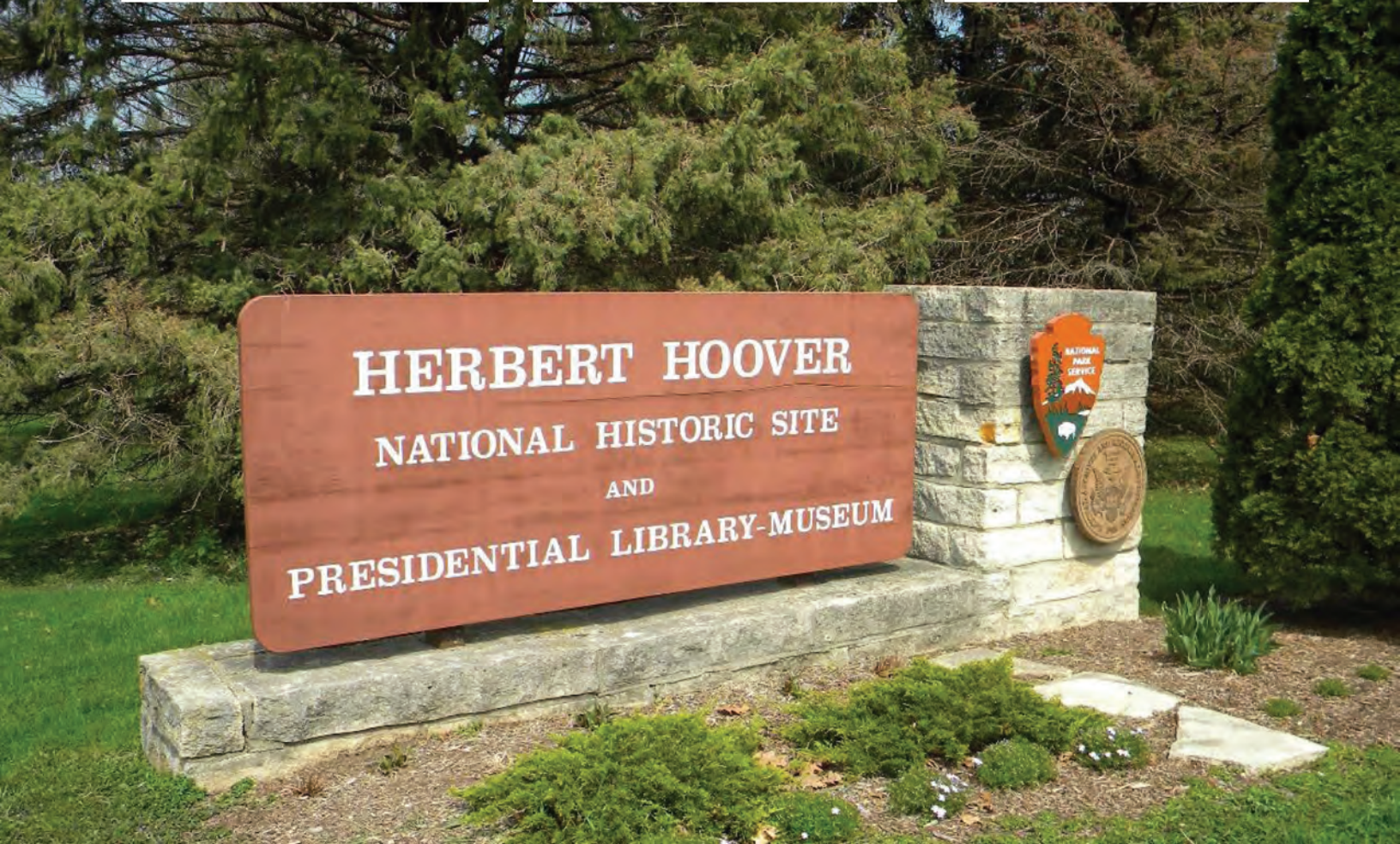
National Park Service
U.S. Department of the Interior

Herbert Hoover
National Historic Site

Restore and Stabilize Hoover Creek for Flood Mitigation

Environmental Assessment

January 2019



This plan fulfills a park planning priority for resource preservation, facility asset management, and visitor use management at Herbert Hoover National Historic Site and serves as a component of the park's planning portfolio. Herbert Hoover National Historic Site planning portfolio consists of the individual plans, studies, and inventories, which together guide park decision making. The planning portfolio enables the use of targeted planning documents (such as this one) to meet a broad range of park planning needs and fulfill legal and policy requirements. Herbert Hoover 2004 general management plan remains a critical piece of the park's planning portfolio, and will continue to be updated and/or supplemented in a timely manner through the development of additional park planning documents.

Environmental Assessment

Restore and Stabilize Hoover Creek for Flood Mitigation

The National Park Service (NPS) has prepared this environmental assessment to evaluate the impacts of flood control measures to mitigate reoccurring flood damage and preserve the site's properties and cultural resources at Herbert Hoover National Historic Site, Cedar County, Iowa.

This environmental assessment evaluates two alternatives for managing flooding and preserving the historically significant properties at Herbert Hoover National Historic Site, describes the environment impacted by the alternatives; and assesses the environmental consequences of implementing the alternatives. Under the no-action alternative, management would continue operating and maintaining the existing facilities with no changes, which includes repairs to multiple structures after flood events. Under the proposed action, identified as the proposed action, the NPS would create an off-channel detention basin; modify the stream channel to manage flood flows and restore and stabilize Hoover Creek; replace the Downey Street Bridge; replace and relocate utilities; stabilize the historic limestone wall; and install earthen noise mitigation berms for noise reduction along Interstate 80 and Parkside Drive.

How to Comment

We invite you to comment on this environmental assessment during the 14-day public review period. The preferred method of providing comments is through the NPS's Planning, Environment, and Public Comment (PEPC) website for the park at: http://parkplanning.nps.gov/heho. Or you may mail comments to the address below:

Superintendent
Herbert Hoover National Historic Site
110 Parkside Drive
West Branch, IA 52358

Only written comments will be accepted. Please submit your comments within 14 days of the posting of the notice of availability on the PEPC website. Please be aware that your entire comment will become part of the public record. If you wish to remain anonymous, please clearly state that within your correspondence; however, NPS cannot guarantee that personal information, such as email address and phone number, will be withheld.

Image: Herbert Hoover National Historic Site sign and landscape

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Appendix A: Resource Protection Measures

Acronyms and Initialisms

AASHTO	American Association of State Highway and Transportation Officials
CFR	Code of Federal Regulations
FEMA	Federal Emergency Management Agency
NPS	National Park Service
PEMA	palustrine emergent temporarily flooded
R2UBG	riverine lower perennial unconsolidated bottom intermittently exposed
site	Herbert Hoover National Historic Site
USFWS	United States Fish and Wildlife Service

CHAPTER 1: PURPOSE AND NEED

1.1 INTRODUCTION

The National Park Service (NPS) proposes to develop flood control measures to protect critical resources at the Herbert Hoover National Historic Site (the site) located in West Branch, Cedar County, Iowa (see figure 1). Hoover Creek, a tributary of the west branch of Wapsinonoc Creek, traverses the site and is subject to flash flooding.

The 187-acre site was established on August 12, 1965, to commemorate the life of the 31st President of the United States. The following is a partial list of the historic, cultural, and natural resources of the site (see figure 2).

- The cottage where Herbert Hoover was born in 1874, which was listed as a National Historic Landmark in 1965 (Birthplace Cottage).
- The gravesites of President and Mrs. Hoover (Gravesite).
- The Friends Meetinghouse where the Hoover family worshipped.
- A blacksmith shop similar to the one owned by Hoover's father (Blacksmith Shop).
- The first one-room schoolhouse in West Branch (Schoolhouse).
- A statue of the Egyptian goddess Isis that was gifted by the people of Belgium (Isis Statue).
- The PT Smith House and the House of the Maples.
- Several late nineteenth century and early twentieth century homes, outbuildings, and associated landscape features.
- The 81-acre reconstructed tallgrass prairie.
- The Herbert Hoover Presidential Library-Museum (Library-Museum) managed by the National Archives and Records Administration.
- The Downey Street Bridge, originally constructed in the late 1800s, and rehabilitated in 1917 (concrete railings) and 1985 (wooden railings).
- The limestone retaining wall west of the Downey Street Bridge, which was constructed in 1939.
- Hoover Creek, which is associated with Hoover's boyhood memories and has influenced development over time.

The purpose of the site is to preserve the Birthplace Cottage, Gravesite, and other historically significant properties associated with the life of Herbert Hoover; to provide an accessible, dignified, and spacious setting in which visitors can experience the Birthplace Cottage, Gravesite, Library-Museum, and other resources; and to commemorate and interpret the life, career, and accomplishments of Herbert Hoover in cooperation with other organizations (NPS 2004).

There are six periods of historic significance at the site (NPS 1995):

- Pre-1874 is the period prior to Herbert Hoover's birth
- 1874–1885 is the period of Hoover's boyhood in West Branch
- 1886–1927 is the period of Hoover's adolescence and pre-presidential
- 1928–1934 is the period during which the site received recognition as the Hoover birthplace and is the beginning of Hoover's campaign and presidency
- 1935–1966 is the period between the establishment of the National Historic Site and the implementation of the Gravesite design following Hoover's death and burial
- 1967–present is the period of site development and recreation of a nineteenth century historic scene

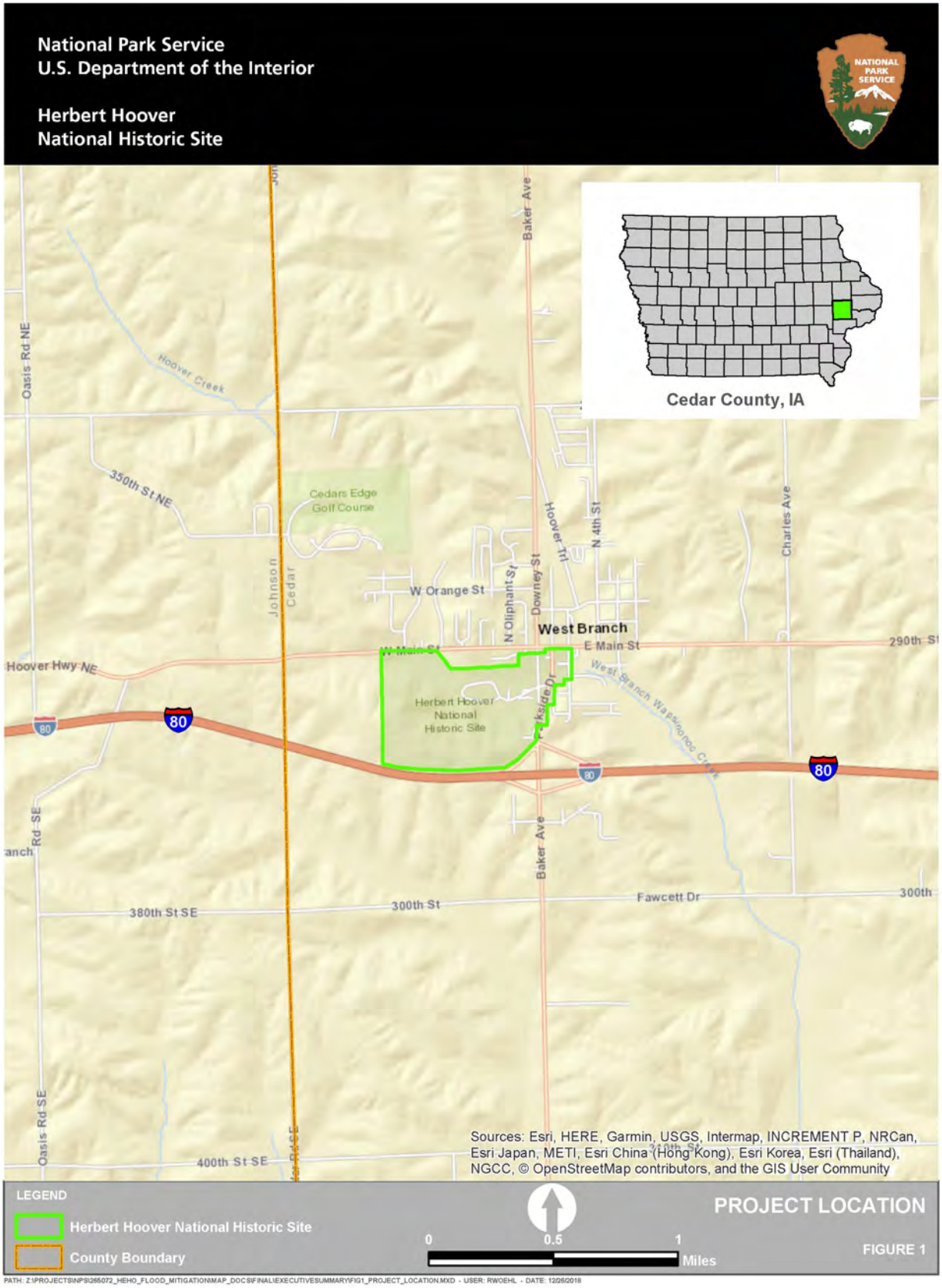

FIGURE 1. PROJECT LOCATION

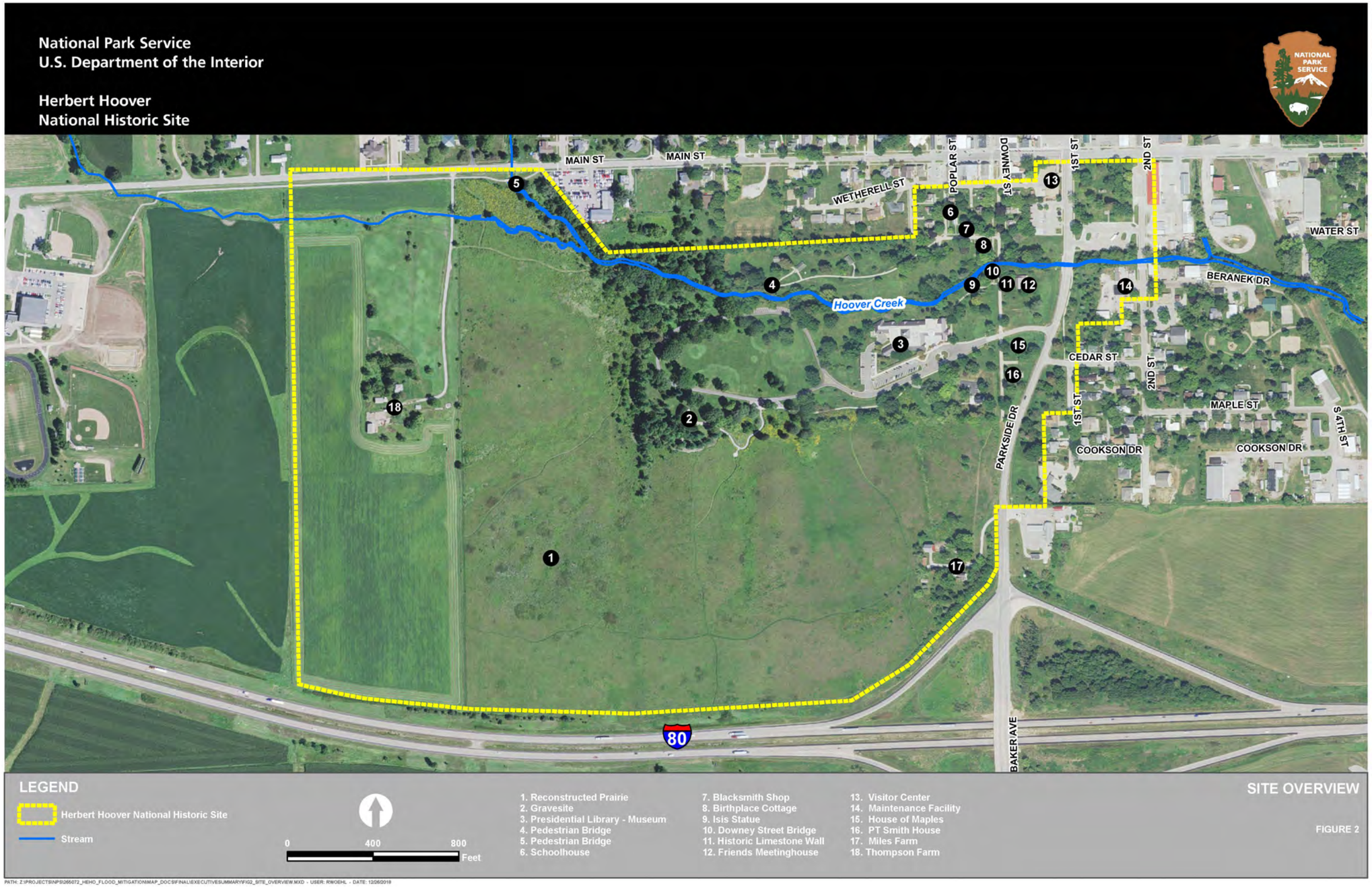

FIGURE 2. SITE OVERVIEW

This environmental assessment assesses the potential effects of implementing the no-action alternative and the proposed action alternative, which consists of proposed flood control measures, on identified impact topics.

1.2 PURPOSE OF AND NEED FOR ACTION

The purpose of the proposed action is to preserve and protect the site's properties and cultural resources associated with the life of Herbert Hoover.

The proposed action is necessary because regular flooding of Hoover Creek threatens historic structures and properties, disrupts the visitor experience, and requires staff to make continual building repairs after floods occur.

Hoover Creek begins to flood, that is, escape its confining banks, at approximately a 2-year recurrence interval. A 2-year recurrence interval concept relates to the chance that a flood of a certain size would occur. A 2-year recurrence interval is not one that occurs every 2 years, but rather has a 50 percent chance of occurring in any given year. The occurrence of a flood does not reduce the chances of another flood occurring within the same year. Based on modeling from the United States Geological Survey (USGS 2018) the discharge, or flow, associated with the 2-year recurrence interval is 350 cubic feet per second. A cubic foot per second is equivalent to the volume of water that flows past a single point in one second. Using the data of record from a USGS gage on Hoover Creek within the site, the following events have occurred that have exceeded 350 cubic feet per second:

- June 3, 2008. Peak flow: 404 cubic feet per second
- June 18, 2010. Peak flow: 354 cubic feet per second
- April 17-18, 2013. Peak flow: 747 cubic feet per second
- June 30, 2014. Peak flow: 705 cubic feet per second
- July 12, 2014. Peak flow: 546 cubic feet per second
- June 21, 2018. Peak flow: 651 cubic feet per second
- September 5, 2018. Peak flow: 506 cubic feet per second
- October 6, 2018. Peak flow: 704 cubic feet per second

PHOTOGRAPH 1. FLOODING IN JUNE 2018. VIEW FROM DOWNEY STREET BRIDGE, LOOKING EAST.

Photograph 1 shows Hoover Creek flooding in 2018 and photograph 2 shows flooding approaching the Library-Museum in 2008.

PHOTOGRAPH 2. FLOODING IN JUNE 2008 APPROACHING THE LIBRARY-MUSEUM.

The site's previous flood protection efforts have included sandbagging building entrances and closing portions of the site. Post-flood requires cleanup of debris from pedestrian pathways, the pedestrian bridge, parking lots, and Downey Street Bridge. Floods larger than a 2-year event create additional cleanup and post-flooding maintenance, including pumping

of water from crawl spaces or basements of buildings and cleanup of building interiors. The site's maintenance facility is located east of Parkside Drive and south of Hoover Creek. Employees must move out equipment when the building is flooded as well as empty and clean the building after it has been flooded.

In addition to flood protection, the proposed action is needed to enhance visitor experience by restoring and stabilizing Hoover Creek to reflect a period of cultural significance; preventing further damage to and restoring the limestone retaining wall as a contributing landscape feature of the site; and replacing the Downey Street Bridge to its historic 1917 appearance.

PHOTOGRAPH 3. DOWNEY STREET BRIDGE, CIRCA 1940.

The National Park Service is referencing the 1930s as a basis for stream restoration of Hoover Creek. In that period, the banks of Hoover Creek were maintained as turf grass. Over the years, due to degradation of Hoover Creek (lowering of the creek bed over time), maintenance has become problematic and thus, woody vegetation has become more prevalent, changing the historic context. In its 1995 *Herbert Hoover National Historic Site Cultural Landscape Report* (NPS 1995), the National Park Service determined that Hoover Creek west of the Downey Street Bridge should be a "well-maintained park-like setting."

PHOTOGRAPH 4. DOWNEY STREET BRIDGE IN 2018.

The Downey Street Bridge was constructed of wood in the late 1800s. In 1917, it was rebuilt in concrete with stone abutments. In 1939, the limestone retaining wall was added (photograph 3). In the 1985, the bridge's concrete railing was removed and replaced with wooden railings to replicate what would have been present during Hoover's boyhood (1874–1885) (photograph 4) (NPS 1995, NPS 2018a). The *Herbert Hoover National Historic Site Cultural Landscape Report* called for the current Downey Street Bridge to be replaced with a bridge that does not restrict stream flow (NPS 1995).

PHOTOGRAPH 5. LIMESTONE WALL WEST OF DOWNEY STREET BRIDGE.

The limestone wall (photograph 5) is located within the viewshed of the Birthplace Cottage, Hoover Creek, Downey Street Bridge, and the Isis Statue. The limestone wall was constructed in 1939 west of the Downey Street Bridge when the banks of the creek were graded back and seeded. The integrity of the wall is threatened by flooding when Hoover Creek leaves its banks (a 2-year event and higher).

1.3 ISSUES AND CONCERNS AND IMPACT TOPICS

Issues are "problems, concerns, conflicts, obstacles, or benefits that would result" if either the no-action alternative or the proposed action is implemented (NPS 2015). Impact topics are resources of concern that could be affected, either beneficially or adversely, by implementing the proposed action.

1.3.1 Issues and Concerns

During the scoping process, specific considerations and concerns were identified as critical to this project. Along with the purpose of and need for the proposed action, these issues guided the development of alternatives and contributed to the selection of impact topics analyzed in detail in this environmental assessment. Some issues and concerns were raised during scoping that were dismissed from detailed analysis because it was determined they were not central to the proposed action, the resource does not occur in the area, or there would be no measurable change to the resource. The following lists the identified issues and concerns.

- Flooding can cause damage to archaeological resources and historic structures. Some of the project activities could result in modifications to the archaeological resources, cultural landscape, and historic structures.
- The vista that extends between the Birthplace Cottage and the Gravesite was intentional and designed as a part of the cultural landscape. The view of the Library-Museum from Parkside Drive needs to be maintained.
- Any stream channel modification or detention basin construction would cause a loss of trees. The trees present at the site today were in large part selected and planted according to planting plans from the late 1960s that maintain some views and obstruct others.
- Constructing project elements to provide flood risk reduction would impact the stream channel, associated wetlands, and floodplain; therefore, stream channel and associated wetland and floodplain impacts will be analyzed.
- Flooding causes loss of road and trail access to the site and damages the landscape. During flooding, the site or portions of the site may be temporarily closed to the public until the flood damage can be repaired and access to the facilities can be restored. Visitor experience can be adversely affected by the closure of the facilities during flooding. Constructing all project elements could temporarily affect visitor experience by introducing noise, visual disturbance, and trail closures.
- Constructing project elements for flood risk reduction could affect habitat for sensitive wildlife species.

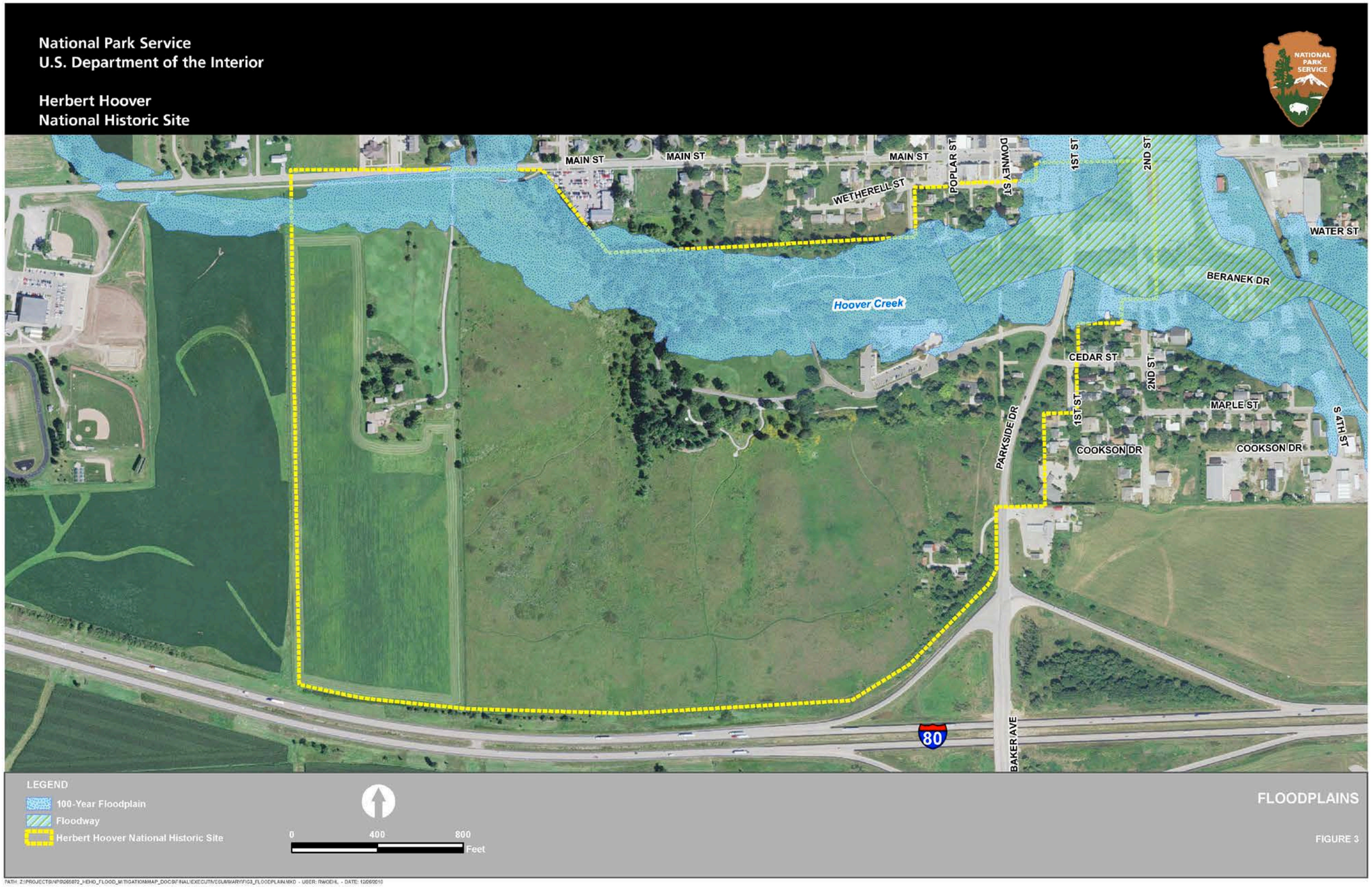

FIGURE 3. FLOODPLAINS

1.3.2 Impact Topics Retained for Analysis

Based on the issues and concerns, four impact topics will be analyzed; with subtopics embedded within each topic. The impact topics retained for analysis are cultural resources, stream channel and floodplain, visitor use and experience, and important wildlife habitat:

Cultural Resources. Following National Park Service Resource Types, cultural resources will be discussed in the subtopics of cultural landscapes (settings humans have created in the natural world), and historic structures (examples of human productive ability and artistic sensitivity) (NPS 1998). Cultural landscape will address the vista of the Birthplace Cottage and the Gravesite.

Floodplain and Wetlands. Because flooding and the damage it causes is the primary need, work would occur within the stream channel and the floodplain under the proposed action. Under the no-action alternative, the stream channel would continue to degrade. Hoover Creek is classified as a riverine lower perennial unconsolidated bottom intermittently exposed wetland (R2UBG).

Emergent wetlands occur adjacent to Hoover Creek. A wetland delineation (HDR 2018a) conducted on Hoover Creek and its surrounding area found 10, small (each less than 0.01 acre) emergent wetlands (see figure 4). The National Park Service would obtain a Section 404 of the Clean Water Act permit. Consequently, the individual topic of wetlands was dismissed from further review in this environmental assessment. Coordination with National Park Services' Water Resources Division confirmed that the stream rehabilitation can be classified as a restoration activity. Wetland impacts are an excepted action as a part of a restoration activity. In addition, new wetlands would form along the new stream channel edges.

Wetland impacts created by riparian stream restoration and the repair of the stone wall are excepted actions according to NPS *Procedural Manual 77-1: Wetland Protection*, section 4.2.1. Therefore, the best management practices and conditions described in *Procedural Manual 77-1*, appendix 2, have been met or would be implemented, and wetland compensation is not required for these actions. Further, the proposed action would increase functional values of essential wetland functions and therefore are excepted from compensation requirements.

Visitor Use and Experience. Construction noise, construction visual disturbance, and the changes to the prairie trails would occur during construction of the proposed action. Areas would be closed or otherwise made inaccessible for walking. Architectural Barrier Act compliant pathways between structures would no longer be available, requiring visitors needing universal access to drive between locations.

Wildlife Habitat. The prairie would be disrupted by the off-channel detention basin, the earthen sound mitigation berms, the haul roads, and the trail relocation both permanently and temporarily under the proposed action. The riparian areas would be disrupted by the stream channel improvements under the proposed action. Trees and woody vegetation along the stream corridor and in a select area on the southwestern section of the creek would be removed. This would result in the removal of approximately 96 trees, as well as some shrubs and herbaceous vegetation from the riparian habitat.

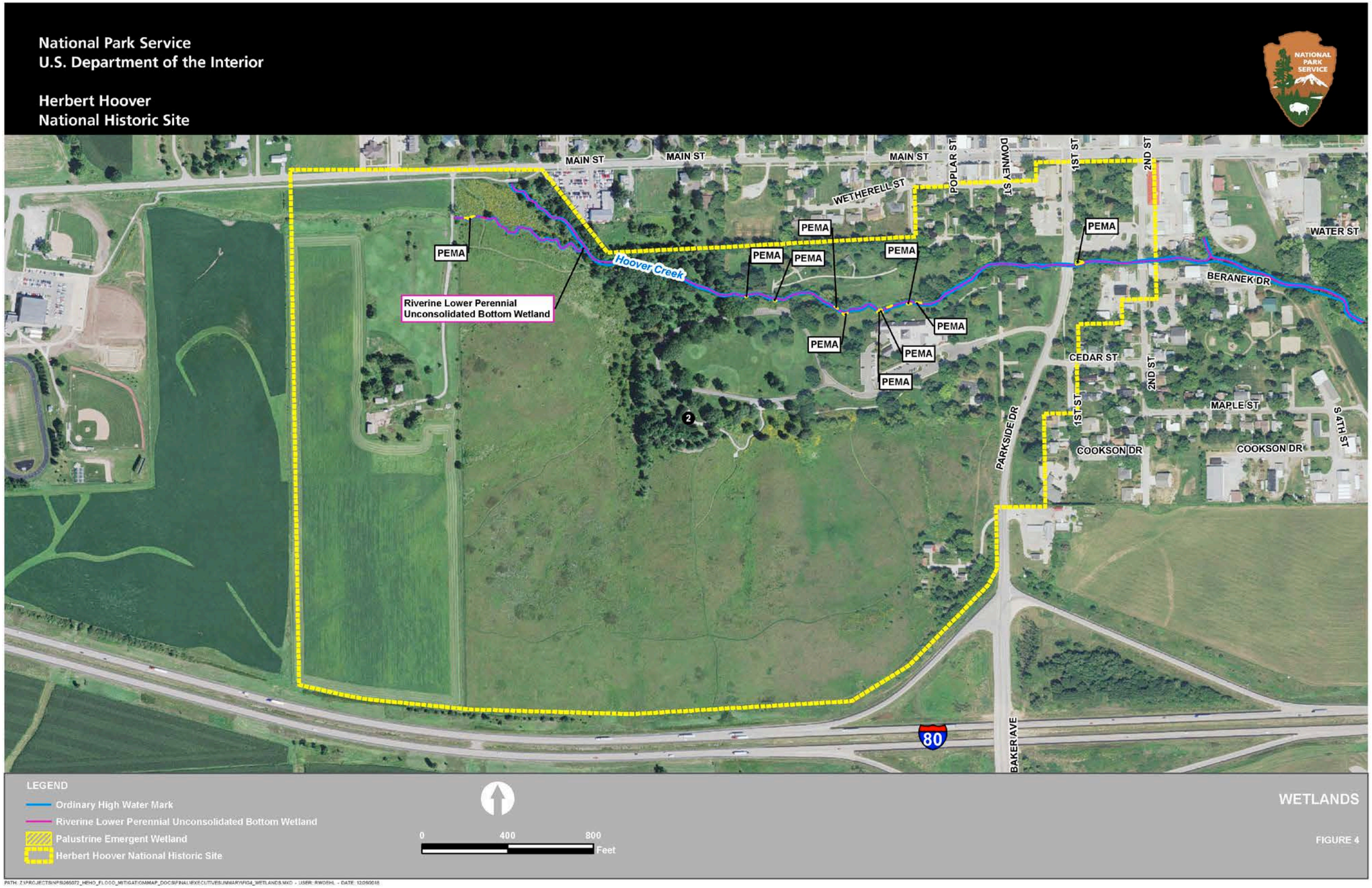

FIGURE 4. WETLANDS

1.3.3 Impact Topics Dismissed from Further Analysis

The following topics have been dismissed from further analysis of impacts based on the rationale provided for each.

Archaeological Resources. In 2017 a Phase I geoarchaeological survey was conducted of 13.8 acres in the area potentially affected by excavation and/or grading associated with implementation of the proposed flood mitigation measures. The survey identified areas with the potential to contain buried prehistoric archaeological sites. The core soils identified the depths where there is high potential for archaeological resources and the areas where further archaeological investigation was needed.

A Phase I archaeological survey of those areas identified with the potential to contain buried prehistoric archaeological sites was subsequently conducted in 2018, in accordance with the guidelines of the Iowa State Historic Preservation Office and the Association of Iowa Archaeologists. The survey included a visual inspection of the area of potential effects and approximately 200 auger or shovel tests to a maximum depth of 350 cm. Neither prehistoric archaeological resources nor historic resources of potential significance were discovered.

No impacts on potentially significant prehistoric or historic archaeological resources are anticipated during construction of the detention basin, earthen sound mitigation berms, and stream channel improvements, nor during replacement of the Downey Street Bridge. Haul roads would be constructed and used in ways that avoid disturbance of sediments. Archaeological monitoring would occur during excavation for the sewer line to ensure that known historic resources are documented as encountered during trenching; information gathered during this process would be used in planning future undertakings.

If during construction potentially significant archaeological resources could not be avoided, or if previously unknown archaeological resources were discovered, an appropriate mitigation strategy would be developed in consultation with the Iowa State Historic Preservation Officer and, as necessary, American Indian tribes traditionally associated with park lands. In the unlikely event that 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 (25 USC 3001) of 1990 would be followed.

Sound (noise impacts). Short-term, localized construction noise would cause adverse effects on the visitors in the typically quiet, restful areas of the prairie, along Hoover Creek and on Downey Street Bridge. Under the proposed action, the earthen sound mitigation berms would provide a reduction in noise to approximately one-sixth of the site (Nuessly 2018). Sound (noise impacts) was dismissed from further review in this environmental assessment.

Water quality and quantity. Impacts on water quality are possible from increased sediment loads during flooding. Surface water runoff discharge from the landscape would be contained in the off-channel detention basin and would discharge slowly. There is potential for water quality to improve by reducing particulate matter in the water through sediment settling in the off-channel detention basin. Vegetation recovery is expected to reduce erosion susceptibility throughout the landscape. In accordance with NPS *Management Policies* (2006b), best management practices would be used for all phases of construction activity, including pre-construction, construction, and post-construction.

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction. The erosion and sediment controls would be designed as part of the Storm Water Pollution Prevention Plan, which would be required for the National Pollutant Discharge Elimination System permit. However, there would be minor temporary impacts on

water quality after construction of the channel and prior to complete vegetation of the channel banks due to increased sedimentation into Hoover Creek. Erosion would be minimized through use of erosion control blankets along the channel banks.

Water quality as it relates to groundwater, drinking water, and wells would not be affected by the proposed action. Water quality was dismissed from detailed analysis in this environmental assessment.

The proposed action would not alter the water quantity that flows through the site, but rather would reduce the peak flow discharge of smaller storm events. Consequently, water quantity was dismissed from detailed analysis.

Threatened and endangered species and fish and wildlife. The United States Fish and Wildlife Service's (USFWS's) Information for Planning and Consultation (IPaC) lists four federally listed species as potentially occurring within the site. The listed species are Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), prairie bush-clover (*Lespedeza leptostachya*), and western prairie fringed orchid (*Platanthera praeclara*). The National Park Service manages the site to protect all species native to the site that are listed under the Endangered Species Act (NPS 2006b). There would be little to no impact on fish and wildlife resources; therefore, USFWS issued a letter of no objection to project implementation on September 20, 2018.

The Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act protects avian species. The bald eagle is not commonly found at the site (NPS n.d.); nor are any nests within 0.25 mile of the site. Impacts on migratory birds would be avoided during tree removal by implementing a timing restriction. The National Park Service would cooperate and coordinate with the United States Fish and Wildlife Service to ensure best management practices, timing restrictions, and other mitigation practices are implemented during construction to prevent adversely affecting protected species. Appendix B contains all agency correspondence.

The National Park Service monitors and maintains species lists of the fish and wildlife (including aquatic invertebrates in Hoover Creek) that are found at the site. Long-term, no fish or wildlife species are anticipated to be adversely affected by the proposed action. While the stream channel is being improved, there may be short-term effects on aquatic species. In accordance with NPS *Management Policies* (2006b), best management practices would be used for all phases of construction activity, including pre-construction, construction, and post-construction. Consequently, this impact topic was dismissed from further review in this environmental assessment.

Unique ecosystems or important fish or important wildlife habitat. The site does not contain ecological critical areas or unique natural resources. Therefore, the project would not affect these resources as referenced in the Wild and Scenic Rivers Act, NPS *Management Policies* (2006b), 40 Code of Federal Regulations (CFR) 1508.27, or the 62 criteria for national natural landmarks (36 CFR 62.5). Unique ecosystems and important fish and wildlife habitat is dismissed from further review.

Recreation resources. Replacement of Downey Street Bridge would cause a short-term disruption during construction to walkers and joggers that use the bridge. The off-site detention basin construction would require reroute of the existing prairie trails. During construction, there would be a short-term noise and visual disturbance to picnickers and others enjoying the open space. However, the project would prevent future flooding of the site's recreational facilities and disruption of the use of these facilities. This impact topic was dismissed from further review in this environmental assessment.

Overall aesthetics. The western portion of the site contains open space, the reconstructed prairie, the Gravesite, and picnic areas. The aesthetics in this portion of the site should promote pedestrian

recreation and quiet reflection. The eastern portion of the site contains the Library-Museum, the Birthplace Cottage, and the other historic buildings. The aesthetics in this portion of the site should promote active learning, gathering for social activities, and an appreciation of history. The proposed action would not compete with the existing aesthetics, and the decrease in flooding and flooding damage would benefit the existing aesthetics. The proposed earthen sound mitigation berms would blend in with the existing topography and would be seeded with prairie vegetation. The proposed earthen sound mitigation berms would be contoured and vegetated with native grasses, increasing the topography within the southern perimeter and a small section of the eastern perimeter of the reconstructed prairie, and maintaining the rural/agricultural setting. The berms' long-term benefit is a reduction in noise at the site.

Invasive species. Invasive species were not identified as an issue or a concern. Invasive species would be addressed as part of best management practices during construction and through the revegetation plan. Therefore, this impact topic was dismissed from further review in the environmental assessment. Revegetation with a native species mix and best management practices within reconstructed prairie are described as part of the proposed action (see Chapter 2) and addressed in best management practices.

Land use, property values, and stormwater runoff. The proposed action would cause a change in land use in the prairie. Of the 81-acre reconstructed prairie, approximately 10.1 acres would be converted to the off-channel detention basin. Twenty-four trees in the vicinity of the detention basin would be removed. Seventy-two trees would be removed along the stream channel improvements. The Downey Street Bridge would be expanded to a 32-foot-long bridge. The earthen sound mitigation berms would be contoured and vegetated with native grasses, increasing the topography within the southern perimeter and a small section of the eastern perimeter of the reconstructed prairie, and maintaining the rural/agricultural setting. None of the project elements would adversely affect the property values of private property surrounding the site. The earthen sound mitigation berms would not change the existing paths of stormwater runoff. Given the negligible to minor impacts on land use, property values and stormwater runoff, this impact topic was dismissed from further review in this environmental assessment.

CHAPTER 2: ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the two alternatives that are considered in this document. The proposed action was developed to address the purpose of and need for the project. The no-action alternative is also considered. The required mitigation measures to be incorporated into the proposed action are found in Appendix A.

2.2 ALTERNATIVES

2.2.1 No-Action Alternative

Under the no-action alternative (figure 5), which represents the status quo, the National Park Service would continue to use and maintain the existing facilities. Maintenance (mowing slopes along the stream channel) and management of the stream corridor, roads, trails, culverts, bridges, and stone walls would continue. The site's emergency response to floods would remain unchanged. Post-flood cleanup would continue. Continuing current practices does not meet the purpose of and need for the project, but the existing conditions are used as a baseline against which the proposed action is analyzed.

Some maintenance activities are common to both alternatives, such as periodic clearing of debris, clearing or cutting of vegetation, and clearing of sediment on the inlet side of existing culverts.

Hoover Creek would continue to exist as a degraded stream, with a deeply incised channel with near vertical banks. Its banks would continue to slump and erode and overhanging vegetation would obscure the channel. Downey Street Bridge would not be replaced. The Hoover Creek limestone wall would remain in place and would continue to deteriorate over time from flooding. No off-channel detention basin would be constructed and the land would remain as reconstructed prairie. No utility relocations of the sanitary sewer and water lines would occur beneath the Downey Street Bridge and Parkside Drive. Earthen sound mitigation berms would not be constructed north of Interstate 80, west of Parkside Drive, or south of the Gravesite.

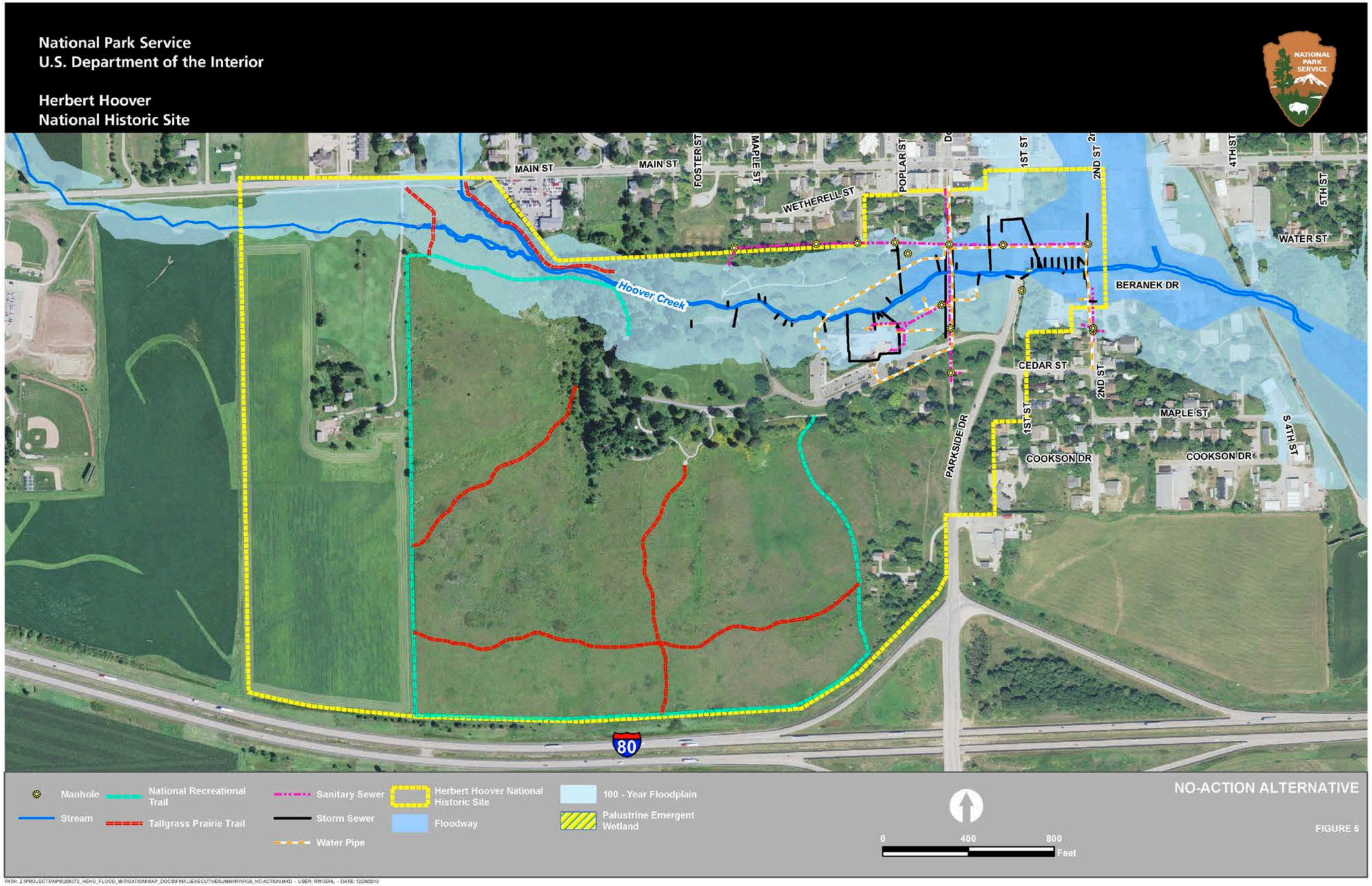

FIGURE 5. NO-ACTION ALTERNATIVE

2.2.2 Proposed Action (NPS Preferred)

The proposed action would restore the channel to reflect a period of cultural significance (a "well-maintained park-like setting" [NPS 1995]) and mitigate flooding by improving in-stream capacity (see figure 6 for project components). All of the project components together are the proposed action. None are alternatives by themselves.

Off-channel detention basin. The off-channel detention basin would be constructed in the reconstructed prairie on the northwest portion of the site (see figure 7). The basin would be dry other than when used to store floodwaters. Floodwaters would enter the detention basin via an approximate 175-foot-long intake weir constructed on the south bank of Hoover Creek. The intake weir would be excavated approximately 1.5 to 3 feet below existing grade. The detention basin would be excavated to an average depth of 8 feet below existing grade. Existing groundwater is approximately 4 feet below existing grade with a 0.5 percent slope gradient in the downslope (south to north) direction. Intercepted groundwater would be drained via a constructed subdrain along the north side of the detention basin and the base of the slope would discharge into the outfall culvert. The total size of the off-channel detention basin would be approximately 10.1 acres and would hold a maximum capacity of 19.5 acre-feet of water.

Floodwaters stored in the off-channel detention basin would drain as water levels in Hoover Creek allow. The surface water runoff from the surrounding prairie is negligible. During a high intensity, short duration event, the basin would fully drain in approximately 13 hours (assuming water levels in Hoover Creek have receded below the detention outlet). A drop inlet structure in the lowest portion of the basin nearest Hoover Creek would be installed. An 88-foot-long, 24-inch-diameter reinforced concrete pipe would be installed to return water to Hoover Creek.

To have a natural appearance, the edge and shape of the off-channel detention basin would vary. The basin would be re-seeded with two different seed types. Lower areas of the basin would be planted with a native seed mix that is more tolerant of frequently to occasionally wetter conditions. Higher areas of the basin would be planted with a native seed mix that is more tolerant of dryer conditions and would include species similar to the adjacent reconstructed prairie. The native seed mixes would be free from invasive and non-native species. Approximately 800 feet of prairie trails would be realigned (approximately 6 percent of the 12,797 total feet of trails at the site). Approximately 25 trees would be removed. A tree replacement plan would be implemented to compensate for the trees removed as part of off-channel detention construction.

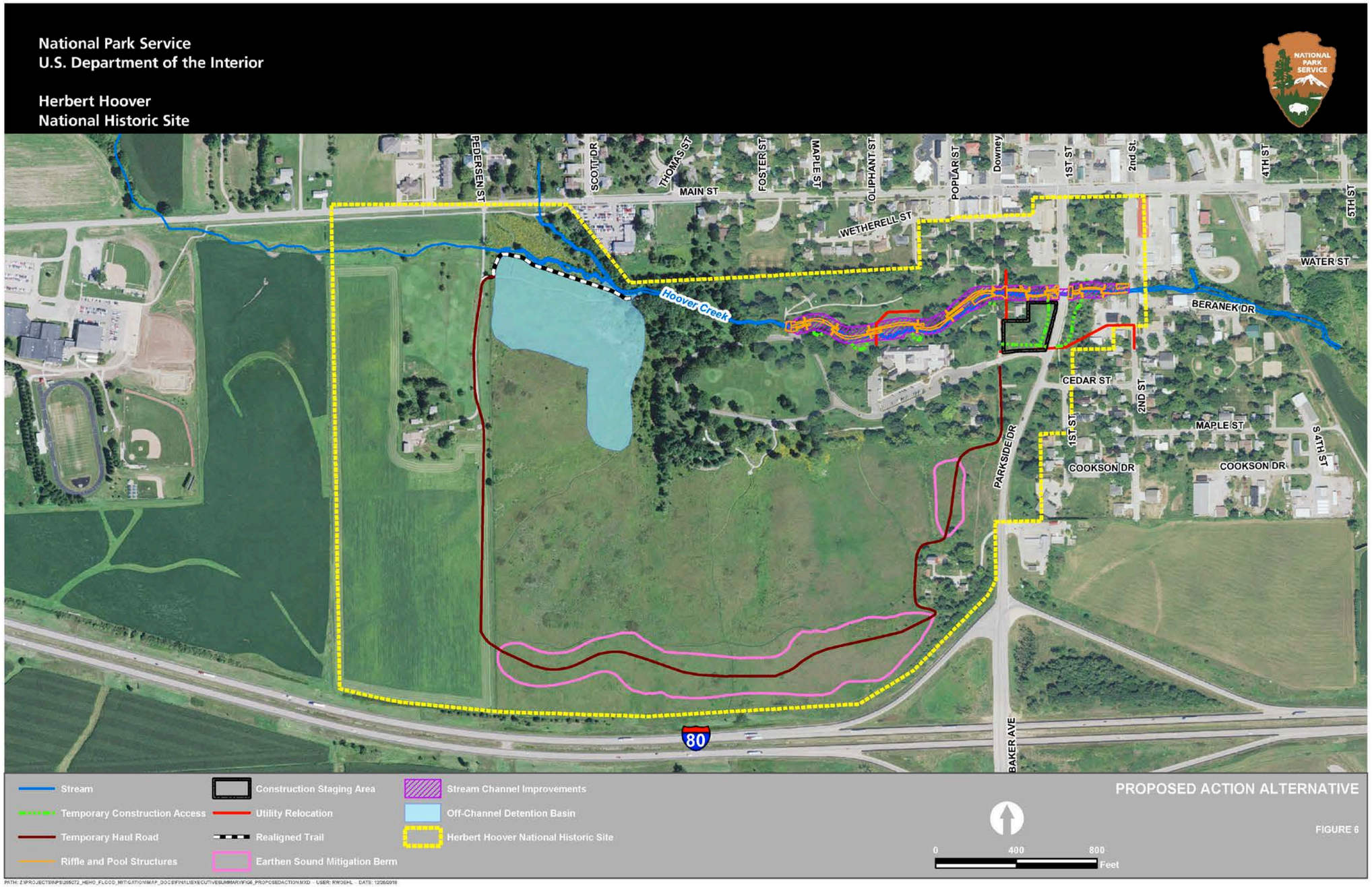

FIGURE 6. PROPOSED ACTION

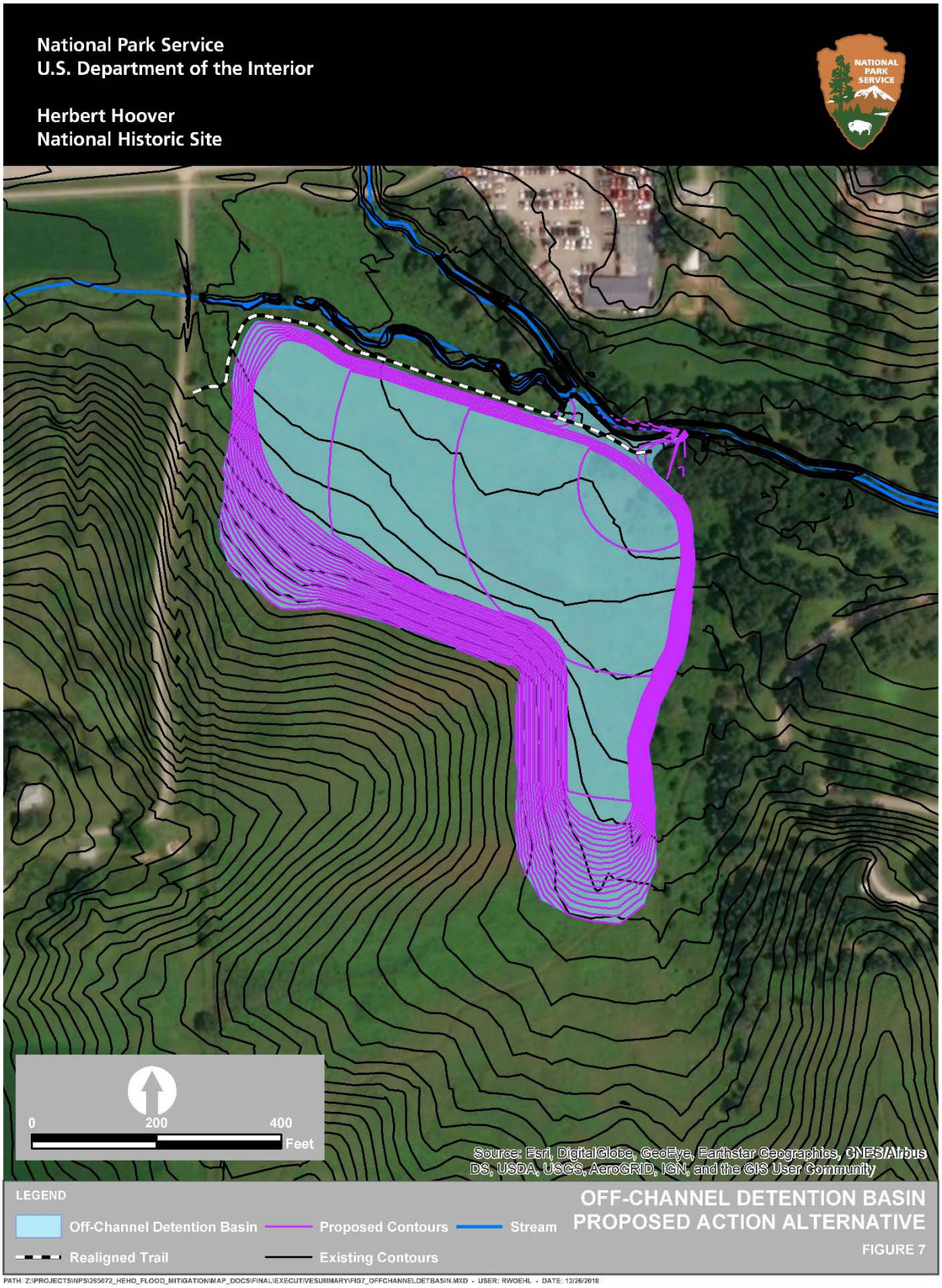

FIGURE 7. OFF-CHANNEL DETENTION BASIN

Stream channel improvements. Approximately 1,815 linear feet of Hoover Creek (from the pedestrian bridge within the site, downstream to the upstream end of the 2nd Street Bridge) would be rehabilitated to provide for increased flood flow capacity and increased stream channel capacity to carry flows following storm events (see figure 6).

The channel bed would range from approximately 3.5 to 13 feet wide at the bottom and would have sloping sides ranging from 2.5 to 4 horizontal to 1 vertical ratio. The depth from the stream bank to the floor of the channel would be similar to existing conditions, which ranges from 2 to 5 feet. The bankfull width at the top of the channel would be approximately 60 to 80 feet. Existing conditions include a channel bed of 5 to 10 feet, side slopes of 1 to 2 horizontal to 1 vertical ratio, and a bankfull width at the top of the channel of 30 to 40 feet.

The channel alignment (path) would be altered in some locations to introduce curves (sinuosity) to the channel flow and would be stabilized with riffle-pool structures. As part of the new channel alignment and corresponding with the introduced curves, 10 rock riffle structures would be constructed in the channel with pools downstream of each riffle structure (see figure 6 for locations and figure 8 for details). Riffle structures are constructed of revetment stone with native soils to form a dense compact rock mass. Riffle structures spacing typically ranges between 150 and 250 linear feet apart. Riffle structures vary in size, but would span the reconstructed channel width (plus stabilization into the banks). Depths of water would vary from shallow riffles to deeper pools. The banks of the reconstructed stream channel would be stabilized with a combination of rock revetment and turf reinforcement mats.

Seeding associated with the stream channel improvements includes a native seed mix extending 5 feet (horizontally) up the banks from edge of the permanent pool. A turf grass seed mix would be used from the edge of the native seed mix to the top of bank. The seed mixes would be free from invasive and non-native species. The turf grass would reflect the "well-maintained park-like appearance" (NPS 1995). The slopes along the channel would be such that the National Park Service could maintain them with its existing lawn mowing equipment and could supplement as needed with manual maintenance.

Approximately 75 trees would be removed as part of the channel improvements, but trees would remain near 2nd Street to obscure the view of the maintenance facility. A tree replacement plan would be implemented to compensate for the trees removed as part of channel improvements.

Downey Street Bridge replacement. The existing Downey Street Bridge (reconstructed with concrete deck in 1917 and in 1985, wooden railings installed to replace the concrete railings) and wing walls would be removed. A new 32-foot-long concrete bridge and four new concrete wing walls would be constructed (see figure 9). The bridge allows for a 16-foot-wide lane with a 6-foot-wide, raised boardwalk on either side to match the style of the existing Downey Street Bridge and the approach widths on either side of the bridge. Given the proximity to the birthplace, the railing would be designed to mimic the baluster style of the 1917 bridge. Soil and rock riprap (Class D revetment) would be placed beneath the bridge in the channel and up the banks. The riprap would be installed to the dimensions documented in the plans and laid in accordance with Iowa Department of Transportation/American Association of State Highway and Transportation Officials (AASHTO) specifications. Calculations suggest the selected revetment stone is stable under bankfull conditions.

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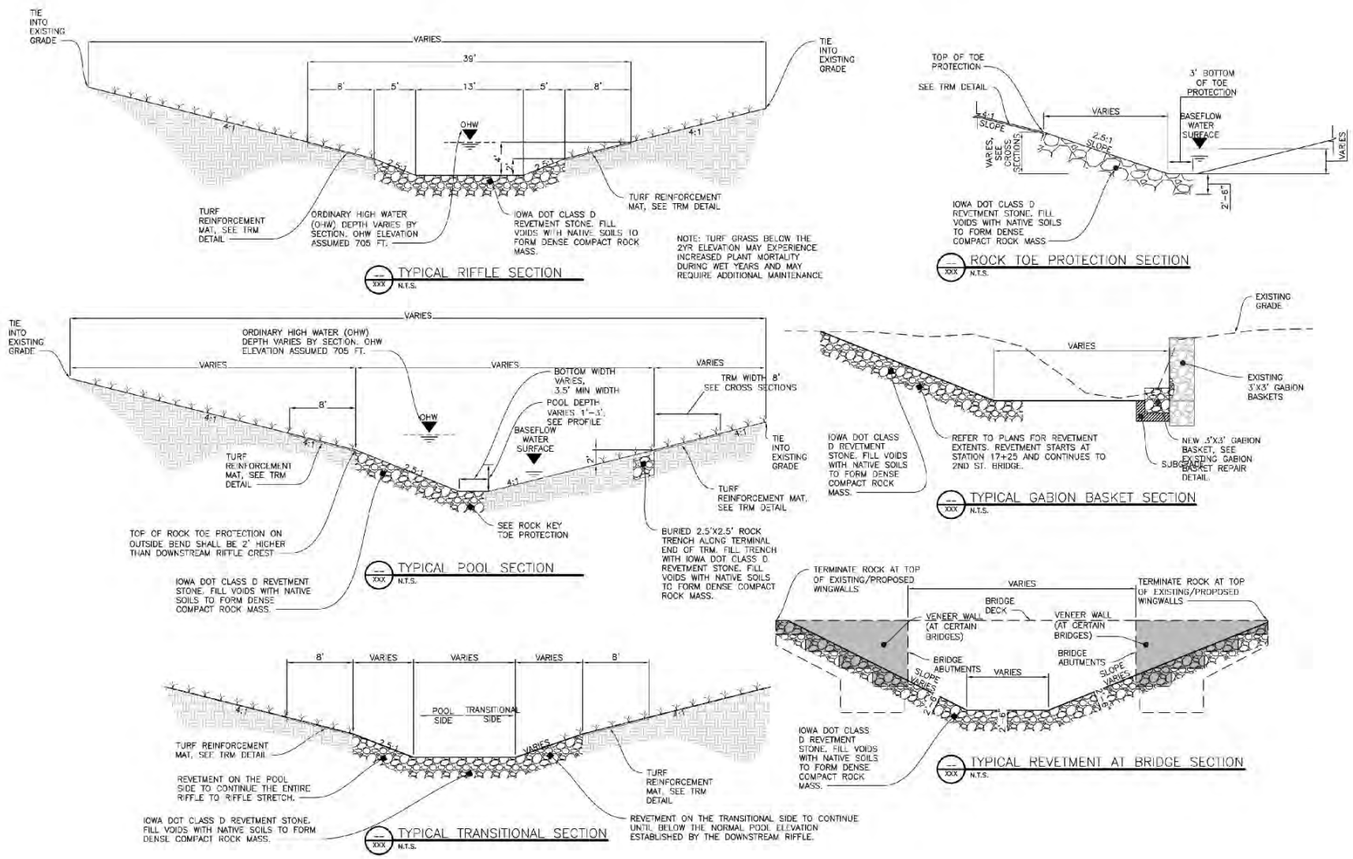

TYPICAL STREAM CROSS SECTION
PROPOSED ACTION ALTERNATIVE

FIGURE 8

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FIGURE 8. TYPICAL STREAM CROSS-SECTION

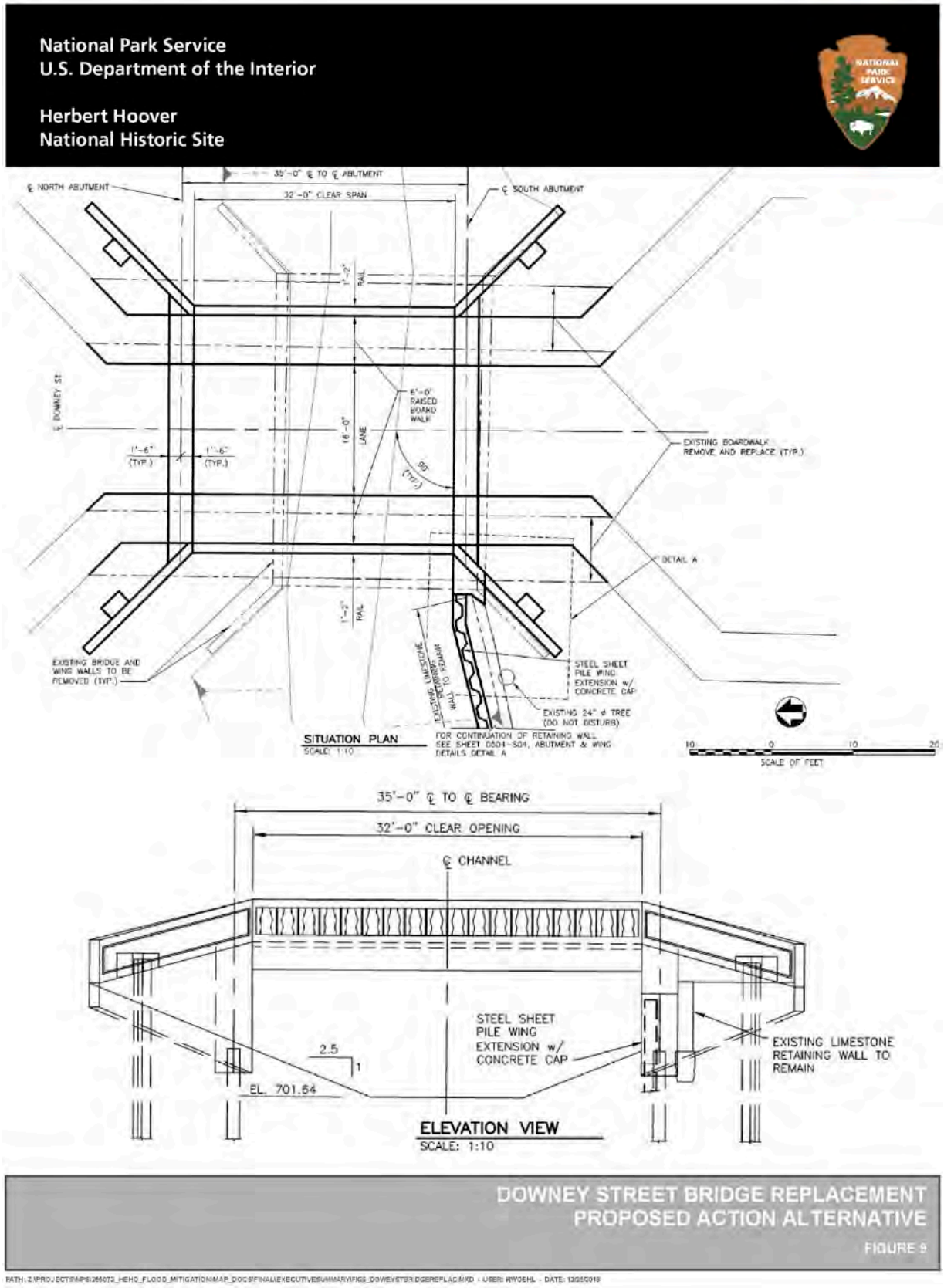

FIGURE 9. DOWNEY STREET BRIDGE REPLACEMENT

Hoover Creek limestone retaining wall. The existing Hoover Creek limestone wall is located on the right bank of Hoover Creek beginning in the southwest corner of the Downey Street Bridge extending upstream for approximately 115 feet. It was constructed in 1939 as part of the regrading of Hoover Creek to facilitate the flagstone walk and area around the Statue of Isis.

PHOTOGRAPH 6. LIMESTONE RETAINING WALL ADJACENT TO DOWNEY STREET BRIDGE.

The eastern most (downstream) 40 feet of the Hoover Creek limestone wall (extending from near the existing right bank Downey Street Bridge abutment) maintains a reasonably straight horizontal alignment and plumb vertical orientation (see photograph 6).

The western most (upstream) 75 feet is not in sound condition, either from a horizontal alignment perspective or from vertically plumb condition.

The eastern most (downstream) 40 feet (approximate) would remain in place (see figure 10). As part of the reconstruction of Downey Street Bridge, a 15.5-foot-long protective wall would be constructed from the new bridge abutment and adjacent to the existing wall that is exposed to Hoover Creek. The protective wall allows channel grading and bridge construction to occur and protects the foundation of the existing wall by preventing undermining from Hoover Creek during higher flow events.

The western most (upstream) 75 feet of the existing limestone wall would be removed and its limestone salvaged. Beginning from the upstream end of the 40-foot-long limestone wall left in place, approximately 45 feet of new cast-in-place concrete wall would be constructed on the same alignment as the existing limestone wall. The replacement of this section of wall was designed to maintain the historic character of the cultural landscape. The cast-in-place concrete wall would be faced with limestone salvaged from the removal of the existing limestone wall.

PHOTOGRAPH 7. EXISTING EXPOSED UTILITY LINES BENEATH DOWNEY STREET BRIDGE.

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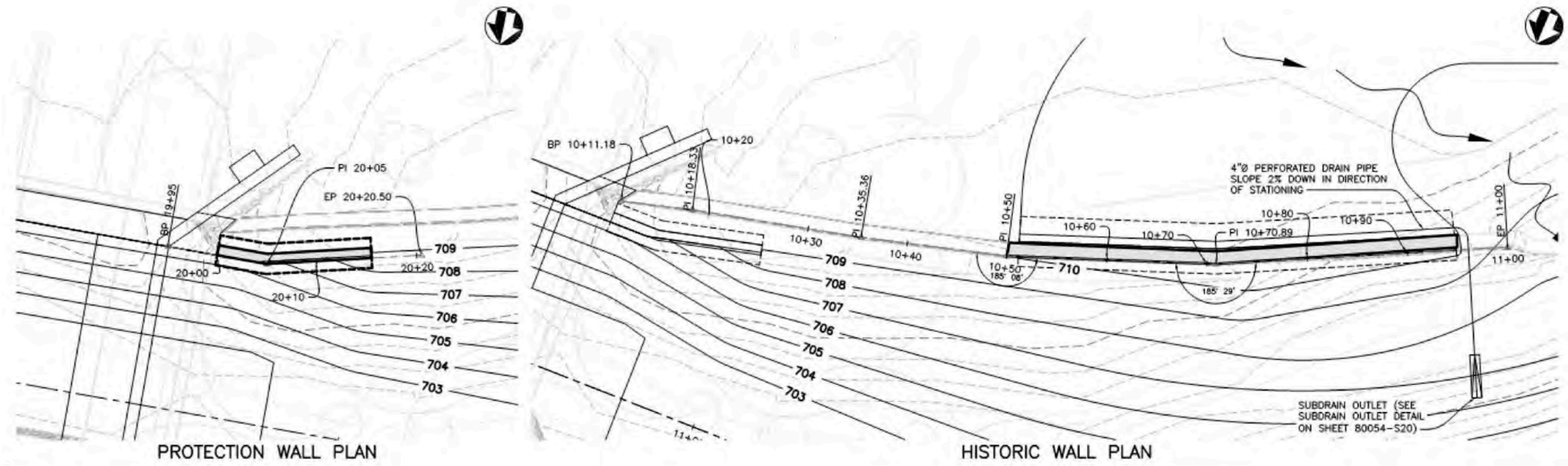

HOOVER CREEK LIMESTONE RETAINING WALL
PROPOSED ACTION ALTERNATIVE

FIGURE 10

FIGURE 10. HOOVER CREEK LIMESTONE RETAINING WALL

Utility relocations. The existing sanitary sewer line and water line exposed beneath Downey Street Bridge (see photograph 7) would be relocated prior to demolition of the bridge. The 6-inch-diameter water line would be rerouted via trenchless hydraulic directional drilling under Hoover Creek, east of the bridge. The 8-inch-diameter sanitary sewer line would be rerouted eastward, under Parkside Drive via trenchless boring with the remaining rerouted line to be open trenched, to tie into the existing sanitary system at 2nd Street.

There are 12 known stormwater outfalls within the proposed section of Hoover Creek reconstruction. These outfalls would remain as individual or combined outfalls into the channel. The existing stormwater discharge pipes would be intercepted at the top bank elevation and a manhole installed. A discharge pipe of equal or greater diameter of the existing outfall would be constructed to allow for discharge into the reconstructed channel at the bottom of the channel. This would provide a uniform appearance with minimal reconstructed bank disturbance.

Earthen sound mitigation berms. Earthen sound mitigation berms would be constructed using excess spoil material. Excess is material that cannot be used as part of fill required for other project elements. The earthen sound mitigation berms were designed to provide a cost-effective method to use excess spoil material, to avoid legal ramifications of removing soil from a National Historic Site, and to provide potential sound mitigation benefits. The earthen sound mitigation berms would be seeded relative to their surroundings and would be shaped to blend into existing topography to the greatest extent possible. To soften the visual impact of the earthen sound mitigation berms, the designs include flattening of the grading at the ends of the berms and contouring the berm alignments to follow along existing rounded ridge lines. Drainage patterns have been considered, and the earthen sound mitigation berm layout would not impede existing stormwater routing. The two flattop earthen sound mitigation berms would be approximately 10 to 15 feet tall, and would be constructed along Parkside Drive and Interstate 80 near the site property lines (see figure 6) to best address the main source of noise. The earthen sound mitigation berms would have dimensions up to 900 feet long and 300 feet wide. The earthen sound mitigation berms would have a footprint of approximately 11.8 acres. The earthen sound mitigation berms would be seeded with a native seed mix representative of the reconstructed prairie species composition and would be free from invasive and non-native species.

Construction access, staging areas, and site fencing. Construction is anticipated to occur over 7 months from September 2019 to March 2020. The staging area was selected to minimize visitor experience disruptions (see figure 6). Chain-link fencing would be erected to direct pedestrians to areas free from construction. Construction activity limits would be set to allow adequate workspace and to allow construction sequencing. Construction information signs would be incorporated. During construction, visitors would not be able to use the bridge as a pedestrian route over Hoover Creek, which is the primary public pedestrian route between the visitor center, the Library Museum, the Isis Statue, and the Friends Meetinghouse. The construction would disrupt the annual 'A Christmas Past' event, which brings in 3,000 to 4,000 visitors, and has the potential to disrupt school tour season if construction occurs into April and May (approximately 4,000 visitors). Pedestrians would be directed away from the area. Approximately 5,700 linear feet of temporary haul roads would be necessary to transport the excess spoil material from the off-channel detention basin and the stream improvements to the earthen sound mitigation berm locations (see figure 6). The temporary haul roads would be 20 feet wide and have a 2-foot-wide ditch on either side. Of the 5,700 feet of haul roads, 2,639 feet of haul roads would be incorporated into the earthen sound mitigation berms. Table 1 summarizes the temporary haul road locations and lengths.

TABLE 1. TEMPORARY HAUL ROAD LOCATIONS AND LENGTHS

Temporary Haul Road Location	Length (feet)
North earthen sound mitigation berm	379
South earthen sound mitigation berm	2,260
Downey Street	367
Farmstead driveway	687
Mowed prairie trail	233
Prairie	1,811
Total	**5,737**

Revegetation. All areas disturbed because of construction would be stabilized and re-vegetated with native seed mixes representative of the areas adjacent to the disturbance. These areas include disturbance related to construction of all project components including the construction access and staging areas and all construction activity limits. To reduce and minimize potential for invasive species, disturbed soils would be revegetated, stabilized, and maintained as soon as possible to prevent the germination and growth of invasive plants. To prevent introduction of invasive plants, the landscape will be revgetated with weed-free local native plant seed mixes. Tree plantings would occur to replace unavoidable tree removal that would be required by the proposed action. Tree plantings would occur in number, type, and location consistent with the *Herbert Hoover National Historic Site Cultural Landscape Report* (NPS 1995).

2.3 ALTERNATIVES CONSIDERED BUT DISMISSED

The National Park Service analyzed various options on how to minimize flood risk associated with Hoover Creek flooding while maintaining historic site context. Some of these options were based on the concepts presented in the *Final Hoover Creek Stream Management Plan* (NPS 2006a). These concepts were determined to be unfeasible and therefore not carried forward for analysis in this environmental assessment.

During planning stages, alternatives for off-channel detention options, conveyance under and around the Downey Street Bridge, improvements to the existing limestone retaining wall (located at the southwest corner of the Downey Street Bridge), and earthen sound mitigation berms were considered. The following summarizes these options and the reason for dismissal from further evaluation:

- Off-channel detention alternatives
    - Expanded detention areas to the west and north of the preferred off-channel detention location – Added detention area provided better flood mitigation but cost was a factor.
    - Relocation of Hoover Creek for one large detention area – No additional gain in flood mitigation but increased environmental impact.
- Downey Street Bridge conveyance alternatives
    - Replace bridge with reinforced concrete boxes – Not consistent with cultural landscape with no advantage of flood mitigation effects.
    - Replace bridge with same span length but thinner deck – Not as effective flood mitigation.
    - Replace bridge with pedestrian bridge crossing – Not consistent with cultural landscape.
- Hoover Creek limestone retaining wall alternatives

  - Complete removal and replacement of limestone wall – Total loss of cultural resource characteristics.
  - Minor wall improvements and repairs with addition of drains, riprap, and support – Long term stability would be questionable and not compatible with bridge reconstruction.
- Earthen sound mitigation berms alternatives
  - Disposal of excess soil material on Thompson Farm – Farmstead and stream corridor layout provides limited access, transport, and surface disposal area, resulting in potential impact on surface drainage patterns. Less accommodating terrain requiring fill over a larger surface area. Increased potential surface disturbance and spread of invasive species.
  - Three earthen sound mitigation berms – Impacts associated with reduced access to city water main due to fill over the mainline. Increased potential seasonal safety hazard for wind-tunnel snow drifting along Interstate 80.
  - Off-site dispersal of soil material – Regulatory and legal considerations as well as cost for removal, transport, and location and available capacity of disposal facilities.

2.4 RESOURCE PROTECTION MEASURES

To minimize impacts related to the proposed action alternative, the National Park Service would implement mitigation measures whenever feasible. Subject to the final design and approval of plans by relevant agencies, mitigation measures would include but would not be limited to the items in Appendix A.

CHAPTER 3: AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the affected environment associated with the no-action alternative and the proposed action. The intent is to provide an analytical basis for comparing the alternatives and the impacts that would result from implementing these alternatives, which is presented in chapter 4.

3.2 AFFECTED ENVIRONMENT

3.2.1 Cultural Resources

Cultural Landscapes

The Herbert Hoover National Historic Site is the birthplace of President Herbert Hoover. The site was established in 1965 and was listed in the National Register of Historic Places as a National Historic Landmark in 1966. The site is divided into six landscape management areas. These areas are the historic core, the Gravesite, the Library-Museum, the loop drive, the rural/agricultural setting, and the visitor contact and park support area (also referred to as the visitor center/park support area) see figure 11.

The historic core is the historic area surrounding the boyhood home of President Hoover. This area encompasses the historic resources that span "the entire period of Herbert Hoover's life" (NPS 1995). The preserved landscape features include the "spatial organization of streets, street trees, sidewalks, and fences" (1995). These features reflect the historic patterns of development of the historic core, and contribute to the "integrity of feeling and design" of the site (1995).

The Gravesite is the burial place of President Herbert Hoover and his wife, Lou Henry Hoover. The Gravesite was completed in 1966 and "retains its original strong visual relationship to the historic core, the loop drive, and picnic area" (NPS 1995).

The Library-Museum "contributes to integrity for the post-presidential sub-period" (NPS 1995) of the site. The area includes the Library-Museum and the Library Association Building. President Hoover was involved in the creation of the Library-Museum throughout its development and attended its dedication. The Library-Museum has changed "substantially since that period with the several additions to the building" (NPS 1995).

The loop drive area "retains strong associations with Herbert Hoover, who attended celebratory functions in the area" (NPS 1995). Hoover "attended the Boy Scout dedication [of the picnic shelters] and lunch in his honor to celebrate his eightieth birthday" (NPS 1995).

The rural/agricultural setting includes the Isaac Miles Farm, Thompson Farm, and prairie. "Both the Isaac Miles and the Thompson farms retain aspects of integrity of location, design, association, workmanship, feeling, materials, and setting" (NPS 1995). "The prairie has no Hoover associations" (1995). "Originally part of the Isaac Miles Farm, the prairie overlays historic cultivated fields that existed during the period of significance" (NPS 1995). The presence of the constructed prairie "slightly diminishes the integrity of the agricultural setting for the historic core, [Library-Museum], the [G]ravesite, the Isaac Miles Farm, and the Thompson Farm" (NPS 1995). The prairie serves as an "open space buffer for the historic core" (NPS 1995).

"The visitor contact and park support area does not contribute to the integrity of the [site]" (NPS 1995). "The area does, however, have traditional site entry features" and has the "site's first commemorative feature, a small boulder that was donated to the site in 1929" (NPS 1995).

Historic Structures

The site contains 75 historic-age structures that are contributing elements to the character, feeling, and design of the Herbert Hoover National Historic site (NPS 1995; NPS 2006c). These structures represent a period of significance beginning with Hoover's birth in 1874 and ending with the completion of the Gravesite design in 1966. The historic structures of the site of particular relevance to the proposed action include the Birthplace Cottage, the Library-Museum, Gravesite, the Downey Street Bridge, a relocated and restored Quaker meeting house (the Friends Meetinghouse), two farmstead clusters (NPS 2006c), several nineteenth century residences (some are in their original locations, others have been relocated to the site), a representation of a nineteenth century blacksmith shop (built in 1957), a relocated and restored schoolhouse (moved in 1968), picnic shelters, and comfort stations (built in 1952). In addition, the Birthplace Cottage is individually listed in the National Register of Historic Places (photograph 8).

PHOTOGRAPH 8. BIRTHPLACE COTTAGE.

Herbert Hoover was born in the Birthplace Cottage in 1874, where he lived until the family moved in 1879. The Hoovers acquired the Birthplace Cottage in 1935 and developed the site for public use. The Birthplace Cottage is individually listed as a National Historic Landmark. The Hoovers acquired additional land to site the Isis Statue across Hoover Creek from the Birthplace Cottage (photograph 9). The Isis Statue "was a gift of Belgian children, refugees, and soldiers to Herbert Hoover in gratitude for his World War I relief program" (NPS 1995).

PHOTOGRAPH 9. ISIS STATUE.

Groundbreaking for the Library-Museum was held in 1959 and the Library-Museum was opened to the public in 1962 (NPS 1995). The Library-Museum contains archival collections, President Hoover's papers, oral histories, photographs, memorabilia, and scholarly articles.

After Hoover's death in October 1964, he was buried at the Gravesite and his wife was reinterred beside him. The vista between the Birthplace Cottage and the Gravesite is maintained as open space to retain the visual and ideological connection between the two areas. A visual corridor that extends between the Birthplace Cottage and the Gravesite forms a significant element of the cultural landscape.

The Downey Street Bridge was constructed of wood between 1874 and 1899 (NPS 2006c). In 1917, the bridge was rebuilt in concrete (2006c). The bridge railings were replaced with wood in 1985 (2006c). The bridge today does not retain its original integrity of material or workmanship.

According to the *Herbert Hoover National Historic Site Cultural Landscape Report* (NPS 1995), "the crossing of the creek at Downey Street, however, is a character-defining feature of the site."

Following along Hoover Creek is the limestone retaining wall that was built in 1939 (NPS 1995). This wall was constructed to facilitate the flagstone walk and area around the Isis Statue. The retaining wall "associated with the creek and developed during the period of significance. . .[has] deteriorated to a point where [it] no longer contribute[s] to the integrity of the site" (NPS 1995).

The Friends Meetinghouse was moved to the park in 1964 and restored in 1966 (NPS 1995). "A federal building designed to accommodate both the U.S. Post office and the visitor center was constructed in 1970–71" (NPS 1995).

The Thompson Farm is a contributing feature of the site. "The significance and integrity of the Thompson Farm are related to its vernacular layout and character" (NPS 1995). Character-defining features of the Thompson Farm include the following (NPS 2006c):

- Thompson Farm House (HS-80, IDLCS 70097)
- Thompson Farm Garage (HS-81, IDLCS 70098)
- Thompson Machine Shed (HS-84, IDLCS 70101)
- Thompson Brooder House (HS-85, IDLCS 70102)
- Thompson Hog House/Corn Crib (HS-86, IDLCS 70103)
- Thompson Corn Crib (HS-87, IDLCS 70104)
- Thompson Barn (HS-88, IDLCS 70105)
- Thompson Chicken House (HS-89, IDLCS 70106)
- Thompson Storage Bins (HS-92, IDLCS 70109)
- Thompson Pumps (HS-83, IDLCS 070100)
- Thompson Fence/Entrance Gate (HS-90, IDLCS 070107)
- Thompson Farm fence posts in house yard
- Thompson Farm drives
- Thompson Cattle Guard (HS-91, ICLCS 70108)
- Thompson Walkways (HS-82, IDLCS 70099)

The Isaac Miles Farm is another contributing feature of the site. The "Isaac Miles Farm is significant for its associations with the Hoover family and also contributes to an understanding of the rural setting of the birthplace" (NPS 1995).

Character-defining features of the Isaac Miles Farm include the following (NPS 2006c):

- Miles, Isaac, Farmhouse (HS-11, IDLCS 06151)
- Miles, Isaac, Bank Barn (HS-12, IDLCS 06152)
- Miles, Isaac, Corn Crib (HS-13, IDLCS 06153)
- Miles, Isaac, Garage (HS-14, IDLCS 06154)
- Miles, Isaac, Shed (HS-15, IDLCS 06155)
- Miles, Isaac, Windmill (HS-20, IDLCS 06158)
- Miles, Isaac, Pole Shed/Machine Shed (HS-53, IDLCS 70095)
- Miles, Isaac, Chicken House (HS-54)
- Miles, Isaac, Hand Pump (HS-51, IDLCS 070093)
- Isaac Miles Farm drives
- Miles, Isaac, Concrete Sidewalks (HS-52, IDLCS 70094)

3.2.2 Floodplain and Wetlands

Floodplain. The Hoover Creek watershed flows northwest to southeast and has a drainage area of about 2.5 square miles at the point where it flows through the site (measured at the pedestrian bridge). The Hoover Creek floodplain is mapped Zone A by the Federal Emergency Management Agency from where Hoover Creek enters the site to Downey Street Bridge. Zone A areas provide an area susceptible to the 1 percent annual chance of flooding (100-year flood event). Downstream of the Downey Street Bridge, the site is within an area mapped Zone AE, for which base flood elevations are provided (see chapter 1, figure 3). The 100-year event elevation ranges from 717.0 feet at the pedestrian bridge to 715.6 feet at Downey Street Bridge. The proposed project elements and temporary construction areas are within the Federal Emergency Management Agency designated 100-year floodplain.

Hoover Creek is subject to flash flooding. The creek is actively incising (deepening without substantial widening), which results in eroded and unstable stream banks that interfere with normal stream functions. Hoover Creek begins to flood, that is, escape its confining banks, at approximately a 2-year recurrence interval. A 2-year recurrence interval concept relates to the chance that a flood of a certain size would occur. A 2-year recurrence interval is not one that occurs every 2 years, but rather has a 50 percent chance of occurring in any given year. The occurrence of a flood does not reduce the chances of another flood occurring within the same year.

Hoover Creek is conveyed under five bridges: West Main pedestrian bridge, a pedestrian bridge within the site; Downey Street Bridge; Parkside Drive Bridge; and 2nd Street Bridge. There is no rock riprap associated with the bridges. The bridge abutments for the pedestrian bridge, Downey Street Bridge, and Parkside Drive Bridge are located above the ordinary high water mark. There is a small section of metal sheet piling on one bank of the 2nd Street Bridge.

There are 14 storm sewer outfalls adjacent to the channel. The outfalls consist of small diameter pipe that extend from the channel bank; the majority are located above the ordinary high water mark. These outfalls are discharges associated with drainage from residential property site drainage and basement/crawl space sump pumps.

Wetlands. The wetlands impact topic discusses both stream channel related resources and other wetland resources. Hoover Creek is a tributary of the West Branch Wapsinonoc Creek and runs through the site. Hoover Creek is a perennial (flows year round) stream with gradient (slope) of 25 percent, or 0.0025 foot of vertical drop for every 1 horizontal foot of channel length. Hoover Creek is classified as a riverine lower perennial unconsolidated bottom intermittently exposed wetland (R2UBG), and totals 0.77 acre within the project area (HDR 2018a). A riverine freshwater system includes deepwater habitats contained within a channel; upland islands or palustrine wetlands can also be found in the channel but are not included in the riverine system. The lower perennial subsystem is characterized by a low gradient and some water flows all year, except during years of extreme drought (Federal Geographic Data Committee 2013).

A functional assessment was performed on Hoover Creek using the State of Iowa Stream Mitigation Method (USACE 2017). The assessment determined that the existing functional condition is moderately functional. Increased surface runoff rates and volumes have resulted in slumping stream banks, continual erosion, down-cutting of the streambed, and poor water quality from high sediment loading. Hoover Creek is not self-sustaining and does not function as a healthy stream.

Non-riverine wetlands were delineated on the banks adjacent to Hoover Creek. A total of 0.04 acre of palustrine emergent temporarily flooded wetlands are present (HDR 2018a). Eleven individual palustrine wetlands are fragmented along sloughed portions of the incised channel of Hoover Creek and display a monotypic invasive vegetation composition (reed canary grass). Palustrine

emergent wetland systems consist of nontidal wetlands dominated by rooted herbaceous vegetation that grow in wet soil (Federal Geographic Data Committee 2013).

The palustrine wetlands found along Hoover Creek provide limited habitat, hydrologic, and water quality functions. Therefore, the palustrine wetlands do not provide valuable habitat for listed threatened and endangered species. In addition, the wetlands provide minimal recreation or historical value due to their small size and the wetlands are likely the result of bank sloughing and are not a representation of wetlands that would have been historically present along non-degraded stream channels. The wetlands provide low hydrologic values because the small wetlands do not provide a storage function and would not contribute to flood control or groundwater recharge. In addition, the water quality functions and values are minimal due to their small size and location in an incised channel, resulting in limited filtration of sediments and associated pollutants (HDR 2018a).

3.2.3 Visitor Use and Experience

In 2017, the site had 144,619 visits. Since 1971, the site has had an average of 223,132 visitors per year. Visitation peaked at 394,900 visitors in 1973. In the last 10 years (2008 to 2017) visitation has declined to an average of 140,328 visitors per year (NPS 2018d).

The National Park Service surveys a selection of visitors every year. In 2017, 100 percent of respondents to the survey were satisfied overall with the appropriate facilities, services and recreational opportunities at the site, giving a good or very good rating (NPS 2017b).

The visitor experience goals were outlined in the *Herbert Hoover National Historic Site Long-Range Interpretive Plan* (NPS 2008). The following express the visitor experience goals that relate to and could be affected by Hoover Creek flooding.

> All park visitors should have the opportunity to: [. . .]
>
> - Access the park facilities and programs given the full range of visitor abilities and disabilities.
> - Enjoy a variety of recreational activities that do not interfere with other people and do not adversely impact the park's resources.
> - Safely enjoy their visit by learning about and following safety guidelines and park rules and regulations.
> - Use all their senses during their park experience.
> - Find opportunities for solitude and personal discovery. (NPS 2008)

One of the purposes of the site is to "provide an accessible, dignified, and spacious setting in which visitors can experience the Birthplace Cottage, Gravesite, Presidential Library-Museum, and other resources" (NPS 2004). The visitor experience can be passive, such as at the Gravesite, or interactive such as at the Birthplace Cottage or Blacksmith Shop. The vista between the Birthplace Cottage and the Gravesite represents coming from simple beginnings to achieve great things.

The National Park Service maintains a visitor center to greet visitors and guide their visit. There is no fee to visit the NPS-managed portions of the site; however, visitors must pay a fee to access additional resources of the Library-Museum (NPS 2017a).

The Friends Meetinghouse allows visitors to experience quiet and contemplation, while the Schoolhouse promotes education and learning; values that were important in Hoover's life.

The Isis Statue represents Hoover's empathy and concern for the welfare of children on a global scale. The reconstructed prairie provides an opportunity for visitors to experience the natural and rural aesthetics that helped shape Hoover's interest in the natural world.

In addition to the historical buildings and structures, the site has two picnic shelters, paved trails, the pedestrian bridge, the Downey Street Bridge, and prairie trails for active recreation. The outer Hebert Hoover Prairie Trail was designated as a National Recreation Trail in 1981.

3.2.4 Wildlife Habitat

An 81-acre tallgrass reconstructed prairie was established in 1971. It is included in the NPS Heartland Inventory and Monitoring Network. Species include prairie grasses such as big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), little bluestem (*Schizachyrium scoparium*), side-oats grama (*Bouteloua curtipendula*), and Canada wildrye (*Elymus canadensis*); and wildflowers such as Canada anemone (*Anemone canadensis*), coneflowers (*Echinacea purpurea*), asters (*Aster* spp.), goldenrods (*Solidago* spp.), and milkweed (*Asclepias* spp.). Nonnative plants and woody vegetation have degraded portions of the prairie, but the National Park Service is actively removing undesirable species through methods including prescribed fire (the last prescribed fire occurred in 2011), physical removal, mowing, and herbicides. Additionally, the National Park Service is working to increase the plant species diversity of the original planting to fill in functional and seasonal blooming gaps (NPS 2003). The National Park Service monitors breeding birds and prairie vegetation to evaluate the quality of habitat that the prairie provides. In addition, the prairie offers more than 2 miles of trails through the reconstructed prairie for hiking, cross-country skiing, snowshoeing, and nature studying. The prairie is overseeded with native plant seeds to promote their distribution. The prairie provides habitat for pollinators, grassland nesting birds, and other species common to the area.

In most areas along Hoover Creek, the riparian corridor is less than 50 feet wide and transitions to maintained turf grass. The riparian corridor along Hoover Creek provides habitat for wildlife, including migratory birds and bats. The riparian corridor consists of a wooded overstory and an understory that includes both native and non-native trees, and herbaceous and shrubby plant species. Trees found along the riparian corridor through the park include a wide variety of species because of different levels of management in different areas of the site. Tree species include, but are not limited to: green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), silver maple (*Acer saccharinum*), walnut (*Juglans nigra*), red cedar (*Juniperus viginiana*), basswood (*Tilia americana*), honey locust (*Gleditsia triacanthos*), weeping willow (*Salix sp.),* American elm (*Ulmus americana*), red elm (*Ulmus rubra*), Siberian elm (*Ulmus pumila*) (invasive non-native), redbud (*Cercis canadensis*), hackberry (*Celtis occidentalis),* Colorado spruce (*Picea pungens*) (non-native), white fir (*Abies concolor*) (non-native), and arborvitae (*Thuja occidentalis*). The herbaceous vegetation is dominated by reed canary grass (*Phalaris arundinacea)*, smooth brome (*Bromus inermis*), stinging nettle (*Urtica dioica*), and Kentucky bluegrass (*Poa pratensis*).

FIGURE 11. LANDSCAPE MANAGEMENT AREAS

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the environmental consequences associated with the no-action alternative and the proposed action. The intent is to provide an analytical basis for comparing the alternatives and the impacts that would result from implementing these alternatives. First, the methodology for conducting the analysis is explained. Then, the results of the evaluation of environmental consequences on cultural resources, floodplain and wetlands, visitor use and experience, and wildlife habitat are presented. Applicable best management practices and mitigation measures are presented in Appendix A.

In accordance with the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR 1500–1508), the environmental consequences analysis considers direct impacts and their duration, intensity, type, and context; indirect impacts; cumulative impacts; and measures to mitigate impacts.

4.2 METHODOLOGY

4.2.1 Assessing Impacts of the Alternatives

The analysis of potential impacts on cultural resources, floodplain and wetlands, visitor use and experience, and wildlife habitat includes an evaluation of the impacts of implementing either the no-action alternative or the proposed action. The methods used to assess potential impacts are based on a review of pertinent literature and NPS studies; information provided by on-site experts and other agencies; professional judgment; and NPS staff knowledge and insight.

4.2.2 Assessing Cumulative Impacts

Cumulative impacts were assessed by considering the impacts of the proposed action in addition to impacts associated with other past, present, and reasonably foreseeable future actions in and near the site. To support this analysis, information was gathered on ongoing and future NPS actions. Because some of the future projects are in an early planning phase, the evaluation of cumulative impacts is qualitative. Past, ongoing, and future actions that have the potential to have a cumulative effect in conjunction with the proposed action include the following:

Past Actions. There are 14 storm sewer outfalls adjacent to the channel. The outfalls consist of small diameter pipe that extend from the channel bank; the majority are located above the ordinary high water mark. The origins of these outfalls include drainage residential properties stormwater and basement/crawl space sump pumps.

Flood mitigation plans have been developed for the City of West Branch and in Cedar County (Cedar County 2016), and the City of West Branch has implemented stormwater best management practices (City of West Branch 2015).

The City of West Branch has planned for implementation of stormwater system and drainage improvements; stream bank stabilization, grade control structures, and channel improvements; drainage study and stormwater master plan; flood-prone property acquisition; and drainage districts to improve land for agriculture and sanitary purposes (City of West Branch 2003).

Current Actions. At the site, the National Park Service is creating and repairing trails in the reconstructed prairie. A new 4-foot-wide access would be mowed to eliminate a steep hillside along a current trail that runs from the Isaac Miles farm to the Gravesite. The access would be used by

park maintenance vehicles traveling to Miles Farm. A new, 15-foot-wide firebreak would be constructed near the Gravesite (NPS 2018c).

Future Foreseeable Actions. At some point in the future, the National Park Service may consider a plan for a concrete sidewalk along the east side of Parkside Drive on NPS-owned property. The sidewalk would allow for an aesthetic, safe, and pleasing walking experience, providing views of the site.

The National Park Service plans to install a new alarm system throughout the site and is scheduled to start concurrently with the proposed action. The alarm system would provide alerts for high water in Hoover Creek, flooded basements, intrusions, and fire protection. The alarm project needs to install new fiber optic lines across Hoover Creek to the Meetinghouse, the Isis Statue, PT Smith House, Isaac Miles Farm, and the maintenance shop. The National Park Service is working to install the fiber optics within the Downey Street Bridge replacement and the new sewer line.

4.3 ENVIRONMENTAL CONSEQUENCES

The impact discussion that follows addresses direct impacts (in terms of duration, intensity, type, and context) and indirect impacts, as well as any cumulative impacts for the no-action alternative and the proposed action. A complete list of mitigation measures and best management practices for the proposed action is included in Appendix A.

4.3.1 Cultural Resources

No-Action Alternative. Under the no-action alternative, the visual corridor that connects the Birthplace Cottage and the Gravesite would continue to be adversely temporarily affected by Hoover Creek flooding. Flooding approaches the Library-Museum, which prevents storing archives on the lower shelves of the first floor archival storage room.

Cumulative. Although other past, present, and reasonably foreseeable future actions have affected, or could have the potential to affect, the cultural landscape and historic structures, the no-action alternative would have no impacts; therefore, there would be no cumulative impacts.

Proposed Action

Off-channel Detention Basin

Under the proposed action, the off-channel detention basin would be located in the northwest corner of the reconstructed prairie, between the Gravesite and Thompson Farm. The basin would be approximately 10.1 acres in size, and the edge and shape of the basin would vary to have a more natural appearance. The basin would be re-seeded with two different seed types and would include species similar the adjacent reconstructed prairie. Approximately 25 trees in the northeast corner of the basin would be removed.

Cultural Landscape. The location of the proposed off-channel detention basin falls entirely within the prairie sub-area of the rural/agricultural setting landscape management area. In addition to the 81-acre prairie, this landscape management area includes the Isaac Miles Farm and the Thompson Farm. The prairie, planted in native Iowa tallgrass, was established in 1971 over cropland associated with the Isaac Miles Farm (NPS 1995). Reconstructed after the historic site's period of significance (1874–1966), the prairie is not considered a character-defining feature of the rural/agricultural setting, and its presence "slightly diminishes the integrity of the agricultural setting for the historic core, [the Library-Museum], the [G]ravesite, the Isaac Miles Farm, and the Thompson Farm" (NPS 1995). Additionally, the off-channel detention basin would be within the prairie and, as proposed, would have a narrow border of prairie grass to screen views of the basin from the Thompson Farm to the west; the trees limiting the view from the Gravesite to the east would remain in place.

As a result of the off-channel detention basin's location within the prairie, a non-character defining feature of the rural/agricultural setting landscape management area, and the visual screening of the feature from adjacent areas, the proposed off-channel detention basin would not adversely affect the cultural landscape of the site.

Historic Structures. The historic structures near the proposed off-channel detention basin include the Thompson Farm and the Gravesite. The Thompson Farm is a contributing feature of the site. The farm lies immediately southwest of the proposed off-channel detention basin. Character-defining features of the Thompson Farm include the following (NPS 2006c):

- Thompson Farm House (HS-80, IDLCS 70097)
- Thompson Farm Garage (HS-81, IDLCS 70098)
- Thompson Machine Shed (HS-84, IDLCS 70101)
- Thompson Brooder House (HS-85, IDLCS 70102)
- Thompson Hog House/Corn Crib (HS-86, IDLCS 70103)
- Thompson Corn Crib (HS-87, IDLCS 70104)
- Thompson Barn (HS-88, IDLCS 70105)
- Thompson Chicken House (HS-89, IDLCS 70106)
- Thompson Storage Bins (HS-92, IDLCS 70109)
- Thompson Pumps (HS-83, IDLCS 070100)
- Thompson Fence/Entrance Gate (HS-90, IDLCS 070107)
- Thompson Farm fence posts in house yard
- Thompson Farm drives
- Thompson Cattle Guard (HS-91, ICLCS 70108)
- Thompson Walkways (HS-82, IDLCS 70099)

Within the prairie, the proposed off-channel detention basin would be located across the path that leads to the farmstead. The prairie is not a character-defining feature of the landscape, and once the re-seeding of the basin takes place, it is not anticipated that the basin would have any visual impacts on the nearby historic structures. As a result, the proposed action would not adversely affect the Thompson Farm as a contributing feature of the site.

The Gravesite is a contributing feature of the site that is located immediately east of the proposed off-channel detention basin. Character-defining features of the Gravesite include the following (NPS 2006c):

- Hoover Graves (HS-41, IDLCS 006174)
- Gravesite Memorial Benches (HS-46, IDLCS 070088)
- Gravesite Memorial Flagpole (HS-47, IDLCS 070089)
- Concrete approach walk at Gravesite
- Concave, elliptical granite block walk with marble curb and end blocks
- Vista

The Gravesite is bounded on the southern and western sides with a vegetative buffer that shields the site from the surrounding prairie. The view of the proposed off-channel detention basin would be restricted by the existing vegetative buffer and, therefore, would not adversely affect the Gravesite.

Stream Channel Improvements

The stream channel improvements would involve the rehabilitation of Hoover Creek from the pedestrian bridge to the upstream end of the 2nd Street Bridge. Approximately 75 trees (of an estimated 500 on the site) along Hoover Creek would be removed as part of the proposed action.

Tree plantings would occur to replace unavoidable tree removal that would be required by the proposed action. Tree plantings would occur in number, type, and location consistent with the *Cultural Landscape Report* (NPS 1995).

Cultural Landscape. Relative to the cultural landscape, the proposed stream channel improvements span four landscape management areas: the historic core, the Library-Museum, the loop drive area, and the visitor center and park support area.

The presence of trees is noted as a character-defining feature of the site's historic landscape in the *Cultural Landscape Inventory* and *Cultural Landscape Report* (NPS 2006c; NPS 1995). Though replanting of trees and their maturation could minimize the impact on the landscape over time, the removal of approximately 75 trees from the banks of the creek would have a moderate impact on the landscape of two of the four adjacent landscape management areas.

Within the historic core landscape management area, the spatial organization of the streets and street trees is among the characteristics that contribute to the integrity of feeling and design of the area (NPS 2006c). As proposed, the removal of trees along both the north and south banks of Hoover Creek in the vicinity of Downey Street would have a moderate impact on the feeling and design of the historic core. Additionally, NPS consciously maintains the vista between the Birthplace Cottage in the historic core and the Gravesite, in addition to the views along Downey Street and Parkside Drive (NPS 2006c). The proposed stream channel improvements have the potential to adversely affect the appearance of the cultural landscape in those areas.

The stream channel improvements within the Library-Museum landscape management area would have a minimal effect on the viewshed of the resource because the proposed removal plan includes trees mainly on the north bank of the creek, leaving trees on the south bank largely in place north of the Library-Museum. The landscape of the Library-Museum has changed "substantially since [the post-presidential sub-period] with the several additions to the building" that do not contribute to the integrity of the site (NPS 2006c). Therefore, the proposed stream channel improvements would have a negligible effect on the integrity of design and feeling of the Library-Museum area.

The proposed stream channel improvements would affect the loop drive landscape management area, which currently appears as it did during Hoover's post-presidential years (NPS 2006c). The proposed tree removals in this area along the north and south banks of the creek would have a moderate impact on the landscape in the loop drive landscape management area. Relative to the visitor center and park support landscape management area, the proposed stream channel improvements would not have an adverse effect on this landscape management area, which does not contribute to the integrity of the site (NPS 2006c).

Historic Structures. The presence of trees is noted as a character-defining feature of the historic landscape, as noted in the *Cultural Landscape Inventory* and *Cultural Landscape Report* (NPS 2006c; NPS 1995). Over the years, episodes of replanting have occurred, but with deference to the location and type of vegetation historically present at the site. Approximately 75 trees along Hoover Creek would be removed as part of the proposed action, but the trees that would be left in place would maintain the arrangement of vegetation and provide similar visual screening between character-defining historic structures in the four landscape management areas adjacent to the creek and the historic landscape. The remaining trees would limit impacts on the viewsheds of the following character-defining features of the site (NPS 2006c):

- Hoover Birthplace Cottage (HS-01, IDLCS 00659)
- Herbert Hoover Birthplace Cottage Privy (HS-23, IDLCS 06160)
- Friends (Quaker) Meeting House (HS-03, IDLCS 06143)
- Isis Statue

Considering the limited visual impacts that the proposed tree removals would have on the viewsheds of character-defining historic structures, the proposed stream channel improvements would not have an adverse effect on historic structures because the viewsheds between the historic structures and the adjacent historic landscape would be maintained.

Downey Street Bridge Replacement

The proposed action involves the replacement of the Downey Street Bridge, which is located within the historic core landscape management area. Under the proposed action, the existing bridge and wing walls would be removed and replaced with a new 32-foot-long concrete bridge and four new wing walls. The bridge is considered a contributing historic resource to the site.

Cultural Landscape. The historic core is the historic area surrounding the boyhood home of President Hoover and includes historic resources that span "the entire period of Herbert Hoover's life" (NPS 1995). The preserved landscape features of the historic core include the "spatial organization of streets, street trees, sidewalks, and fences," which reflect the historic patterns of development of the historic core, and contribute to the integrity of feeling and design of the site (NPS 1995). It is noted that these features remain though some of the actual materials and species have changed (NPS 2006c). The location and profile of the replacement bridge is not expected to deviate from those of the historic-age bridge. Therefore, the proposed Downey Street Bridge replacement would have no adverse effect on the cultural landscape of the historic core because the historic circulation pattern would be maintained, and the replacement bridge would not introduce additional architectural or landscape elements to the historic landscape. The replacement of the Downey Street Bridge with an in-kind replacement would mitigate any adverse effect of the proposed action on the overall feeling and design of the historic core landscape.

Historic Structures. Replacement of the Downey Street Bridge, which is a contributing resource to the site, would have a direct adverse impact on the historic-age bridge itself (HS-26, IDLCS 06162). The Downey Street Bridge was originally constructed of wood between 1874 and 1899. In 1917, the bridge was rebuilt in concrete, and the bridge railings were replaced with wood in 1985 (NPS 2006c). Eventual replacement of the Downey Street Bridge has been a known necessity since the 1990s, and the *Cultural Landscape Report* recommends "document[ing] the current Downey Street [B]ridge to HABS/HAER standards and replace it with a bridge without concrete embankments that restrict stream flow" (NPS 1995). The proposed action would replace the Downey Street Bridge with a structure of similar design and materials to the concrete bridge erected at the crossing in 1917, the design of which remained in place and unaltered for almost 70 years (1917–1985). The design of the replacement bridge would minimize that impact of the removal of the historic structure to a high degree, but the removal would still result in a direct impact on the current historic-age bridge.

Hoover Creek Limestone Retaining Wall

The proposed action involves the partial replacement of the Hoover Creek limestone retaining wall, originally constructed in 1939. The proposed improvements include the construction of a protective wall adjacent to the existing wall and the removal of approximately 75 feet of the western-most portion of the existing wall. After the removal, a replacement wall would be built along the same alignment as the Hoover Creek limestone retaining wall. The wall would be constructed of cast-in-place concrete and faced with limestone salvaged from the original wall.

Cultural Landscape. The Hoover Creek limestone retaining wall is located within the historic core landscape management area. The proposed improvements to the wall would retain as much of the historic character of the wall itself, and thereby the cultural landscape, as possible. By facing the replacement wall with the salvaged limestone, the distinctive features and finishes that characterize the wall would be preserved, maintaining the materials of the structure historically visible along that stretch of Hoover Creek. The action would not affect historic circulation patterns, nor would

it introduce new or intrusive landscape features. As a result, the proposed improvements to the limestone retaining wall would not adversely affect the cultural landscape of the historic core landscape management area.

Historic Structures. The improvements to the Hoover Creek limestone retaining wall would result in a minimized impact on the historic structure itself. The wall was originally built in 1939 (NPS 1995). The eastern-most 40 feet of the wall are in reasonably good condition and would remain in place under the proposed action; the western-most 75 feet are in poor condition and are proposed to be rebuilt (see previous discussion). By facing the concrete replacement of a portion of the wall with salvaged limestone from the original structure, the wall would retain its historic finish and appearance. The use of the original historic materials to finish the replacement structure would mitigate potential adverse effects on the integrity of design, materials, and feeling of the retaining wall that the proposed partial replacement of the wall poses.

Utility Relocations

Under the proposed action, the 6-inch-diameter water line would be rerouted via trenchless hydraulic directional drilling under Hoover Creek, east of the bridge. The 8-inch-diameter sanitary sewer line would be rerouted eastward, under Parkside Drive, via trenchless boring, with the remaining rerouted line to be open trenched to tie into the existing sanitary sewer system at 2nd Street. New manholes and discharge pipes would be constructed at the 12 known stormwater outfalls.

Cultural Landscape. The proposed utility relocation of the sanitary sewer and water lines would create a temporary disturbance to the historic core and visitor center and park support landscape management areas. These utilities would be moved from beneath the Downey Street Bridge and rerouted to east of the bridge. The sanitary sewer line would be rerouted under Parkside Drive using trenchless boring. An open trench would be used to install the line so that it ties into the existing sanitary sewer system at 2nd Street. The water line would be rerouted using hydraulic directional drilling under Hoover Creek. Both the sanitary sewer and water lines would remain underground for the utility relocations as part of the proposed action and would not affect either the historic core or visitor center and park support area.

Historic Structures. No historic structures would be adversely affected because of the proposed utility relocation because both utility lines would avoid the existing resources and remain subsurface.

Earthen Sound Mitigation Berms

The proposed action includes the construction of two earthen sound mitigation berms within the rural/agricultural setting landscape management area. The two flattop berms would be approximately 10 to 15 feet tall, and would be constructed along Parkside Drive and Interstate 80 near the site property lines (see figure 6) to best address the main sources of noise. The south earthen sound mitigation berm as proposed would extend east to west along the southern boundary of the site, north of Interstate 80, and would curve to the northeast, where it would be adjacent to the westbound onramp for Interstate 80. The south earthen sound mitigation berm would be located within the prairie sub-area. The north earthen sound mitigation berm would be located north of the Isaac Miles Farm and west of Parkside Drive, and would fall within the Isaac Miles Farm sub-area. The earthen sound mitigation berms would have dimensions up to 2,250 feet long and 300 feet wide, and a footprint of approximately 11.8 acres. The berms would be constructed using excess spoil material, and seeded relative to their surroundings. The two earthen sound mitigation berms would be shaped to blend into existing topography to the greatest extent possible.

Cultural Landscape. The construction of the earthen sound mitigation berms would have a moderate adverse effect within the rural/agricultural setting landscape management area. Based on the recommendations set forth in the *Cultural Landscape Report*, while the prairie lacks "historical significance and integrity, [it] provides traditional countryside views and a rural, open space buffer for the historic core" and "…still provides a visual impression of open land" (NPS 1995). Vegetation, including mature trees, along the southern edge of the historic core (south of the P.T. Smith House), and extending west to the south of the Library-Museum and Gravesite areas, would limit the visibility and impacts of the earthen sound mitigation berms on those landscape management areas. However, the earthen sound mitigation berms as proposed would alter the terrain of the prairie sub-area, creating landscape features that did not previously exist on the open expanse of land during its use as agricultural fields or as a reconstructed prairie. The use of sympathetic seeding and shaping of the berms would help to minimize the visual impact of the berms as much as possible. While the earthen sound mitigation berms would reduce noise from nearby roadways and mitigate that particular intrusion on the rural/agricultural setting landscape management area, they would create a new feature that would moderately impact the cultural landscape of the area.

Historic Structures. The proposed berms would have moderate adverse effects in the form of visual impacts on the viewsheds of the Thompson Farm and Isaac Miles Farm, most notably to the Isaac Miles Farm, which is located between the two proposed earthen sound mitigation berms. Historic structures that would be affected by the proposed earthen sound mitigation berms include all character-defining features within the Thompson Farm and Isaac Miles Farm sub-areas. Character-defining features of the Thompson Farm include the following (NPS 2006c):

- Thompson Farm House (HS-80, IDLCS 70097)
- Thompson Farm Garage (HS-81, IDLCS 70098)
- Thompson Machine Shed (HS-84, IDLCS 70101)
- Thompson Brooder House (HS-85, IDLCS 70102)
- Thompson Hog House/Corn Crib (HS-86, IDLCS 70103)
- Thompson Corn Crib (HS-87, IDLCS 70104)
- Thompson Barn (HS-88, IDLCS 70105)
- Thompson Chicken House (HS-89, IDLCS 70106)
- Thompson Storage Bins (HS-92, IDLCS 70109)
- Thompson Pumps (HS-83, IDLCS 070100)
- Thompson Fence/Entrance Gate (HS-90, IDLCS 070107)
- Thompson Farm fence posts in house yard
- Thompson Farm drives
- Thompson Cattle Guard (HS-91, ICLCS 70108)
- Thompson Walkways (HS-82, IDLCS 70099)

The proposed construction of the earthen sound mitigation berms would have a moderate adverse effect on all 15 character-defining features of the Thompson Farm, which have an unobstructed view of the prairie to the southeast; the presence of trees south of the Gravesite presents a minimal visual barrier between the Thompson Farm and the prairie due east, which includes the expanse of prairie to the north of the Isaac Miles Farm. The presence of the proposed earthen sound mitigation berms to the southeast would have a visual effect on the historically open landscape, and thereby a visual impact on the Thompson Farm and its historic viewshed.

Character-defining features of the Isaac Miles Farm include the following (NPS 2006c):

- Miles, Isaac, Farmhouse (HS-11, IDLCS 06151)

- Miles, Isaac, Bank Barn (HS-12, IDLCS 06152)
- Miles, Isaac, Corn Crib (HS-13, IDLCS 06153)
- Miles, Isaac, Garage (HS-14, IDLCS 06154)
- Miles, Isaac, Shed (HS-15, IDLCS 06155)
- Miles, Isaac, Windmill (HS-20, IDLCS 06158)
- Miles, Isaac, Pole Shed/Machine Shed (HS-53, IDLCS 70095)
- Miles, Isaac, Chicken House (HS-54)
- Miles, Isaac, Hand Pump (HS-51, IDLCS 070093)
- Isaac Miles Farm drives
- Miles, Isaac, Concrete Sidewalks (HS-52, IDLCS 70094)

The proposed construction of the earthen sound mitigation berms, both of which would terminate in close proximity to the Isaac Miles Farm, would have a moderate adverse effect on the viewshed of the 11 character-defining features of the farmstead. View of the earthen sound mitigation berm to the south of the Isaac Miles Farm would be partially screened by vegetation at the south end of the farm, but the smaller proposed earthen sound mitigation berm that would run parallel to Parkside Drive would be located immediately north of the farm, introducing a landscape feature to the open area between the farm and the historic core.

Construction Access, Staging Areas, and Site Fencing

The proposed construction access, staging areas, and site fencing would not have any long-term effects on the cultural landscape or the historic structures within the site. A temporary staging area would be located to the east and south of the Friends (Quaker) Meetinghouse, and haul roads would be constructed in the prairie in close proximity to the Thompson Farm and Isaac Miles Farm, but the effects would be temporary and mitigated through revegetation of the impacted reconstructed prairie and eventual closure of the staging area.

Cumulative. The proposed action is one in a series of improvements to the site over its history. The proposed improvements would have limited adverse impacts on the cultural landscape and historic structures. Where the proposed improvements would have a moderate adverse impact on the landscape, use of replacement tree plantings in keeping with the recommendations of the *Cultural Landscape Report* (NPS 1995), and use of sympathetic seeding on new landscape features (the off-channel detention basin and earthen sound mitigation berms) seek to mitigate the impacts on the landscape and the viewsheds of historic structures. Similarly, in-kind replacements of the Downey Street Bridge and portions of the Hoover Creek limestone retaining wall are based on the historic design and materials of those structures, limiting the effects of their needed replacement. There are no known current or future projects that would cause an additive impact on tree removal or the integrity of historic structures at the site.

Conclusion. The proposed improvements to landscape features and historic structures on the site would have limited to moderate direct impacts. Construction of the off-channel detention basin would have no adverse effect on the cultural landscape and historic structures of the site. The stream channel improvements and associated tree removal would have a moderate impact on the cultural landscape, and no adverse effect on the viewsheds of the site's contributing historic structures. The Downey Street Bridge replacement would have no adverse effect on the cultural landscape, but would have a direct impact on the current historic-age bridge, mitigated to a high degree by the proposed use of the current bridge's original design features and materials. The construction of the earthen sound mitigation berms would result in moderate adverse effects on the cultural landscape of the agricultural/rural setting landscape management area, and a moderate adverse effect on the viewsheds of resources within the Thompson Fam and Isaac Miles Farm areas. The haul roads and staging areas in proximity to historic structures would be temporary, and

impacts would be mitigated through revegetation of the impacted reconstructed prairie. Appendix A contains mitigation measures related to cultural resources.

4.3.2 Floodplain and Wetlands

No-Action Alternative. Under the no-action alternative, Hoover Creek would continue to degrade and would continue to flood and adversely affect the site through continued bed incision and bank erosion. In the 1870s, Hoover Creek that now bisects the site was little more than a grassy swale that occasionally drained surface water into the west branch of the Wapsinonoc Creek. However, as the native prairie was cleared and converted to agriculture, and as the town of West Branch was developed with homes, businesses, and streets, the local runoff increased. What was once a swale became a stream. Continued flooding and increased runoff has caused the stream to downcut and the stream banks to slough off. The stream has been migrating laterally to the south, approaching the Library-Museum. The existing 0.04 acre of palustrine emergent wetlands may eventually slough off and other wetlands may form as the stream continues to downcut.

Cumulative. Although other past, present, and reasonably foreseeable future actions have affected, or could have the potential to affect, floodplain and wetland habitat, the no-action alternative would have no impacts and, therefore, there would be no cumulative impacts.

Proposed Action

Off-channel Detention Basin. The off-channel detention basin would be partially located within the existing FEMA-mapped 100-year floodplain of Hoover Creek and would have an indirect beneficial impact on the floodplain by storing runoff that exceeds the channel capacity and reducing flooding severity downstream.

The floodplain would be temporarily adversely affected during construction due to the presence of staging areas, construction equipment, and materials in the floodplain. Temporary erosion may occur from grading soils prior to revegetation. Sediment and erosion control measures would be used to reduce temporary impacts.

Construction of the return culvert would have a minor direct impact on the south channel bank of Hoover Creek. The 24-inch-diameter return culvert and associated concrete apron with end wall would result in minor fill (approximately 0.01 acre) in Hoover Creek. The off-channel detention basin would temporarily store a volume of stormwater runoff (a maximum of 19.5 acre-feet) and discharge it at a controlled rate to prevent Hoover Creek from receiving too much water at one time and reducing the risk for overbank flooding. A hydraulic analysis demonstrates that the proposed detention basin would reduce peak flow rates for events with a 0.2 (5-year) through 0.01 (100-year) annual exceedance probability, with the largest peak flow reductions achieved during frequent events (HDR 2018b). Lower peak flow rates result in lower water surface elevations in the floodplain. A full detention pond would drain in 13 hours if floodwaters in Hoover Creek have receded to the midpoint of the outfall culvert.

Under the proposed action, construction of the off-channel detention basin would have no direct or indirect impact on wetlands.

Implementation of required erosion and sediment controls would minimize impacts on floodplain, Hoover Creek, and wetlands during construction of the off-channel detention basin. See Appendix A for proposed erosion and sediment control practices.

Stream Channel Improvements. The segment of Hoover Creek proposed for improvements is located within the floodway and floodplain of Hoover Creek. It is anticipated that the stream channel improvements would increase channel conveyance and would have minor beneficial impact on the floodway and floodplain. The water surface elevation during flooding events would

be reduced by the proposed action (HDR 2018b). The channel would be stabilized by adding pools and riffles to dissipate flow energy. Stone revetment would be installed at areas with high velocities (HDR 2018c).

The wetland impacts on both the palustrine emergent wetlands and the riverine wetlands are exempted from wetland mitigation requirements under NPS *Procedural Manual 77-1: Wetland Protection* under stream restoration (NPS 2016). Under the proposed action, stream channel improvements would result in a direct impact on 0.03 acre of palustrine emergent temporarily flooded (PEMA) wetland. However, stream improvements would include wetland seeding along the lower banks of Hoover Creek and it is anticipated that 0.60 acre of PEMA wetland fringe would develop and would replace the 0.03 acre of PEMA wetland impact. Stream channel improvements would occur along approximately 1,815 feet (0.37 acre of riverine lower perennial unconsolidated bottom intermittently exposed [R2UBG] wetland) of Hoover Creek. The new channel would be approximately 35 feet shorter than the existing channel; however, the channel banks would be widened and graded to a less steep slope, resulting in an overall wider channel cross-section. It is anticipated that the wider channel cross-section would increase the R2UBG wetland by 1.15 acres. The R2UBG wetland would include the low flow water extent of Hoover Creek, which includes the area below the elevation of the PEMA fringe wetland seeding. The impacts and proposed project conditions area preliminary and final impacts and post-project conditions would be refined during coordination with the United States Army Corps of Engineers for purposes of obtaining a Section 404 of the Clean Water Act permit. Table 2 summarizes the impacts on wetlands and Hoover Creek resulting from the stream channel improvements.

TABLE 2. WETLAND AND CHANNEL IMPACTS RESULTING FROM STREAM CHANNEL IMPROVEMENTS

Wetland/Channel	Existing Condition within Project Area	Permanent Impact	Post-Project Condition within Project Area
PEMA (acre)	0.04	0.03	0.64
R2UBG (acre)	0.77	0.37	1.92
Hoover Creek (linear feet)	3,241	1,815	3,206

Note: Wetland impacts are exempted from wetland mitigation requirements under NPS policies under Director's Order #77-1 (NPS 2002).

This impact would be negligible at the local scale and the regional scale. Over the long term, the project would provide some benefits to floodplains and wetlands by reducing the potential for future flood-related erosion and enhancing flood retention functions within the floodplain. After completion of the project, the floodplain function and wetlands in the study area would be improved.

A functional assessment was performed on Hoover Creek using the State of Iowa Stream Mitigation Method (USACE 2017). The assessment determined that the existing functional condition is moderately functional. The proposed action would incorporate riffle-pool structures and the channel alignment would be designed to introduce sinuosity to the channel flow. The channel banks would be widened and graded to a less steep slope and rock revetment would stabilize the channel. The Iowa Stream Mitigation Method categorizes the net benefits of the stream into four categories: excellent, good, moderate, and stream relocation. Based on the design of the proposed action, Hoover Creek would best be categorized using the Iowa Stream Mitigation Method as a "Good" net benefit. Some characteristics of a "Good" net benefit include benefits gained on a localized scale and not system wide, stream bank stabilization, restoration of in-stream features (that is, riffle-pool habitat), restoration of highly eroded areas, and seeding with native vegetation. Based on the State of Iowa Stream Mitigation Method Calculator, these improvements to Hoover Creek would result in an overall net benefit to the stream.

The channel improvements to Hoover Creek would require modifications to the 14 storm sewer outlets. It is anticipated that storm sewer outfalls greater than 12 inches in diameter would be replaced with drop manholes and new storm sewer pipe with concrete flared end sections and rock riprap at sewer outlets. Eleven of the 14 storm sewer outlets are greater than 12 inches in diameter and would be replaced as part of the proposed action. The permanent impact area provided in table 2 includes the entire stream improvement area; which would also include the areas planned for storm sewer outlet improvements. Storm sewers less than 12 inches in diameter would be cut to align with the new channel, but would not be replaced with new a manhole or sewer pipe.

Installation of rock revetments along the outside bends of the channel would improve the stability of the channel and prevent the channel from degrading to the conditions that are currently present. In addition, the riffle-pool features that would be incorporated into the new channel would provide improved aquatic habitat.

The proposed stream channel improvements were designed to be stable between the existing pedestrian bridge and 2nd Street. However, the proposed action would result in an increase in channel velocities on NPS property upstream of those limits. This increase is documented in a technical memorandum from HDR to NPS dated November 28, 2018 (HDR 2018d). HDR has recommended that NPS inspect the condition of the stream upstream of the pedestrian bridge following runoff events.

Construction of stream channel improvements would require temporary diversion of segments of the stream channel. It is anticipated that construction would occur in phases. It is assumed that a cofferdam or other detention structure would be placed on the upstream end of construction phase of the channel. Flow would be diverted into an appropriately sized pipe. Ideally, construction would occur during times of low flow. It is anticipated that during construction of the channel, the flow of Hoover Creek would be maintained and would not impact downstream hydrology of Hoover Creek.

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction. The erosion and sediment controls would be designed as part of the Storm Water Pollution Prevention Plan, which would be required for the National Pollutant Discharge Elimination System permit. However, there would be minor temporary impacts on water quality after construction of the channel and prior to complete vegetation of the channel banks due to increased sedimentation into Hoover Creek. Erosion would be minimized through use of erosion control blankets along the channel banks.

Downey Street Bridge Replacement. Under the proposed action, the existing bridge and wing walls would be removed and replaced with a new 32-foot-long concrete bridge and four new wing walls. The new bridge would include the placement of rock riprap beneath the bridge in the channel and up the banks. There are no wetlands near the bridge; construction of the bridge would have no adverse impacts on wetlands. The placement of rock riprap beneath the bridge would fill approximately 75 linear feet of Hoover Creek, resulting in a minor impact on Hoover Creek.

Replacing the bridge would eliminate the constriction point that is currently caused by the Downey Street Bridge. Without increasing the capacity for conveying flow, the increased capacity of the stream channel improvements would not be as effective. Downstream of the Downey Street Bridge, stream flow channel capacity would also be increased down to the 2nd Street Bridge.

No indirect effects of the Downey Street Bridge replacement on floodplain and wetlands have been identified.

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction. See Appendix A for proposed erosion and sediment control practices.

Hoover Creek Limestone Retaining Wall. The existing limestone wall is located on the south bank of Hoover Creek (above the ordinary high water mark) and within the floodway of Hoover Creek.

There are no wetlands near the wall, and reconstruction of the west 45 feet of the wall would have no adverse impact on wetlands. In addition, the reconstructed portion of the wall would align with the existing wall and would have no adverse impact on Hoover Creek.

Implementation of required erosion and sediment controls would minimize adverse impacts on water quality during construction.

Utility Relocations. Under the proposed action, the sanitary sewer line and water line would be relocated prior to the Downey Street Bridge demolition. The 6-inch-diameter water line would be rerouted via trenchless hydraulic directional drilling under Hoover Creek, east of the bridge. The 8-inch-diameter sanitary sewer line would be rerouted eastward, under Parkside Drive via trenchless boring with the remaining rerouted line to be open trenched, to tie into the existing sanitary system at 2nd Street. The existing sanitary sewer line and water line are located within the floodway and floodplain of Hoover Creek, and the rerouted water main would remain in the floodplain. The underground utilities would have no direct or indirect impact on the floodway or floodplain of Hoover Creek.

Relocating the utilities would have no direct or indirect impact on Hoover Creek and its associated wetlands.

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction. See Appendix A for proposed erosion and sediment control practices.

Earthen Sound Mitigation Berms. Under the proposed action, the earthen sound mitigation berms would be located south of Hoover Creek and would be located outside the Hoover Creek floodplain. There would be no direct or indirect impact on Hoover Creek or the floodplain due to construction of the earthen sound mitigation berms. Overall drainage patterns and drainage subbasin boundaries would remain unchanged. Earthen sound mitigation berms would generally follow existing ridgelines, which would optimize sound mitigation and minimize fill material required. Because the existing ridgelines are being raised, there would be slight changes in surface water runoff in the immediate vicinity of the berms; but this would be minimized during construction with soil and erosion controls. Revegetating with native grasses would stabilize the disturbed surfaces, slowing the surface water runoff and improving natural infiltration in the surrounding landscape.

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction of the proposed action. See Appendix A for proposed erosion and sediment control practices.

Construction Access, Staging Areas and Site Fencing. Under the proposed action, staging areas would be selected to minimize impacts on protected natural resources. There would be no temporary pedestrian access across Hoover Creek while the Downey Street Bridge is being replaced. The temporary impacts would be negligible on Hoover Creek and its associated floodplain because construction would occur during periods of low flow. In-channel construction would occur in phases and would require temporary diversion and that flow would be diverted into an appropriately sized pipe. The construction access and staging would be located outside of wetland areas and would have no impact on the wetlands adjacent to Hoover Creek.

The construction access, staging, and site fencing would be temporary and would have no indirect impacts on Hoover Creek, the floodplain, or wetlands.

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction. See Appendix A for proposed erosion and sediment control practices.

Cumulative. Overall, cumulative impacts from past, present, and reasonably foreseeable future actions would be beneficial. The proposed action would contribute beneficial effects on flood flows and floodplain capacity, and would improve hydrological capacity within the floodplain over the long term. Thus, when the effects of the proposed action are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts would be beneficial, with a small incremental contribution from the proposed action.

Conclusion. The proposed action would have a minor beneficial impact on floodplain. Construction of the return culvert of the off-channel detention basin would result in fill (approximately 0.01 acre) in Hoover Creek. Stream channel improvements would result in a direct impact on 0.03 acre of PEMA wetland. However, stream improvements would include wetland seeding along the lower banks of Hoover Creek and it is anticipated that 0.60 acre of PEMA wetland fringe would develop and would replace the 0.03 acre of PEMA wetland impact. Stream channel improvements would occur along approximately 1,815 feet (0.37 acre of R2UBG wetland) of Hoover Creek. The new channel would be approximately 35 feet shorter than the existing channel; however, the channel banks would be widened and graded to a less steep slope, resulting in an overall wider channel cross-section. It is anticipated that the wider channel cross-section would increase the R2UBG wetland by 1.15 acres. The proposed action would have a minor adverse impact on stream channel and wetlands. Appendix A contains mitigation measures related to floodplain and wetlands.

4.3.3 Visitor Use and Experience

No-Action Alternative. Under the no-action alternative, visitors would use and experience the site in its current condition. During the temporary flooding and post-flood clean-up, the existing conditions of Hoover Creek would have adverse impacts on visitor experience. The impacts would occur during their visit (short term), as well as when later recalling their visit (long term).

If Hoover Creek is flooding during a visit, the floodwaters detract from the viewshed and can prevent pedestrian access to the various buildings and the picnic area. Depending on the size and timing of flooding, floodwaters may enter the buildings and prevent use by visitors. Visitors may avoid visiting altogether if they are aware that flooding is occurring, even if the site is open to visitors. Flooding that results in closure of the site could completely prevent a visitor from experiencing the park.

Post-flooding, visitors would experience varying levels of clean up and maintenance. The flood debris is unsightly, and the infrequent and temporary maintenance equipment would cause noise disturbance.

Cumulative. Although other past, present, and reasonably foreseeable future actions have affected, or could have the potential to affect, visitor use and experience in the analysis area, these projects have had short-term impacts on visitor experience. Overall, the no-action alternative would have no new impacts; therefore, there would be no contribution to cumulative impacts.

Proposed Action

Off-channel Detention Basin. Under the proposed action, the off-channel detention basin would be constructed in the northwest portion of the site. The area for the detention basin includes a portion of the reconstructed prairie, the Hoover Creek riparian area, and approximately 800 feet of existing prairie trails, a portion of which is designated as National Historic Trail. Visitors would experience noises typical of construction. During construction, the tranquil prairie viewshed would be temporarily replaced with views of construction equipment, dirt grading, vegetation and tree removal, and intake weir construction. Construction barriers and signs would advise visitors to stay

away from the construction area. Construction would occur from approximately September 2019 to March 2020.

Approximately 856 feet of prairie trail, representing 6 percent of the total 12,797 feet of prairie trail on the site, would be realigned along the west and north sides of the off-channel detention basin (figure 7). In addition, the prairie trails in the northwest corner of the prairie would be closed during construction of the off-channel detention basin, temporarily restricting visitor access to these portions of the historic site. The construction of the off-channel detention basin would impact visitor use and experience due to construction noise, visual disturbance, and limited trail access during the period of construction.

The water surface elevation during flooding events would be reduced by the proposed action. Beneficial indirect effects were identified downstream. Reduced flooding would allow visitors to experience the buildings and amenities unimpeded. Providing the public opportunities to experience important historic sites is an important purpose of the site; thus, over the long term, reducing the frequency for trail closures within the site would substantially improve the visitor experience. Occasional trail closures and repairs to walking surfaces in the vicinity of the basin and downstream could still occur.

Stream Channel Improvements. Under the proposed action, the channel banks along Hoover Creek would be graded to have a gentle slope beyond a constructed low-flow channel. Trees and upland grasses would be removed and replaced with a maintained grassy bank. Curves would be introduced to the channel alignment, as well as riffles and pools. Visitors would experience noises typical of construction. During construction, the stream riparian viewshed would contain views of construction equipment, dirt grading, vegetation and tree removal, and rock revetment placement. Construction barriers and signs would advise visitors to stay away from the construction area. Construction would occur from approximately September 2019 to March 2020.

The stream channel improvements would have a moderate impact on visitor experience due to the construction noise, the construction visual disturbance, and the length of construction.

A beneficial indirect effect includes reduced temporary trail closures and repairs to unsafe walking surfaces due to infrequent flooding, resulting in improved safety and experience for visitors. Visitors would be able to more easily access Hoover Creek because the slopes would be gentler and the maintained grass would be walkable. In addition, the viewshed from the Birthplace Cottage to the Gravesite over Hoover Creek would be maintained.

Downey Street Bridge Replacement. Under the proposed action, the existing Downey Street Bridge and wing walls would be removed and replaced with a longer span bridge. The concrete railing would mimic the baluster style of the reconstructed 1917 bridge. Visitors would experience noises typical of construction. Visitors would see construction equipment, grading, vegetation and tree removal, rock riprap placement, and bridge construction. Construction barriers and signs would advise visitors to stay away from the construction area.

During construction, visitors would not be able to use the bridge as a pedestrian route over Hoover Creek, which is the primary public pedestrian route between the visitor center, the Library-Museum, the Isis Statue, and the Friends Meetinghouse. The construction would disrupt the annual 'A Christmas Past' event, which brings in 3,000 to 4,000 visitors and has the potential to disrupt school tour season if construction occurs into April and May (approximately 4,000 visitors). Long-term, the bridge replacement would improve public and employee access and safety.

The replacement of the Downey Street Bridge would have an adverse impact on visitor experience due to the construction noise, the construction visual disturbance, and the closure of the pedestrian access during construction.

No indirect effects were identified.

Hoover Creek Limestone Retaining Wall. Under the proposed action, approximately 40 feet of the limestone retaining wall would remain in place. Another 45 feet of the wall would be replaced with a concrete wall refaced with recovered limestone. Visitors would experience noises typical of construction and would see construction equipment, wall removal, and wall reconstruction. However, construction noise and visual disturbances would be limited because visitors would be prevented from entering the surrounding area. Post-construction, visitors would experience the wall much as they do presently. The replaced wall would be safer than the original because the tilted and damaged sections would be removed.

The limestone retaining wall reconstruction would have a negligible impact on visitor experience because 40 feet of the existing wall would be retained and the remainder would be reconstructed.

No indirect effects were identified.

Utility Relocations. Under the proposed action, the 6-inch-diameter water line would be rerouted via trenchless hydraulic directional drilling under Hoover Creek, east of the bridge. The 8-inch-diameter sanitary sewer line would be rerouted eastward, under Parkside Drive via trenchless boring with the remaining rerouted line to be open trenched, to tie into the existing sanitary sewer system at 2nd Street. New manholes and discharge pipes would be constructed at the 12 known stormwater outfalls. Visitors would experience construction noise and views of construction equipment.

The utility relocations would have a negligible, short-term impact on visitor experience because the water line and sanitary sewer work would primarily be conducted using trenchless boring under Hoover Creek and Parkside Drive. Visitors would be prevented from entering the areas of open trench.

A beneficial indirect impact of moving the sanitary sewer and water lines from beneath the Downey Street Bridge would be that they would not be subjected to stream channel erosion and potential damage or failure. Both the sanitary sewer line and water line utilities would be upgraded with new materials that would increase their useful lifespans.

Earthen Sound Mitigation Berms. Under the proposed action, earthen sound mitigation berms would be constructed along the southern and eastern edges of the prairie. Visitors would experience noises typical of construction and may experience construction equipment moving the spoil material and grading it to the appropriate contours. Temporary haul roads are needed to move the materials to other parts of the site (see figure 6). Construction would occur from approximately September 2019 to March 2020.

The earthen sound mitigation berms would be seeded with vegetation that mimics the surrounding prairie. Long-term, the earthen sound mitigation berms would have a benefit on noise levels in the prairie and along the prairie trails (Nuessly 2018).

The construction of earthen sound mitigation berms would have a minor, short-term impact on visitor experience, due to the movement of the materials on the temporary haul roads and the time needed for grading and revegetation.

Construction Access, Staging Areas, and Site Fencing. Under the proposed action, construction access, staging areas, and site fencing would provide the construction workers with the room to perform their duties, while affecting the least amount of area as possible. The site fencing, barriers, and signs would be used to keep visitors from entering construction areas as well as to inform them of construction. If used appropriately, visitors should remain safely away from construction. All of the construction areas would be contoured, reconstructed, and re-seeded, as appropriate, to return the view to preexisting conditions.

Construction traffic along roads leading to the site would result in increased noise and dust, which could adversely affect the visitor experience. Because only Downey Street would be closed during construction, the number of visitors affected by increased construction traffic would be limited, and these impacts would end after construction is complete.

The construction access, staging areas, and site fencing would have a minor, short-term impact on visitor experience. These impacts would occur due to the noise, visual, and access disruptions of the site during construction.

Cumulative. Under the proposed action, short-term adverse impacts would occur during construction, including limits to accessibility, increased traffic, as well as dust and noise from construction. However, construction would occur during months of lower visitation or would be scheduled to avoid special events, thereby mitigating some impact on visitors. The project would result in a long-term beneficial impact as well as contribute to a small cumulative beneficial impact in combination with other past, present, or reasonably foreseeable future actions.

Conclusion. Implementation of proposed action would improve the long-term reliability of site access to all visitor facilities in the analysis area, resulting in a beneficial impact on visitor use and experience. The off-channel detention basin would adversely affect approximately 800 feet of prairie trails, a portion of which is designated as National Historic Trail, which would be realigned north and west of the basin. Construction would cause a short-term noise and visual disturbance to a visitor's experience. Site fencing, barriers, and signs would be used to keep visitors from entering construction as well as to inform them of construction. All disturbed areas would be revegetated. The decreased flooding impacts and improved stream channel corridor, Downey Street Bridge and limestone wall would benefit visitors' experiences of the site. Overall, the proposed action would have a moderate adverse impact on visitor use and experience in the short-term and a beneficial indirect effect of reduced flooding severity in the long-term. Appendix A contains the mitigation measures for visitor use and experience.

4.3.4 Wildlife Habitat

No-Action Alternative. Under the no-action alternative, the off-channel detention basin and earthen sound mitigation berms would not be constructed, and there would be no construction impact on the prairie or tree removal in the riparian area. The pedestrian trails in the northwest corner of the site would not be disrupted by off-channel detention basin construction. The prairie would continue to be managed in accordance with the Prairie Management Plan (NPS 2003). The trees in the riparian area would not be removed for off-channel detention basin construction or stream improvements. Flooding would continue, threatening the trees in the riparian area and the reconstructed prairie. The stream fauna are depauperate (lacking in numbers and variety of species) and indicative of a highly degraded system.

Cumulative. Although other past, present, and reasonably foreseeable future actions have affected, or could have the potential to affect, wildlife habitat, the no-action alternative would have no impacts; therefore, there would be no cumulative impacts.

Proposed Action

Off-channel Detention Basin. Under the proposed action, the off-channel detention basin would be located in the northwest corner of the reconstructed prairie. The basin would be approximately 10.1 acres in size and the edge and shape of the basin would vary to have a more natural appearance. The basin would be re-seeded with two different seed types. Lower areas of the basin would be planted with a seed mix that is more tolerant of frequently to occasionally wetter conditions, and the higher areas of the basin would be planted with a seed mix that is more tolerant of dryer conditions and would include species similar the adjacent reconstructed prairie.

Construction of the basin would have a moderate direct impact on the wildlife habitat of the prairie by converting 10.1 acres of the 81-acre prairie to a detention basin. The proposed action would remove prairie acreage used by grassland nesting birds and replace it with habitat that may be more suitable to amphibians and other wildlife species. The severity of these impacts on special status species and habitat would depend on factors such as the sensitivity of the species, seasonal use patterns, type and timing of project activity, and physical parameters. The reconstructed prairie is the most intact prairie area for miles around, with high quality prairie vegetation and few invasive species. Seeding the upper area of the basin with a seed mix similar to the existing prairie would reduce adverse effects by mimicking the existing habitat provided by the prairie. The revegetation of the detention area and stabilization along Hoover Creek would result in a slight change in the plant composition. Long-term, the increased diversity of vegetation and habitat due to the construction of the off-channel detention basin is a minor benefit to wildlife habitat. The revegetation of the prairie within the detention basin would occur slowly and would improve over time.

Approximately 25 trees in the northeast corner of the basin would be removed. This would be a minor direct impact due to the loss of volunteer ash trees. Tree removal would have an adverse effect on available nesting habitat, but given the size of the canopied area and arrangement of trees, most tree nesting species using this resource are relatively common and tolerate disturbance along edge habitats. In an effort to reduce the potential impact on nesting migratory birds and roosting bats, tree removal and construction of the basin would occur outside the primary nesting season of migratory birds (April 1 through September 30), which overlaps the bat pup season (June 1 through July 31). Tree plantings would occur to replace unavoidable tree removal that would be required by the proposed action. Trees would be replaced at the site with numbers, types, and locations consistent with the *Cultural Landscape Report* (NPS 1995).

Indirect impacts may include the potential for species composition changes on the fringe of the basin due to wetter soils when detention basin is full. However, water stored in the detention basin is intended to be short-term (approximately 13 hours when Hoover Creek conditions allow).

Implementation of required erosion and sediment controls would minimize impacts on water quality during construction.

Stream Channel Improvements. Under the proposed action, stream channel improvements would have no direct impact on the prairie habitat. The extent of the improvements is from the pedestrian bridge downstream to the 2nd Street Bridge. Stream channel modification and bank grading would have a direct impact on approximately 1,815 feet of Hoover Creek riparian habitat. Modifying the banks and stream channel would cause sedimentation and disruption to the habitat for fish and stream invertebrates, but would likely have long-term benefits to the stream community.

Stream flow diversion and project work area dewatering are expected to cause temporary loss, alteration, and reduction of aquatic habitat. Effects associated with dewatering, structure placement, and increased mobilization of sediment within stream channels are expected to be short-term and localized.

Construction of the channel would require the removal of approximately 75 trees that may provide suitable nesting habitat for bird species. Tree removal would have a moderate and direct impact on migratory bird nesting habitat and potential bat roosting habitat through reduced habitat availability and displacement. The removal of 75 trees would be a moderate impact because the site contains nearly 500 trees and this removal represents more than 5 percent of the trees on site. In an effort to reduce the potential impact on nesting migratory birds, tree removal would occur outside the primary nesting season of migratory birds (April 1 through September 30), which overlaps the bat pup season (June 1 through July 31). Tree plantings would occur to replace unavoidable tree

removal that would be required by the proposed action. Tree plantings would occur in number, type, and location consistent with the *Cultural Landscape Report* (NPS 1995).

Construction noise associated with the stream channel improvements would indirectly impact the prairie and adjacent riparian habitat by causing minor and temporary disruption to the existing habitat. Construction noise would potentially impact habitat by interfering with the communication of wildlife and reducing habitat quality.

Four trees have been designated for protection as part of the stream channel design. These trees would remain on the landscape and incorporated into the stream channel design. The trees that would remain include one tree on the left (north) bank approximately 400 feet upstream of the Downey Street Bridge, one tree on the left (north) bank on Downey Street Bridge abutment, one tree on the right (south) bank on the Downey Street Bridge abutment, and one tree on the left (north) bank downstream approximately 80 feet from the Downey Street Bridge.

Downey Street Bridge Replacement. Under the proposed action, the bridge is located approximately 0.30 mile east and 0.10 mile north of the prairie. Replacement of the bridge would have no direct impact on the prairie habitat. However, construction of the bridge would require the removal of several trees and would have a moderate direct impact on the habitat of the Hoover Creek riparian corridor. In an effort to reduce the potential impact on nesting migratory birds, tree removal would occur outside the primary nesting season of migratory birds (April 1 through September 30).

During construction of the bridge, there would be temporary, minor indirect impacts on the prairie and riparian habitat due to construction noise.

Hoover Creek Limestone Retaining Wall. Under the proposed action, the wall is located approximately 0.30 mile east and 0.10 mile north of the prairie. Replacement of portions of the wall would have no direct impact on the prairie and a negligible direct impact on the riparian habitat of Hoover Creek. Construction of the west segment of the retaining wall would impact the herbaceous habitat of the riparian corridor.

During construction of the retaining wall, there would be temporary, minor indirect impacts on the prairie and Hoover Creek riparian habitat due to construction noise.

Utility Relocations. Under the proposed action, the sanitary sewer line relocations would occur near the Downey Street Bridge and east to 2nd Street. The water line relocations would occur near the Downey Street Bridge and west of the bridge. These utility relocations would have no direct impact on the prairie habitat. Relocation of the water lines would have minor and direct impacts on the riparian corridor, because the new water lines would be constructed through Hoover Creek. The 6-inch-diameter water line west of the Downey Street Bridge would be constructed using a trench; however, this work would occur within the disturbance area of the stream improvements and would increase the disturbance to the riparian habitat.

During construction of the utilities, there would be temporary, minor indirect impacts on the prairie and riparian habitat due to construction noise.

Earthen Sound Mitigation Berms. Under the proposed action, earthen sound mitigation berms would be constructed using excess spoil material. The earthen sound mitigation berms would be seeded relative to their surroundings and would be shaped to provide a more contoured aesthetic. The earthen sound mitigation berm layout would maintain existing drainage patterns and would not impede existing stormwater routing. The flattop earthen sound mitigation berms would be approximately 10 to 15 feet tall and would be constructed west of Parkside Drive and north of Interstate 80 near the park property lines to best address the source of the noise.

The current soil surface would be buried and would displace wildlife species that overwinter above and below ground within these areas. The earthen sound mitigation berms would be seeded with a

seed mix similar to the prairie. Although some vegetation would establish itself the first growing season (likely the cover crop and any annual forbs), it may take a minimum of 5 years for the seeded prairie vegetation to become fully established on the berms and resemble preconstruction conditions. It would likely take up to 5 years for some invertebrate species to reestablish on the berms, but less time for small mammals and reptiles to reestablish. Invasive plants (such as reed canary grass, smooth brome, and sweet clover) have the potential to establish on the disturbed areas because the seed bank in the topsoil would have full access to light and moisture with minimal competition. During this time, there would be a direct impact on the prairie habitat by decreasing the total acreage of available habitat by approximately 11.8 acres. Although it modifies the surface contours in localized areas, the earthen sound mitigation berms would be integrated into the prairie and would introduce diversity into the rural/agricultural setting. Following construction and revegetation, the earthen sound mitigation berms would provide a similar habitat to the existing reconstructed prairie. In addition, the construction noise generated by the haul road and construction equipment building the earthen sound mitigation berms would directly impact the prairie habitat. Because the reconstructed prairie has been developing over 40 years, it may take several years to recover from the disturbance due to the proposed action. The revegetation of the prairie on the earthen sound mitigation berms would occur slowly and would improve over time.

Construction of the earthen sound mitigation berms would temporarily disrupt the prairie trails located on the south and east boundaries of the prairie. Following construction, it is anticipated that access to the prairie trails would be reconstructed.

The earthen sound mitigation berms would have no direct impact on the riparian habitat of Hoover Creek; however, construction noise may result in minor indirect impact the riparian habitat.

Construction Access, Staging Areas, and Site Fencing. Under the proposed action, staging areas would be selected to minimize visitor experience disruptions. Chain-link fencing would be erected to direct pedestrians to areas free from construction. Construction activity limits would be set to allow adequate workspace and to allow construction sequencing. Construction information signs would be incorporated.

It is anticipated that haul roads, staging areas, and site fencing would be located outside of the Hoover Creek riparian corridor and would not directly impact habitat along Hoover Creek.

The construction haul roads necessary for construction of the proposed action would be located along the perimeter of the prairie and would occur within the footprint of the earthen sound mitigation berms to the extent practicable (see figure 10). The haul roads would be temporary and would directly impact the prairie habitat. The haul roads would disturb the prairie vegetation and the noise generated from the construction traffic would disturb the adjacent habitat. Haul roads would cause compaction of soils; compacted soils may be harder to re-vegetate, may be revegetated by invasive plants, and could cause erosion of the site. Following construction, the areas disturbed by the haul roads would be re-seeded with a prairie seed mix similar to the surrounding environment.

Cumulative. Overall, cumulative impacts from past, present, and reasonably foreseeable future actions would be beneficial. As previously described, the proposed action would contribute moderate negative effects on wildlife habitat that would be reduced by prairie revegetation and tree plantings over the long term. Land development in the surrounding area could continue to deplete prairie and wooded riparian corridors. Thus, when the effects of the proposed action are combined with the effects of other past, present, and reasonably foreseeable future actions, the overall cumulative impacts would be beneficial, with a negligible incremental contribution from the proposed action.

Conclusion. Construction of the basin would have a moderate direct impact on the wildlife habitat of the prairie by converting 10.1 acres of the reconstructed prairie to a detention basin and another 11.8 acres of reconstructed prairie to the earthen sound mitigation berms. The total impact on the prairie would be approximately 23 acres out of a total 81 acres. The off-channel detention basin and the stream restoration activities together would remove approximately 100 trees, which is approximately 20 percent of the total trees on site, a moderate direct impact. Stream channel modification and bank grading would have a direct impact on approximately 1,815 feet of Hoover Creek riparian habitat. The haul roads would be temporary and would directly impact the prairie habitat. Impacts would be mitigated through revegetation of the impacted reconstructed prairie and implementation of tree plantings on site. Appendix A contains the mitigation measures for wildlife habitat.

CHAPTER 5: CONSULTATION AND COORDINATION

The National Park Service coordinated with resource agencies, American Indian tribes, and members of the public to allow an opportunity for input. The agency and public scoping process conducted in conjunction with construction design document and environmental assessment development allows the National Park Service to incorporate any substantive comments into the design.

The National Park Service sent an agency and tribal scoping letter on July 2, 2018. The letter detailed the project need, described the project components, provided a schedule on the development and release of the draft environmental assessment, and requested input on the project. The following agencies, organizations, and libraries received notice of the public scoping period and will receive a notice of the availability of this environmental assessment:

- Hoover Presidential Foundation
- Herbert Hoover Presidential Library and Museum
- West Branch Friends Church
- West Branch Public Library
- Tipton Public Library
- Iowa City Public Library
- Coralville Public Library
- Cedar County Board of Supervisors
- State Historical Society of Iowa
- Iowa Geological Survey
- Iowa Department of Natural Resources
- Iowa Department of Natural Resources, Water Resources Division
- Iowa Senator Joni Ernst
- Iowa Senator Chuck Grassley
- United States Geological Survey Congressional Liaison Office
- United States Fish and Wildlife Service, Region 3, Illinois-Iowa Field Office, Kraig McPeek
- United States Environmental Protection Agency, Region 7
- Natural Resources and Conservation Service Tipton Service Center
- United States Army Corps of Engineers, Rock Island District
- Advisory Council on Historic Preservation
- National Park Service, Water Resources Division
- Iowa Tribe of Oklahoma, Chairman Bobby Walkup
- Sac and Fox Tribe of the Mississippi River, Chairman Milo Buffalo
- Iowa Tribe of Kansas and Nebraska, Chairman Timothy Rhodd
- Sac and Fox Nation of Missouri in Kansas and Nebraska, Elmore Green
- Sac and Fox Nation, Oklahoma, Principal Chief Kay Rhoads

NPS's public scoping period was open from July 2, 2018, to August 3, 2018. The scoping period was advertised through a press release.

A public open house was held on July 12, 2018, from 6:00 p.m. to 8:00 p.m. at the site's Visitor Center. The materials available at the open house included display boards, a sign-in sheet, and a comment form. The public had the option of leaving a comment by one of three ways: at the public

meeting; via the NPS Planning, Environment, and Public Comment (PEPC) website; or by mail to the superintendent.

No comments were received from tribes, federal agencies, or local agencies. The Iowa Department of Natural Resources noted that no site-specific records or rare species or significant natural communities would be impacted by the proposed action. They will not require a sovereign lands construction permit. The Iowa Department of Cultural Affairs commented that historic archaeological sites may extend into the proposed construction areas. They agree with the general scope of the archaeological survey that is to be completed in 2018 and want to review the survey results when available. The public provided two written comments. One commenter noted that the proposed action would provide remediation of flooding, stated that the stream channel should implement meanders, and pointed out that the original plans included a dam. The second commenter stated that the noise berms were beneficial, but was concerned about the loss of tree canopy.

This environmental assessment will be available for public review and comment during a 30-day period following publication of the environmental assessment. Comments and other input will be summarized in the resulting decision document.

Coordination with the resource agencies and American Indian tribes will continue, as needed, prior to and during construction of the proposed action.

CHAPTER 6: LIST OF PREPARERS

The preparers of and contributors to this environmental assessment included staff from Herbert Hoover National Historic Site, the National Park Service Midwest Region, National Park Service Denver Service Center, and HDR.

TABLE 3. LIST OF PREPARERS AND CONTRIBUTORS

Name	Title	Agency/Company
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Pete Swisher	Superintendent, HEHO	NPS
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Jessica Salesman	Biological Science Technician, HEHO/NPS	NPS

CHAPTER 7: REFERENCES

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APPENDIX A: RESOURCE PROTECTION MEASURES

Impact Topics and Protection Measures	Responsible Party
Cultural Resources	
NPS policies and procedures for protecting and preserving cultural resources, including guidance addressing unplanned discoveries of cultural resources, would be followed.	National Park Service and Construction Contractor
The Downey Street Bridge replacement and the Hoover Creek limestone wall reconstruction will follow NPS standards for rehabilitation outlined in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*.[1]	National Park Service and Construction Contractor
The proposed action will adhere to guidelines for the management of archeological resources, cultural landscapes, and historic and prehistoric structures found in *NPS-28: Cultural Resource Management Guideline*.[2]	National Park Service and Construction Contractor
The National Park Service will follow cultural resource management principles for archeological resources, cultural landscapes, and historic and prehistoric structures as outlined in *Management Policies 2006*.[3]	National Park Service and Construction Contractor
The Downey Street Bridge should be documented in accordance with the Historic American Buildings Survey and Historic American Engineering Record programs prior to demolition.	National Park Service and Construction Contractor
Any mitigation proposed by the State Historic Preservation Officer will be implemented.	National Park Service and Construction Contractor
The stream channel improvements will incorporate the treatment described in the *Herbert Hoover National Historic Site Cultural Landscape Report*.[4]	National Park Service and Construction Contractor
Floodplain and Wetlands	
Wetlands would be avoided to the extent practicable. If any wetlands could not be avoided, the National Park Service would follow the procedures outlined in its *Procedural Manual 77-1: Wetland Protection*.[5] Any wetland impacts would be minimized to the extent practicable. When compliance with *Procedure Manual 77-1: Wetland Protection* and Section 404 of the Clean Water Act is required, the National Park Service would coordinate with the appropriate United States Army Corps of Engineers office, Iowa Department of Natural Resources, and the National Park Service Water Resources Division. Any required Section 404 permit would be obtained through a joint state and federal permit process that has been established between the Iowa Department of Natural Resources and the United States Army Corps of Engineers.	National Park Service and Construction Contractor
Construction haul roads, staging areas, and site fencing would be located outside of the Hoover Creek riparian corridor.	Construction Contractor

Impact Topics and Protection Measures	Responsible Party
The proposed action must have only negligible to minor, new adverse effects on site hydrology and fluvial processes, including flow, circulation, velocities, hydroperiods, water level fluctuations, sediment transport, channel morphology, and so on. Care must be taken to avoid any rutting caused by vehicles or equipment.[5]	National Park Service and Construction Contractor
The proposed action must have only negligible to minor, new adverse effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.[5]	National Park Service and Construction Contractor
The proposed action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. The proposed action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements.[5]	National Park Service and Construction Contractor
Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.[5]	National Park Service and Construction Contractor
Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.[5]	National Park Service and Construction Contractor
Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.[5]	National Park Service and Construction Contractor
Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. Runoff from stockpiled material must be controlled with silt fencing, filter cloth, coir wattles, or other appropriate means to prevent reentry into the waterway or wetland.[5]	National Park Service and Construction Contractor
Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.[5]	National Park Service and Construction Contractor
Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.[5]	National Park Service and Construction Contractor
Where planting or seeding is required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.[5]	National Park Service and Construction Contractor
Silt fence provides sediment control by reducing water velocity and ponding water to facilitate the deposition of sediment on the up-gradient side of the fence. Silt fence applications include, but are not limited to, project perimeter control, secondary containment, back of curb protection, and containment for any disturbed or staging area. Silt fence will be inspected regularly for sediment accumulation, tears or holes in the fabric, broken stakes, gaps in the fabric, or areas where the fabric needs to be re-attached to the wooden stakes.	Construction Contractor

Impact Topics and Protection Measures	**Responsible Party**
A stabilized staging area is a specific location on or near the project site for stockpiling/staging materials and equipment for use on site. A stabilized staging area allows for a central location for deliveries and storage of equipment when not in use, and reduces disturbance of areas of the site not scheduled for disturbance through construction activities. Stabilized staging areas generally consist of a cleared area of the site with vehicle tracking control and perimeter control (for example, silt fence and/or construction fencing). Stabilized staging areas will be implemented as needed on site. They should be positioned to reduce the need for relocation and should be placed out of areas of active construction activity. Stabilized staging areas will be inspected for adequate vehicle tracking control and perimeter control. Stabilized staging areas should be repaired or modified as needed.	Construction Contractor
Vehicle tracking control will be used at designated points of ingress and egress, where traffic transitions from a stabilized road surface (for example, gravel or pavement) to disturbed soil. Tracking control is designed to cause soil to vibrate off equipment and vehicles as they transition from disturbed soils to paved areas. In vegetated areas where access is anticipated to be minimal, geotextiles, turf mats, or cattle guards may be installed primarily to protect vegetation and to provide a stabilized entrance.	Construction Contractor
Erosion/sediment control log applications include, but are not limited to, slope stabilization, perimeter control, check dams in swales, back of curb protection, and temporary secondary containment for stockpiles, materials storage, or masonry. Erosion/sediment control logs reduce water velocity, allowing sediment to accumulate on the up-gradient side of the log.	Construction Contractor
Perimeter control serves as erosion and sediment control and, when appropriate, access control. At down-gradient locations, perimeter controls will be installed where overland sheet flow has the potential to leave the site. In up-gradient areas, perimeter control may be added to define project boundaries, limit on-site flows, or protect off-site features. Such controls should be suitable to the application. Perimeter control may consist of any number of best management practices, including, but not limited to, earthen berms, erosion/sediment control logs, silt fence, and construction fencing. Perimeter control will be used around bore holes, trenches, and other locations where sediment is exposed and may accumulate.	Construction Contractor
Inlet protection is designed to slow stormwater flow into the inlet, allowing sediment time to settle and accumulate on the up-gradient side of the structure. Inlet protection will be installed prior to earth disturbing activity up-gradient of the inlet.	Construction Contractor
Erosion control blankets and turf reinforcement mats function by providing ground cover that reduces erosive action. Turf reinforcement mats are able to handle higher levels of concentrated flows and are used mainly in channel applications. Erosion control blankets and turf reinforcement mats may be used in conjunction with other velocity reducing best management practices. Erosion control blanket and turf reinforcement mat applications include, but are not limited to, slope and swale protection.	Construction Contractor
Seeding involves the mechanical or hand application of specific seed mixes appropriate for the site location and soil type. Seeding provides plant growth to stabilize the soil, reducing the likelihood of erosion or sediment transport. As soon as practical after the completion of construction activities, soil should be properly prepared and seeded.	Construction Contractor
Soils deposited on paved surfaces will be swept or cleaned as needed to reduce the potential of sediment transport and tracking. Sweeping operations consist of scraping large quantities of sediment from pavement and/or sweeping, via hand or mechanical means, to remove as much deposited sediment as possible. All streets within and immediately surrounding a construction site will be cleaned of earth material when sediment has been deposited on the roadway and is being tracked off site. Scraped or swept material will not be deposited in the storm sewer.	Construction Contractor

Impact Topics and Protection Measures	Responsible Party
Surface roughening, which consists of grooves or tracks installed in the soil surface parallel to the slope, is a temporary soil stabilization technique that works well in areas that will remain inactive for a short time. Surface roughening works by reducing water velocity and promoting infiltration, thus decreasing the potential for erosion to occur. Any disturbed areas with no construction activity planned for longer than 14 days may be surface roughened. This may include areas where scheduling prevents the immediate implementation of final stabilization practices, the sides of stockpiles, or other slopes. Surface roughening may be applied by creating a continuous furrow parallel to the slope.	Construction Contractor
Visitor Use and Experience	
To minimize safety hazards during construction of the proposed facilities, construction workers would be responsible for following recommended safety procedures. An active construction site would be off limits to park visitors; temporary barriers would be used to prevent visitor access to the site, and signs would be installed along haul routes and access points to warn visitors of construction activities. Construction materials would be located in a secure area.	Construction Contractor
To minimize the impact of noise on visitor experience, the National Park Service would notify site visitors of planned construction and approximate periods. The construction contractor would minimize noise generated by construction equipment by maintaining muffler systems on equipment. Equipment would be operated only as necessary. Construction would be limited to daylight hours.	National Park Service and Construction Contractor
The planned facilities would be constructed in accordance with accessibility standards as outlined in "Director's Order #42, Accessibility for Visitors with Disabilities in National Park Service Programs and Services,"[6] and with the Americans with Disabilities Act, the Architectural Barriers Act Accessibility Standard, and the Uniform Federal Accessibility Standards, as applicable.	National Park Service and Construction Contractor
All construction access, staging, and site fencing would be removed upon completion of construction. Disturbed areas would be returned to pre-existing contours (where applicable) and seeded.	National Park Service and Construction Contractor
Construction would occur from approximately September 2019 to March 2020. Construction work hours would be 7:00 a.m. to 5:00 p.m., with no weekend or holiday work unless previously requested and approved.	Construction Contractor
The construction contractor will develop a traffic control plan. The plan will be provided to the National Park Service for review and approval before implementation. Considerations for emergency vehicle access will be incorporated into the plan.	National Park Service and Construction Contractor
Wildlife Habitat	
Areas in the prairie disturbed during construction would be reseeded with a prairie seed mix similar to the existing vegetation of the restored prairie.	Construction Contractor
Prairie trails in the northwest corner of the prairie would be closed during the construction of the off-channel detention basin. The trails would be rerouted to the north and west of the basin.	National Park Service and Construction Contractor
Construction of the berms would temporarily disrupt the prairie trails located on the south and east boundaries of the prairie. Following construction, it is anticipated that access to the prairie trails would be restored.	National Park Service and Construction Contractor
Tree cutting to avoid impacts on protected species is planned to occur between October 1 and March 31 to meet Migratory Bird Treaty Act and Endangered Species Act tree-cutting restrictions.	Construction Contractor

Impact Topics and Protection Measures	**Responsible Party**
Tree replacement will occur in number, type, and location consistent with the *Herbert Hoover National Historic Site Cultural Landscape Report*.[4]	National Park Service and Construction Contractor
In accordance with the National Park Service's *Management Policies 2006*, best management practices would be used for all phases of construction activity, including preconstruction, actual construction, and post-construction.[3]	National Park Service and Construction Contractor
Construction sites would be limited to the smallest feasible area. Ground disturbance and site management would be carefully controlled to prevent undue damage to vegetation, soils, and archeological resources, and to minimize air, water, soil, and noise pollution. Protective fencing and barricades would be provided for safety and to preserve natural and cultural resources. Effective stormwater management measures specific to the site would be implemented, and appropriate erosion and sedimentation control measures would be in place at all times. Vegetation would be cleared only as necessary to construct the proposed facilities.	National Park Service and Construction Contractor
Trucks hauling fill and equipment used in the stream channel improvements should have their undercarriages and tires washed before entrance to the site.	Construction Contractor
Travel direction and cleaning locations will be identified prior to the start of work.	National Park Service and Construction Contractor
During transport, exposed earthen materials will be covered with fabric or impermeable material to prevent invasive plant contamination.	Construction Contractor
Disturbed soil will be stabilized and covered as soon as possible to prevent germination and growth of invasive plants.	Construction Contractor
Graders and other equipment will be cleaned immediately after operating in areas potentially infested with invasive plants. All dirt and plant parts will be cleaned from the underside of vehicles and other equipment.	Construction Contractor
Vehicles, equipment and tools will be cleaned to remove soil, seeds, and plant parts before transporting materials and before entering and leaving stockpile, staging areas, and work sites.	Construction Contractor

Notes:

1. National Park Service. 2017. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. https://www.nps.gov/tps/standards/treatment-guidelines-2017.pdf.
2. National Park Service. 1998. *NPS-28: Cultural Resource Management Guideline*. June 11. http://obpa-nc.org/DOI-AdminRecord/0049518-0049814.pdf.
3. National Park Service. 2006. *Management Policies 2006*. ISBN 0-16-076874-8. https://www.nps.gov/policy/MP_2006.pdf.
4. National Park Service. 1995. *Herbert Hoover National Historic Site Cultural Landscape Report*. National Park Service Midwest Region. September.
5. National Park Service. 2016. *Procedure Manual 77-1: Wetland Protection*. June 21. https://www.nps.gov/policy/DOrders/Procedural_Manual_77-1_6-21-2016.pdf.
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National Park Service
US Department of Interior

Herbert Hoover National Historic Site
Iowa

FINDING OF NO SIGNIFICANT IMPACT

Restore and Stabilize Hoover Creek for Flood Mitigation

Herbert Hoover National Historic Site

INTRODUCTION

The National Park Service (NPS) prepared an environmental assessment (EA) to evaluate the impacts of flood control measures to mitigate reoccurring flood damage and preserve the site's properties and cultural resources at Herbert Hoover National Historic Site, Cedar County, Iowa. The (EA) evaluated two alternatives: the no-action alternative and the proposed action alternative, and analyzed the potential impacts that these alternatives would have on the environment.

This environmental assessment has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations (40 CFR 1500-1508.9); and with *NPS Director's Order #12; Conservation Planning, Environmental Impact Analysis, and Decision-Making* (2011) and the 2015 *National Park Service NEPA Handbook*. During the preparation of the EA, the NPS consulted with federal and state agencies, tribes, interested and affected parties, and the general public. The EA was made available for a 14-day public review (see Attachment C, Public Comment for more details). A non-impairment determination is included in Attachment D.

PURPOSE AND NEED

The purpose of the proposed action is to preserve and protect the site's properties and cultural resources associated with the life of Herbert Hoover. The proposed action is necessary because regular flooding of Hoover Creek threatens historic structures and properties, disrupts the visitor experience, and requires staff to make continual building repairs after floods occur. In addition to flood protection, the proposed action is needed to enhance visitor experience by restoring and stabilizing Hoover Creek to reflect a period of cultural significance; preventing further damage to and restoring the historic limestone wall as a contributing landscape feature of the site; and replacing the Downey Street Bridge so that it reflects its historic 1917 appearance.

SELECTED ACTION

The NPS has selected the proposed action (NPS preferred). The selected action was identified in the EA as the NPS preferred alternative and is described on pages 2-3 thru 2-12 of the EA The selected action will restore the channel to a historic period and mitigate flooding by improving in-stream capacity. The selected action will include the following project components:

> **Off-channel detention basin.** Floodwaters will enter the detention basin via an approximate 175-foot-long intake weir constructed on the right bank of Hoover Creek. The off-channel detention basin will be approximately 10.1 acres and will hold a maximum capacity of 19.5 acre feet of water. An 88-foot-long, 24-inch-diameter reinforced concrete pipe will be installed to return water to Hoover Creek.

Stream channel improvements. Approximately 1,815 linear foot of Hoover Creek (from the pedestrian bridge within the site, downstream to the upstream end of 2nd Street Bridge) will be rehabilitated to provide for increased flood flow capacity and increased stream channel capacity to carry flows following storm events. The channel will have increased sinuosity and riffle and pool structures.

Downey Street Bridge replacement. The existing bridge and wing walls will be removed and a new 32-foot-long concrete bridge and four new concrete wing walls will be constructed. The concrete railing will mimic the baluster style of the 1917 bridge construction.

Hoover Creek limestone retaining wall. The eastern most (downstream) 40 feet will remain in-place. The western most (upstream) 75 feet of the existing historic limestone wall will be removed. The limestone salvaged from the 75 feet of removed wall will be used to face the 45 feet of new cast-in-place concrete wall that will be constructed on the same alignment as the existing limestone wall.

Utility relocations. The existing sanitary sewer and water lines exposed beneath Downey Street Bridge will be relocated prior to demolition of the bridge.

Earthen sound mitigation berms. Noise barrier berms will be constructed using excess spoil material. The flat-top berms will be approximately 10 to 14 feet tall, and will be constructed along Parkside Drive and Interstate 80 near the site property lines to best address the main noise source.

Construction access, staging areas, and site fencing. Construction is anticipated to require up to 9 months. Staging areas will be selected to minimize visitor experience disruptions. Chain-link fencing will be erected to direct pedestrians to areas free from construction. Temporary haul roads will be necessary to transport the excess spoil material from the off-channel detention basin and the stream improvements, to the earthen sound mitigation berm locations.

Revegetation. All areas disturbed because of construction will be stabilized and re-vegetated with seed mixes representative of the areas adjacent to the disturbance. Tree plantings will occur in number, type, and location consistent with the *Herbert Hoover National Historic Site Cultural Landscape Report* (NPS 1995).

MITIGATION MEASURES

The selected action incorporates the mitigation measures and best management practices listed in Attachment A. Additional mitigation measures and best management practices may be added to this list in the future. Attachment A also includes a list of the permits and approvals that will be required in order to implement the selected alternative.

SIGNIFICANCE OF CRITERIA REVIEW

As defined in 40 CFR 1508.27, the significance of an impact with respect to the selected action is determined by examining the criteria listed below.

(1) Impacts may be both beneficial and adverse. A significant impact may exist even if the federal agency believes that on balance the effect will be beneficial.

As described in Chapter 4 of the environmental assessment, the National Park Service's selected action will result in beneficial and/or adverse impacts on cultural resources, floodplain and wetlands, visitor use and experience, and wildlife habitat. No significant impacts were identified that require analysis in an environmental impact statement.

Cultural Resources. Replacement of the Downey Street Bridge, which is a contributing resource to the site, will have a direct adverse impact on the historic-age bridge itself. While the earthen sound mitigation berms will reduce noise from nearby roadways and mitigate that particular intrusion on the rural/agricultural setting landscape management area, they will create a new feature that will moderately impact the cultural landscape of the area. The earthen sound mitigation berm construction will have an adverse effect on all 15 contributing features of the Thompson Farm and 11 contributing features of the Isaac Miles Farm.

Floodplain and Wetlands. The selected action will have an indirect beneficial impact on the floodplain by storing runoff that exceeds the channel capacity and reducing flooding severity downstream. The water surface elevation during flooding events will be reduced by the selected action. The channel will be stabilized by adding pools and riffles to dissipate flow energy. Stone revetment will be installed at areas with high velocities.

The wetland impacts on both the palustrine emergent wetlands and the riverine wetlands are exempted from wetland mitigation requirements under NPS Procedural Manual 77 1: Wetland Protection under stream restoration (NPS 2016). Under the selected action, stream channel improvements will result in a direct impact on 0.03 acre of palustrine emergent temporarily flooded (PEMA) wetland. However, stream improvements will include wetland seeding along the lower banks of Hoover Creek and it is anticipated that 0.60 acre of PEMA wetland fringe will develop and will replace the 0.03 acre of PEMA wetland impact. Stream channel improvements will occur along approximately 1,815 feet (0.37 acre of riverine lower perennial unconsolidated bottom intermittently exposed [R2UBG] wetland) of Hoover Creek. The new channel will be approximately 35 feet shorter than the existing channel; however, the channel banks will be widened and graded to a less steep slope, resulting in an overall wider channel cross-section. It is anticipated that the wider channel cross-section will increase the R2UBG wetland by 1.15 acres. The R2UBG wetland will include the low flow water extent of Hoover Creek, which includes the area below the elevation of the PEMA fringe wetland seeding. A functional assessment was performed on Hoover Creek using the State of Iowa Stream Mitigation Method (USACE 2017). Based on the State of Iowa Stream Mitigation Method Calculator, these improvements to Hoover Creek will result in an overall net benefit to the stream.

Visitor Use and Experience. Approximately 856 feet of prairie trail, representing 6 percent of the total 12,797 feet of prairie trail on the site, will be realigned along the west and north sides of the off-channel detention basin. During construction, visitors will not be able to use the Downey Street Bridge as a pedestrian route over Hoover Creek, which is the primary public pedestrian route between the visitor center, the Library Museum, the Isis Statue, and the Friends Meetinghouse. The construction will disrupt the annual 'A Christmas Past' event, which brings in 3,000 to 4,000 visitors and has the potential to disrupt school tour season if construction occurs into April and May (approximately 4,000 visitors). Long-term, the bridge replacement will improve public and employee access and safety. The selected action will have a moderate impact on visitor experience due to the construction noise, the construction visual disturbance, and the length of construction. Site fencing, barriers, and signs will be used to keep visitors from entering construction areas as well as to inform them of construction. If used appropriately, visitors should remain safely away from construction. The selected action provides a beneficial indirect effect from reduced flooding severity.

Wildlife Habitat. Construction of the off-channel detention basin will have a moderate direct impact on the wildlife habitat of the prairie by converting 10.1 acres of the 81-acre prairie to a detention basin. Approximately 25 trees in the northeast corner of the basin will be removed. This will be a minor direct impact due to the loss of volunteer ash trees. Construction of the channel will require the removal of approximately 75 trees, which will be a moderate impact because the site contains nearly 500 trees and this removal represents more than 5 percent of the trees on site. The earthen sound mitigation berms will cause a direct impact on the prairie habitat by decreasing the total acreage of available habitat by approximately 11.8 acres while the prairie vegetation reestablishes.

(2) The degree to which the proposed action affects public health or safety.

The selected action has some risk to public safety during construction. However, this risk is very low and will be further minimized during construction by implementing site fencing, barriers, and signs that keep visitors from entering construction areas. Therefore, no significant impacts will occur with respect to public health or safety.

(3) Unique characteristics or the geographical area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

No prime farmland, wild and scenic rivers, ecologically critical areas, ethnographic resources, sacred sites, or Indian Trust resources are located within the site; therefore, none will be affected by the NPS selected action.

Replacement of the Downey Street Bridge, which is a contributing resource to the site, will have a direct adverse impact on the historic-age bridge itself. While the earthen sound mitigation berms will reduce noise from nearby roadways and mitigate that particular intrusion on the rural/agricultural setting landscape management area, they will create a new feature that will moderately impact the cultural landscape of the area. The earthen sound mitigation berm construction will have an adverse effect on all 15 contributing features of the Thompson Farm and 11 contributing features of the Isaac Miles Farm.

Temporary and permanent impacts will occur on wetlands for the riparian stream restoration and repair of the stone wall. Wetland impacts created by riparian stream restoration and the repair of the stone wall are excepted actions according to NPS Procedural Manual 77-1: Wetland Protection, section 4.2.1. Therefore, the best management practices and conditions described in Procedural Manual 77-1, appendix 2, have been met or will be implemented, and wetland compensation is not required for these actions. Further, the selected action will increase functional values of essential wetland functions and therefore are excepted from compensation requirements. The NPS will continue to coordinate with the US Army Corps of Engineers as necessary to acquire the necessary permits and approvals listed in attachment A.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

No highly controversial effects or decrease in the quality of the human environment were identified during the preparation of the environmental assessment or by the public during the public and agency review period.

(5) The degree to which the potential impacts are highly uncertain or involve unique or unknown risks.

No highly uncertain, unique, or unknown risks were identified during the preparation of the environmental assessment or by the public during the public and agency review period.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The NPS selected action neither establishes a precedent for future actions with significant effects nor represents a decision in principle about a future consideration.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

As described in Chapter 4 of the EA, cumulative impacts were assessed by considering the impacts of the selected action when added to impacts associated with other past, present, and reasonably foreseeable future actions. To support this analysis, information was gathered on past, present, and future NPS actions. Cumulative actions include 14 storm sewer outfalls adjacent to Hoover Creek, flood mitigation plans and stormwater drainage improvements for City of West Branch and Cedar County, creating and repairing trails in Herbert Hoover National Historic Site prairie, a future concrete sidewalk along Parkside Drive, and a future alarm system for high water alerts. The beneficial and adverse impacts of these other past, present, and reasonably foreseeable future actions on resources, in conjunction with the impacts of the selected action, will result in both beneficial and adverse cumulative impacts; however, the overall cumulative impacts are not significant. The selected action, in combination with the cumulative actions, will result in limited adverse cumulative impacts on cultural landscape, historic structures, prairie and wooded riparian corridors. The selected action, in combination with the cumulative actions, will result in beneficial cumulative impacts on flood flows, floodplain capacity, and will improve hydrological capacity within the floodplain, and visitor use and experience. Although the selected action contributes to the cumulative impacts within the site, those cumulative impacts will not be significant.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant, cultural, or historic resources.

In 2017 a Phase I geoarchaeological survey was conducted of 13.8 acres in the area potentially affected by excavation and/or grading associated with implementation of the flood mitigation measures. The survey identified areas with the potential to contain buried prehistoric archaeological sites. The core soils identified the depths where there is high potential for archaeological resources and the areas where further archaeological investigation was needed.

A Phase I archaeological survey of those areas identified with the potential to contain buried prehistoric archaeological sites was subsequently conducted in 2018, in accordance with the guidelines of the Iowa State Historic Preservation Office and the Association of Iowa Archaeologists. The survey included a visual inspection of the area of potential effects and approximately 200 auger or shovel tests to a maximum depth of 350 cm. Neither prehistoric archaeological resources nor historic resources of potential significance were discovered.

No impacts on potentially significant prehistoric or historic archaeological resources are anticipated during construction of the detention basin or earthen sound mitigation berms, during improvement of stream channel, or during replacement of the Downey Street Bridge. Haul roads will be constructed and used in ways that avoid disturbance of sediments. Archaeological monitoring will occur during excavation for the sewer line to ensure that known historic resources are documented as encountered during trenching; information gathered during this process will be used in planning future undertakings.

If potentially significant archaeological resources cannot be avoided, or if previously unknown archaeological resources are discovered, an appropriate mitigation strategy will be developed in consultation with the Iowa State Historic Preservation Officer and, as necessary, American Indian tribes traditionally associated with park lands. In the unlikely event that 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 (25 USC 3001) of 1990 will be followed.

While the earthen sound mitigation berms will reduce noise from nearby roadways and mitigate that particular intrusion on the rural/agricultural setting landscape management area, they will create a new feature that will moderately impact the cultural landscape of the area. The earthen sound mitigation berm construction will have an adverse effect on all 15 contributing features of the Thompson Farm and 11 contributing features of the Isaac Miles Farm.

Replacement of the Downey Street Bridge, which is a contributing resource to the site, will have a direct adverse impact on the historic-age bridge itself (HS-26, IDLCS 06162). The Downey Street Bridge was originally constructed of wood between 1874 and 1899. In 1917, the bridge was rebuilt in concrete, and the bridge railings were replaced with wood in 1985. Eventual replacement of the Downey Street Bridge has been a known necessity since the 1990s, and the Cultural Landscape Report recommends "document[ing] the current Downey Street [B]ridge to HABS/HAER standards and replac[ing] it with a bridge without concrete embankments that restrict stream flow" (NPS 1995). The design of the replacement bridge will minimize the impact of removing the historic structure, but the removal will still result in a direct impact on the current historic-age bridge.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

In a letter dated September 13, 2018, the NPS initiated consultation with the US Fish and Wildlife Service. In this letter, the National Park Service advised the US Fish and Wildlife Service that the proposed action "will not affect" the Prairie bush-clover or the Western Prairie fringed orchid; and "*may affect*" but *"will not adversely affect"* the Indiana Bat and the Northern Long eared bat species. The US Fish and Wildlife Service (USFWS) issued a letter of no objection to project implementation on September 20, 2018.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The NPS selected action violates no federal, state, or local environmental protection laws.

DECISION AND FINDING OF NO SIGNIFICANT IMPACT

The NPS has selected the proposed action for implementation to mitigate reoccurring flood damage and preserve the properties and cultural resources at Herbert Hoover National Historic Site. The selected action will include all of the project components: off-channel detention basin; stream channel improvements; Downey Street Bridge replacement; Hoover Creek limestone retaining wall; utility relocations; earthen sound mitigation berms; construction access, staging areas, and site fencing; and revegetation.

Based on review of the facts and analysis in the environmental assessment, the selected action will not have a significant impact either by itself or in consideration of cumulative impacts. Accordingly the requirements of NEPA, regulations promulgated by the CEQ, regulations promulgated by the Department of the Interior, and provision of Director's Order 12 and the 2015 *National Park Service NEPA Handbook* have been fulfilled.

It is my determination that the selected action does not constitute a major federal action significantly affecting the quality of the human environment. Therefore, in accordance with NEPA and with the CEQ regulations (40 CFR 1500-1508), an environmental impact statement is not required and will not be prepared for implementation of the selected action.

Recommended:

Peter S. Swisher
Superintendent
Herbert Hoover National Historic Site

2-27-19
Date

Approved:

Patricia S. Trap
Acting Regional Director
Midwest Region

3.8.19
Date

Attachment A: Mitigation, Permits and Approvals

Attachment B: Agency and Tribal Consultation

Attachment C: Public Comment and Errata Sheet

Attachment D: Non-Impairment Determination

Attachment A: Mitigation, Permits and Approvals

RESOURCE PROTECTION MEASURES

The following table outlines resource protection measures (mitigation) and the party responsible for implementing each. The NPS will monitor throughout the construction process to help ensure that resource protective measures are being implemented and are achieving their intended results. The exact mitigation measures will depend on final design and approval of plans by relevant agencies. Proposed action is synonymous with selected action.

Impact Topics and Protection Measures	Responsible Party
Cultural Resources: NPS policies and procedures for protecting and preserving cultural resources, including guidance addressing unplanned discoveries of cultural resources, would be followed.	National Park Service and Construction Contractor
Cultural Resources: The Downey Street Bridge replacement and the Hoover Creek limestone wall reconstruction will follow NPS standards for rehabilitation outlined in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*.[1]	National Park Service and Construction Contractor
Cultural Resources: The proposed action will adhere to guidelines for the management of archeological resources, cultural landscapes, and historic and prehistoric structures found in *NPS-28: Cultural Resource Management Guideline*.[2]	National Park Service and Construction Contractor
Cultural Resources: The National Park Service will follow cultural resource management principles for archeological resources, cultural landscapes, and historic and prehistoric structures as outlined in *Management Policies 2006*.[3]	National Park Service and Construction Contractor
Cultural Resources: The Downey Street Bridge should be documented in accordance with the Historic American Buildings Survey and Historic American Engineering Record programs prior to demolition.	National Park Service and Construction Contractor
Cultural Resources: Any mitigation proposed by the State Historic Preservation Officer will be implemented.	National Park Service and Construction Contractor
Cultural Resources: The stream channel improvements will incorporate the treatment described in the *Herbert Hoover National Historic Site Cultural Landscape Report*.[4]	National Park Service and Construction Contractor
Floodplain and Wetlands: Wetlands would be avoided to the extent practicable. If any wetlands could not be avoided, the National Park Service would follow the procedures outlined in its *Procedural Manual 77-1: Wetland Protection*.[5] Any wetland impacts would be minimized to the extent practicable. When compliance with *Procedure Manual 77-1: Wetland Protection* and Section 404 of the Clean Water Act is required, the National Park Service would coordinate with the appropriate United States Army Corps of Engineers office, Iowa Department of Natural Resources, and the National Park Service Water Resources Division. Any required Section 404 permit would be obtained through a joint state and federal permit process that has been established between the Iowa Department of Natural Resources and the United States Army Corps of Engineers.	National Park Service and Construction Contractor

Impact Topics and Protection Measures	Responsible Party
Floodplain and Wetlands: Construction haul roads, staging areas, and site fencing would be located outside of the Hoover Creek riparian corridor.	Construction Contractor
Floodplain and Wetlands: The proposed action must have only negligible to minor, new adverse effects on site hydrology and fluvial processes, including flow, circulation, velocities, hydro-periods, water level fluctuations, sediment transport, channel morphology, and so on. Care must be taken to avoid any rutting caused by vehicles or equipment.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: The proposed action must have only negligible to minor, new adverse effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: The proposed action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. The proposed action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. Runoff from stockpiled material must be controlled with silt fencing, filter cloth, coir wattles, or other appropriate means to prevent reentry into the waterway or wetland.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.[5]	National Park Service and Construction Contractor
Floodplain and Wetlands: Where planting or seeding is required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.[5]	National Park Service and Construction Contractor

Impact Topics and Protection Measures	Responsible Party
Floodplain and Wetlands: Silt fence provides sediment control by reducing water velocity and ponding water to facilitate the deposition of sediment on the up-gradient side of the fence. Silt fence applications include, but are not limited to, project perimeter control, secondary containment, back of curb protection, and containment for any disturbed or staging area. Silt fence will be inspected regularly for sediment accumulation, tears or holes in the fabric, broken stakes, and gaps in the fabric, or areas where the fabric needs to be re-attached to the wooden stakes.	Construction Contractor
Floodplain and Wetlands: A stabilized staging area is a specific location on or near the project site for stockpiling/staging materials and equipment for use on site. A stabilized staging area allows for a central location for deliveries and storage of equipment when not in use, and reduces disturbance of areas of the site not scheduled for disturbance through construction activities. Stabilized staging areas generally consist of a cleared area of the site with vehicle tracking control and perimeter control (for example, silt fence and/or construction fencing). Stabilized staging areas will be implemented as needed on site. They should be positioned to reduce the need for relocation and should be placed out of areas of active construction activity. Stabilized staging areas will be inspected for adequate vehicle tracking control and perimeter control. Stabilized staging areas should be repaired or modified as needed.	Construction Contractor
Floodplain and Wetlands: Vehicle tracking control will be used at designated points of ingress and egress, where traffic transitions from a stabilized road surface (for example, gravel or pavement) to disturbed soil. Tracking control is designed to cause soil to vibrate off equipment and vehicles as they transition from disturbed soils to paved areas. In vegetated areas where access is anticipated to be minimal, geotextiles, turf mats, or cattle guards may be installed primarily to protect vegetation and to provide a stabilized entrance.	Construction Contractor
Floodplain and Wetlands: Erosion/sediment control log applications include, but are not limited to, slope stabilization, perimeter control, check dams in swales, back of curb protection, and temporary secondary containment for stockpiles, materials storage, or masonry. Erosion/sediment control logs reduce water velocity, allowing sediment to accumulate on the up-gradient side of the log.	Construction Contractor
Floodplain and Wetlands: Perimeter control serves as erosion and sediment control and, when appropriate, access control. At down-gradient locations, perimeter controls will be installed where overland sheet flow has the potential to leave the site. In up-gradient areas, perimeter control may be added to define project boundaries, limit on-site flows, or protect off-site features. Such controls should be suitable to the application. Perimeter control may consist of any number of best management practices, including, but not limited to, earthen berms, erosion/sediment control logs, silt fence, and construction fencing. Perimeter control will be used around bore holes, trenches, and other locations where sediment is exposed and may accumulate.	Construction Contractor
Floodplain and Wetlands: Inlet protection is designed to slow stormwater flow into the inlet, allowing sediment time to settle and accumulate on the up-gradient side of the structure. Inlet protection will be installed prior to earth disturbing activity up-gradient of the inlet.	Construction Contractor
Floodplain and Wetlands: Erosion control blankets and turf reinforcement mats function by providing ground cover that reduces erosive action. Turf reinforcement mats are able to handle higher levels of concentrated flows and are used mainly in channel applications. Erosion control blankets and turf reinforcement mats may be used in conjunction with other velocity reducing best management practices. Erosion control blanket and turf reinforcement mat applications include, but are not limited to, slope and swale protection.	Construction Contractor
Floodplain and Wetlands: Seeding involves the mechanical or hand application of specific seed mixes appropriate for the site location and soil type. Seeding provides plant growth to stabilize the soil, reducing the likelihood of erosion or sediment transport. As soon as practical after the completion of construction activities, soil should be properly prepared and seeded.	Construction Contractor

Impact Topics and Protection Measures	Responsible Party
Floodplain and Wetlands: Soils deposited on paved surfaces will be swept or cleaned as needed to reduce the potential of sediment transport and tracking. Sweeping operations consist of scraping large quantities of sediment from pavement and/or sweeping, via hand or mechanical means, to remove as much deposited sediment as possible. All streets within and immediately surrounding a construction site will be cleaned of earth material when sediment has been deposited on the roadway and is being tracked off site. Scraped or swept material will not be deposited in the storm sewer.	Construction Contractor
Floodplain and Wetlands: Surface roughening, which consists of grooves or tracks installed in the soil surface parallel to the slope, is a temporary soil stabilization technique that works well in areas that will remain inactive for a short time. Surface roughening works by reducing water velocity and promoting infiltration, thus decreasing the potential for erosion to occur. Any disturbed areas with no construction activity planned for longer than 14 days may be surface roughened. This may include areas where scheduling prevents the immediate implementation of final stabilization practices, the sides of stockpiles, or other slopes. Surface roughening may be applied by creating a continuous furrow parallel to the slope.	Construction Contractor
Visitor Use and Experience: To minimize safety hazards during construction of the proposed facilities, construction workers would be responsible for following recommended safety procedures. An active construction site would be off limits to park visitors; temporary barriers would be used to prevent visitor access to the site, and signs would be installed along haul routes and access points to warn visitors of construction activities. Construction materials would be located in a secure area.	Construction Contractor
Visitor Use and Experience: To minimize the impact of noise on visitor experience, the National Park Service would notify site visitors of planned construction and approximate periods. The construction contractor would minimize noise generated by construction equipment by maintaining muffler systems on equipment. Equipment would be operated only as necessary. Construction would be limited to daylight hours.	National Park Service and Construction Contractor
Visitor Use and Experience: The planned facilities would be constructed in accordance with accessibility standards as outlined in "Director's Order #42, Accessibility for Visitors with Disabilities in National Park Service Programs and Services,"[6] and with the Americans with Disabilities Act, the Architectural Barriers Act Accessibility Standard, and the Uniform Federal Accessibility Standards, as applicable.	National Park Service and Construction Contractor
Visitor Use and Experience: All construction access, staging, and site fencing would be removed upon completion of construction. Disturbed areas would be returned to pre-existing contours (where applicable) and seeded.	National Park Service and Construction Contractor
Visitor Use and Experience: Construction would occur from approximately September 2019 to March 2020. Construction work hours would be 7:00 a.m. to 5:00 p.m., with no weekend or holiday work unless previously requested and approved.	Construction Contractor
Visitor Use and Experience: The construction contractor will develop a traffic control plan. The plan will be provided to the National Park Service for review and approval before implementation. Considerations for emergency vehicle access will be incorporated into the plan.	National Park Service and Construction Contractor
Wildlife Habitat: Areas in the prairie disturbed during construction would be reseeded with a prairie seed mix similar to the existing vegetation of the restored prairie.	Construction Contractor
Wildlife Habitat: Prairie trails in the northwest corner of the prairie would be closed during the construction of the off-channel detention basin. The trails would be rerouted to the north and west of the basin.	National Park Service and Construction Contractor

Impact Topics and Protection Measures	Responsible Party
Wildlife Habitat: Construction of the berms would temporarily disrupt the prairie trails located on the south and east boundaries of the prairie. Following construction, it is anticipated that access to the prairie trails would be restored.	National Park Service and Construction Contractor
Wildlife Habitat: Tree cutting to avoid impacts on protected species is planned to occur between October 1 and March 31 to meet Migratory Bird Treaty Act and Endangered Species Act tree-cutting restrictions.	Construction Contractor
Wildlife Habitat: Tree replacement will occur in number, type, and location consistent with the *Herbert Hoover National Historic Site Cultural Landscape Report*.[4]	National Park Service and Construction Contractor
Wildlife Habitat: In accordance with the National Park Service's *Management Policies 2006*, best management practices would be used for all phases of construction activity, including preconstruction, actual construction, and post-construction.[3]	National Park Service and Construction Contractor
Wildlife Habitat: Construction sites would be limited to the smallest feasible area. Ground disturbance and site management would be carefully controlled to prevent undue damage to vegetation, soils, and archeological resources, and to minimize air, water, soil, and noise pollution. Protective fencing and barricades would be provided for safety and to preserve natural and cultural resources. Effective stormwater management measures specific to the site would be implemented, and appropriate erosion and sedimentation control measures would be in place at all times. Vegetation would be cleared only as necessary to construct the proposed facilities.	National Park Service and Construction Contractor
Wildlife Habitat: Trucks hauling fill and equipment used in the stream channel improvements should have their undercarriages and tires washed before entrance to the site.	Construction Contractor
Wildlife Habitat: Travel direction and cleaning locations will be identified prior to the start of work.	National Park Service and Construction Contractor
Wildlife Habitat: During transport, exposed earthen materials will be covered with fabric or impermeable material to prevent invasive plant contamination.	Construction Contractor
Wildlife Habitat: Disturbed soil will be stabilized and covered as soon as possible to prevent germination and growth of invasive plants.	Construction Contractor
Wildlife Habitat: Graders and other equipment will be cleaned immediately after operating in areas potentially infested with invasive plants. All dirt and plant parts will be cleaned from the underside of vehicles and other equipment.	Construction Contractor
Wildlife Habitat: Vehicles, equipment and tools will be cleaned to remove soil, seeds, and plant parts before transporting materials and before entering and leaving stockpile, staging areas, and work sites.	Construction Contractor

Notes:

1. National Park Service. 2017. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. https://www.nps.gov/tps/standards/treatment-guidelines-2017.pdf.
2. National Park Service. 1998. *NPS-28: Cultural Resource Management Guideline*. June 11. http://obpa-nc.org/DOI-AdminRecord/0049518-0049814.pdf.
3. National Park Service. 2006. *Management Policies 2006*. ISBN 0-16-076874-8. https://www.nps.gov/policy/MP_2006.pdf.

[4] National Park Service. 1995. *Herbert Hoover National Historic Site Cultural Landscape Report*. National Park Service Midwest Region. September.

[5] National Park Service. 2016. *Procedure Manual 77-1: Wetland Protection*. June 21. https://www.nps.gov/policy/DOrders/Procedural_Manual_77-1_6-21-2016.pdf.

[6] National Park Service. 2000. "Director's Order #42: Accessibility for Visitors with Disabilities in National Park Service Programs and Services." November 3. https://www.nps.gov/policy/DOrders/DOrder42.html.

PERMITS AND APPROVALS

The following is a list of federal, state and local permits that will be required for project construction. This list is not all inclusive and will depend on final design.

- USACE and Iowa Department of Natural Resources (Iowa DNR) Joint Application
- Section 404 of the Clean Water Act
- Section 401 Water Quality Certification
- Floodplain Development Permit
- Iowa DNR Sovereign Lands Permit
- National Pollutant Discharge Elimination System Stormwater Discharge Permit

Attachment B: Agency and Tribal Consultation

The National Park Service coordinated with resource agencies, American Indian tribes, and members of the public to allow an opportunity for input. The agency and public involvement process conducted in conjunction with the construction design document and environmental assessment development allows the National Park Service to incorporate any substantive comments into the design.

The National Park Service sent an agency and tribal scoping letter on July 2, 2018. The letter detailed the project need, described the project components, provided a schedule on the development and release of the draft environmental assessment, and requested input on the project. The following agencies, organizations, and libraries received notice of the public scoping period and received a notice of the availability of this environmental assessment:

- Hoover Presidential Foundation
- Herbert Hoover Presidential Library and Museum
- West Branch Friends Church
- West Branch Public Library
- Tipton Public Library
- Iowa City Public Library
- Coralville Public Library
- Cedar County Board of Supervisors
- State Historical Society of Iowa
- Iowa Geological Survey
- Iowa Department of Natural Resources
- Iowa Department of Natural Resources, Water Resources Division
- Iowa Senator Joni Ernst
- Iowa Senator Chuck Grassley
- United States Geological Survey Congressional Liaison Office
- United States Fish and Wildlife Service, Region 3, Illinois-Iowa Field Office, Kraig McPeek
- United States Environmental Protection Agency, Region 7
- Natural Resources and Conservation Service Tipton Service Center
- United States Army Corps of Engineers, Rock Island District
- Advisory Council on Historic Preservation
- National Park Service, Water Resources Division
- Iowa Tribe of Oklahoma, Chairman Bobby Walkup
- Sac and Fox Tribe of the Mississippi River, Chairman Ms. March Runner
- Iowa Tribe of Kansas and Nebraska, Chairman Timothy Rhodd
- Sac and Fox Nation of Missouri in Kansas and Nebraska, Ms. Tiauna Carnes
- Sac and Fox Nation, Oklahoma, Principal Chief Kay Rhoads

The same list received a notice of availability of the environmental assessment on February 1, 2019. The comment period closed on February 19, 2019. Coordination with the resource agencies and American Indian tribes will continue, as needed, prior to and during construction of the selected action.

Section 106 of the National Historic Preservation Act

The original programmatic agreement negotiated between the NPS and the office of the Iowa State Historic Preservation Officer (SHPO), which guided consultations under Section 106 for the project, expired on January 1, 2015. Prior to the document's expiration, the NPS and SHPO agreed to extend the terms of the agreement through January 1, 2020. Under the auspices of the PA the NPS and SHPO continue to consult to avoid, minimize, or mitigate adverse effects to historic properties.

The notice of availability letter dated February 1, 2019 also provided a copy of the archaeological survey for the State Historic Preservation Officer and the Advisory Council on Historic Preservation to review under Section 106 of the National Historic Preservation Act of 1966. The original programmatic agreement negotiated between the NPS and the office of the Iowa State Historic Preservation Officer (SHPO), which guided consultations under Section 106 for the project, expired on January 1, 2015. Prior to the document's expiration, the NPS and SHPO agreed to extend the terms of the agreement through January 1, 2020. Under the auspices of the PA the NPS and SHPO continue to consult to avoid, minimize, or mitigate adverse effects to historic properties.

Section 7 of the Endangered Species Act

The United States Fish and Wildlife Service's (USFWS's) Information for Planning and Consultation (IPaC) lists four federally listed species as potentially occurring within the site. The listed species are Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), prairie bush-clover (*Lespedeza leptostachya*), and western prairie fringed orchid (*Platanthera praeclara*). The National Park Service manages the site to protect all species native to the site that are listed under the Endangered Species Act (NPS 2006b). There would be little to no impact on fish and wildlife resources; therefore, USFWS issued a letter of no objection to project implementation on September 20, 2018.

The Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act protects avian species. The bald eagle is not commonly found at the site (NPS n.d.), and no nests are located within 0.25 mile of the site. Impacts on migratory birds would be avoided during tree removal by implementing a timing restriction. The National Park Service would cooperate and coordinate with the USFWS to ensure best management practices, timing restrictions, and other mitigation practices are implemented during construction to prevent adversely affecting protected species.

Consultation with Tribes

The Indian Tribes referenced above did not respond to the scoping letter sent on July 2, 2018. Subsequently, a notice of availability for the environmental assessment was provided to each of the Tribes on February 1, 2019. The Iowa Tribe of Oklahoma, Sac and Fox Nation of Oklahoma, Sac and Fox Tribe of the Mississippi River, Sac and Fox Nation of Missouri in Kansas, and Nebraska and Iowa Tribe of Kansas and Nebraska have not responded to indicate interest in this proposed action.

Attachment C: Public Comment

PUBLIC COMMENT AND RESPONSE

The Restore and Stabilize Hoover Creek for Flood Mitigation environmental assessment was available for public review between February 7 and February 19, 2019. During this time, three comments were received directly in the National Park Service's Planning, Environment, and Public Comment (PEPC) website (http://parkplanning.nps.gov/), each expressing several concerns. Overall there was strong support for the selected project, identifying it as environmentally well-planned, and as setting an example of caring for public lands. There was some public concern about damages caused by flooding, earthen sound mitigating berms and effects on the cultural resources. The concerns from the commenters and the National Park Service's responses to those concerns are found below.

Concern

Concern was expressed over how much protection would be provided to the park from the 2-year flood event due to the design components (for example, widening the stream channel, lengthening the bridge span, or building the detention basin), or other actions needed to protect resources during storm events involving emergency action and preservation actions.

Response

Hoover Creek begins to flood, that is, escape its confining banks, at approximately a 2-year recurrence interval. A hydraulic analysis demonstrated that the proposed detention basin would reduce peak flow rates for events with a 0.2 (5-year) through 0.01 (100-year) annual exceedance probability, with the largest peak flow reductions achieved during frequent events (HDR 2018b). See the Flow Reduction due to Off-Channel Detention Storage Table below. Lower peak flow rates result in lower water surface elevations in the floodplain. The stream and bridge improvements improve the capacity of the channel to convey flow. Under the selected action, all existing emergency response pertaining to flooding and preservation would continue to be implemented as needed.

Hydrologic & Hydraulic Modeling Presentation

Flow Reduction due to Off-Channel Detention Storage

@ Downey St.	Flow (cfs)					
	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
Existing	761	958	1290	1578	1909	3077
Conv + Bridge	612	669	1106	1464	1892	3068
Reduction	20%	30%	14%	7%	1%	0%

Source: HDR Hydrologic and Hydraulic Analysis Report March 2017

Concern

There were two similar concerns expressed regarding sound mitigation and earthen berms. The first suggested that sound mitigation and "earthen sound-mitigating berms" are not included in the original 2006 Stream Management Plan and Environment Impact Statement. It appears to be a separate project with separate goals that appears only in the later proposals for flood mitigation. The proposed berms in the prairie are related to flood mitigation only by the need to dispose of excess spoil within the park. This document does not address why building earthen berms in the prairie does not rate a separate environmental assessment. The second concern suggested it is not clear, given the impacts and trade-offs to the cultural landscape involved, why the earthen berms do not require a separate EA.

Response

Under NEPA, construction of the earthen berms is a *connected* action. Actions are connected if they automatically trigger other actions, cannot or will not proceed unless other actions have been taken previously or simultaneously, or are interdependent parts of a larger action and depend on the larger action for justification. Construction of the earthen berms is dependent upon the excavation of the detention basin, and cannot proceed without the excavation of the detention basin. Connected actions are considered to be an integral part of the proposed action and as such should be analyzed in the same NEPA document rather than a separate EA. Construction of the earthen berms with the excavated soil from the detention basin was not considered in the flood mitigation planning addressed in the 2006 EIS but is an outgrowth of more recent planning – it is more efficient and economical to distribute the large quantity of excavated soil onsite rather than haul the material elsewhere, and the earthen berms constructed from the excavated soil can be used for sound attenuation. The beneficial and adverse effects of adding the earthen berms to the landscape are evaluated in the Environmental Assessment.

Concern

In Section 2.3, the document dismisses the Thompson Farm as an alternative disposal area for excess spoil. It is not clear what makes access more limited (it has a road, where prairie does not), the terrain less accommodating (it is not significantly different from the prairie except in vegetation), or the wind and snow drift hazards greater (part of the Thompson Farm is actually below the highway grade). It is certainly not clear why there is more potential for disturbance and spread of invasive species. If this is the case, the breezy approach to restoring native plant communities in the prairie after construction should be reconsidered.

The document also neglects to mention that the publicly owned Thompson Farm tract is now farmed for alfalfa by a private party. I would like an explanation for this curious omission. Did this fact play a role in the decision to dump excess spoil in the prairie instead?

Response

Due to the heavy traffic along nearby Interstate-80, quiet is a diminishing value in the National Historic Site. Rather than dispose of the excavated soil on the Thompson Farm the NPS would use the soil to construct berms to partially attenuate sounds from the nearby highway, to provide a more tranquil and solemn setting within the historic site core, and more quietude along the Tallgrass Prairie Trails.

Concern

In Section 4.3, the document considers the environmental consequences of the project on the cultural landscape, which is subject to policy protections outlined in the 1995 Cultural Landscape Report. The proposal concedes an adverse effect on the rural, agricultural setting by creating "a new feature" in the prairie. But it tries to have its cake and eat it too. It cites the prairie's lack of "historical significance and integrity," while touting "a negligible incremental contribution" (p. 4-19) as a beneficial cumulative impact on the prairie's wildlife habitat. This negligible benefit, as described in Section 4.3.4, seems to consist entirely of destroying the prairie and then building it back again. Given that it took the National Park Service 40 years to get the prairie to its present condition, it is hard to believe there would be a net benefit a few years after the project (p. 4-19).

Response

The 1995 Cultural Landscape Report (CLR) organizes/evaluates the National Historic Site (NHS) into six landscape management areas: the historic core (in the central northeastern part of the NHS between the central business district of West Branch and the library-museum entry drive, centered along the former alignment of Downey Street and the former Penn Street), gravesite, presidential library-museum, Loop Drive area, rural/agricultural setting, and visitor center & park support. The reconstructed tallgrass prairie, which covers the southern and western portions of the National Historic Site (NHS), as well as the area west of the gravesite and east of the Thompson Farm agricultural land, was developed following the NHS's period of significance (1874-1966) and has no Hoover associations. Most of the prairie overlays historic cultivated fields that existed during the period of significance and, as a result, the presence of the prairie diminishes the integrity of the once agricultural setting of the NHS. The CLR does note that "[d]espite its current lack of historical significance and integrity, the prairie provides traditional countryside views and a rural, open space buffer for the historic core." Construction of the detention basin, which would be reseeded to an appearance similar to that of the adjacent prairie, and the earthen berms along the exterior boundaries of the NHS site (west of Parkside Drive and north of Interstate 80 near the park property lines) would minimally affect existing views from the gravesite, loop drive, or presidential library-museum and not diminish the visual integrity of the rural/agricultural setting.

Because the tallgrass prairie lacks historical significance and integrity the impacts associated with the prairie's wildlife habitat are an issue separate from the cultural landscape.

The EA acknowledges that the reconstructed prairie was developed over a period of 40 years and would take several years to recover from the disturbance associated with the proposed action. Construction of the off-channel detention basin will have a moderate direct impact on the wildlife habitat of the prairie by converting 10.1 acres of the 81-acre prairie to a detention basin. The earthen sound mitigation berms will cause a direct impact on the prairie habitat by decreasing the total acreage of available habitat by approximately 11.8 acres while the prairie vegetation reestablishes. The revegetation of the prairie within the detention basin will occur slowly and will improve over time. The earthen sound mitigation berms will be seeded relative to their surroundings and will be shaped to provide a more contoured aesthetic. The earthen sound mitigation berm layout will maintain existing drainage patterns and will not impede existing stormwater routing. Although it modifies the surface contours in localized areas, the earthen sound mitigation berms will be integrated into the prairie and will introduce diversity into the rural/agricultural setting. Following construction and revegetation, the earthen sound mitigation berms will provide a similar habitat to the existing reconstructed prairie. Because the reconstructed prairie has been developing over 40 years, it may take several years to recover from the disturbance due to the proposed action. There

will be potential for species composition changes in the short term, but overall revegetation of the prairie would slowly improve over time, and support a gradual restoration of wildlife habitat.

Attachment D: Non-Impairment Determination

The National Park Service has developed *Guidance for Impairment Determinations and the NPS NEPA Process* (September 2011). That guidance builds upon the statutory direction of the National Park Service Organic Act to manage resources "unimpaired for future generations" and the interpretation by the National Park Service of legislative direction in its document *Management Policies 2006*.

Management Policies 2006, Section 1.4.4, explains the prohibition on impairment of park resources and values:

> While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

WHAT IS IMPAIRMENT?

Management Policies 2006, Section 1.4.5, What Constitutes Impairment of Park Resources and Values, and Section 1.4.6, What Constitutes Park Resources and Values, provide an explanation of impairment.

Impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.

The National Park Service has discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park (*Management Policies 2006*, Section 1.4.3). However, the National Park Service cannot allow an adverse impact that would constitute impairment of the affected resources and values (*Management Policies 2006*, Section 1.4.3).

Section 1.4.5 of *Management Policies 2006* states:

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Per Section 1.4.6 of *Management Policies 2006*, park resources and values that may not be impaired include the following:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological,

biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;

- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park, but this would not be a violation of the Organic Act, unless the National Park Service was in some way responsible for the action.

HOW IS AN IMPAIRMENT DETERMINATION MADE?

Section 1.4.7 of *Management Policies 2006* states, "[i]n making a determination of whether there would be an impairment, an NPS decision-maker must use his or her professional judgment." This means that the decision-maker must consider any environmental assessments or environmental impact statements required by the National Environmental Policy Act of 1969; consultations required under Section 106 of the National Historic Preservation Act ; relevant scientific and scholarly studies; advice or insights offered by subject matter experts and others who have relevant knowledge or experience; and the results of civic engagement and public involvement activities relating to the decision.

Management Policies 2006 further defines "professional judgment" as "a decision or opinion that is shaped by study and analysis and full consideration of all the relevant facts, and that takes into account the decision-maker's education, training, and experience; advice or insights offered by subject matter experts and others who have relevant knowledge and experience; good science and scholarship; and, whenever appropriate, the results of civic engagement and public involvement activities related to the decision."

The Restore and Stabilize Hoover Creek for Flood Mitigation environmental assessment analyzes impacts to the following resources: cultural resources, floodplains and wetlands, visitor use and experience, and wildlife habitat. *NPS Guidance for Non-Impairment Determinations and the NPS NEPA Process* (September 2011) states that:

> The impairment determination does not include discussion of impacts to visitor experience, socioeconomics, public health and safety, environmental justice, land use, park operations, etc., as those do not constitute impacts to park resources and values subject to the non-impairment standard.

As a result, for purposes of this document, impairment findings are required for cultural resources, floodplains and wetlands, and wildlife habitat.

NON-IMPAIRMENT DETERMINATION FOR THE SELECTED ACTION

This non-impairment determination has been prepared for the National Park Service's selected action described in Chapter 2, pages 2-3 to 2-12 of the environmental assessment. A non-impairment determination is made for all relevant resource impact topics analyzed for the selected action.

Cultural Resources. There will be no impairment to the Herbert Hoover National Historic Site's cultural resources. Replacement of the Downey Street Bridge, which is a contributing resource to the site, selected have a direct adverse impact on the historic-age bridge itself. Eventual replacement of the Downey Street Bridge has been a known necessity since the 1990s, and the *Cultural Landscape Report* recommends "document[ing] the current Downey Street [B]ridge to HABS/HAER standards and replace it with a bridge without concrete embankments that restrict stream flow" (NPS 1995). The proposed action selected replace the Downey Street Bridge with a structure of similar design and materials to the concrete bridge erected at the crossing in 1917, the design of which remained in place and unaltered for almost 70 years (1917–1985). The design of the replacement bridge selected minimize the impact of removing of the historic structure to a high degree.

While the earthen sound mitigation berms selected reduce noise from nearby roadways and mitigate that particular intrusion on the rural/agricultural setting landscape management area, they selected create a new feature that selected moderately impact the cultural landscape of the area. The earthen sound mitigation berm construction will have an adverse effect on all 15 contributing features of the Thompson Farm and 11 contributing features of the Isaac Miles Farm. The berms selected be constructed using excess spoil material, and seeded relative to their surroundings. The two earthen sound mitigation berms selected be shaped to blend into existing topography to the greatest extent possible. Attachment A contains resource protection measures related to cultural resources.

Despite the removal of a historic structure, and an adverse effect on contributing features, the selected action selected provide preservation and protection of the sites' properties and cultural resources. Regular flooding of Hoover Creek could damage historic structures and properties. Hoover Creek selected be restored to its period of cultural significance and the historic limestone wall selected continue to exist as a contributing landscape feature of the site. Therefore, the selected action will not result in an impairment to Herbert Hoover National Historic Site's cultural resources.

Floodplains and Wetlands. There will be no impairment to the Herbert Hoover National Historic Site's floodplain and wetland resources. The selected action will have an indirect beneficial impact on the floodplain by storing runoff that exceeds the channel capacity and reducing flooding severity downstream. The water surface elevation during storm events selected be reduced, and the stream channel selected be stabilized by adding pools and riffles to dissipate flow energy. The selected action slows degradation of Hoover Creek by disrupting bed incision and bank erosion. The selected action selected contribute beneficial effects on flood flows and floodplain capacity, and selected improve hydrological capacity within the floodplain over the long term.

The wetland impacts on both the palustrine emergent wetlands and the riverine wetlands are exempted from wetland mitigation requirements under NPS Procedural Manual 77 1: Wetland Protection under stream restoration (NPS 2016). Under the proposed action, stream channel improvements selected result in a direct impact on 0.03 acre of palustrine emergent temporarily flooded (PEMA) wetland. However, stream improvements selected include wetland seeding along the lower banks of Hoover Creek and it is anticipated that 0.60 acre of PEMA wetland fringe will develop and will replace the 0.03 acre of PEMA wetland impact. Stream channel improvements will occur along approximately 1,815 feet (0.37 acre of riverine lower perennial unconsolidated bottom intermittently exposed [R2UBG] wetland) of Hoover Creek. The new channel will be approximately 35 feet shorter than the existing channel; however, the channel banks will be widened and graded to a less steep slope, resulting in an overall wider channel cross-section. It is anticipated that the wider channel cross-section will increase the R2UBG wetland by 1.15 acres. The R2UBG wetland will include the low flow water extent of Hoover Creek, which includes the area below the elevation of the PEMA fringe wetland seeding. A functional assessment was performed on Hoover Creek using the State of Iowa Stream Mitigation Method (USACE 2017). Based on the State of Iowa Stream Mitigation Method Calculator, these improvements to Hoover Creek will result in an overall net benefit to the stream.

Implementation of required erosion and sediment controls will minimize impacts on water quality during construction (see Attachment A). The erosion and sediment controls will be designed as part of the Storm Water Pollution Prevention Plan, which will be required for the National Pollutant Discharge Elimination System permit. However, there will be minor temporary impacts on water quality after construction of the channel and prior to complete vegetation of the channel banks due to increased sedimentation into Hoover Creek. Erosion will be minimized through use of erosion control blankets along the channel banks. Overall, the selected alternative is beneficial to the floodplain and the minor wetland impacts are exempted from wetland mitigation requirements under NPS Procedural Manual 77 1: Wetland Protection Therefore, the selected action will not result in an impairment to Herbert Hoover National Historic Site's floodplain and wetland resources.

Wildlife Habitat. There will be no impairment to the Herbert Hoover National Historic Site's wildlife habitat. Construction of the off-channel detention basin will have a moderate direct impact on the wildlife habitat of the prairie by converting 10.1 acres of the 81-acre prairie to a detention basin. The earthen sound mitigation berms will cause a direct impact on the prairie habitat by decreasing the total acreage of available habitat by approximately 11.8 acres while the prairie vegetation reestablishes. Seeding the upper area of the basin with a seed mix similar to the existing prairie will reduce adverse effects by mimicking the existing habitat provided by the prairie. The revegetation of the detention area and stabilization along Hoover Creek will result in a slight change in the plant composition. Long-term, the increased diversity of vegetation and habitat due to the construction of the off-channel detention basin is a minor benefit to wildlife habitat. The revegetation of the prairie within the detention basin will occur slowly and will improve over time. The earthen sound mitigation berms will be seeded relative to their surroundings and will be shaped to provide a more contoured aesthetic. The earthen sound mitigation berm layout will maintain existing drainage patterns and will not impede existing stormwater routing. Although it modifies the surface contours in localized areas, the earthen sound mitigation berms will be integrated into the prairie and will introduce diversity into the rural/agricultural setting. Following construction and revegetation, the earthen sound mitigation berms will provide a similar habitat to the existing reconstructed prairie. Because the reconstructed prairie has been developing over 40 years, it may take several years to recover from the disturbance due to the proposed action. The revegetation of the prairie on the earthen sound mitigation berms will occur slowly and will improve over time.

Approximately 25 trees in the northeast corner of the off-channel detention basin will be removed. This will be a minor direct impact due to the loss of volunteer ash trees. Construction of the channel will require the removal of approximately 75 trees, which will be a moderate impact because the site contains nearly 500 trees and this removal represents more than 5 percent of the trees on site. In an effort to reduce the potential impact on nesting migratory birds, tree removal will occur outside the primary nesting season of migratory birds (April 1 through September 30), which overlaps the bat pup season (June 1 through July 31). Tree plantings will occur to replace unavoidable tree removal that will be required by the proposed action. Tree plantings will occur in number, type, and location consistent with the *Cultural Landscape Report* (NPS 1995). Attachment A contains resource protection measures for wildlife habitat.

Overall the selected action restores and stabilizes Hoover Creek and reduces the amount and severity of flooding events which can have a negative impact on wildlife habitat. The disturbed areas of prairie will be restored to the extent practicable and the trees will be replaced in number, type and location consistent with the *Cultural Landscape Report* (NPS 1995). Therefore, the selected action will not result in an impairment to Herbert Hoover National Historic Site's wildlife habitat.

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 wise use of our land and water resources, protecting our fish and wildlife, 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. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting 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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