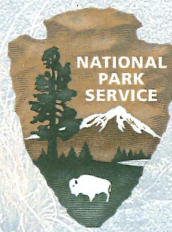


RSS

RESOURCE STEWARDSHIP STRATEGIES



BRIDGING SCIENCE AND MANAGEMENT FOR TODAY AND TOMORROW

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CHAPTER 1: INTRODUCTION AND OVERVIEW

HARPERS FERRY NATIONAL HISTORICAL PARK

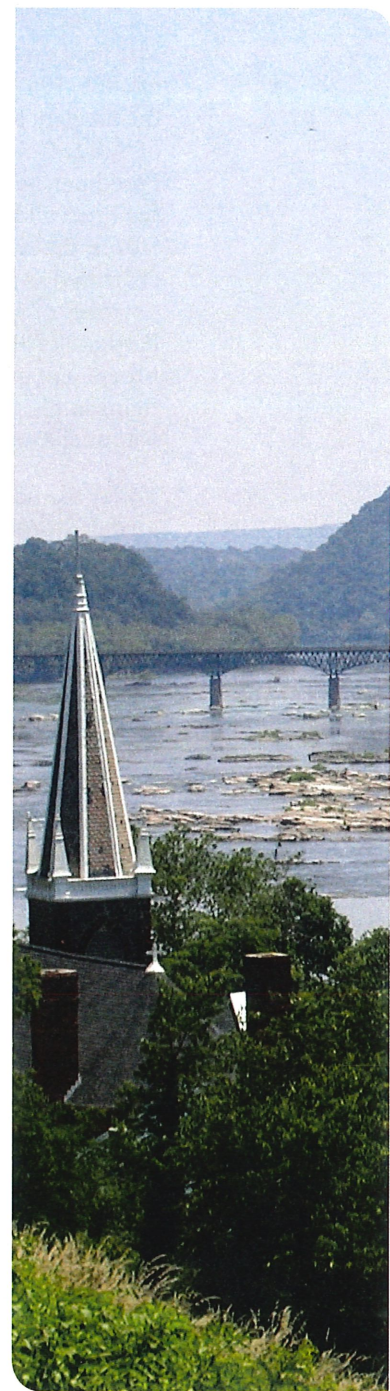
Harpers Ferry National Historical Park (HAFE) lies at the confluence of the Potomac and Shenandoah Rivers, where the states of West Virginia, Virginia, and Maryland converge. This confluence of the two rivers cuts a gap through the Blue Ridge as the Potomac River continues its voyage to the Chesapeake Bay. Located on the point of a peninsula formed by these two rivers, Lower Town is the historic center of Harpers Ferry. Harpers Ferry National Historical Park was established primarily to preserve historic resources and to commemorate the historic events that occurred at and around Harpers Ferry.

Harpers Ferry National Monument was authorized by Congress in 1944 (PL 78-386). The name was changed to Harpers Ferry National Historical Park in 1963. Today, the national historical park contains 3,656 acres, primarily in West Virginia, with additional lands in Maryland and Virginia.

During its earliest period, Harpers Ferry was an important manufacturing and commercial town, using the two rivers for water power and transportation. George Washington recommended a federal armory be located at Harpers Ferry, and the Congress authorized the armory on June 15, 1796. When production began in 1801, it became the nation's second federal armory. By the 1850s, Harpers Ferry was militarily significant because of the United States (US) Armory and Arsenal and geographically significant because of the Baltimore and Ohio Railroad and Chesapeake and Ohio Canal transportation networks.

In 1859, Harpers Ferry was the scene of the electrifying John Brown Raid, a critical event in the months leading up to the Civil War. Strategically important because of its location at the gateway into the Shenandoah Valley, Harpers Ferry changed hands eight times during the war. Stonewall Jackson's capture of the Union garrison here at Harpers Ferry in September 1862, along with nearly 12,700 US soldiers, set the stage for the great battle at Antietam Creek that ended the South's first invasion of the North. It was the largest number of Union soldiers surrendered during the Civil War.

The Union army quickly reoccupied Harpers Ferry and between 1862 and 1864 converted the position into a fortress with strong field fortifications overlooking the town on the summits of Bolivar Heights, Loudoun Heights, and Maryland Heights. In July 1864, the Union army repelled an attack at Harpers Ferry here by Lieutenant General Jubal Early's Confederate army. This four-day operation, and the later battle at Monocacy Junction, delayed the Confederate army long enough to allow the Union army to reinforce Washington, DC, and ward off its capture.



PARK PURPOSE

Purpose statements identify the specific reason for establishing a particular park. Purpose statements are crafted through a careful analysis of the enabling legislation and legislative history that influenced the development of a particular park. The 2016 Harpers Ferry National Historical Park Foundation Document states this park's purpose as:

To preserve Harpers Ferry National Historical Park for the benefit and enjoyment of the people as a public national memorial, commemorating historical events that occurred at or near Harpers Ferry.



RESOURCE STEWARDSHIP STRATEGY OVERVIEW

As steward of Harpers Ferry National Historical Park's natural and cultural resources, park management recognizes the importance of developing a strategic approach to resource management. Such an approach must be information-based and may inform stakeholders about park issues through science and scholarship. Director's Order 2-1, Resource Stewardship Planning (which recommends the preparation of a resource stewardship strategy [RSS] to replace the resource management plan at parks nationwide); the 2004 NPS Program Standards: Park Planning; and NPS *Management Policies 2006* provide a useful framework for developing the resource strategies needed at the park.

A resource stewardship strategy is a long-range dynamic planning tool for a national park unit to set specific goals and track progress in achieving its desired natural and cultural resource conditions. As part of a park's planning portfolio, the resource stewardship strategy serves as a bridge between the park's foundation document, other plans, and everyday management of its natural and cultural resources.

A resource stewardship strategy establishes a framework and a coordinated process for

1. evaluating and summarizing existing information about park resources (including key issues, stressors, and threats),
2. using science and scholarship to establish stewardship goals for resources,
3. integrating natural and cultural resource management, and
4. determining the stewardship activities needed to achieve stewardship goals.

This information provides a basis for making informed resource management decisions for specific project proposals and for developing and revising annual work plans over time.

A resource stewardship strategy is not a static document or a one-time effort. Rather, it is a dynamic framework that should be routinely updated as conditions change; new issues, stressors, or threats are identified; and activities are accomplished. A resource stewardship strategy is reviewed by NPS subject-matter experts and decision makers; however, it is not a publicly reviewed decision document.

The resource stewardship strategy process also provides an opportunity for a park to take an integrated approach to resource management by capitalizing on overlapping opportunities among and within disciplines or addressing larger parkwide issues. Taking an integrated approach can result in more effective stewardship for resources through the use of science, scholarship, research, policy, interpretation, and direct management.

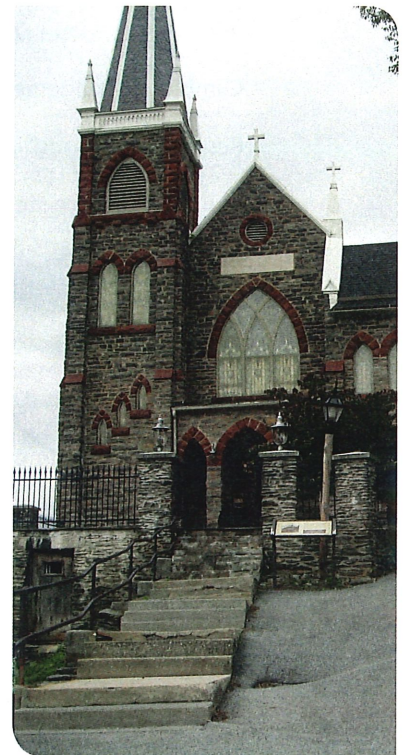
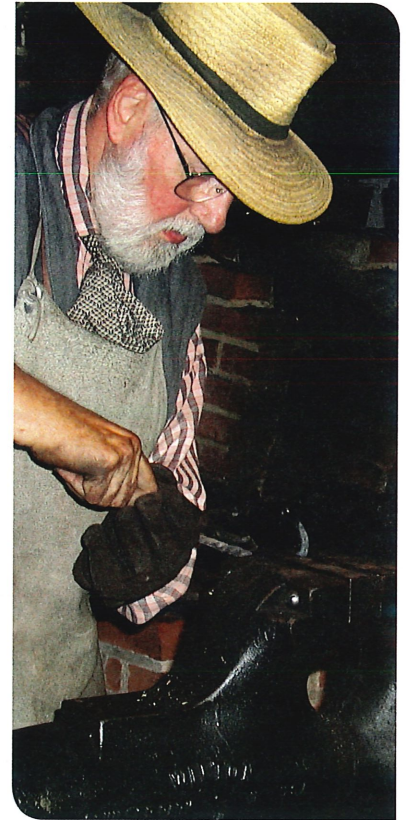
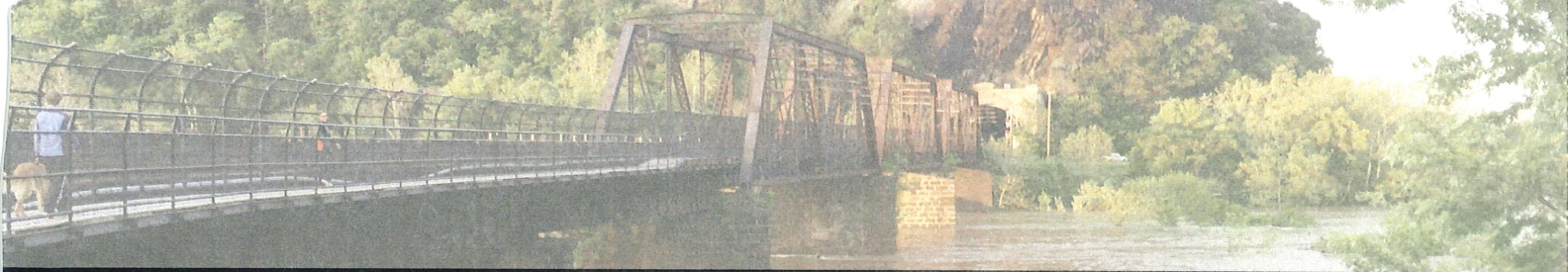


Table 2. Plans Identified in the 2017 Resource Stewardship Strategy

PLANNING ACTIVITY	IDENTIFIED AS A PLANNING NEED IN THE NATIONAL CAPITAL REGION PLANNING PORTFOLIO? (YES/NO)
Trails management plan	Yes
Housekeeping plan	Yes
Collections management plan	Yes
Comprehensive exhibits plan	Yes
Visual resource protection plan	Yes
Earthworks management plan	Yes





CHAPTER 2: RESOURCE STEWARDSHIP STRATEGY PROCESS

PURPOSE AND INTENT OF THE SUMMARY

This summary document is intended to give readers an overview of the resource stewardship strategy for Harpers Ferry National Historical Park. The document serves as a communication tool that complements the dynamic and evolving RSS desktop application actively used for resource management. This summary is not intended to describe all the elements in the resource stewardship strategy, but instead focuses on the components of the resource stewardship strategy that are essential for communicating the highest priority natural and cultural resource needs and management issues.

This summary document includes brief descriptions of the park's priority resources and their components, some of the high priority stewardship strategies for these resources (which include stewardship goals and specific activities to fulfill the goals), and a list of key issues, stressors, and threats affecting park resources. The summary concludes by looking at ongoing implementation of the resource stewardship strategy.

It is important to remember that implementation of the resource stewardship strategy is an ongoing process, with updates and revisions occurring as resource and management conditions change and strategies are executed.

RESOURCE STEWARDSHIP STRATEGY PROCESS

The resource stewardship strategy provides strategic guidance for resource management at Harpers Ferry National Historical Park. It represents the collaborative effort and knowledge of park staff, the National Capital Region (NCR), Natural Resource Stewardship and Science (NRSS) and Cultural Resources, Partnerships and Science programs, the Denver Service Center (DSC), and subject-matter experts including state agency partners and scholars. As one of the first parks to implement the new resource stewardship strategy framework developed by the national working group, the Harpers Ferry National Historical Park Resource Stewardship Strategy participants addressed steps outlined in the resource stewardship strategy development guide to craft these strategies.

As illustrated in figure 2, the resource stewardship strategy development process follows six main steps: (1) Inform the process; (2) Evaluate park resources; (3) Identify priority resources; (4) Establish stewardship goals; (5) Develop stewardship activities; and (6) Implement resource stewardship strategies.

The HAFE RSS process addressed each of the six steps in an iterative fashion throughout a three-day workshop. The team particularly focused on the outcomes of the key issues, stressors, and threats analysis, combined with consideration of staffing and funding availability to prioritize their resources, goals, and activities.

DEVELOPMENT OF THIS RESOURCE STEWARDSHIP STRATEGY

ASSEMBLING THE RSS TEAM AND GATHERING INFORMATION

Initiating the resource stewardship strategy planning process for Harpers Ferry National Historical Park began with assembling the resource stewardship strategy project team. The team then gathered documentation on park resources, including the natural resource condition assessment and cultural resource stewardship assessment, state wildlife actions plans, inventory and monitoring reports, NRSS resource summaries, climate change resource management implications, GIS data, and other relevant information.

DSC staff solicited information from the collaborative staff and agency specialists, as well as input from cultural, natural, and interdisciplinary resource experts outside the National Park Service. For natural resources, letters were sent, in consultation with staff from Harpers Ferry Historical Park and NCR RSS team members, to external subject-matter experts (SMEs), including researchers and State Wildlife Action Plan coordinators in West Virginia, Virginia, and Maryland. The letters requested specific input and rationale for suggested high priority management issues and activities, as well as information and data needs to best manage the park's natural resources. Subject-matter experts provided responses on resource guidance ranging from wetland and riparian area restoration, to threatened and endangered species conservation, to invasive plant and hazard tree management. These experts' input helped inform pre-workshop summaries for the natural resource specialists on the RSS team to consider during the workshop and development of the remaining RSS process steps.

For cultural resources, a team of cultural resource specialists from the park and the region prepared a draft cultural resource stewardship assessment (CRSA) in the months preceding the start of the RSS process. Completed in May 2017, the draft cultural resource stewardship assessment provided the RSS team a baseline understanding of the current information, data gaps, and resource conditions for all of the cultural resources managed by Harpers Ferry Historical Park. The draft cultural resource stewardship assessment also identified a list of preliminary actions to consider in the resource stewardship strategy that would help address cultural resource management gaps and potential management (see appendix F for the list of CRSA preliminary actions). Prior to the in-person workshop, the team discussed and analyzed the body of resource information and knowledge during conference calls.

HOLDING THE WORKSHOP

The in-person workshop was held at Mather Training Center in Harpers Ferry, West Virginia, on July 25–27, 2017. Staff and NPS personnel from the park, National Capital Region, and Natural Resource Stewardship and Science participated in the workshop while DSC Planning Division staff served as facilitators.

A summary of the CRSA preliminary actions were reviewed by the RSS team at the start of the workshop as orientation to the status of cultural resources in a discussion that combined the key issues, stressors, and threats for those resources (described later in this summary). The cultural resource stewardship assessment and its preliminary actions referenced in a handout throughout the workshop as a touchstone for aligning the two documents, where appropriate. This crosswalk was done at the discretion of the RSS team's cultural resource subject-matter experts with an understanding that the analysis of the cultural resource stewardship assessment is broad and covers all cultural resources parkwide, while the resource stewardship strategy is intended to be strategic in scope and focuses on a subset of cultural resources identified as priority resources.

SCHOLARLY AND TECHNICAL INFORMATION USED TO INFORM THE RSS PROCESS

A list of documents used to inform the RSS process includes the following:

- HAFE Cultural Resource Stewardship Assessment (2017)
- HAFE Natural Resource Condition Assessment (2013)
- Natural Resources Stewardship and Science RSS Resource info Sheets: HAFE (2017)
- HAFE RSS Rare Species Overview (2017)
- IPaC Resource List (USFWS) (2017)
- HAFE Foundation Document (2016)
- Environmental Assessment for the Wetland Restoration Action Plan - National Capital Region (2016)
- HAFE Fire Management Plan (2016)
- Draft Deer Management Plan - National Capital Region (2016)
- State Wildlife Action Plans for West Virginia, Virginia, and Maryland (2015)
- HAFE State of the Park Report (2009)
- HAFE General Management Plan (2008)
- HAFE General Management Implementation Plans (various)

An important part of the resource stewardship strategy development process involves reviewing and assessing scholarly and technical information to evaluate the status of information and condition of the park's natural and cultural resources. The following sources of information represent the primary resource documentation and databases used to determine the information and condition status of each priority resource analyzed in the development of the Harpers Ferry National Historical Park's Resource Stewardship Strategy.

FOUNDATION DOCUMENT: Harpers Ferry National Historical Park's foundation document, completed in 2016, describes the park's purpose, significance, fundamental resources and values, and interpretive themes and provides basic guidance for planning and management decisions. Combined with the natural resource condition assessment (NRCA 2013) and cultural resource stewardship assessment, the foundation document is one of the main "starting point" documents used to identify and evaluate priority natural and cultural resources for the resource stewardship strategy.

INVENTORY AND MONITORING PROGRAM: To improve park management through greater reliance on access to scientific information, the NPS Inventory and Monitoring Program (I&M) and the National Capital Region's Office of Natural Resources and Science provided guidance, funding, and technical assistance to complete a host of natural resource inventories for parks. The inventories are a baseline for long-term ecological monitoring by the National Capital Region Network of numerous natural resources at Harpers Ferry National Historical Park (<http://science.nature.nps.gov/im/units/ncrn/>).

CHAPTER 3: KEY PARK STRESSORS AND ISSUES

The evaluation of key resource management stressors and issues is an important step in the resource stewardship strategy development process to inform the development of stewardship goals and activities during steps 4 and 5 of the RSS process illustrated in figure 2. Stressors are factors that may exacerbate change in resource conditions, such as climate change, population growth, invasive species, and visitor use. Key issues are management concerns that directly relate to park resources and their conditions. Related to stressors and key issues, stewardship threats are immediate or potential factors that may negatively impact park resources, such as expanding development outside park boundaries. Understanding the current state of resources as well as stressors that multiply the effects of current issues and threats that may become key management issues, helps the park better understand resource conditions and future trends.

Harpers Ferry National Historical Park faces a variety of resource stressors and resource management issues that are currently impacting or pose future threats to the park's priority resources and components. Stressors include both climate change and non-climate change factors (such as increased precipitation and flooding events combined with increasing urban development adjacent to park boundaries). Stressors such as invasive plant and insect species, climate change, pollution and contamination, diminished quality of night skies and natural sounds, external development pressures, and a lack of baseline documentation and data on natural and cultural resources may exacerbate change in resource conditions. They also represent immediate or potential management challenges that may negatively impact park resources. Stressors were considered in the development of resource stewardship strategies, especially in the priorities assigned to stewardship activities. Impacts of key stressors on the park's priority resources and components are discussed in the following sections.



THREATENED NATURAL SOUNDS AND NIGHT SKIES. Increasing development within and surrounding the park that includes utilities right-of-ways, railroad bridges, and transportation corridors comes with impacts to the park's historical soundscape and introduces light pollution to the once-dark night skies in this semi-rural but growing region in which the park is located. Construction activities can include loud blasting activities, while regional population growth leads to an increasing number of aircraft overflights.

LACK OF BASELINE DATA FOR NATURAL RESOURCE MANAGEMENT. As noted, the park's 3,656 acres serve as a refuge from surrounding development, contribute to regional biodiversity, and serve as an important wildlife corridor and habitat. Ongoing inventory and monitoring and baseline information is needed to address increasing negative impacts to birds, pollinators, threatened and endangered bats, water quality, groundwater, and karst features. Baseline data is needed to guide management decisions for natural resource conservation. Similarly, baseline data and monitoring is needed to track the ongoing coniferous forest decline from the hemlock woolly adelgid and ash tree decline from the emerald ash borer. Conducting amphibian monitoring to better understand potential climate change impacts on park wetlands has also been identified as a baseline information gap.

LACK OF BASELINE DATA FOR CULTURAL RESOURCE MANAGEMENT. Given the park's 152 historic structures at Harper Ferry National Historical Park, finding the best possible use for these buildings is both a parkwide issue and an opportunity. Cyclical maintenance and long-term stewardship responsibilities for historic structures require park management to think creatively and make hard decisions related to these resources. Developing plans for the consolidation of office space to be more efficient and cost-effective is an important strategy when considering the adaptive reuse of historic structures. Completing historic structures reports to provide a baseline understanding of the conditions and significance of each structure is an important first step in documenting and better understanding the needs of buildings within the park. Additionally, the park's vast landscapes retain a high potential for in-ground archeology. Many areas of the park lack archeological survey and the research required to guide future management priorities and direction.

VISITOR USE CONCERNS FOR CULTURAL RESOURCE AND NATURAL RESOURCE MANAGEMENT.

Direct and indirect impacts to both resources at Harpers Ferry National Historical Park are caused by increasing visitor use in the park. An overall increase in the number of visitors as well as increasing crowding in certain areas can exacerbate degradation from cumulative wear and tear to cultural resources and erosion and its effects to natural resources. It can also lead to challenges of protecting particularly vulnerable resources, such as caves, and can result in management issues concerning restricting access to those areas or resources. Vandalism, such as looting artifacts or damage to historic structures, may increase in these circumstances.

Other resource management challenges for consideration in the resource stewardship strategy involved the park staff's capacity to balance resource needs with ongoing compliance involved for other projects in the park. Co-management with other agencies and navigating funding sources within the NPS system (e.g., Project Management Information System [PMIS] / Facility Management Software System [FMSS]) and seeking potential external funding were also noted as both ongoing challenges and opportunities in integrated resource management.



CHAPTER 4: PRIORITY RESOURCES AND IDENTIFIED COMPONENTS

PARK PRIORITY RESOURCES

Harpers Ferry National Historical Park's priority resources drive the resource stewardship strategy process. A priority resource is a cultural or natural resource that the National Park Service manages or monitors to maintain a park unit's purpose and significance, to address policy/law mandates, or to address scholarly and scientific research needs or findings. A priority resource component is an aspect or attributing resource that is integral to the functionality, importance, or condition of a priority resource and can be managed, monitored, or studied practically over both the short and long term. Priority resource components are included, or nested, under the associated priority resources.

The following priority resources and components were identified for Harpers Ferry National Historical Park.

HISTORIC STRUCTURES

Harpers Ferry National Historical Park reflects more than one event, one date, or one place. It is multi layered, involving a diverse number of people, places, and events, which is reflected in the diversity of historic structures found throughout the park. The historic structures reflect on and connect visitors to the evolution of industry, John Brown's Raid, the Civil War, and African American history. The Lower Town of Harpers Ferry maintains the appearance of a 19th-century community. The historic structures on Camp Hill reflect the establishment and history of armory dwellings and of Storer College.

Historic structures at Harpers Ferry National Historical Park were identified as a fundamental resource in the foundation document. The park's List of Classified Structures (LCS) includes 152 entries, ranging from John Brown's Fort to structures that are more modern. All but four structures contribute to the park's National Register of Historic Places significance. Historic structures throughout the park are used for many purposes, including public access and exhibits, educational programming, park administrative functions, and storage of museum collections. Most of these structures are in good or fair condition. The hydroelectric power plant, Nash House, Shipley School Building are listed in poor condition. Uninhabited portions of structures are not well monitored and their conditions vary. Component historic structures specifically addressed in this resource stewardship strategy are the Lockwood House, B&O Railroad bridge piers, hydroelectric plant, US Armory – Potomac River wall, and the John Allstadt Ordinary, which are described below.

CULTURAL LANDSCAPES

The park's cultural landscapes preserve and interpret the sites where explorers, inventors, raiders, soldiers, townspeople, teachers, and civil rights leaders made their mark on American history. The cultural landscape of historic Lower Town reflects the constraints of the rivers and the surrounding hillsides on the growth of the town and the influence of these rivers on industrial development. Virginius Island contains extensive ruins associated with the 19th-century industrial heritage of Harpers Ferry. Maryland Heights, Bolivar Heights, Camp Hill, Murphy Farm, and School House Ridge reflect Civil War battles and the occupation of Harpers Ferry during the war. The cultural landscape on Camp Hill reflects armory dwellings and yards, the historic Storer College campus, and the Reconstruction era of the nation's history. These cultural landscapes provide immersive opportunities for people to understand historic events in the places where they occurred.

Cultural landscapes that have some level of documentation (cultural landscape inventory, cultural landscape report, or both) include Lower Town, Virginius Island, The US Armory and Potomac Riverfront, Hall's Island, Camp Hill, Murphy Farm, School House Ridge North, and School House Ridge South / Allstadt Farm. Those awaiting documentation include Loudoun Heights, Maryland Heights, Bolivar Heights, Nash Farm, and Short Hill.

MARYLAND HEIGHTS AND LOUDOUN HEIGHTS. Maryland Heights and Loudoun Heights are areas with Civil War fortifications that surrounded the town of Harpers Ferry. Between 1862 and 1863, the Union Army fortified the crests of the three ridges and the western brow of Camp Hill with earthen and stone field fortifications that formed one large defensive complex. Along with Bolivar Heights, Maryland Heights, and Loudoun Heights are among the most extensive and best-preserved examples of Civil War field fortifications that remain. Constructed of stone, Maryland and Loudoun Heights Civil War features are relatively difficult to access but are becoming increasingly popular hiking destinations among park visitors. The Maryland Heights area of the park contains approximately 763 acres; Loudoun Heights contains 276 acres (NPS 1980).

ALLSTADT FARM (SCHOOL HOUSE RIDGE SOUTH). The Allstadt Farm is significant for its 19th-century agricultural history, John Brown's Raid on Harpers Ferry, its role in the Civil War Battle of Harpers Ferry, and for its dolomite limestone quarry that supported the industrial history of the town of Millville from 1901-1957. The cultural landscape was documented in a 2005 cultural landscape inventory and is currently assessed to be in poor condition (NPS 2011).

NASH FARM. The Bradley Nash Farm (a.k.a. Nash Farm) consists of approximately five contiguous town lots in Harpers Ferry. The farm is significant for its association with the Siege of Harpers Ferry in September 1862 and for its development as a small, early-20th-century farm. The farm's owner from the early-20th-century period, Bradley Nash, is also associated with establishing the Harpers Ferry National Historical Park, as Nash twice served as mayor of Harper's Ferry, helped garner Congressional support for creating the park, and later served as the park historian. The farm contains a complex of buildings built in the 1920s-30s, including a house, dairy barn, milk house, a small "chapel" created from a springhouse, a secondary dwelling, and sheds (NPS 2001).

ARCHEOLOGICAL RESOURCES

Archeological resources play a key role in understanding the history of Harpers Ferry. Harpers Ferry National Historical Park protects thousands of years of human history, from prehistory to the modern era. Data about the layered historic events that occurred in Harpers Ferry are preserved in the subsurface remains of the archeological record. Information about industrial, military, and domestic activities is revealed through archeological research and provides a new level of understanding about the development of the nation from the 18th to the 20th centuries. Harpers Ferry's archeological sites include waterpower and industrial sites; prehistoric sites; Civil War fortifications and encampments; the remains of historic roads; and domestic sites such as homes.

Fifty years of robust archeological activity has resulted in the identification and documentation of 160 archeological sites at the park. However, there are still large tracts that need formal archeological survey and investigation, and there are ongoing human impacts on archeological sites because of illegal camping, metal detecting, relic hunting, and feature destruction at remote locations within the park. Resources management staff performs ongoing compliance reviews on the many maintenance projects at the park to ensure that archeological resources are protected. Archeological artifacts are the largest subunit of the park collections with 68% (766,646 of 1,135,730) of the total. Of those, 7% of the archeological artifacts remain at the park. Archeological resources are identified in the park foundation document as a fundamental resource. Component areas of focus in this resource stewardship strategy are Maryland Heights, Loudoun Heights, Upper Armory Grounds, and Armory Canal.

MARYLAND HEIGHTS AND LOUDOUN HEIGHTS. The high-elevation areas of Maryland Heights and Loudoun Heights constitute part of the more remote and difficult-to-access areas of the park. The landscapes contain series of earthen and stone field fortifications that formed one giant defensive complex developed by the Union Army during the Civil War (NPS 1980).

UPPER ARMORY GROUNDS. The Upper Armory Grounds is geographically defined by the area of the Armory site that lies upstream along the Potomac River from the Harpers Ferry train station. Two rows of Armory buildings divided by a central street feature are accessible for archeological study across much of this area. Unlike the area downstream, deemed the "Lower Armory Grounds" which underwent multiple years of archeological investigation over the past decade, the Upper Armory Grounds remain undocumented. Based on the high level of archeological preservation and integrity recorded at the Lower Armory Grounds, it is surmised that the Upper Armory holds similar archeological integrity. This area is considered a threatened site because of its location in the floodplain.

ARMORY CANAL. The Potomac Canal of the US Armory carried water from the Armory's Potomac Dam inland parallel to the south bank of the river to supply power to the Musket Factory shops. The canal was reconstructed and enlarged between 1830 and 1837, and the canal walls were later lined with cut stone between 1854 and 1860.

In addition to trees, shrubs, and woody plants, many fern species occur within the park's forest ecosystems. On rock ledges and crevices, woolly lip fern (*Cheilanthes tomentosa*), the locally rare lobed spleenwort (*Asplenium pinnatifidum*), and the common polypody (*Polypodium virginianum*) can be found. On the steep, rocky, and partially shaded slopes of Short Hill, Maryland Heights, and Loudoun Heights, marginal shield fern (*Dryopteris marignalis*) and Christmas fern (*Polystichum acrostichoides*) are common species. Floodplains and moist, shaded, low slopes surrounding the Potomac and Shenandoah Rivers support other fern species, including intermediate shield fern (*Dryopteris intermedia*), New York fern (*Thelypteris noveboracensis*), and fragile fern (*Cystopteris protrusa*) (2017 Deer Plan).

WETLAND AND RIPARIAN AREAS. The park's wetlands are mainly located along floodplains in forested wetland systems or as emergent wetland seeps typically found along upland slopes. Two extensive types of floodplain riparian forests are located along the Potomac and Shenandoah Rivers. Lower areas flood on average every one to three years have silver maple (*Acer saccharinum*) as a prominent component with associated species such as sycamore, green ash (*Fraxinus pennsylvanica*), and cottonwood (*Populus deltoides*). The higher parts of floodplains have a diverse forest of sycamore, white and green ash, tulip poplar, bitternut hickory, hackberry, sugar maple, black walnut (*Juglans nigra*), and the locally rare Shumard oak (*Quercus shumardii*) (2017 Deer Plan).

Other park wetlands consist of open water ponds where natural wetlands have been impacted by the creation of berms to increase water levels. Because of the disturbance of many of the wetland areas by continuous mowing practices and adjacent agricultural uses, many of the emergent wetlands are dominated by upland grass species (2017 WRAP).

The preferred alternative in the NPS National Capital Region's 2017 Wetland Restoration Action Plan (WRAP) provides comprehensive guidance to restoring, enhancing, and protecting wetlands and riparian habitats at four NCR parks (including HAFE) when opportunities or mitigation needs arise. Through this plan, the park has identified candidate wetland and riparian areas for restoration.

GRASSLANDS. Grasses and grass-like plants, including sedges and rushes, add to the diversity and regional importance of the park's forest ecosystems. On the dry, rocky ridge tops of Maryland Heights, Loudoun Heights, and Short Hill, poverty grass (*Danthonia spicata*) and greenish sedge (*Carex virescens*) are the most frequent species encountered. At lower elevations on these ridges, cliff muhly (*Muhlenbergia sobolifera*), tall brome-grass (*Bromus pubescens*), and Bosc's panicgrass (*Dicanthelium boscii*) are commonly found. In floodplain forests, there are species such as nodding fescue (*Festuca subverticillata*) and deertongue grass (*Dichanthelium clandestinum*). Prairie grasses such as big bluestem (*Andropogon gerardii*), the locally uncommon prairie cordgrass (*Spartina pectinata*), and the bank-stabilizing Emory's sedge (*Carex emoryi*) are more likely to be seen along the riverbanks of the Potomac and Shenandoah (2017 Deer Plan).

Some areas within the park currently being used for agricultural permits could be established as wild grassland to provide habitat to foster species diversity (2016 Foundation Document).

CHAPTER 5: STEWARDSHIP GOALS AND HIGH-PRIORITY ACTIVITIES

Stewardship activities represent the primary outcome of the resource stewardship strategy development process, providing the park with a roadmap for investing both human and financial resources in the management of natural and cultural resources. Each resource stewardship strategy consists of identified stewardship goals and a comprehensive set of activities to help managers achieve those goals.

A stewardship activity is defined as one or more initiatives that strive to achieve a short-term stewardship goal. On its own, an activity produces a specific deliverable or outcome. Such activities may include assessments, documentation, identification, maintenance, operations, resource protection, thematic studies, catalogue, evaluation, interpretation, planning, training, data recovery, education, inventory, monitoring, research, survey, treatment, restoration, or other types of management.

The following tables (tables 3a-3g) are organized by priority resource components and show the long-term and short-term stewardship goals for each.

Table 3a. Long-Term and Short-Term Goals for Priority Resource—Historic Structures

COMPONENT	LONG-TERM GOALS	SHORT-TERM GOALS
LOCKWOOD HOUSE	Lockwood House will be preserved, improved, and maintained in the best condition possible (LCS/FMSS) according to Secretary of the Interior's Standards. This goal will be sustained by cyclical and preventative maintenance, planning, and programs according to approved treatment documents (e.g., historic structure report [HSR], cultural landscape report [CLR]) as well as asset condition survey results.	Lockwood House is improved from fair to good condition as defined by the LCS through stabilization, conservation, and restoration treatments of the interior historic fabric according to the Secretary of Interior Standards and following the recommendations of the 2006 HSR and 2006 CLR.
B&O BRIDGE PIERS	B&O Bridge Piers will be preserved, improved, and maintained in the best condition possible (LCS/FMSS) according to Secretary of the Interior's Standards. This goal will be sustained by cyclical and preventative maintenance, planning, and programs according to approved treatment documents (e.g., HSR, CLR) as well as asset condition survey results.	B&O piers are stabilized to counter the water load undermining the structures.
HYDRO-ELECTRIC PLANT	Hydroelectric plant will be preserved, improved, and maintained in the best condition possible (LCS/FMSS) according to Secretary of the Interior's Standards. This goal will be sustained by cyclical and preventative maintenance, planning, and programs according to approved treatment documents (e.g., HSR, CLR) as well as asset condition survey results.	Hydroelectric plant is stabilized to deter further rapid deterioration and provide short-term resource protection.
US ARMORY POTOMAC RIVER WALL	US Armory Potomac River Wall will be preserved, improved, and maintained in the best condition possible (LCS/FMSS) according to Secretary of the Interior's Standards. This goal will be sustained by cyclical and preventative maintenance, planning, and programs according to approved treatment documents (e.g., HSR, CLR) as well as asset condition survey results.	Survey to establish project scopes of work and the maintenance program is completed.

Table 3d. Long-Term and Short-Term Goals for Priority Resource—Archeological Resources

COMPONENT	LONG-TERM GOALS	SHORT-TERM GOALS
MARYLAND HEIGHTS	A complete, reliable, and accurate inventory of archeological sites is created. Archeological sites are monitored and recorded per ASMIS, Secretary of the Interior's Standards, and GIS standards. Archeological resources are protected and preserved in accordance with NPS policy and guidelines.	Strategies are developed to address visitor damage using existing condition assessment data.
LOUDOUN HEIGHTS	A complete, reliable, and accurate inventory of archeological sites is created. Archeological sites are monitored and recorded per ASMIS, Secretary of the Interior's Standards, and GIS standards. Archeological resources are protected and preserved in accordance with NPS policy and guidelines.	Strategies are developed to address visitor damage using existing condition assessment data.
UPPER ARMORY	A complete, reliable, and accurate inventory of archeological sites is created. Archeological sites are monitored and recorded per ASMIS, Secretary of the Interior's Standards, and GIS standards. Archeological resources are protected and preserved in accordance with NPS policy and guidelines.	Planning and research for a pedestrian survey is initiated.
ARMORY CANAL	A complete, reliable, and accurate inventory of archeological sites is created. Archeological sites are monitored and recorded per ASMIS, Secretary of the Interior's Standards, and GIS standards. Archeological resources are protected and preserved in accordance with NPS policy and guidelines.	Planning and research for a pedestrian survey is initiated.
PARKWIDE ARCHEOLOGICAL RESOURCES	A complete, reliable, and accurate inventory of archeological sites is created. Archeological sites are monitored and recorded per ASMIS, Secretary of the Interior's Standards, and GIS standards. Archeological resources are protected and preserved in accordance with NPS policy and guidelines.	A comprehensive Archeological Overview and Assessment is completed to inform parkwide archeological management decisions.

Table 3e. Long-Term and Short-Term Goals for Priority Resource—Historic Views

COMPONENT	LONG-TERM GOALS	SHORT-TERM GOALS
VIEW FROM AND OF CONFLUENCE	Historic views are inventoried and criteria developed that allows the park to objectively evaluate potential impacts caused by external pressures and internal NPS operations, and informs land acquisition priorities (and strategies).	Key staff (i.e., resource management staff, facilities, and interpretation divisions) are trained in the principles of parkwide visual resource management for improved collaboration and management.
VIEW FROM AND OF CONFLUENCE	Historic views are inventoried and criteria developed that allows the park to objectively evaluate potential impacts caused by external pressures and internal NPS operations, and informs land acquisition priorities (and strategies).	Park has a visual resource inventory which assesses significant views, especially from confluence and from MD heights.
VIEW FROM AND OF CONFLUENCE	Historic views are inventoried and criteria developed that allows the park to objectively evaluate potential impacts caused by external pressures and internal NPS operations, and informs land acquisition priorities (and strategies).	Landowners, planners and other stakeholders are engaged in cooperative conservation of important views across park boundaries, to get "buy-in" or "collaboration."
VIEW FROM AND OF CONFLUENCE	Historic views are inventoried and criteria developed that allows the park to objectively evaluate potential impacts caused by external pressures and internal NPS operations, and informs land acquisition priorities (and strategies).	Visitors enjoy a variety of views, with an understanding of air quality and other factors that influence scenic quality.

The following stewardship strategies tables (tables 4a-4g) are organized by priority resource components and include short-term stewardship goals and associated high-priority activities. Please see chapter 6 for the medium- and low-priority activities.

Table 4a. Short-Term Goals and High-Priority Stewardship Activities for Priority Resource—Historic Structures

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
LOCKWOOD HOUSE	Lockwood is improved from fair to good condition as defined by LCS through stabilization, conservation, and restoration treatments of the interior historic fabric according to the Secretary of Interior Standards and following the recommendations of the 2006 HSR and 2006 CLR.	- PMIS or grant funding with partnerships. <i>High Priority. Start Date FY17.</i> - Determine and plan stabilization, conservation, preservation treatment, using HSR as guide. <i>High Priority. Start Date FY17.</i> - Fabric Stabilization, Conservation, Restoration: Walls, floors, windows, doors, trims, fireplaces, stairs, painting, stains, finishes. <i>High Priority. Start Date FY17.</i>
HYDRO-ELECTRIC PLANT	Hydroelectric plant is stabilized to deter further rapid deterioration and provide short-term resource protection.	<i>There are no high-priority activities associated with this goal. Please refer to tables 5a-5g in chapter 6 for a list of all medium- and low-priority stewardship activities.</i>
US ARMORY POTOMAC RIVER WALL	Survey to establish project scopes of work and the maintenance program is completed.	<i>There are no high-priority activities associated with this goal. Please refer to tables 5a-5g in chapter 6 for a list of all medium- and low-priority stewardship activities.</i>
JOHN ALLSTADT ORDINARY	Documentation (HABS, HAER, survey, archeological inventory, HSR, CLR) informs plans for the John Allstadt Ordinary's preservation and interpretation development. Determine immediate maintenance, as found necessary.	<i>There are no high-priority activities associated with this goal. Please refer to tables 5a-5g in chapter 6 for a list of all medium- and low-priority stewardship activities.</i>

Table 4b. Short-Term Goals and High-Priority Stewardship Activities for Priority Resource—Cultural Landscapes

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
PARKWIDE CULTURAL LANDSCAPES	Establish and implement cultural landscape priorities.	- Prepare trails management plan (especially for Maryland Heights and Loudoun Heights). <i>High Priority. Start Date TBD.</i> - Prepare earthworks management: Create HAFE staff earthworks management plan multidisciplinary team. <i>High Priority. Start Date TBD.</i> - Prepare earthworks management plan (especially for Maryland Heights and Loudoun Heights). <i>High Priority. Start Date TBD.</i>
MARYLAND HEIGHTS	Complete baseline documentation and inventory as well as treatment documents to gain a full understanding of the contributing landscape features.	Prepare CLR for Maryland Heights. <i>High Priority. Start Date TBD.</i>

Table 4e. Short-Term Goals and High-Priority Stewardship Activities for Priority Resource—Historic Views

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
VIEW FROM AND OF CONFLUENCE	Key staff (i.e., resource management staff, facilities, and interp divisions) are trained in the principles of parkwide visual resource management for improved collaboration and management.	<i>There are no high-priority activities associated with this goal. Please refer to tables 5a-5g in chapter 6 for a list of all medium- and low-priority stewardship activities.</i>
VIEW FROM AND OF CONFLUENCE	Park has a visual resource inventory which assesses significant views, especially from confluence and from MD heights.	- Identify views important to cultural landscapes and visitor enjoyment. <i>High Priority. Start TBD.</i> - Conduct visual resource inventory using NPS Air Resources Division protocol to establish baseline conditions. <i>High Priority. Start TBD.</i>
VIEW FROM AND OF CONFLUENCE	Visitors enjoy a variety of views, with an understanding of air quality and other factors that influence scenic quality.	- Reduce views at vistas where earthworks exist to preserve them until approved plan is adopted. <i>High Priority. Start Date TBD.</i> - Prepare visual resource protection plan. <i>High Priority. Start Date TBD.</i>

Table 4f. Short-Term Goals and High Priority Stewardship Activities for Priority Resource—Eastern Deciduous Forest

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
FORESTS AND ECOSYSTEMS	Deer population is managed annually to achieve a positive response in seedling regeneration.	- Complete deer management plan FONSI. <i>High Priority. Start Date TBD.</i> - Implement deer management plan. <i>High Priority. Start Date TBD.</i> - Monitor deer population and seedling response. <i>High Priority. Start Date TBD.</i> - Complete a baseline assessment of soundscapes and night skies (technical assistance request) [possibly combined with climate change assessment]. <i>High Priority. Start Date TBD.</i> - Implement recommendations of night skies and soundscape assessment. <i>High Priority. Start Date TBD.</i> - Climate change vulnerability projects: (a) Year 1 - technical assistance request: work with CCRP on focused studies. <i>High Priority. Start Date TBD.</i>
FORESTS AND ECOSYSTEMS	Continue working with EPMT and IPM to reduce invasive plants and insects.	- Identify annual targets for invasive species and hotspot areas (consider climate change). <i>High Priority. Start Date TBD.</i>
RIPARIAN AND WETLANDS	WRAP is implemented where appropriate.	- Prepare SOW and PMIS statements to implement site-specific WRAP projects.
GRASSLANDS	The Nash Property is restored to a functioning grassland within five years.	- Coordinate grassland restoration and planting strategy, including mowing, invasive species treatments, burning, and general operations and maintenance. <i>High Priority. Start Date TBD.</i> - Coordinate and conduct I&M bird and pollinator monitoring. <i>High Priority. Start Date TBD.</i>

CHAPTER 6: OTHER STEWARDSHIP STRATEGIES

The following stewardship strategies tables (tables 5a-5g) are organized by priority resource components and short-term stewardship goals and associated medium- and low-priority activities.

Table 5a. Short-Term Goals and Stewardships Activities for Priority Resource—Historic Structures

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
LOCKWOOD HOUSE	Lockwood House is improved from fair to good condition as defined by the LCS through stabilization, conservation, and restoration treatments of the interior historic fabric according to the Secretary of Interior Standards and following the recommendations of the 2006 HSR and 2006 CLR.	- Waysides interpretation, project documentation, report, make the building open to the public. <i>Low Priority. Start Date TBD.</i> - Begin 1st and 2nd floor historic preservation work via Tauck grant and plan for fire intrusion and detection and accessibility components. Need Priority. Start Date TBD.
B&O BRIDGE PIERS	B&O piers are stabilized to counter the water load undermining the structures.	- Engage MD SHPO and Army Corps of Engineers. Amass all existing data and past documentation. Determine project phases and costs. Conduct vegetation control. Start all compliance early. MD state underwater archeology. Engage all park staff involved—give notice. <i>Medium Priority. Start Date TBD.</i> - MD SHPO Compliance, Diving engineering and archeology surveys, start EAs, Army Corps project planning. <i>Low Priority. Start Date TBD.</i> - MD SHPO Compliance, EA completed, project planning, design, phases, and costs. Get funding. <i>Low Priority. Start Date TBD.</i> - Contracting, construction phases as per funding. <i>Low Priority. Start Date TBD.</i>
HYDRO-ELECTRIC PLANT	Hydroelectric plant is stabilized to deter further rapid deterioration and provide short-term resource protection.	- 2019 PMIS funded; plant is stabilized and mothballed; prepare long-range use plans. <i>Medium Priority. Start Date FY18.</i> - Veg. control every year, monitor condition, long-range use plans, continue security. <i>Medium Priority. Start Date FY18.</i>
US ARMORY POTOMAC RIVER WALL	Survey to establish project scopes of work and the maintenance program is completed.	- Compliance vegetation control; Survey condition; Plan future SOW needs and compliance; Draft plans and costs in FMSS. <i>Low Priority. Start Date TBD.</i> - PMIS entered, funding and project plans schedules, veg control, compliance (section 106), seek concurrence with SOW. <i>Low Priority. Start Date TBD.</i> - Projects funded and completed if possible. <i>Low Priority. Start Date TBD.</i>

Table 5c. Short-Term Goals and Stewardship Activities for Priority Resource—Museum Collections

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
FULL MUSEUM COLLECTION	Deficiencies in collections database are fully understood.	- Deaccession pharmacy collections as outside scope of collection. <i>Low Priority. Start Date TBD.</i>
FULL MUSEUM COLLECTION	Artifacts are preserved through regular monitoring and consistent with updated plans.	- Update the collection management plan. <i>Medium Priority. Start Date TBD.</i> - Develop plan to support appropriate research and direct inappropriate research to other sources and inform staff of changes. Digitize research resources and make available on web. <i>Low Priority. Start Date TBD.</i> - Implement NCR RPRS permitting process recommendations as appropriate. <i>Low Priority. Start Date TBD.</i> - Develop a comprehensive exhibits plan. <i>Medium Priority. Start Date TBD.</i>
FULL MUSEUM COLLECTION	Digital access to museum collections is provided to the public and park staff.	- Create and establish a website featuring Storer College. <i>Medium Priority. Start Date FY18.</i>

Table 5d. Short-Term Goals and Stewardship Activities for Priority Resource—Archeological Resources

COMPONENT	SHORT-TERM GOALS	ACTIVITIES
MARYLAND HEIGHTS	Strategies are developed to address visitor damage using existing condition assessment data.	- Analyze trails / visitor access in relation to damaged archeological resources (dependent on completion of cultural landscape and earthworks plans). <i>Medium Priority. Start Date TBD.</i>
UPPER ARMORY	Planning and research for a pedestrian survey is initiated.	- Initiate armory/canal historical research, photo documentation, and mapping. <i>Low Priority. Start Date TBD.</i>
ARMORY CANAL	Planning and research for a pedestrian survey is initiated.	- Initiate armory/canal historical research, photodocumentation, and mapping. <i>Low Priority. Start Date TBD.</i>
PARKWIDE ARCHEOLOGICAL RESOURCES	A comprehensive Archeological Overview and Assessment is completed to inform parkwide archeological management decisions.	- Once under NPS ownership, Archeological planning and actions at Allstadt Ordinary property. <i>Medium Priority. Start Date TBD.</i> - Once under NPS ownership, conduct ongoing archeology at Allstadt Ordinary property. <i>Low Priority. Start Date TBD.</i>

Table 5e. Short-Term Goals and Stewardship Activities for Priority Resource—Historic Views

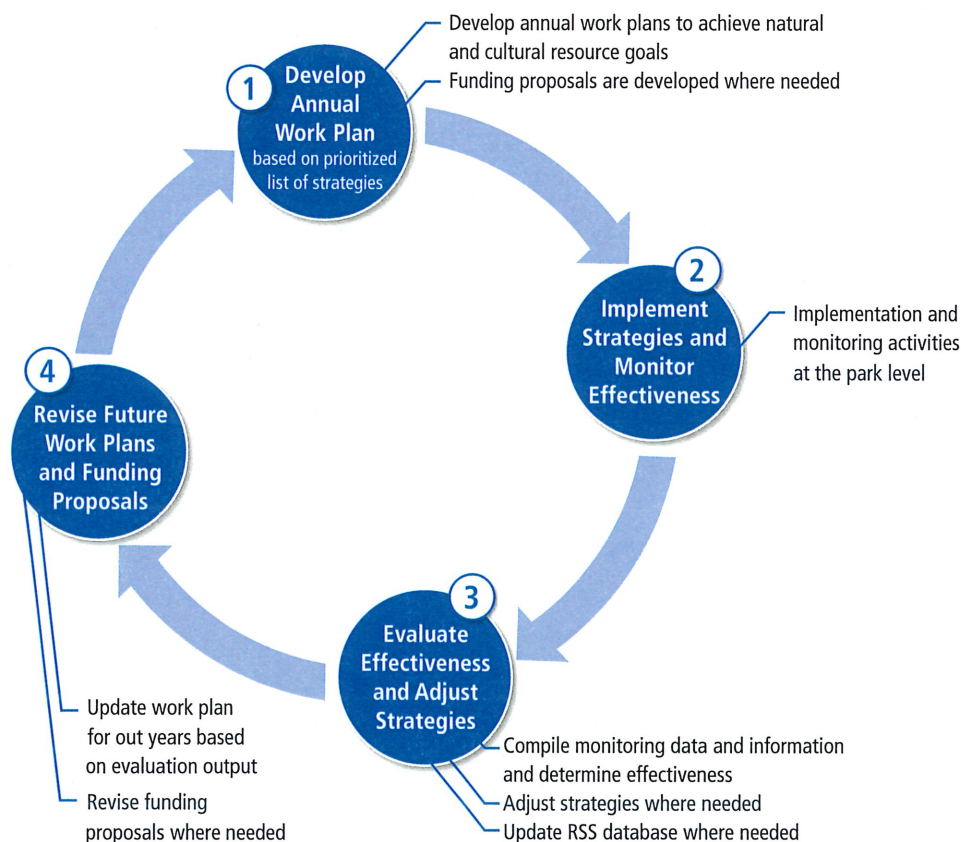
COMPONENT	SHORT-TERM GOALS	ACTIVITIES
VIEW FROM AND OF CONFLUENCE	Key staff (i.e., resource management staff, facilities, and interp divisions) are trained in the principles of parkwide visual resource management for improved collaboration and management.	- Request technical assistance for training ("Enjoy the View" training?). <i>Medium Priority. Start Date TBD.</i> - Seek NPS professionals and existing policies or plans to use as model for HAFE use. <i>Medium Priority. Start Date TBD.</i> - Recruit volunteers to improve and maintain views the park wants to maintain. <i>Medium Priority. Start Date TBD.</i>
VIEW FROM AND OF CONFLUENCE	Landowners, planners and other stakeholders are engaged in cooperative conservation of important views across park boundaries, to get "buy-in" or "collaboration"	- Identify partners and initiate discussion forum. <i>Medium Priority. Start Date TBD.</i>
VIEW FROM AND OF CONFLUENCE	Visitors enjoy a variety of views, with an understanding of air quality and other factors that influence scenic quality.	- Monitor conditions of observation points every 5-10 years. <i>Medium Priority. Start Date TBD.</i>

CHAPTER 7: ONGOING IMPLEMENTATION OF THE RESOURCE STEWARDSHIP STRATEGY

The stewardship goals, activities, and other pertinent information of the resource stewardship strategy is managed and updated regularly using the RSS desktop application. This information will assist resource managers in determining what, how, when, and where resource management occurs in the parks and will assist the park's resource management staff in developing annual work plans. These work plans will be an important planning tool for park staff to determine what they will be able to realistically tackle over the coming years.

Long-term implementation of the resource stewardship strategy includes park managers monitoring resource information and conditions and evaluating the effectiveness of resource stewardship strategies over time. Regular monitoring of RSS progress will provide park managers an opportunity to evaluate whether the stewardship strategies are making progress and consider whether adjustments are needed. See figure 3 for more information on the cyclical nature of this process. In addition, routine communication with the public is another important aspect of the implementation process. These outreach efforts are intended to improve public awareness about the science and strategies used to protect the park's diverse resources and values over time.

Figure 3. Resource Stewardship Strategy Implementation Process





APPENDIXES

APPENDIX A: RESOURCE STEWARDSHIP STRATEGY GLOSSARY

Activity: One or more initiatives that strive to achieve a short-term stewardship goal. On its own, an activity produces a specific deliverable or outcome. Such activities may include assessments, documentation, identification, maintenance, operations, resource protection, thematic studies, cataloguing, evaluation, interpretation, planning, training, data recovery, education, inventory, monitoring, research, survey, treatment, restoration, or other types of management.

Activity Priority: High, medium, low priority of activity.

Activity Status: This status would track whether the activity has been initiated, not initiated, ongoing, or completed.

Activity Target: The specific target for completing the activity (e.g., time frame, completeness, quality level). The target should be flexible because time frames might need to be readjusted once all of the activities are compiled.

Activity Type: The type of activity described could include resource education, research, inventory, direct management, collaboration, etc.

Desired Conditions: A park's natural and cultural resource conditions that the National Park Service aspires to achieve and maintain over time and the conditions necessary for visitors to understand, enjoy, and appreciate those resources.

Key Issue: A park management concern directly related to park resources and their condition.

Priority Resource: A cultural or natural resource that the National Park Service manages or monitors to maintain a park unit's purpose and significance, to address policy/law mandates, or to address scholarly and scientific research needs or findings.

Priority Resource Component: An aspect or attributing resource that is integral to the functionality, importance, or condition of a priority resource and can be managed or monitored practically over the next three to five year horizon. Priority resource components are included, or nested, under the associated priority resources.

Resource Condition Assessments: Developed separately, the Natural Resource Condition Assessment and Cultural Resource Condition Assessment combine existing scholarly or scientific data with expert interpretations as the primary basis for developing information and condition findings in the Resource Stewardship Strategy. Condition assessments highlight emerging or crosscutting issues that require the greatest management attention and help inform the development of stewardship strategies.

APPENDIX B: BIBLIOGRAPHY

The following reference documents, organized by authored texts followed by priority resources, were essential in understanding and assessing the current status of resource information and condition during the resource stewardship strategy planning process.

AUTHORED TEXTS

National Parks Conservation Association

- 2009 *State of the Parks: Harpers Ferry National Historical Park, A Resource Assessment.*

State of Maryland

- 2017 *Standards – Streams.* http://mde.maryland.gov/programs/Water/TMDL/Water%20Quality%20Standards/Pages/Programs/WaterPrograms/TMDL/wqstandards/wqs_designated_uses.aspx.

Thomas, J. E., J. P. Campbell, B. Carlstrom, M. Carter, S. D. Costanzo, W. C. Dennison, J. Hitchcock, M. Lehman, M. Nortrup, and C. Stubbs

- 2013 *Harpers Ferry National Historical Park Natural Resource Condition Assessment: National Capital Region.* Natural Resource Report NPS/CHOH/NRR—2013/746. National Park Service, Fort Collins, Colorado.

Tudek, J.K. and D.J. Vesper

In press. A review of the karst resources of the Antietam National Battlefield, the Harpers Ferry National Historical Park, and the Harpers Ferry National Historical Park. Draft Natural Resource Technical Report. Report on file with the National Park Service.

OTHER DOCUMENTS

- Cultural Resource Stewardship Assessment (2017)
- Natural Resource Plans
 - » Wetland Restoration Action Plan (WRAP) & Environmental Assessment for Four NCR Parks: Chesapeake & Ohio Canal National Historical Park (CHOH), Monocacy National Battlefield (MONO), Harpers Ferry National Historical Park (HAFE) and Catoctin Mountain Park (CATO) (In progress)
 - » HAFE RSS Rare Species Overview (2017)
 - » State Wildlife Action Plans for WV, VA, MD (2015)
 - » Natural Resource Condition Assessment (2013)
- Recent Natural Resources Inventory and Monitoring Data**
 - » Natural Resources Stewardship and Science (NRSS) RSS Resource info Sheets (2017)
 - » Long-Term Forest Monitoring Protocol (2014)
 - » Forest Vegetation Structure using LiDAR (2013)
 - » Forest Bird Monitoring (2013)
 - » Water Resources Vital Signs (2012)
 - » Forest Vegetation Status (2012)
- » Water Chemistry and Quantity Monitoring Protocol (2011)
- » Stream Discharge Trends (2011)
- » Nitrogen Sensitivity (2011)
- » Lichen Biomonitoring to Detect Air Quality Effects (2011)
- » Acidification Evaluation (2011)
- » Water Resources Monitoring (2010)
- » Forest Vegetation Monitoring (2010)
- » Survey of Ferns and Fern Allies (2009)
- » Patch, Landscape, Soundscape Effects on Forest Birds (2009)
- » Development of Natural Gas Resources in Marcellus Shale (2009)
- » Deer Monitoring (2009)
- » Sedge, Grass, and Rush Inventory (2008)
- Digital Geologic Map of Harpers Ferry National Historical Park and Vicinity, Maryland and West Virginia (NPS, GRD, GRI, HAFE, HAFE digital map). NPS Geologic Resources Inventory Program (2010)
- Visitor Study (2006)

** Cultural resource documents were reviewed and evaluated in the HAFE Cultural Resource Stewardship Assessment (2017) prepared in advance of this RSS.*

*** The “recent” natural resources inventorying and monitoring documents are included for a 10-year timeframe, between 2008 and 2018.*

RESOURCE	RECOMMENDED ACTIVITY	SOURCE
HISTORIC STRUCTURES	Evaluate mothballing options for armory	RSS Workshop Notes (July 2017)
HISTORIC STRUCTURES	Strategic plan for reuse of buildings	RSS Workshop Notes (July 2017)
HISTORIC STRUCTURES	Revisit historical significance of individual buildings (e.g., the Lockwood House is significant and its historical significance is high based on park's feedback – has HSR and CLR). Lockwood house has high, high API and still has trouble getting funded.	RSS Workshop Notes (July 2017)
HISTORIC STRUCTURES/ CULTURAL LANDSCAPES	Baseline information for newly acquired properties. e.g., Allstadt house/flea market grounds.	RSS Workshop Notes (July 2017)
CULTURAL LANDSCAPES	Updated CLIs for US Armory Grounds & Potomac Riverfront, School House Ridge North	CRSA (2017)
CULTURAL LANDSCAPES	Parkwide National Register update	CRSA (2017)
CULTURAL LANDSCAPES	Revise CLIs to include completed Parts 1 and 2	CRSA (2017)
CULTURAL LANDSCAPES	Add landscape features in FMSS and baseline reports to IMRA	CRSA (2017)
CULTURAL LANDSCAPES	Cultural landscape documentation of the armory	RSS Workshop Notes (July 2017)
CULTURAL LANDSCAPES	Need baseline cultural landscape documentation for Short Hill as well (but not as high priority as Maryland and Loudoun Heights)	RSS Workshop Notes (July 2017)
ARCHEOLOGICAL RESOURCES	Archeological studies to address unsurveyed park lands	CRSA (2017)
ARCHEOLOGICAL RESOURCES	NR and DOEs to include archeological sites	CRSA (2017)
ARCHEOLOGICAL RESOURCES	Improve FMSS listings for archeological sites	CRSA (2017)
ARCHEOLOGICAL RESOURCES	Continued monitoring site condition and working to improve sites with basic maintenance activities, such as vegetation removal, relocation of trails, curbing illegal camping, etc.	CRSA (2017)
ARCHEOLOGICAL RESOURCES	Comprehensive archeological survey Camp Hill	RSS Workshop Notes (July 2017)
ARCHEOLOGICAL RESOURCES	Additional archeological work at Halls Island	RSS Workshop Notes (July 2017)
CULTURAL ANTHROPOLOGY	Finalize the Ethnographic Overview and Assesment (EOA), then present the EOA to the community and complete document	CRSA (2017)
CULTURAL ANTHROPOLOGY	Engage in communication with the affiliated groups identified in the EOA	CRSA (2017)
CULTURAL ANTHROPOLOGY	Follow ups including Ethnographic recommendation from NCR after completing report from UMD	RSS Workshop Notes (July 2017)

Table D3. Integrated Resources

RESOURCE	RECOMMENDED ACTIVITY	SOURCE
PARKWIDE RESOURCES	Climate change vulnerability study	RSS Workshop Notes (July 2017)
PARKWIDE RESOURCES	Adapt actions indicated in NCR integrated pest management plan for specific park resources	RSS Workshop Notes (July 2017)
PARKWIDE RESOURCES	Inventory historic springs locations indicate where these have existed – overlap this inventory with cultural resources	RSS Workshop Notes (July 2017)
PARKWIDE RESOURCES	Improve Pollinators Habitats in cultural landscapes, by reducing mowing along the corridors to allow native pollinator species to thrive alongside native vegetation	RSS Workshop Notes (July 2017)



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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