioration of the house. Since the house is a major component of the cultural landscape, the deterioration of the structure, particularly the exterior, would have a long-term moderate impact on the overall landscape. There would be no ground disturbance under this alternative and therefore, the cultural landscape would not be impacted by these actions.

The no action alternative does not constitute an undertaking under Section 106 of the NHPA.

Alternative B: Repair and Rehabilitate the Clara Barton House

Preservation of Historic Roof Structure

Roof repair under alternative B would have a long-term beneficial effects on the cultural landscape by preserving the roofline and maintaining the architectural and visual components of the Clara Barton House that make it an important element to the overall landscape. The preservation of the roof would also aid in the long-term preservation of the house itself and minimize the potential for deterioration that could impact the integrity of the cultural landscape.

There would be short-term, temporary negative effects on the cultural landscape during the roof repair. Construction equipment would not only be visible but audible and could detract from the cultural landscape. However, these impacts would be restricted to the period of construction. Roof repair under alternative B would have no adverse effect on the cultural landscape.

New Fire Suppression System and Replacement Fire Alarm System

There would be short-term, temporary negative effects on the cultural landscape during the construction of the fire suppression and climate control systems. Ground-disturbing activities and construction equipment would not only be visible but audible and could detract from the cultural landscape. However, these impacts would be restricted to the period of construction and all areas of disturbed ground would be rehabilitated to match the existing conditions. Therefore, there would be no adverse effect on the cultural landscape.

New Climate Control System

Effects on the cultural landscape from implementation of the climate control system would be the same as for implementation of the fire suppression system.

Alternative B would have *no adverse effect* on the Glen Echo-Clara Barton House Cultural Landscape. Although short-term negative effects are expected during construction, in the long term, the repair of the house and installation of a climate control system would have a beneficial effect on the cultural landscape by ensuring the preservation of the structure itself.

Effects on Archeological Resources

Although, there has been limited archeological survey at the Clara Barton House, these surveys have identified one archeological site, indicating that there is the potential for additional archeological sites to be located within the project area. Given that these resources are predominately located subsurface, although are observable on the surface in many instances, the potential impacts on archeological resources are limited to those areas where there would be ground-disturbing activities such as excavation or grading.

Alternative A: No Action

Under the no action alternative, there would be no impacts on this resource because the current practices regarding visitor use, operations, and maintenance would continue. Because none of these activities would involve ground-disturbing activities, any existing archeological resource would remain undisturbed.

The no action alternative does not constitute an undertaking under Section 106 of the NHPA.

Alternative B: Repair and Rehabilitate the Clara Barton House

Preservation of Historic Roof Structure

Construction activities involving the use of heavy equipment to shuttle supplies to the house or to the roof may affect site 18MO154 by disturbing the ground. Effects would be greater if the equipment was used during or after a rain or snow even and the ground was particularly soft. Restricting heavy equipment to paved or graveled areas would ensure that any effects to 18MO154 are avoided.

The use of heavy equipment outside of previously surveyed areas, such as in staging areas or as transportation between roads and the house, could negatively impact unknown archeological resources. Again, these impacts could be avoided by restricting heavy equipment use to paved or graveled areas. Any impacts would be avoided or minimized through Section 106 consultation and the preparation of a Memorandum of Agreement, to include further archeological investigation of the area.

New Fire Suppression System and Replacement Fire Alarm System

Archeological survey at Clara Barton has been limited and one archeological site has been identified, 18MO154. The placement of the water piping would take place in previously disturbed soils of an existing 36-inch-wide utility trench, portions of the driveway along Oxford Road and leading to the house. Widening of the existing 3' utility trench could have an adverse impact on site 18MO154. These effects could be avoided or minimized by completing archeological inventories of the unsurveyed areas of

disturbance prior to construction and monitoring of the area where the trench bisects site 18MO154. The NPS will execute a Memorandum of Agreement as part of the Section 106 consultation.

The staging area, located in a regraded, grassed area adjacent to Clara Barton House, has not been previously surveyed. Given that previous survey has identified both prehistoric and historic archeological components within the project area, there is the potential for archeological resources to be present at the staging area. These resources could be adversely affected by the use of the staging area. These impacts would be avoided or minimized through Section 106 consultation and the preparation of a Memorandum of Agreement, to include further archeological investigation of the area.

New Climate Control System

Ground disturbance would occur as a result of construction of supply and return lines for the climate control system. Although these pipes would be placed in a previously excavated utility trench, the trench may be widened to accommodate the new lines. The effects to site 18MO154 from the expansion of the utility trench would be the same as those listed in the section “Fire Suppression and Replacement Fire Alarm System.”

Additionally, construction of the geothermal wells would require ground disturbance in the grassy area adjacent to the house. NPS observations suggest that this area does not appear to have been highly altered and therefore is a potential for archeological resources to exist at the site. As a result, construction of the climate control system under alternative B could have an adverse effect on archeological resources. These effects could be avoided or minimized by completing archeological inventories of the areas of disturbance prior to construction.

The staging area for the climate control system installation would be at the small parking lot adjacent to the overflow parking lot. No effects to archeological resources would occur as no ground disturbance would occur.

There is the potential for Alternative B to have an *adverse effect* on archeological resources. Section 106 consultation will continue through the preparation of a Memorandum of Agreement, to include further archeological investigation of the area.

SUMMARY AND DETERMINATION OF EFFECT

Alternative A: No Action Alternative

Although the No Action Alternative does not constitute an undertaking, there are impacts to cultural resources that would occur as a result of the continuation of existing conditions. The current state of the roof will likely result in increasing impacts to the structure due to degraded structural components from seasonal expansion and contraction, water leaks and the low load bearing capacity of the roof itself. Water damage will continue to be a problem in the rooms below the roof line. Additionally, given the current state of the roof, it is highly likely that a portion will fail in the near future.

The lack of an adequate climate control also has an impact on the overall structure by allowing for seasonal temperature fluctuations to impact the structural integrity of the house and the museum collections housed within. Also, the use of stand-alone air conditioning units detracts from the historic character of the building.

The continuation of these conditions would result in increasing structural problems that require more numerous, and potentially extensive, maintenance and repair. In the long term, failure to address the problems could lead to the loss of character defining features of the house and the overall integrity of the structure. This would not only impact the historic character of the structure and its potential eligibility to the NRHP but would have an impact on Glen Echo- Clara Barton House cultural landscape by degrading a key feature of that landscape. Damage to the exterior of the house from lack of repair would become visually apparent from the surrounding areas of the cultural landscape.

Alternative B: Repair and Rehabilitate the Clara Barton House

Alternative B would have *no adverse effect* on historic structures and the cultural landscape. Although there are temporary impacts associated with this alternative, the long term benefits to the preservation of the structure outweigh these minor impacts. Additionally, adherence to the Secretary of Interior's Standards for historic structures would ensure that the impacts are minimal. Overall, the rehabilitation proposed under this alternative would have long-term benefits that ensure the continued preservation of the structure.

There is the potential for this alternative to have an *adverse effect* on archeological resources. There is one known archeological site that could be impacted by external construction activities. Additionally, much of the area of proposed ground disturbance has not been surveyed and there is the potential for archeological resources in these areas. The NPS will continue Section 106 consultation through the preparation of a Memorandum of Agreement, to include further archeological investigation of the area prior to construction..

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Town of Glen Echo

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APPENDIX A: CONSULTATION AND COORDINATION



United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Memorial Parkway
c/o Turkey Run Park
McLean, Virginia 22101

RECEIVED
AUG 09 2013
BY: _____
F NPS JES EJC

IN REPLY REFER TO:
GWMP H4217 (CLBA)

201303563

August 7, 2013

Mr. Jonathan Sager, Preservation Officer
Maryland Historical Trust
Office of Management, Planning,
and Educational Outreach
100 Community Place, Third Floor
Crownsville, Maryland 21032-2032

Subject: **Clara Barton National Historic Site Proposed Fire Detection and Suppression System, Climate Control System, and Roof Repairs**

Re: Latest Fire Detection and Suppression System Design Drawings for Review and Comment

Dear Mr. Sager:

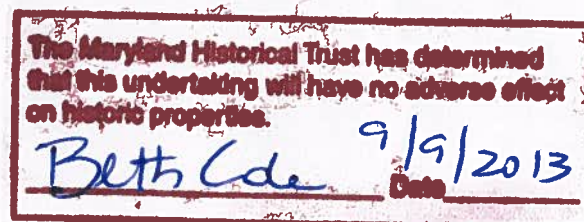
The Maryland Historical Trust (MD SHPO) was notified of the proposed subject undertakings during a meeting on March 4, 2013 at the Clara Barton National Historic Site (CLBA) which you attended. During that meeting a presentation was made and discussion was held on the purpose and need of the project, the background planning history, the working options that had been developed, and the compliance pathways under Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. As you are aware, the CLBA is located in Glen Echo, **Montgomery County**, Maryland and is listed on the National Register of Historic Places and is a National Historic Landmark. The site is administered by the George Washington Memorial Parkway of the National Park Service (NPS).

As an update on the fire detection and suppression system portion of the project, we are providing an electronic copy on CD of the latest plans for your review and comment. We understand that the e-mailed PDF document sent on June 11, 2013 did not satisfy submission requirements for your office and are happy to provide plans in this manner. We thank the MD SHPO for your support of the NPS historic preservation mission and Section 106 responsibilities.

Matthew R. Virta

Matthew R. Virta
Cultural Resources Program Manager

enclosure



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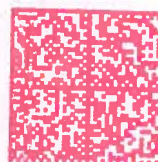


Maryland Historical Trust
100 Community Place
Crownsville, Maryland 21032

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c/o Turkey Run Park
McLean, VA 22101

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