# ENVIRONMENTAL ASSESSMENT FOR VISITOR CENTER RENOVATION AND ADDITION

George Washington Carver National Monument, Diamond, Missouri

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# VISITOR CENTER RENOVATION AND ADDITION
# ENVIRONMENTAL ASSESSMENT

## GEORGE WASHINGTON CARVER NATIONAL MONUMENT

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# 1.0 PURPOSE AND NEED

## 1.1 Purpose of and Need for the Proposed Action

The National Park Service (NPS) proposes to remodel the existing George Washington Carver National Monument visitor center, as well as construct a new addition to the visitor center that would expand and improve visitor and administrative facilities. The primary purpose of the remodeled and expanded visitor center facilities would be to provide the NPS with new interactive science and history discovery exhibit areas, visitor educational focus areas (classrooms), an audiovisual theater, multipurpose room, collections storage and curatorial work space, storm/tornado shelter, new and efficient office space, new or rehabilitated septic system, expanded restrooms, new fire suppression system, and a new heating and ventilation system capable of meeting the current and future mission requirements of the park. Administrative operational inefficiencies associated with the existing situation of scattered office space result in such difficulties as sharing common office equipment and facilities including copy machines, computer printers, and supply storage areas.

The proposed visitor center renovation and addition is driven by a need to expand and better organize the educational functions, visitor facilities, and staff office space at the park. Some of the existing issues that impede the park staff from completely fulfilling the park's mission include:

- Park operational and visitor/educational facilities scattered among five structurally and functionally inadequate buildings within the park,
- An outdated and undersized visitor center unable to accommodate typical-size tour groups and school groups,
- A main entrance to the visitor center that does not provide a clear focus of orientation to newly arriving visitors,
- Inadequate visitor and staff restroom facilities,
- An insufficiently sized and makeshift auditorium/theater with distracting noise from the adjacent lobby and sales area,
- An inadequately sized sales area and office area for use by the Carver Association,
- Noise distractions from the lobby area that interfere with visitor use and enjoyment of the museum.
- Inefficient heating, ventilation and air conditioning (HVAC) and utility systems including an aging and failing propane heating system, a sand-filter septic system that has reached the end of its useful life span, and a potable water system of questionable reliability and of marginal quality,
- Lack of a fire sprinkler or other fire suppression system within the visitor center,
- Lack of storm shelter space for visitor and staff protection during severe storms,
- Park maintenance facilities that have outgrown their current capacity and visually impact visitor areas,
- Inadequate museum storage and curation facilities for the Carver Collection along with limited facility accessibility for researchers and the interested public, and
- Limited and inadequate on-site quarters for any temporary or permanent staff partially as a result of conversion of these quarters to other uses (museum storage, office space, and classrooms).

## 1.2 Purpose and Significance of the National Monument

George Washington Carver National Monument (Monument) was established as a unit of the National Park System by Public Law 78-148 in 1943. The park's enabling legislation and subsequent legislation addressing the Monument's development describes the purposes of the park as follows:

- Memorialize the life of George Washington Carver as a distinguished African American, scientist, educator, humanitarian, Christian, artist, and musician.
- Preserve the setting of the Moses Carver farm and birthplace of George Washington Carver.
- Interpret the life, accomplishments, and contributions of George Washington Carver, through a museum, wayside exhibits, and other interpretive strategies (NPS, 1997).

The Monument is significant as being the birthplace and childhood home of George Washington Carver where he spent his formative years that set him on the road to becoming one of this nation's most distinguished scientists and humanitarians. Although born a slave and orphaned as a baby, his early years were spent in a nurturing atmosphere with his adoptive white parents in an agrarian setting. It was on the Carver farm that he had the opportunity to pursue his curiosity about the world around him (NPS, 1997).

# 2.0 BACKGROUND

## 2.1 Project Background and Scope

Congress established the Monument on July 14, 1943. While authorizing the construction of a museum, roads, monuments, and gardens, the original legislation did not provide sufficient funds to acquire property. In 1950, the original legislation was amended to authorize funds for acquisition of 210 acres of the original 240-acre Carver farm near Diamond, MO, which remained under concurrent jurisdiction between NPS and the State of Missouri until 1982 (Refer to Figures 1 and 2). Construction of the existing visitor center was completed in 1960, and the first NPS master plan was completed in 1964. A General Management Plan (GMP) with accompanying environmental assessment was completed in 1997. The GMP identified a number of facility, operational, and staffing deficiencies, and recommended a number of new projects to address these issues. One such recommendation was to remodel and enlarge the existing visitor center (NPS, 1997).

Starting in the early 1990s and accelerating rapidly after the Long-Range Interpretive Plan was developed in the mid-90s, the park has become a regional educational center especially for elementary school classes and also for teacher training and the general public. The number of educational program participants visiting the park annually grew from around 5,300 in 1995 to over 13,000 in 2001 when the park decided to cap the number of participants at 12,000 annually as a result of facility and staffing limitations. Park interpretive staff are also involved in a number of distance-learning initiatives such as the "Traveling Trunk" programs through which educational materials are temporarily loaned to schools throughout the country. The number of interpretive and educational partnerships involving the Monument continues to grow with a great diversity of organizations ranging from various colleges and universities, to the Smithsonian, the Missouri Botanical Gardens, to the Ozark Rural Systemic Initiative (assisting underprivileged schools), and local marketing and tourism bureaus.

An initial design for a remodeled and expanded visitor center at the Monument was developed in 2001 (Schemmer, 2001). This effort identified initial facility requirements to meet the ever-growing demand for educational/interpretive programs. Following Schemmer's initial work, updated designs were developed eventually leading to the functional areas addressed in this EA's alternatives section. These functional areas include: a multipurpose room, humanitarian room (focus on the arts), kitchen and storage area, science and history discovery areas, science and history focus areas (for hands-on learning), a theater, remodeled museum, new office areas, curatorial facilities, and other support-function areas such as a library-conference room, and computer room. The current total authorized square footage for the visitor center is 23,000 square feet. The current effort described and analyzed in this environmental assessment further refines design requirements and is part of a design-build effort with a goal of a completed visitor center renovation and new addition by mid-2006.

Selection of a preferred alternative design for the visitor center renovation and addition was accomplished through the Choosing-by-Advantages (CBA) process with initial architectural sketches developed in November 2003 and refinement of the preferred alternative accomplished in mid-December 2003. The December CBA meeting was held at the park with participation by park staff, Denver Service Center, and contract personnel. Schematic design of the preferred alternative along with a site map and brief description of the proposed action was forwarded to appropriate regulatory agencies for review and comment (see Section 6.0). Public input was

obtained during the mandatory 30-day public review of this EA, which was made available electronically on the Monument's web page as well as through distribution of paper copies to local libraries and other public media.

## 2.2 Relationship to Other Projects Possibly Having a Cumulative Impact

Several local and regional roadway projects may have some impact on increasing the visibility and accessibility of the park to travelers driving through the Joplin and southwestern Missouri region. The closest national highway to the Monument is U.S. 71 five miles west of the park. Highway U.S. 71 runs from U.S. 190 east of Opelousas, Louisiana, to International Falls, Minnesota, at the Canadian border. Most of the highway between Shreveport, Louisiana, and Kansas City, Missouri, is slated to become a northern extension of Interstate 49. This includes parts of the highway in northern Louisiana, western Arkansas, far northeastern Texas, and western Missouri. U.S. 71 is 4-lane divided highway between MO 59 near Anderson, MO, to Kansas City, where it joins Interstate 29 until St. Joseph. Basically, U.S. 71 is the main highway for north-south travel in western Missouri. The section of U.S. 71 at the County Road V exit leading to the Monument was recently widened to four lanes. As further improvements to this road continue, eventually changing it to interstate status, traffic and potential visitors will continue to increase. The state is also considering relocating the I-44 southwestern Missouri Welcome Center to the interchange of I-44 and U.S. 71. This action could also increase visitation to the Monument as more through travelers become aware of the park.

Although County Road V has recently been resurfaced, this road has many sight distance problems for drivers because of the steep rolling terrain and lack of road cuts to level the driving surface. This situation limits the forward visibility of drivers when approaching hilltops. As a result of this safety hazard, the county may eventually fund improvements to widen this road and reduce sight distance problems with extensive cut and fill. Carver Road, which leads from County Road V to the Monument is a two-lane road maintained by the Diamond Road District. The road is in fair condition, and probably will not be improved in the foreseeable future (NPS, 1997).

The State of Missouri is completing an environmental study of a 30-acre parcel of land that was originally part of the Carver farm and adjoins the southwestern boundary of the Monument near the Carver cemetery. This land was not acquired as part of the original Carver farm purchase since it was being used as a lead and zinc mine. Mining operations have closed, and the state is in the process of closing the hazardous mine shafts as part of their abandoned mines program. The park may consider acquiring this land in the future as a possible site to relocate park maintenance operations (NPS, 1997).

The Environmental Protection Agency is currently working with the town of Diamond, Missouri to address public health concerns by extending a municipal water line to the park. This will eliminate the park's present dependence on its own two potable water wells.


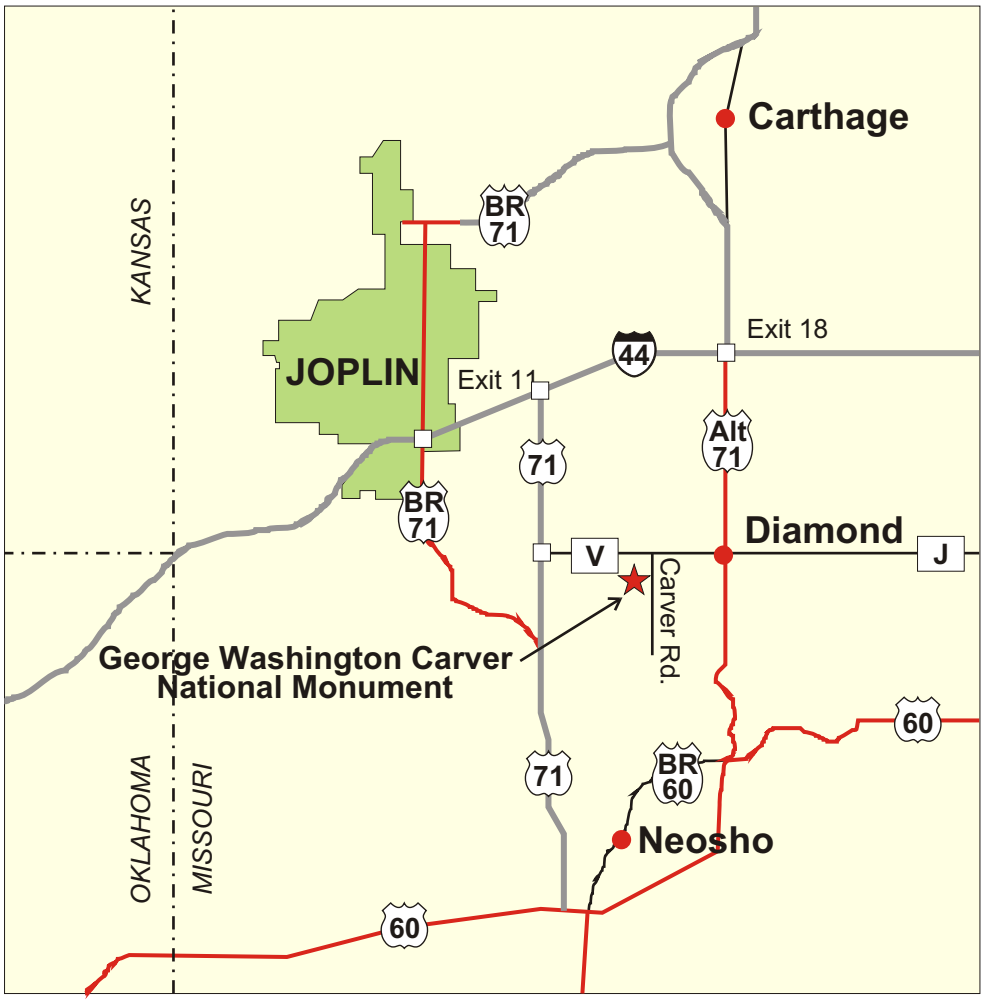


Figure 1

# Vicinity Map

George Washington Carver National Monument
Environmental Assessment for Visitor Center Renovation and Addition
Diamond, Missouri

North

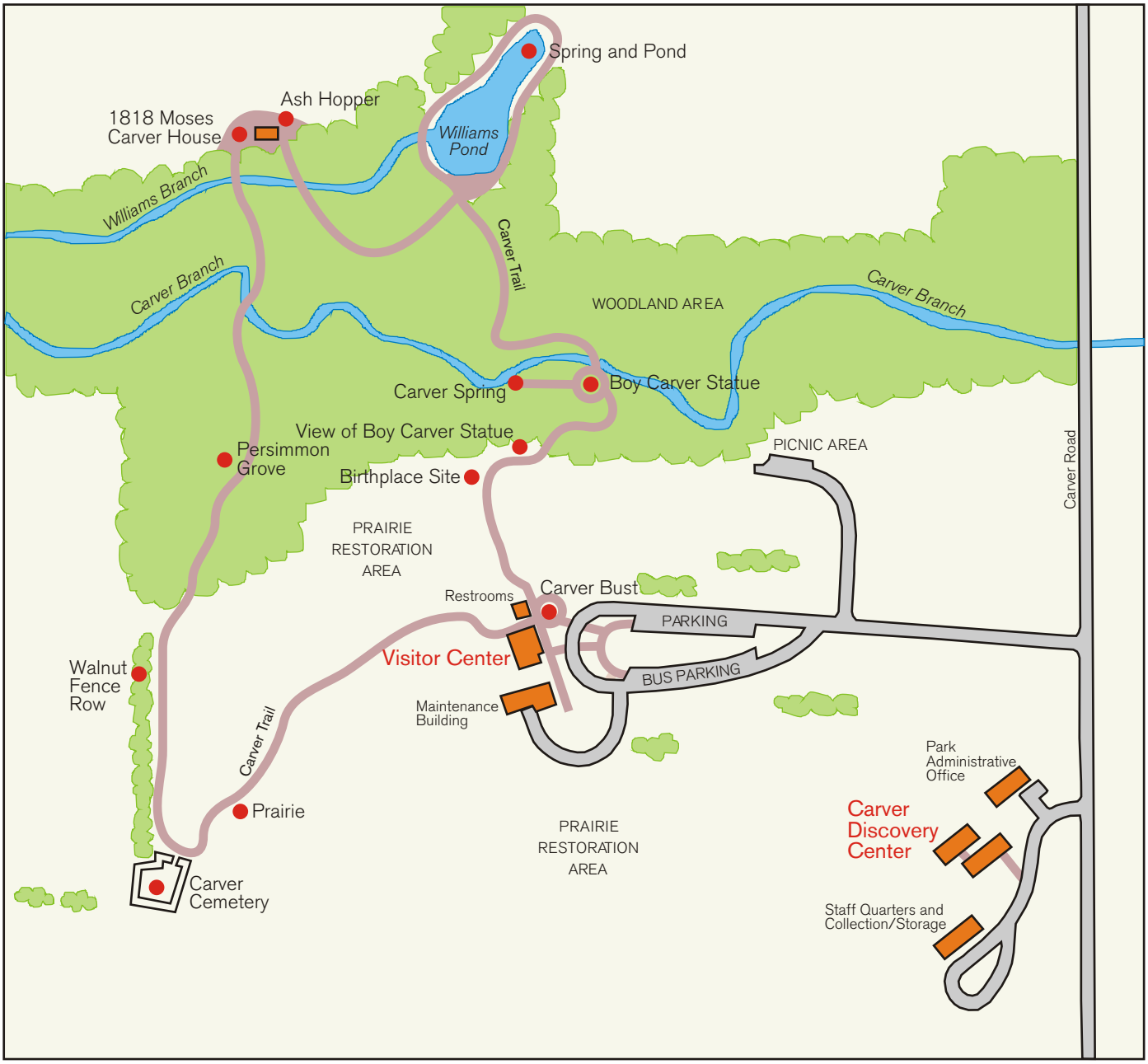


Figure 2

# Park Layout Map

George Washington Carver National Monument
Environmental Assessment for Visitor Center
Renovation and Addition
Diamond, Missouri

## 2.3 Issues

Many deficiencies characteristic of the existing facilities drive the need for the proposed action. An overriding issue as mentioned in Section 2.1 above is the need to expand and better organize the educational functions and facilities at the park. Under existing conditions,the park's one multipurpose classroom is located in a 1960s converted housing unit adjacent to the discovery center, which is a 670 square foot temporary trailer building. These two facilities are located adjacent to other housing units converted into staff office space and museum curatorial space. They are about 0.2 mile away from the visitor center, park restrooms, and museum. (Refer to Figure 2.) The current situation at the visitor center also presents a substantial problem in handling larger school and other groups—the restrooms are not large enough, the entrance is confusing and results in mixing of group tours and individuals, the auditorium/theater is an insufficiently sized room that has been partitioned off of the main lobby and sales area, noise from the lobby and sales area is distracting in the museum and in the theater, there is an inadequately sized merchandise sales area and office area for Carver Association offices, the HVAC system is inadequate and inefficient, there is no fire sprinkler system, and there is no storm shelter for staff and visitor emergency protection.

Some of the utility systems supporting the existing visitor center area are also obsolete and/or inadequate. The existing propane gas lines and tanks used to supply heat systems are aging and failing and do not provide adequate flow to all park facilities. The single-pass sand filter septic system discharging into a small stream trace northwest of the visitor center has no discharge permit and has probably reached the end of its useful life (Chamberlin Architects, 2003).

Curation of the Carver collection is also inadequately housed in a converted two-bedroom park staff apartment. The facility does not meet minimum museum storage standards. In addition accessibility to the collection by researchers is limited, and it is inaccessible to individuals with mobility impairments. The wooden frame building is also highly susceptible to storm damage, which is common in the southwestern portion of Missouri.

NPS staff offices are currently scattered among five different buildings throughout the park, which reduces the efficiency of park administration as well as staff-visitor interaction. Park headquarters is located near the existing classroom and discovery areas resulting in distracting activity and noise that impacts administrative staff work.

Use of the former on-site staff apartments for museum collection storage and curation, classrooms, and office space has limited available temporary quarters for interns and permanent quarters for an authorized on-site ranger.

Finally, the park's maintenance operation has outgrown its current capacity, and its operations overflow into areas visible to park visitors. An old maintenance storage building in particular is very unsightly for visitors.

## 2.4 Impact Topics

Specific impact topics were selected for analysis to allow comparison of the environmental consequences of each alternative. These impact topics were selected based on federal laws, regulations, and Executive Orders; 2001 NPS *Management Policies*; and NPS knowledge of

limited or easily impacted resources. A brief rationale for the selection of an impact topic analysis, or the dismissal of a topic from further consideration, is given below.

### 2.4.1 Impact Topics Selected for Analysis

#### 2.4.1.1 Storm Water and Erosion Control

The Proposed Action would result in ground disturbance from heavy equipment use and other activities during construction and in a permanent increase in impervious paved surfaces and surfaces beneath buildings subsequent to construction Consequently, there would be increased potential for soil erosion from disturbed areas as a result of rainfall events, occurring during construction, and there would be permanent changes in the quantity and speed of runoff in areas immediately adjacent to the visitor center. Both of these situations would result in an increased potential for localized soil erosion.

#### 2.4.1.2 Energy and Utilities

The Proposed Action would result in additional energy requirements as well as utility system upgrades/replacements. The Proposed Action would also provide an opportunity to improve energy efficiency and incorporate some use of renewable energy resources.

#### 2.4.1.3 Museum Collections

The NPS Director's Order 28 defines museum collections as an assemblage of objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so they can be preserved, studied, and interpreted for public benefit. The Proposed Action would create new storage facilities and upgrade climate control conditions for the Carver collection at the Monument. These improvements would have an important impact upon museum collections, which are among the most valuable resources within the Monument. Protection of collection materials and archives from the detrimental effects of ultraviolet light, insect attack, fire, and potential loss due to storm damage is required.

#### 2.4.1.4 Visitor Experience and Aesthetic Resources

The Proposed Action would consolidate visitor services in one area of the park and create new classrooms and interactive exhibits. These changes would affect the quality of visitor experiences and the ability of the park to meet current and projected future demands associated with its extensive educational programs.

#### 2.4.1.5 Park Operations

The Proposed Action would create additional office space and storage areas, expand the area for sales operations, and consolidate park administrative operations into one location. There would also be improved storage for park maintenance equipment and supplies, resulting in improved safety for park personnel and visitors.

### 2.4.2 Impact Topics Eliminated from Further Consideration

#### 2.4.2.1 Geology and Soils

Although limestone bedrock is rather shallow in the area and outcrops occur, geotechnical investigations near the existing visitor center indicate a depth to bedrock that should accommodate proposed construction. Additionally, the construction itself would not have any measurable impact on local or regional geologic formations or on groundwater (see Section 3.1.2). The park is also planning to evaluate, and, if feasible, install a geothermal system for heating and cooling the new/remodeled visitor center. Additional details concerning the geothermal system are given in Section 3.1.3. This sealed heat exchange system would not have any measurable impacts on local geology. Any envisioned construction activity associated with the Proposed Action would disturb a minimum amount of soil surface area within previously disturbed areas of lawn or prairie immediately adjacent to the existing visitor center. The soil series characteristic of the visitor center vicinity is Keeno very cherty silt loam, 3 to 9 percent slopes (NPS, 1997). This series is moderately well-drained and a typical upland soil in the area. Permeability is moderate, available water capacity is low, runoff is medium. This series presents no unusual constraints to construction activity.

#### 2.4.2.2 Floodplains

The Proposed Action does not occur within an area of 100-year or 500-year floodplain, according to the Federal Emergency Management Agency (1985).

#### 2.4.2.3 Wetlands

Wetland areas are not mapped within or adjacent to the project area as indicated on the U.S. Fish and Wildlife Service's National Wetlands Inventory Map for the Granby, Missouri topographic quadrangle (USFWS, Undated).

#### 2.4.2.4 Prime and Unique Farmlands

Prime farmland does not occur in the vicinity of the Proposed Action, which is mapped as Keeno very cherty silt loam (Aldrich, 1989). Consequently, prime farmland as defined in 7 CFR Part 658 would not be impacted by the Proposed Action and is not further discussed.

#### 2.4.2.5 Cultural Resources (Archeology)

Four archeological inventories have been conducted within the monument since 1953. The most recent of these general overviews include *An Intensive Archeological Survey of George Washington Carver National Monument,* 1981, completed for the NPS by Southwest Missouri State University; and the 1999 NPS Integrated Management Plan for George Washington Carver National Monument. The Integrated Management Plan identified twelve historic and prehistoric sites within the boundaries of the park, including a complex site associated with Carver's birthplace cabin. This site is located outside the area of potential effect for this proposal.

The NPS Midwest Archeological Center conducted an intensive archeological investigation within the Area of Potential Effect (APE) for this proposed project in April of 2004. This survey found no archeological resources within the APE for this proposed undertaking. An archeological report titled *Geophysical and Shovel Test Inventory, Visitors Center Expansion Area, George Washington Carver National Monument (GWCA), Newton County, Missouri,* documenting the negative results of the April 2004 archeological investigation, is being prepared and will be forwarded to the Missouri State Historic Preservation Office (SHPO) for review and comment. In addition, a copy of this environmental assessment will also be sent to the Missouri SHPO. Because no archeological resources were found within the area of potential effect for this proposal, archeological resources is dismissed as an impact topic in this environmental analysis.

#### 2.4.2.6 Cultural Resources (Historic Structures)

Although historic architectural sites have been identified within the park (see 2.4.2.7 below), none occur in the vicinity of the Proposed Action. Therefore, there would be no impact to historic structures. The SHPO has given a "Determination of No Adverse Effect" for the Proposed Action on architectural resources within the park (see letter dated August 8, 2003 in the Section 6.0 of this EA).

#### 2.4.2.7 Cultural Resources (Cultural Landscapes)

A cultural landscape is defined in NPS Director's Order 28 as a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. The cultural setting includes the 1881 historic Moses Carver house and the Carver cemetery. The Moses Carver house is of national significance. Although there has been no formal identification and evaluation of the cultural landscape at the Monument, the landscape does contain nationally significant structures as well as many features contributing to the importance of the site. This landscape may meet National Register criteria.

However, implementation of the action alternatives would be consistent with The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Historic Landscapes, 1996. The action alternatives would not destroy historic features and spatial relationships that characterize the property. New work would be compatible in size, scale, proportion, and massing to protect the integrity of the property and its environment.

#### 2.4.2.8 Cultural Resources (Ethnographic Resources)

The NPS defines an ethnographic resource as a site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it (DO-28). Some places of traditional cultural importance may be eligible for listing in the National Register of Historic Places as traditional cultural properties (TCPs) because of their association with cultural practices or beliefs of a living community that are rooted in that community's history and that are important in maintaining the continuing cultural identity of the community.

The NPS has not completed an ethnographic overview and assessment for the Monument. The park is important for its association with George Washington Carver, a distinguished African American scientist, educator, humanitarian, artist, and musician and is also recognized for its significance as the nation's first memorial to the achievements of an African American. Presently, no TCPs have been identified within the park. Furthermore, none of the action alternatives would appreciably alter potential ethnographic resource conditions nor affect the relationship between the resource and an affiliated group's practices and beliefs. Therefore, ethnographic resources are dismissed from further analysis in this environmental assessment. The NPS will continue to consult with interested persons and with the SHPO to identify and protect ethnographic resources.

#### 2.4.2.9 Indian Trust Lands

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaskan Native tribes.

There are no Indian trust resources in George Washington Carver National Monument. The lands comprising George Washington Carver National Monument are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, Indian trust resources is dismissed as an impact topic in this environmental assessment.

#### 2.4.2.10 Air Quality

The Missouri Department of Natural Resources, Air and Land Division, monitors all air quality pollutants throughout the state. The closest air quality monitoring station is located in Carthage, MO, which is about 9 miles north of the Monument. According to the U.S. Environmental Protection Agency (2003), Missouri is in attainment for all criteria pollutants. Negligible air emissions and fugitive dust would be generated from construction activities associated with the proposed action.

#### 2.4.2.11 Noise

With the exception of temporary construction, the Proposed Action would not result in any change in noise levels within the park. Temporary construction noise could result in minimal interference with visitor experiences in the museum within the existing visitor center and, possibly, at the Carver Discovery Center (more than 900 feet southeast of the visitor center). However, such interference would be short-lived.

#### 2.4.2.12 Ecological Resources

The Proposed Action would not impact important park flora and fauna. The proposed site of the visitor center addition is completely within the developed area of the park characterized by lawn grasses and scattered planted trees. Coordination between the NPS and U.S. Fish and Wildlife

Service personnel confirmed that there would be no impact on threatened or endangered species (see letter in Section 6.0 of this EA).

#### 2.4.2.13 Solid and Hazardous Wastes

The Proposed Action would involve a minimal amount of solid waste/construction waste or hazardous waste generation in the short-term. Construction document specifications would address the handling and disposal of any solid, special, or hazardous wastes.

#### 2.4.2.14 Transportation

There would be no changes to existing roadways or traffic circulation as a result of the Proposed Action.

#### 2.4.2.15 Environmental Justice

Executive Order 12898 requires all federal actions to assess the direct and indirect effects they may have on minority and low-income populations and communities. The Proposed Action would not have disproportionately high and adverse human health or environmental effects on minority and low-income populations and communities.

#### 2.4.2.16 Soundscape Management

The Proposed Action would result in temporary short-term increases in construction noise that would be local to the vicinity of the visitor center. Consequently, there would be no noticeable effect upon the natural soundscape of the majority of the park.

#### 2.4.2.17 Lightscape Management

The Proposed Action would result in no appreciable increase in artificial lighting beyond the existing conditions surrounding the visitor center. Therefore, there would be no artificial lighting impacts on the park or surrounding resources.

## 2.5 Applicable Regulatory Requirements and Coordination

This Environmental Assessment (EA) has been prepared to evaluate the impacts of the reasonable alternatives described in Section 3.0. The EA is prepared in accordance with the *National Park Service's Director's Order No. 12: Conservation Planning, Environmental Impact Analysis, and Decision Making*, and its accompanying Handbook, and the provisions of the National Environmental Policy Act of 1969 (NEPA) (PL 91-190, 42 USC 4321-4247). Detailed procedures for developing this document comply with the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508).

Regulatory requirements, which may be applicable to the activities addressed in this EA, include:

- Section 106 of the National Historic Preservation Act addressing any activities directly or indirectly impacting prehistoric or historic archaeological sites, historic structures, or cultural landscapes eligible for or listed on the National Register of Historic Places (NRHP).
- National Parks Omnibus Management Act of 1995.
- NPS Organic Act of 1916.
- George Washington Carver National Monument enabling legislation of July 14, 1943 (57 Stat. 563, P.L. 78-148) passed by the 78th Congress.

# 3.0 ALTERNATIVES

In the 1997 General Management Plan (GMP), the NPS identified the need for a remodeled and expanded facility. Reasonable and feasible action alternatives should remedy deficiencies listed in Section 1.1 by:

- Providing expanded visitor education and exhibit areas to meet the current and future visitation and educational mission needs;
- Improving visitor flow through the facility;
- Providing adequate protection and storage for artifacts and library collections;
- Installing a storm shelter for staff and visitor protection;
- Realigning offices currently spread out in five buildings for enhanced administrative efficiency;
- Upgrading the current visitor center fire suppression capabilities,
- Replacing a failing heating and air conditioning (HVAC) system in the existing visitor center;
- Rehabilitating or replacing the existing septic system;
- Removing the aging temporary building that currently houses the park's discovery area;
- Ensuring accessibility to all facilities; and
- Removing a dilapidated storage building near the maintenance facility.

In terms of location and/or adjacency requirements of specific functions within the renovated existing visitor center and the new addition, the following are important considerations in the evaluation of alternatives:

- Collection and storage areas should be in the most structurally secure area of the building possible with limited or no daylight exposure.
- Staff offices should be isolated from the main visitor flow through the facility and should be co-located with the library/conference room, computer room, mail/copy room, and staff restrooms.
- The multipurpose room, humanitarian room, kitchen, and restrooms have strong functional relationships and should be adjacent to each other and should have easy access to restroom facilities.
- The stage area of the multipurpose room should have side access to an area that could be used either exclusively or as a shared function as a dressing/change room.
- History discovery and history focus rooms should be adjacent with a view of the original Carver cabin site and restored prairie from the history focus room.
- The History focus room, which is to be a replica of the one-room schoolhouse attended by Carver, would ideally be lighted primarily by natural daylight.
- Science discovery and science focus rooms should be adjacent with an outside south and/or west-facing wall in the science focus room for greenhouse installation.
- The museum should remain basically in its current location and configuration with adjacency to the new theater area where visitors are introduced and oriented to the park.

In terms of landscaping, the following are important general considerations:

- Utilize native plant species in general landscaping to the maximum extent possible.

- Select native and non-native species for interpretive areas based on the significance of the plant species to Carver's life work and for their value in providing shade, screening and horticultural value.
- Use a variety of natural materials (wood chips, natural stone, etc.) in lightly used traffic pedestrian walkway areas.
- Place the existing Carver bronze bust in a more prominent location more intimately connected with the surrounding landscape, the visitor center complex, and the interpretive plantings.
- Minimize northward incursion toward the historic archaeological area that could be disturbed by landscaping.

As a result of the NEPA-required scoping process, which included, internal scoping using the NPS Choosing-by-Advantages process; a public scoping meeting; and coordination with state, local, and federal agencies; four alternatives (including the No-Action Alternative) were identified and are analyzed in this EA. These alternatives are described in detail below. All of the action alternatives involve construction of a two-story addition to the west and north sides of the existing visitor center as well as renovation/reconfiguration of the interior of the existing visitor center. The lower story of the addition would be partially below the existing ground level. An elevator and a ramp system are designed into all of the addition alternatives making all areas handicapped accessible.

## 3.1 Actions Common to All Action Alternatives

### 3.1.1 Landscaping, Outdoor Pedestrian Circulation, and Hardscape Features

A detailed landscape design associated with the visitor center renovation and addition will be developed subsequent to final facility design. Facility siting and design analyzed in this EA will only include minimal landscape improvements such as re-grading, re-seeding, and very limited planting. Some general overarching landscaping guidelines to be followed regardless of the action alternative chosen would include:

- Maintaining the large trees along the northeast border of the property,
- Removing the foundation plantings that obscure the drive and the visitor center,
- Continuing to restore and preserve the prairie area,
- Maintaining the large trees directly next to the front of the visitor center,
- Installing a new pedestrian crosswalk and handicapped ramp adjacent to the existing entry road/parking to the visitor center, and
- Making minor modifications to existing fencing and walls to accommodate the existing maintenance yard and a possible service drive to the lower level.

New sidewalks, ramps, and other outdoor hardscape elements such as construction of a small patio area for the Carver bust near the northwest corner of the new visitor center addition would be essentially identical for all action alternatives. The general location of drives, walkways, and other hardscape features would also be the same.

### 3.1.2 Excavation for Construction of a Lower Level

All of the proposed action alternatives would require excavation prior to construction of the lower level of the visitor center addition. The project area, and all of Newton County, is in a region of the state having Mississippian-age rock (typically limestone) as the uppermost bedrock strata (MDNR, 1990). According to a geotechnical study conducted by Palmerton & Parrish, Inc. in 1998, the area around the existing visitor center is underlain by limestone bedrock at a depth ranging from 12 to 16.5 feet below the surface. During the geotechnical study, limestone was found in borings 1, 2, and 3, but was never found at boring 4 at a depth of up to 15.5 feet.

The three action alternatives would most likely result in the removal of some limestone bedrock. However, impact to bedrock below the limestone layer as a geological resource is not a consideration, but the impact of shallow bedrock and the characteristics of the bedrock on the approach to construction of the visitor center addition could be a consideration regardless of the action alternative. Additionally, groundwater drainage may be an issue in all new below-grade construction.

### 3.1.3 Energy and Utility System Improvements

As part of any action alternative, the park intends to determine the feasibility of installing a geothermal well system for heating and cooling the new/renovated visitor center. The geothermal system would be supplemented by electric heating and cooling systems. The geothermal system, as proposed, would consist of 60-80 wells drilled approximately 200 feet deep into bedrock in an area immediately west of the visitor center and covering an area of approximately 18,000 square feet. All wells would be 15 feet apart on center. The grouted wells would be connected by a closed system of pipes filled with propylene glycol as the heat exchange medium. All components of the geothermal well system would be subsurface, and lawn and/or prairie areas where the geothermal well field would be located could be restored to existing vegetative cover. The propane-fired heating system in the existing visitor center would be removed.

A new septic leach field would also be installed with any of the action alternatives. The leach field (approximately 100 feet by 130 feet) would be located generally in the area shown in Figure 7, which is currently in prairie. The installed system would a forced drip system with a septic tank pump supplying a subsurface pipe system evenly distributing the waste water throughout the leach field. Prairie vegetation would be re-established subsequent to leach field and septic tank installation. The leach field must be at least 100 feet from the geothermal well field.

## 3.2 No-Action Alternative

The No-Action Alternative would maintain the existing visitor/administrative facility (Figure 3), the building and adjacent trailer housing the Discovery Center, and the converted apartment for collection and archival storage. The dilapidated maintenance storage building could be demolished under this alternative as part of routine maintenance actions (Refer to Figure 2 for an existing layout of park buildings). There would be no change in the existing floor plan of the visitor center. The existing scattered locations of park facilities would continue to cause difficulties for park staff and visitors moving from location to location within the park. It is also likely that the interior spaces, such as the auditorium and restrooms, within the existing visitor

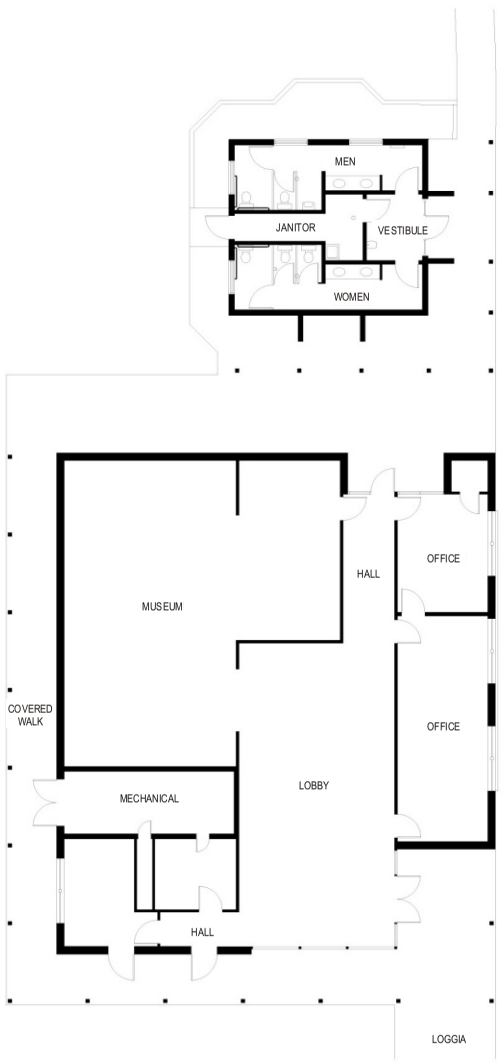


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**FIGURE 3:** No-Action Alternative
(Existing Conditions)

George Washington Carver National Monument

center would remain too small to properly accommodate larger groups. With this alternative, there would remain inadequate protection and storage space for artifacts and library collections. This situation results in putting the Carver Collection at risk for potential damage and loss from adverse environmental conditions in the future.

The visitor center would not have upgrades to its heating and cooling systems, fire suppression capabilities, or septic system. The existing HVAC system within the visitor center would be repaired or replaced with a similar system. All of existing systems are nearing the end of their useable life span (Chamberlin Architects, 2003). Keeping these systems may result in increased repair and maintenance costs for the park. In addition, this alternative would not involve construction of a storm shelter, thus leaving park resources, staff, and visitors at risk in the event of a major storm.

However, given present limitations, the park has continued to expand its mission and programs within the confines of existing facilities. With limited short-term and long-term maintenance, the useful life of existing facilities could be extended, e.g. replacement of the existing heating system with a newer, more efficient system, demolition of the maintenance storage building, and, possibly, the transfer of some of the on-site Carver collection to other Carver sites such as Tuskegee with curatorial facilities meeting standards.

## 3.3 Alternative 1

Alternative 1 consists of an approximately 5,500 square foot lower level and a 10,700 square foot upper level (Figures 4a and 4b). Construction would require excavation to 12 feet below existing grade. Lower level facilities would include:

- Carver collection/storage facilities
- Library/conference room
- Administrative offices
- Computer room
- Mail/copy room
- Reception/waiting area
- Restrooms and locker spaces

Alternative 1 upper level facilities within the new addition would include:

- Kitchen
- Multipurpose room with a stage and an adjacent service entrance and dressing room, also a vending/recycling area off of this room
- Humanitarian focus area separated from the multipurpose room by a moveable partition
- History discovery area containing a replica of the interior of the Carver slave cabin
- Outside observation deck off of the history discovery area
- History focus area adjacent to the history discovery area with a view of the grounds to the west and north including the probable site of the original Carver cabin
- Science discovery area separated from the science focus area by a storage area
- Outside observation deck off of the science discovery area

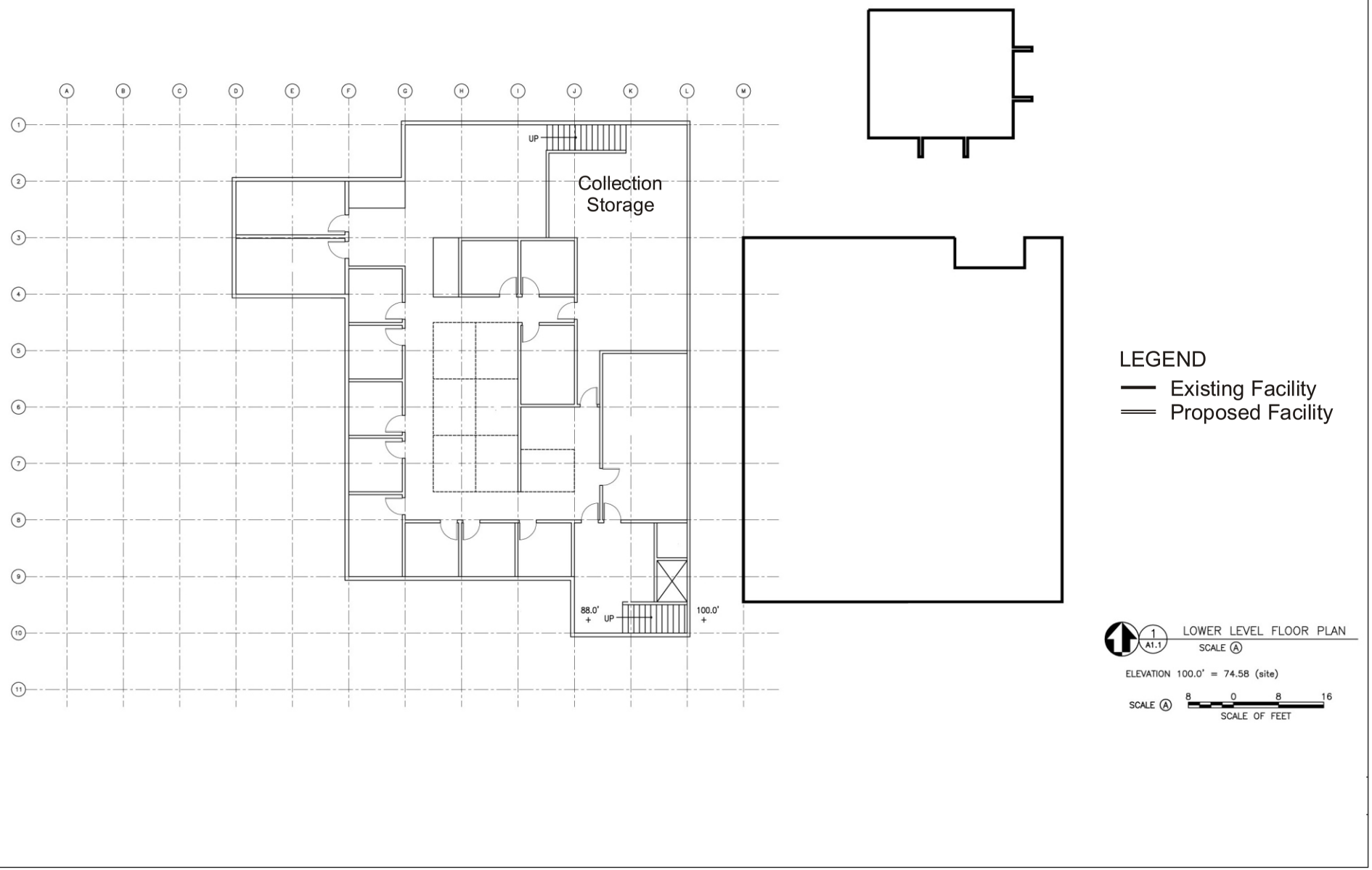


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**FIGURE 4a:** Alternative 1
Lower Level Floor Plan

George Washington Carver National Monument

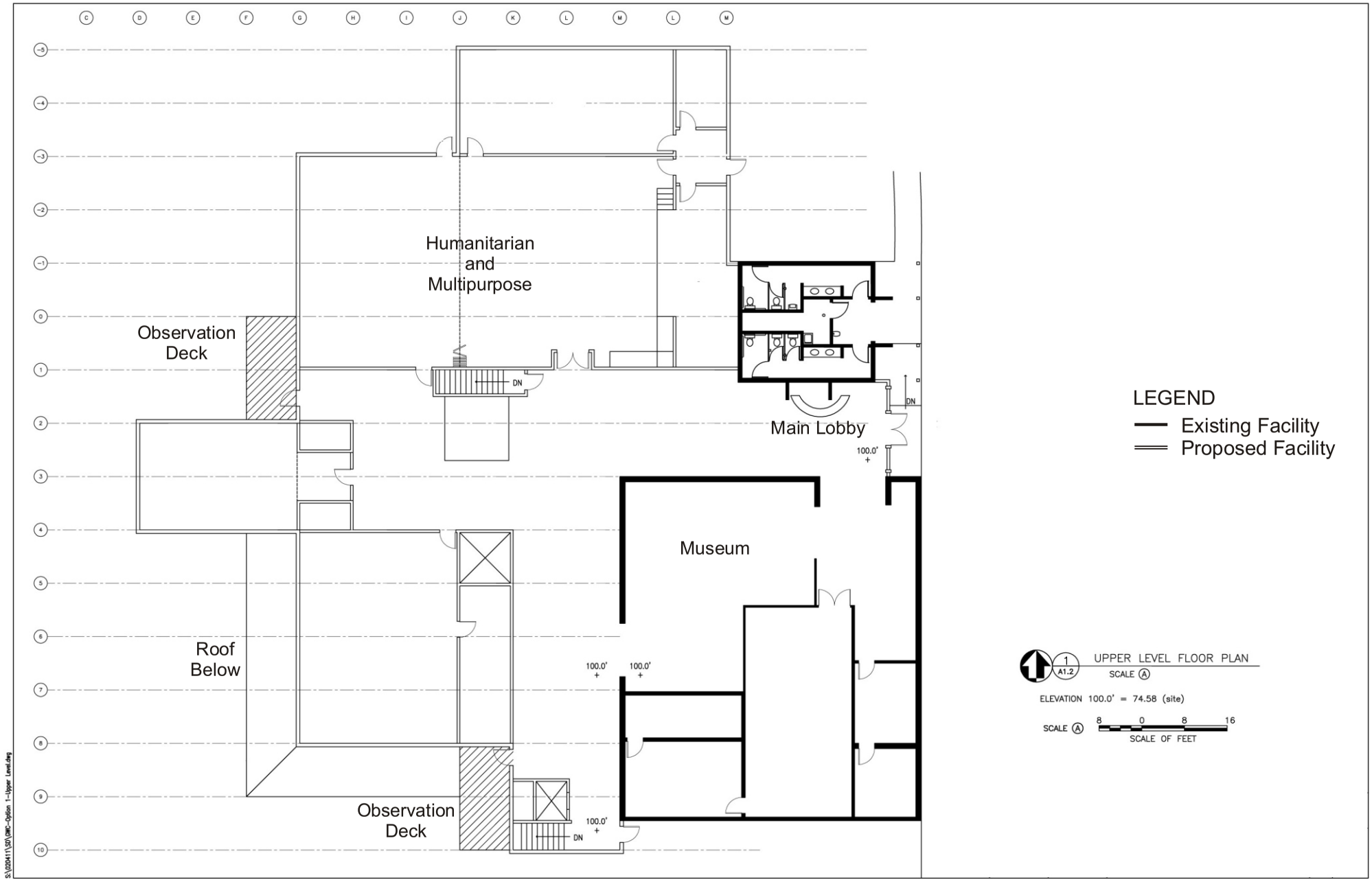


**FIGURE 4b:** Alternative 1
Upper Level Floor Plan

George Washington Carver National Monument

- Science focus area with west and south-facing outside walls for greenhouse installation

This alternative would also involve the following changes to the existing visitor center facilities:

- The museum would remain in its current location, but with an interior connection to the science discovery area in the new addition.
- The existing mechanical room would remain with expansion into current space occupied by Carver Association offices/storage.
- The existing lobby and sales area would be converted into a theater in the southern portion of the building and the lobby and sales area would be moved to the northern end of the building where the park superintendent's office was formerly located.
- The existing small theater area would be converted to storage with a small southeastern portion of the building converted into Carver Association office space.
- The existing breezeway between the visitor center and the restrooms would be enclosed and converted into a main entrance and lobby area.
- The existing restrooms would remain accessible from outside.

## 3.4 Alternative 2

Alternative 2 consists of an approximately 10,000 square foot lower level and a 7,800 square foot upper level (Figures 5a and 5b). Construction of the lower level would require excavation to approximately 10 feet below existing grade, and the upper level addition would be four feet above the floor level of the existing visitor center. Lower level facilities would include:

- Carver collection storage facilities
- Administrative office space
- Separate copy room and mail room
- Reception and waiting area
- Janitorial storage and equipment area
- Restrooms
- Humanitarian area contiguous with a multipurpose room (with stage) and an option to separate the two areas using a moveable partition.
- Vending area off of the multipurpose room
- Kitchen off of the multipurpose room
- Utility and storage rooms

Alternative 2 upper-level facilities within the new addition would include:

- Theater with projection and storage space
- History discovery area containing a replica of the Carver slave cabin
- Outdoor observation decks off of the history discovery area overlooking both the probable site of the original Carver cabin to the north and the prairie and Carver cemetery area to the west.
- History focus area in the northwest corner of the building
- Science discovery area contiguous with the history discovery area and separated from the science focus area by a storage area

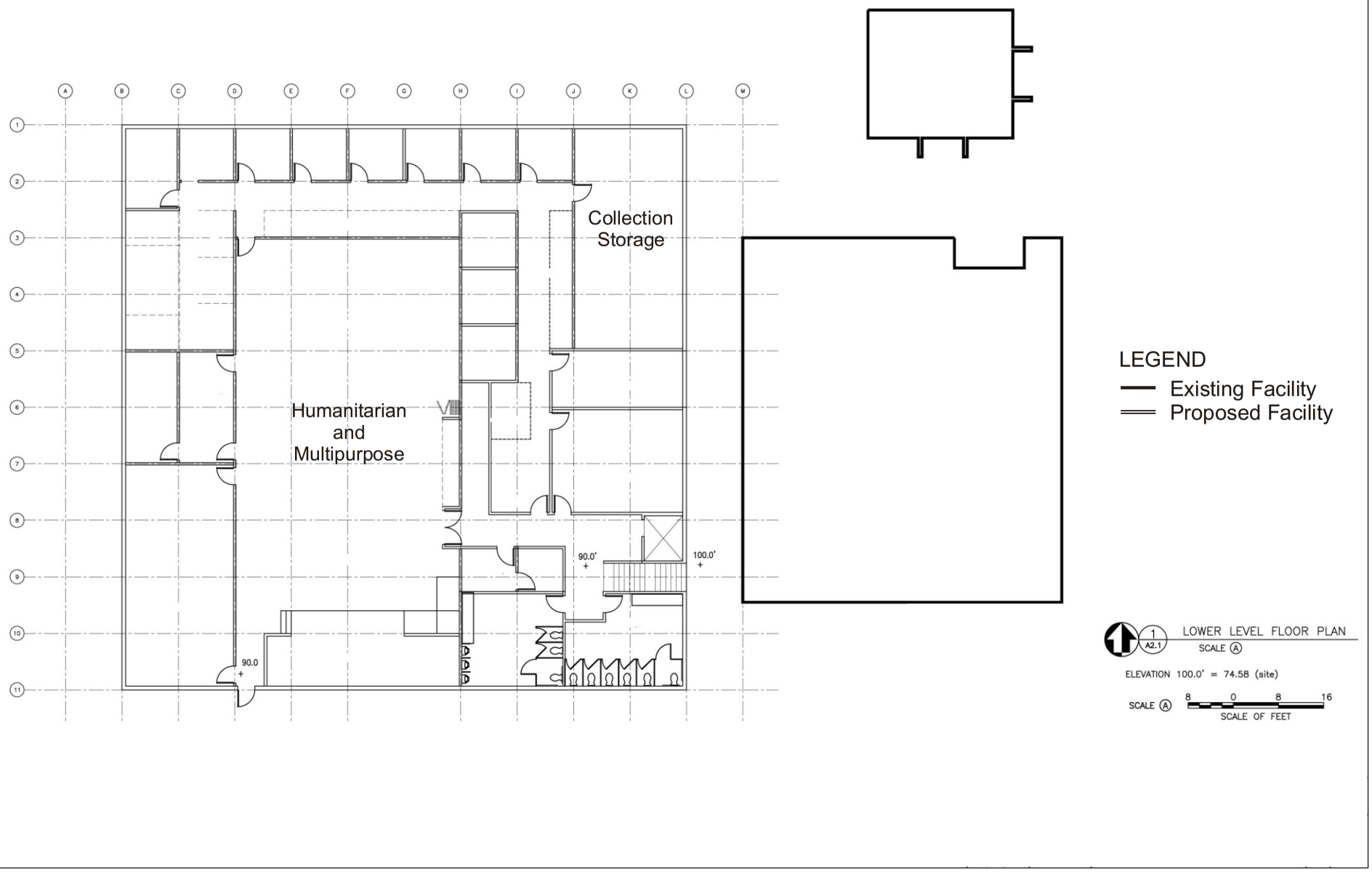


**FIGURE 5a:** Alternative 2
Lower Level Floor Plan

George Washington Carver National Monument

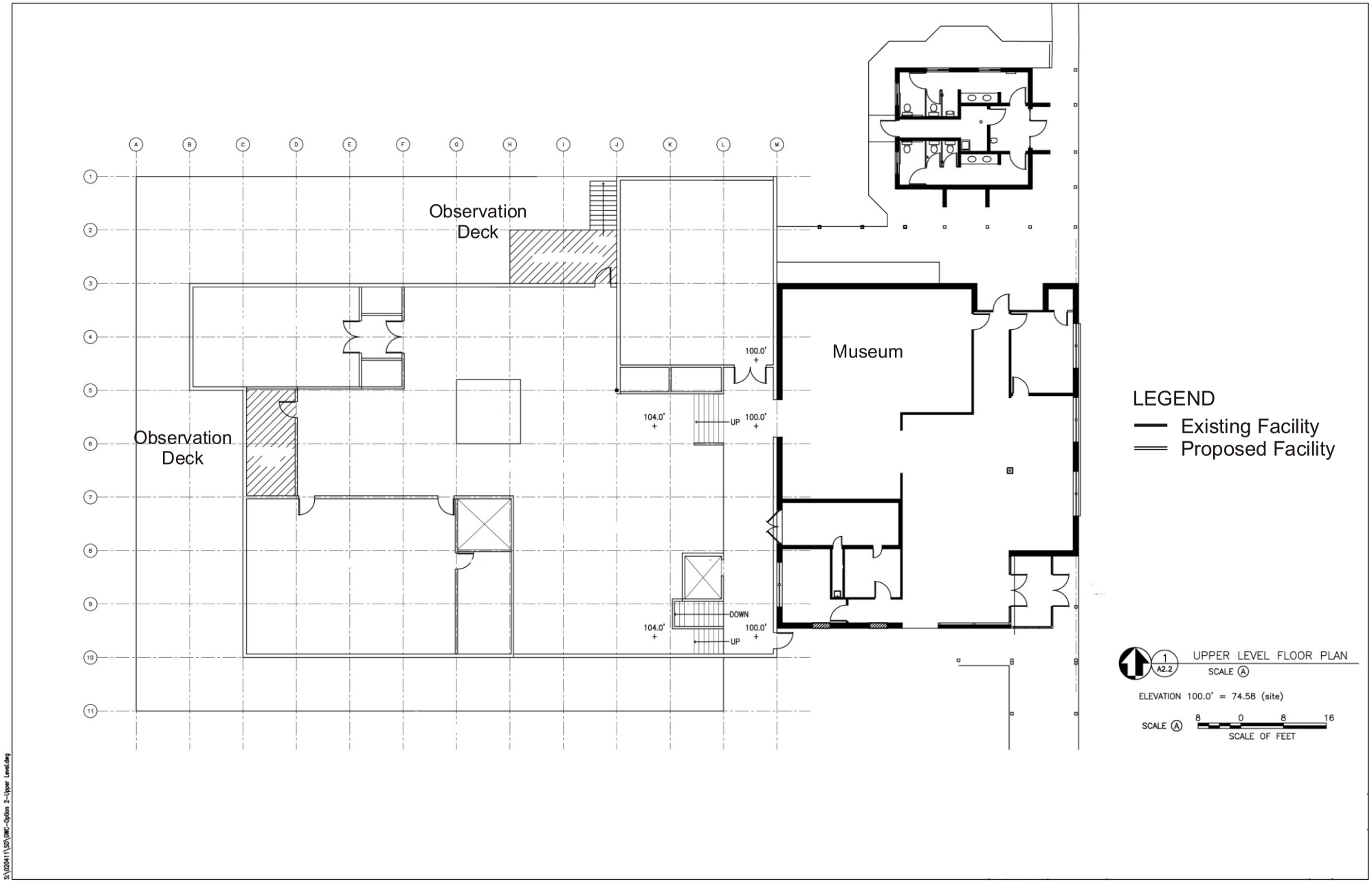


**FIGURE 5b:** Alternative 2
Upper Level Floor Plan

George Washington Carver National Monument

- Science focus area on the southwest corner of the addition with outside south and west-facing walls for greenhouse installation.

This alternative would also result in the following changes to existing visitor center facilities:

- The museum area would remain in its present location, but with an interior entry into the new addition.
- The existing mechanical room would be converted to storage with access from the science discovery area in the new addition.
- Existing Carver Association office and storage space would be reconfigured but primarily remains for office and storage use along with a small mechanical room area.
- The existing lobby and sales area would remain largely where they are currently with expansion into the current small theater area after removal of a wall.
- The former superintendent's office would remain office space.
- The main entrance would remain at the south end of the visitor center as is currently the case. The breezeway connecting the existing visitor center to the restrooms would remain as it currently exists.

## 3.5 Alternative 3 (Preferred Alternative)

Alternative 3 consists of an approximately 10,000 square foot lower level and a 6,900 square foot upper level (Figures 6a and 6b). Construction of the lower level would require excavation to approximately 9 feet below existing grade, and construction of the upper level facilities would be four feet above the floor level of the existing visitor center. Lower level facilities would include:

- Conference/library area
- Museum collection and storage room
- Staff office space including a waiting/reception area, computer room, and mail/filing room
- Restrooms
- Combination humanitarian room and multipurpose room with option to divide with a moveable partition
- Vending recycling area in the multipurpose room along with a stage and side dressing room
- Kitchen off of the multipurpose room
- Service entrance to kitchen
- Mechanical/electrical room

Alternative 3 upper level new addition facilities would include:

- Enclosure of the existing breezeway between the visitor center and the restrooms with its conversion into a lobby with a reception area, which would lead into the History Discovery Area and also into the sales area
- History discovery area containing the replica of the Carver log cabin with an observation deck overlooking the site of the original Carver slave cabin and the prairie located north and west of the visitor center
- History focus area with day-lighting on the north side
- Science discovery area

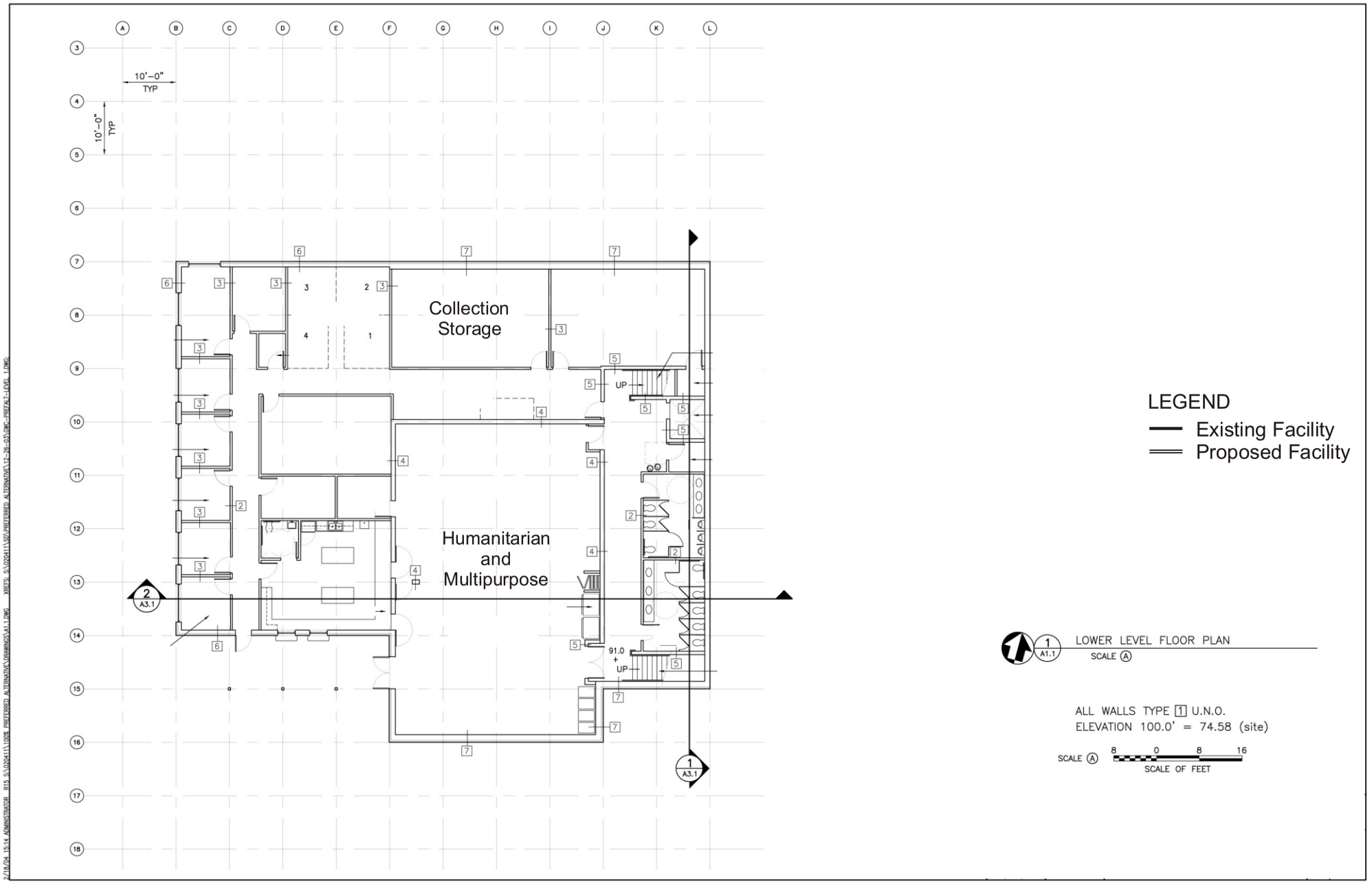


**FIGURE 6a:** Alternative 3
Lower Level Floor Plan

George Washington Carver National Monument

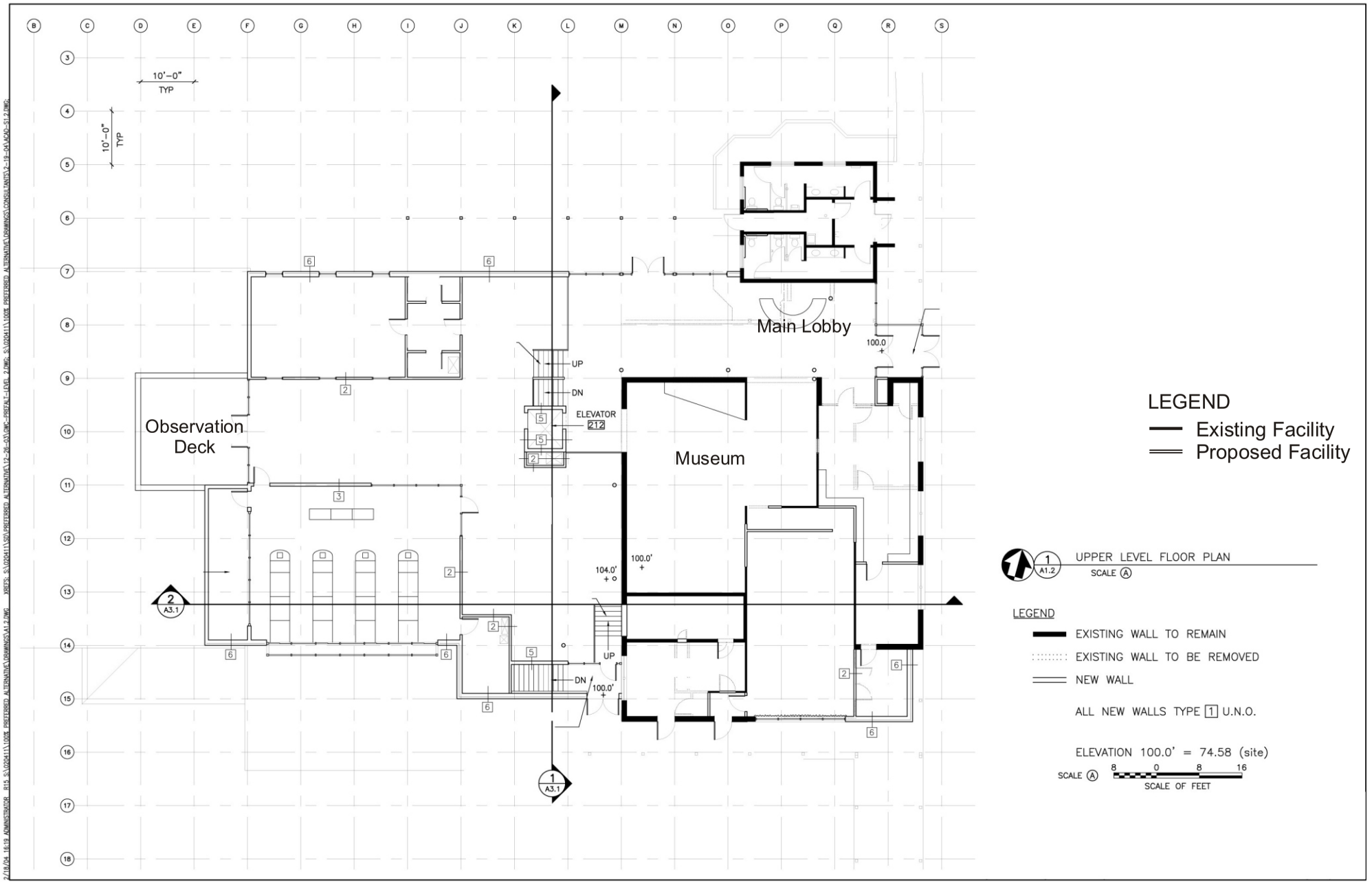


**FIGURE 6b:** Alternative 3
Upper Level Floor Plan

George Washington Carver National Monument

- Science focus area in the southwest corner of the addition with outside walls and access to a storage room

This alternative would also include the following changes within the existing visitor center facilities:

- The museum would remain in its current location with access via the theater, the lobby, and the history discovery area in the new addition. There would be no direct access to the museum from the sales area.
- Sales area would be placed in the northeast corner of the existing visitor center where the present lobby and former superintendent's office are now located.
- Theater would move to the area currently occupied by the lobby and sales area.
- Carver Association office space would be in the area currently used for the theater.
- Carver Association storage space would be in the southeast corner of the building where the existing entrance is located.
- Mechanical room would remain in its current location with expansion of the electrical room into the area currently occupied by Association offices.
- Existing restrooms would remain with access from the outside.

## 3.6 Alternatives Comparison

Table 1 compares the design differences among alternatives that have the greatest functional importance in terms of meeting the overarching purpose and need for the proposed action—improvement of visitor services, safety for staff and visitors, and protection of Carver-related resources entrusted to the park for future generations.

## 3.7 Alternatives Considered but Dismissed

### 3.7.1 Complete On-Site Replacement of Visitor Center

This alternative calls for a complete removal of the existing visitor center and the construction of an entirely new facility at the same location. This alternative was dismissed as technically and economically infeasible because it would not be keeping with the NPS approach to sustainable reuse of facilities and would not only be more environmentally damaging but would also adversely impact both park operations and visitor experience of the park during a protracted period of time between demolition of the existing visitor center and construction of the new facility. There are no alternative facilities in or near the park that could adequately serve staff and visitor needs during the interim period between old facility demolition and completion of the new facility. For these reasons, this alternative was dismissed. This alternative approach is not one recommended in the latest General Management Plan for the park.

### 3.7.2 Construction of a Separate Facility in a Campus-Style Setting

This alternative addressed the possibility of constructing an entirely separate facility while continuing to use the existing facility. This would create a campus-style setting for the Monument. This alternative was dismissed as technically and economically unfeasible due to the

**Table 1**
**Key Functional Differences Among the Alternatives**

| Alternatives | No-Action | Alternative 1 | Alternative 2 | Alternative 3 (Preferred) |
|---|---|---|---|---|
| Basic Configuration of Visitor Center (VC) Facilities | • Existing VC built in 1960.<br>• Multipurpose classroom is a 1960s converted house<br>• Discovery Center is a 670 SF trailer | • Construct 2-story addition to west side of VC<br>• Renovation and reconfiguration of existing VC<br>• Lower floor partially below grade | • Construct 2-story addition to west side of VC<br>• Renovation and reconfiguration of existing VC<br>• Lower floor partially below grade | • Construct 2-story addition to west side of VC<br>• Renovation and reconfiguration of existing VC<br>• Lower floor partially below grade |
| Proposed Total Approximate Square Footage of Visitor Facilities | • 3,302 SF single-story brick and frame building, 670 SF Discovery Center (trailer)/classroom | • 10,700 SF upper level<br>• 5,500 SF lower level | • 7,800 SF upper level<br>• 10,000 SF lower level | • 6,900 SF upper level<br>• 10,000 SF lower level |
| Main Entrance/ Reception/ Information Center Location | • Existing entrance at southeast corner of the VC leading into the sales and lobby area | • New entrance into a main lobby located between the existing restroom building and the existing visitor center. Information desk with views to sales area and history discovery area | • Improvement to existing entrance at southeast corner of the visitor center leading into the sales and lobby area | • New entrance into a main lobby located between the existing restroom building and the existing visitor center. Information desk with views to sales area, museum, and history discovery area (limited) |
| Approximate Size of Largest Lower Level Room for Storm Protection | • None | • 900 SF collection storage room (also 500 SF mail/copy room) | • 3,200 SF humanitarian and multipurpose room | • 2,400 SF humanitarian and multipurpose room |
| Location, Size, Ceiling Height of Collections Storage Room | • 144 SF collections storage room in a one-story converted wood frame staff residence. | • Lower level northeast corner new addition, 900 SF, standard ceiling height but stairs impact north end of the room | • Lower level northeast corner of new addition, 800 SF, low ceiling height throughout the room | • Lower level north wall of new addition, 600 SF, standard ceiling height. |
| Exposure of Museum to Surrounding Areas | • Main open entrance from lobby/sales store area, door to hall and side exit | • Main open entrance from sales store and secondary entrance from science discovery room | • Main open entrance from lobby/sales store area and secondary entrance from elevated history discovery area | • Main entrance from the main lobby and secondary entrance from lobby elevator and stairs area. |
| Main Theater Entrance/ Exit | • Through lobby/ sales store | • Through sales store | • Through museum | • Through museum |

need for increased staffing in order to operate two separate buildings. This approach would also not meet the need to consolidate visitor facilities in one location and would, therefore, reduce visitor enjoyment and continuity of visitor experience. This alternative would also be more environmentally damaging than constructing an addition to an existing facility. Additionally, this approach is not one recommended in the latest General Management Plan for the park.

### 3.7.3 Construction of a Separate Facility in Proximity to the Existing Visitor Center

Another alternative considered a separate facility in close proximity to the existing facility. This alternative was dismissed as technically and economically infeasible due to a lack of utility infrastructure in place to accommodate the new facility, the need for increased staffing to operate two separate buildings, reduced visitor enjoyment, lack of continuity of visitor experience, and the failure to resolve current facility deficiencies. This alternative would also be more environmentally damaging than construction of an addition to an existing structure. This approach is not one recommended in the latest General Management Plan for the park.

### 3.7.4 Construction of an Entirely One Story Facility

This alternative called for the creation of a one-story addition to the existing one-story facility and would not add a lower level to the structure. This alternative was dismissed because it would cause an extensive intrusion onto the historic scene/surrounding landscape of the Monument and it would not provide an adequate storm shelter within the building. Therefore it fails to meet one of the key project objectives of providing staff and visitor protection from frequent severe storms. This approach is not one recommended in the latest General Management Plan for the park.

## 3.8 Mitigation Measures for the Action Alternatives

### 3.8.1 General

Energy-saving construction materials and designs will be incorporated into any new building construction to minimize the use of high energy-embodied materials and to minimize building heating and cooling requirements.

### 3.8.2 Storm Water and Erosion Control

Specific construction site erosion control measures will be placed in plan notes for visitor center addition construction. Roof top runoff from the new addition will be directed into existing grassed swales leading to a natural depression in the prairie area southwest of the visitor center. The new septic drain field area will be restored to prairie following installation. State storm water and erosion control regulations and permitting procedures will be followed during construction activities. Specific storm water and erosion control measures placed in final construction drawing plan notes will follow accepted best management practices detailed in Missouri Department of Natural Resources, Water Protection and Soil Conservation Division guidance.

### 3.8.3 Visitor Experience and Aesthetic Resources

Utility work, renovation of the existing facilities, and construction of new facilities will be phased to insure uninterrupted visitor services. Visitor safety will be taken into consideration during all phases of construction. Construction activities will be coordinated to minimally disturb visitors' experience of park resources. Standard engineering controls will be used during construction activities to prevent dust, asbestos, and other airborne pollutants from entering or impacting in-use visitor areas.

### 3.8.4 Park Operations

Utility work, renovation of existing facilities, and construction of new facilities will be phased to minimize disruptions to basic park operations including maintenance and administrative functions.

### 3.8.5 Existing Landscape Elements

Few, if any, existing large diameter trees will be impacted by the proposed construction activities, which primarily extend into lawn and prairie areas west of the current visitor center. However, a systematic approach to inventorying and preserving as many trees as possible within the construction limits will be developed and incorporated into final design drawings. An approach such as that advocated by the National Arbor Day Foundation's "Building with Trees" program will be used. Trees selected to remain within the construction zone will be protected from limb and root damage during construction by fencing and other protective measures. Replacement and other new trees and shrubs used in landscaping will be native species whenever possible and practical with avoidance of any known or potential invasive non-native species. Prairie vegetation removed or disturbed as a result of construction activities will be replaced with similar prairie species wherever possible and as soon as possible after construction.

### 3.8.6 Cultural Resources

The NPS will, to the maximum extent possible, design and construct project elements to avoid effects and minimize harm to cultural resources. Cultural features will be monitored during the construction of the proposed facilities. If during construction, previously undiscovered archeological resources are discovered, all work in the immediate vicinity of the discovery will be halted until the resources can be identified and documented and an appropriate mitigation strategy developed, if necessary. 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 of 1990 will be followed.

## 3.9 Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "…the environmentally preferable alternative is the alternative that will promote the

national environmental policy as expressed in NEPA's Section 101." Using the six criteria from Section 101 detailed below, it was determined that Alternative 3 best meets the purpose and need of the proposed project by providing the greatest level of resource protection while, at the same time, providing a facility best meeting the educational programming and public safety needs of the park. Figure 7 details the proposed layout of the preferred alternative for the Monument. Alternatives 1 and 2 meet some of the project's purpose and need. However, the superior internal functional arrangement of visitor amenities found in Alternative 3 along with its similar impact on the existing environment compared to the other action alternatives make Alternative 3 the environmentally preferred alternative. The No-Action Alternative does not meet the purpose and need. The rationale for selecting Alternative 3 as the environmentally preferred alternative is provided for each Section 101 criterion in the following discussion.

**Criterion 1—***Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.*

Key to fulfilling this criterion at the Monument is minimization of impacts to the historic/cultural landscape of the park through surface disturbance or through construction of an inappropriately sized (massed) structure. Additionally, long-term preservation of the museum collections for use by future generations is an important factor. While the footprint of Alternative 3 is similar to that of Alternative 2 and larger than that of Alternative 1, it still minimizes encroachment into the surrounding landscape and provides an improved massing and roofline profile compared to Alternatives 1 and 2. Alternative 3 also ensures that the museum collections are properly stored and protected for the benefit of succeeding generations of park visitors, park staff, and researchers by locating the collection/storage facility in the partially below-grade portion on the north side of the proposed addition. This location in the building is away from the prevailing southwestern approach of tornadoes or damaging winds. Alternative 1 also locates museum storage below grade and adjacent to inside walls; however the upper, more visible level of Alternative 1 encroaches much more on the external surrounding environment than does Alternative 3 or Alternative 2. While Alternative 2 also locates museum collection storage below grade and adjacent to inside walls, the collection storage space is less than ideal as a result of a low ceiling made necessary by stairs and the theater located above at the floor level of the existing visitor center. Overall, the invaluable Carver collection maintained at the Monument would best be preserved by Alternative 3 which provides ready accessibility, sufficient space, and climate controls for long-term protection of the collection. The No-Action Alternative would continue the use of the current totally inadequate museum collection/storage space in a converted two-bedroom apartment within a wood frame building.

**Criterion 2—***Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings.*

Alternative 3 would locate the emergency storm shelter within the humanitarian and multipurpose rooms of the basement (lower level) of the visitor center addition and would permit direct emergency access to the outdoors from staff offices. This alternative also provides the best direct access to lower level restrooms from the humanitarian and multipurpose rooms. This is an important design feature allowing better supervision and monitoring of school-age children who will be some of the primary users of the humanitarian and multipurpose room facilities. Also, the building design of Alternative 3 would best blend with the natural surroundings especially the north-south rooflines that compliment the landscape. Alternative 1 does not provide adequate storm shelter space in the lower level, and the space that is provided is within more sensitive

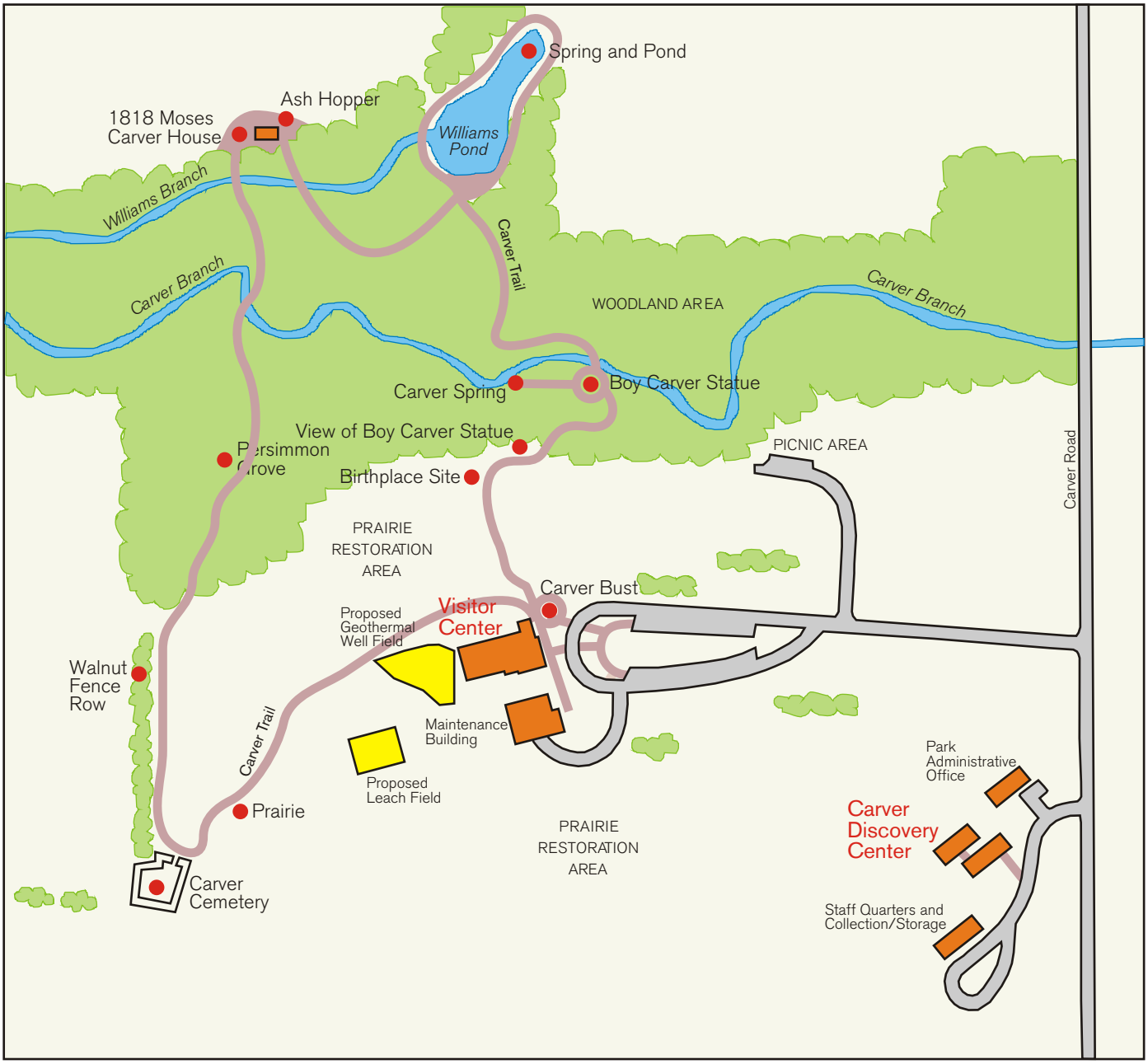


Figure 7

# Proposed Layout

George Washington Carver National Monument
Environmental Assessment for Visitor Center
Renovation and Addition
Diamond, Missouri

areas of collection/storage, library, and staff offices. Massing of the upper level area of this alternative also would be more dominant in the surrounding landscape. Like Alternative 3, Alternative 2 also provides adequate emergency storm shelter in lower level humanitarian and multipurpose rooms. However, in Alternative 2, floor plan efficiency is somewhat compromised over that of Alternative 3 as a result of more mixing of staff offices and space not normally open to the general public with the high public activity areas of the humanitarian and multipurpose rooms. Alternative 2 has a direct doorway connection between staff offices and the humanitarian room, and the lower level restrooms are more remote from the humanitarian room where large numbers of school children would be present. The No-Action Alternative would continue the existing situation in which there is no storm shelter provision for staff or visitors, nor would there be any improvement in visitor (especially school group) services.

**Criterion 3—***Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.*

Alternative 3 would best meet this criterion for many of the same reasons as mentioned for Criterion 2. As mentioned above, Alternative 1 would inadequately provide for public safety because of limited below-grade space to serve as a storm shelter. Alternative 2 would provide adequate storm protection; however, one undesirable aspect of Alternative 2 is the low ceiling and more cramped space for the museum collection/storage facility which would be detrimental to both staff and researchers using this resource. Alternative 3 would include an elevated upper floor level with a single outdoor observation deck that would allow longer views three different directions from the visitor center. This feature would allow more control and supervision of school groups using the observation deck thereby improving safety. The No-Action Alternative would continue the lack of storm protection for the visiting public and staff and would do nothing to address protection of the museum collection/storage facilities.

**Criterion 4—***Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.*

As discussed with the previous criteria, Alternative 3 provides superior aesthetics, protection of park resources and safety for staff and visitors when compared with the other action alternatives. This is accomplished with no more impact to the historic, cultural, and natural environments than any of the other action alternatives. All of the action alternatives provide a diversity and variety of choices in terms of what visitors can participate in and learn about during a visit to the park, and all of the action alternatives provide for visitor and staff accessibility to all areas of the visitor center facilities. The No-Action Alternative with its continuation of the status quo in terms of visitor amenities and services limits the number of visitors that can experience the park and also limits the diversity and variety of entertaining and educational experiences that the park can provide.

**Criterion 5—***Achieve a balance between population and resource use that will permit high standards of living and wide sharing of life's amenities.*

All of the action alternatives would incorporate sustainable planning, design, and use of the new visitor center facilities. Green building approaches would include, but not be limited to, storm water management, light pollution reduction, use of low energy embodied construction materials, geothermal heating and cooling, storage and collection of recyclables, reuse of the existing

buildings, use of energy-efficient lighting and maximum use of daylighting, and improvements in indoor air quality.

Several different aspects of this criterion also include provision of adequate staff workspace location, layout, and equipment; the ability of the park to provide the most visitors with a variety of meaningful, educational experiences (both guided and experiential). While all the action alternatives provide great improvements in these various areas of staff support and accommodation of visitors; cumulatively, Alternative 3 best meets this criterion. As discussed previously, Alternative 1's lack of lower level space limits its ability to accommodate visitors requiring a storm shelter and would result in visitors having to seek shelter in sensitive areas of staff office space and collections/storage space thus potentially impacting park resources. Alternative 2 leaves much of the existing visitor center lobby/sales area unchanged and, as a result, would permit continuing noise interference with museum visitors. Alternative 2 also does not enclose the breezeway area between the existing visitor center and the restrooms converting it into an entry/lobby area with an information desk as designed for Alternatives 1 and 3. This results in more structural and functional separation between the new addition and the remodeled existing visitor center. This situation reduces the possibility of having a more centralized and staffed information area immediately inside the main entrance to serve visitors and to monitor activities in the museum and sales areas. Finally, lower level restroom availability for visitors in Alternative 2 is somewhat remote given that large numbers of children would be using the area. Alternative 3 best accommodates the collections/storage area, separates the humanitarian and multipurpose rooms from staff office spaces, locates visitor restrooms close to the humanitarian and multipurpose rooms, and provides highly improved flow and control of visitors in the upper level. The No-Action Alternative would continue the existing and highly limiting situations with both staff workplace "standard of living" conditions and limitations on numbers of visitors and visitor experiences.

**Criterion 6—***Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.*

For all practical purposes there would be no substantial difference among the action alternatives regarding this criterion. Regardless of the action alternative, NPS sustainability principles would be followed in the procurement and use of construction materials manufactured with the maximum of recycled material content and the lowest possible energy embodiment. All of the action alternatives also incorporate the reuse of the existing visitor center, which likewise saves both renewable and non-renewable resources. Although not recyclable, direct fossil fuel use would decrease with all of the action alternatives since each of these alternatives would incorporate the use of geothermal energy for heating and cooling the new facilities and the current propane heating system would be removed. Indirect fossil fuel use in the form of electric heating and cooling to supplement the geothermal system would be used in all action alternatives. In a narrow sense, the No-Action Alternative would best meet this criterion even though it would not meet the purpose and need for the action.

## 3.10 Impacts Comparison Matrix

See Table 2.

**Table 2**
**Impact Comparison Matrix**

| Resource Area | No-Action Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| **Storm Water and Erosion Control** | **No** individual impact. Cumulative long-term, **negligible adverse** impacts to storm water runoff. | Individual and cumulative long-term, **negligible to minor, adverse** impacts to storm water runoff. Individual, short-term, **negligible, adverse** impacts on erosion control. | Individual and cumulative long-term, **negligible to minor, adverse** impacts to storm water runoff; and individual, short-term, **negligible, adverse** impacts to erosion control. | Individual and cumulative long-term **negligible to minor, adverse** impacts to storm water runoff; and individual, short-term, **negligible, adverse** impacts on erosion control. |
| **Energy and Utilities** | Individual, long-term, **moderate, adverse** impacts on energy efficiency and utility system functioning and reliability. Cumulatively, installation of the planned municipal water line to the park would have a long-term, **minor, beneficial** impact on water system functioning and reliability. | Individual and cumulative, long-term, **moderate, beneficial** impacts on energy efficiency and utility system functioning and reliability. | Individual and cumulative, long-term, **moderate, beneficial** impacts on energy efficiency and utility system functioning and reliability. | Individual and cumulative, long-term, **moderate, beneficial** impacts on energy efficiency and utility system functioning and reliability. |
| **Museum Collections and Storage** | Individual, short-term and long-term, **moderate adverse** impact on the museum collections and storage of artifacts. No cumulative impacts. | Individual, long-term, **moderate, beneficial** impact on the park's museum collections and storage of artifacts. No cumulative impacts. | Individual, long-term, **minor, beneficial** impact on the park's museum collections and storage of artifacts. No cumulative impacts. | Individual, long-term, **moderate, beneficial** impact on the park's museum collections and storage of artifacts. No cumulative impacts. |

**Table 2**
**Impact Comparison Matrix**

| Resource Area | No-Action Alternative | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| **Visitor Experience and Aesthetic Resources** | Individual, short-term and long-term, **moderate, adverse** impact on visitor experience and aesthetics. Cumulative long-term, **minor, adverse** impact on visitor experience and aesthetic resources within the park. | Individual, short-term, **minor, adverse** impact on visitor experience and aesthetic resources during construction activities. The individual, long-term impacts would be **moderately beneficial** to visitor experience and aesthetic resources within the park, but would result in only long-term, **minor, beneficial** impacts to visitor safety as a result limited storm shelter space. Cumulatively, Alternative 1 would have a long-term, **moderate, beneficial** impact on visitor experience and park aesthetics. | Individual, short-term, **minor, adverse** impact on visitor experience and aesthetic resources during construction activities. The individual and cumulative long-term impacts would be **minor and beneficial** to visitor experience and aesthetic resources, but **moderately beneficial** to visitor safety within the park. | Individual, short-term, **minor, adverse** impact on visitor experience and aesthetic resources. The individual and cumulative long-term impacts would be **moderately beneficial** to visitor experience, aesthetic resources, and visitor safety within the park. |
| **Park Operations** | Individual and cumulative, long-term, **moderate, adverse** impacts on park operations. | Individual, long-term, **moderate, beneficial** impact on park operations, despite short-term, **minor, adverse** impacts due to the construction. Cumulative, long-term, **minor, beneficial** impact on park operations. | Individual, long-term, **minor, beneficial** impact on park operations, despite short-term, **minor, adverse** impacts due to the construction. Cumulative, long-term, **minor, beneficial** impact on park operations. | Individual, long-term, **moderate, beneficial** impact on park operations, despite short-term, **minor, adverse** impacts due to the construction. Cumulative, long-term, **minor, beneficial** impact on park operations. |

# 4.0 AFFECTED ENVIRONMENT

Topics addressed in this section and subsequently analyzed in Section 5.0 (Environmental Consequences) were selected based on their relevance as indicated by on-site visits, secondary source documents, regulatory agency input, and information from NPS personnel. The rationale for selection or non-selection of impact topics is provided in Section 2.4.

## 4.1 Storm Water and Erosion Control

The storm water system at the Monument includes roof gutters on all buildings and catch basins in the parking lot that direct storm water through grassy swales west and southwest from the visitor center area. The receiving stream for storm water from the project area, and all of the Monument, is Carver Branch. Carver Branch is a small perennial stream that is a tributary to Shoal Creek within the Spring River watershed. Specific water quality data for Carver Branch was not available. Generally, smaller streams within the Spring River watershed are characterized by fair to good water quality with degradation related to point sources such as sewage treatment plant discharges and mine tailing runoff, and to non-point sources primarily related to agricultural practices.

## 4.2 Energy and Utilities

The current visitor center heating, ventilation and air conditioning (HVAC) system is approximately 22 years old, has been failing for several years, and does not meet National Fire Protection Association (NFPA) standards. The existing facilities are heated with propane. Electricity is provided by New-Mac Electric Cooperative in Neosho, Missouri. Hot water heaters at the park are electric. Maintenance personnel reported that propane storage capacity is inadequate during more severe cold weather periods, and the lines supplying the visitor center are also inadequate during these periods of high demand. A 10-ton air conditioning (AC) unit (Trane) is located behind the visitor center. Telephone lines in the park are all fiber optic and are buried in close proximity to the underground electric lines. All utility lines run extend from Carver Road near the headquarters building to the various Monument facilities including the visitor center.

In 2003, the park spent approximately $1,000 repairing the visitor center HVAC system. Due to the age of the system, parts are expensive and not readily available. The system does not provide adequate temperature control or ventilation for visitors or provide appropriate environmental control (temperature and humidity) for the museum. The park has had to install supplemental electric wall heating and window air conditioning units in two areas of the visitor center. The system is inefficient and costly to operate.

There is a 36,000-gallon underground, concrete water storage tank for fire suppression located adjacent to the Monument maintenance building. Water for structural fire fighting from this storage tank is available via two fire hydrants in front of the visitor center. However, the existing visitor center does not have an internal fire sprinkler system as required by NFPA code. Currently, potable water is provided by two park wells drilled from 575 to 854 feet deep and yielding 50 to 60 gallons per minute. Lead levels are above limits in the water and are reduced through softening. The water is also chlorinated. The park is working with the City of Diamond, MO to extend a municipal water line to the Monument within the next year. This action would

eliminate any public health concerns about lead levels in potable water, and would increase the reliability of the park's water system for fire fighting and other uses.

The park's septic system was installed in 1959 and is a sand filtration system (*i.e.*, leach field) and does not have a permit to operate. The system was designed for 850 people per day, with an average wastewater discharge of 2.5 gallons per person. There is a 400-foot line leading to the 4,000-gallon septic tank, but there is no lift station. A significant amount of line work has been completed in recent years. The system has reached the end of its useful life and should either be abandoned in place or removed and disposed of properly. There are no existing septic system components (grease traps) that serve the visitor center and that may be required with planned increased food preparation functions.

## 4.3 Museum Collections

The Monument's museum collection contains approximately 2,150 objects including documents, photographs, art works, herbarium specimens, gravestones, household goods, and agricultural tools associated with Carver's life and work. The Monument's museum collection is increasing as more Carver-related materials are discovered. Museum collections are generally ineligible for listing on the National Register and, as such, Section 106 determinations of effect under the National Historic Preservation Act are usually not provided. The collection is, however, managed as a cultural resource.

Most of the collection at the Monument is currently housed in a wood frame building (converted staff quarters) located 0.2 miles from the main visitor center. Not only is access to these collections restricted to most visitors, the building itself is highly susceptible to storm damage, wood-boring insects, and problems with climate control. In addition, access to the collections and archival information at the Monument by researchers is made more difficult by the substandard and crowded facilities. The current conditions are inadequate for proper storage and use of these collections and put the collections at risk of being damaged or permanently lost to interpretation.

## 4.4 Visitor Experience and Aesthetic Resources

Visitors experience the Monument through the current visitor center and associated buildings, as well as through the landscape that characterized Dr. Carver's childhood. Access to the 210-acre park is gained either through the park's primary entrance road (leading to the visitor center) or by a short access road (leading to the Carver Science Discovery Center). Both of these are located along the west side of Carver Road, south of Highway V (Figure 2). The access road to the Carver Science Discovery Center is shared by both staff and visitors and is used as the entrance to park headquarters, the Carver collection, and staff housing (see photos in the Appendix). Buses to drop off students or other groups visiting the Carver Science Center primarily use this access. The visitor center is accessed via the main entrance drive with a loop at its western terminus. Parking is adjacent to the loop road and a service drive is located off of the loop road leading to the park maintenance building.

Once most visitors arrive and park, a walkway leads them from the parking lot to the relatively low, one-story, brick and wood-sided building with cedar shake roofing that is the visitor center.

The existing visitor center is approximately 3,300 square foot in size and includes a 1,268 square foot area occupied by the park museum exhibits. Other areas within the visitor center include:

- Lobby and sales area (780 sq. ft.)
- Theater (328 sq. ft.)
- Office (former superintendent's office) (169 sq. ft.)
- Carver Association office (112 sq. ft.) and Association storage space (85 sq. ft.)
- Mechanical room (178 sq. ft.)

A long overhang runs along the entire eastern side of the building connecting the visitor center with the restrooms on the north and the maintenance building on the south. The visitor restrooms are located in a separate building and connected to the visitor center by a covered breezeway area (Figure 3).

In addition to the main visitor center, the classroom and Carver Science Discovery Center offer additional learning and recreational opportunities. These facilities are located approximately 0.2 mile southeast of the visitor center. Student groups are the primary users of this area and are dropped off by bus. They then must walk or be transported to the visitor center for access to the museum and/or Carver trail.

The visitor center can accommodate about 60 people comfortably at one time. Since tour groups of 200 visitors (usually students) are frequent, this means that these groups must be divided among several separate areas and facilities within the park such as the classroom and Discovery Center, the visitor center, and various outdoor locations. This situation requires more staff and entails moving these smaller groups from one facility or location in the park to another. Special days such as Carver Day, National Parks Week, and Prairie Day that attract school groups and the general public from as far away as St. Louis, MO; Tulsa, OK; and from several locations in Arkansas. The visitor center is open year-round from 9:00 a.m. to 5:00 p.m. Central Time. The annual visitation has increased markedly since the center opened in 1960. In 1995, there were a total of 5,309 student visits. By 2002, the number of student visits had increased to 12,000, and projections are that student visitation will approach 39,450 annually by 2014. There was a significant 43 percent increase in attendance at park special events between 2001 and 2002. Total visitation is also expected to increase from approximately 42,000 in 2002 to 63,378 in 2014 (NPS, 2003). As part of its growth plan, the park is working with Newton County and regional tourism officials in increasing visitation and knowledge concerning the park. Statistics and projections for educational/student visitation to the park are summarized in Table 3.

The park entrance road landscape is dominated by lawn areas with large trees (walnut, oak, sycamore, and hackberry). The restored prairie area west of the visitor center is visible to arriving visitors between the visitor center and the maintenance building on the south and between the visitor center and the restroom building on the north. Currently, the exterior of the visitor center is landscaped with typical, mostly non-native plantings. There is a large bust of Dr. Carver in a small adjacent patio area. Visitors can be seated in this area and listen to a recording of Carver reading a poem.

In addition to the aesthetic resources surrounding the visitor center, extensive prairie restoration areas and a trail system are also contributing elements to the park. From the visitor center, the Carver Trail leads north past wayside exhibits indicating the location of the original Carver cabin, then down along Carver Branch past a statue to the boy Carver. From this point, the trail leads

**Table 3**
**Actual and Projected Visitor Center Student Visits[1]**

| Year | Number of Visits | Year | Number of Visits |
|---|---|---|---|
| 1995 | 5,309 | 2005 | 18,600* |
| 1996 | 8,524 | 2006 | 22,200 |
| 1997 | 10,310 | 2007 | 25,800 |
| 1998 | 8,784 | 2008 | 27,775 |
| 1999 | 9,151 | 2009 | 29,700 |
| 2000 | 12,160 | 2010 | 31,650 |
| 2001 | 13,375 | 2011 | 33,600 |
| 2002 | 12,000** | 2012 | 35,550 |
| 2003 | 12,000 | 2013 | 37,500 |
| 2004 | 12,000 | 2014 | 39,450 |

[1]**Source:** NPS, 2003; 2003 numbers and beyond are projected.

***Numbers beginning in 2005 reflect the possible addition of a new facility.
****Capped at this level due to inadequate facilities for additional growth.

through the riparian woodland, past spring-fed Williams Pond and on to the 1881 Moses Carver house. From the Moses Carver house, the trail turns south through riparian woodland and open prairie to the Carver Cemetery before finally leading back to the visitor center. The west and north sides of the visitor center are visible from most of the Carver trail on the east side of Carver Branch including the Carver cemetery area.

The large restored prairie area is located approximately 50 to 100 feet west of the visitor center. Views to the prairie from the visitor center are considered an important component of the landscape and will be maintained.

## 4.5 Park Operations

Presently, the Monument has 12 full-time park employees; this includes the superintendent, a secretary, an administrative officer, one chief ranger and four park rangers, one park guide and three maintenance staff. No employees reside on site, although one of the original apartment buildings containing a two-bedroom apartment and an efficiency apartment is available for occupancy, despite being outdated. The park staff relies on temporary staff and volunteers to supplement full-time educational and interpretive staff.

With the increases in visitation levels, expansion of the educational component of the park's mission over the past decade, and deterioration of an aging and undersized infrastructure, the existing visitor facilities have become inadequate (NPS, 2003). Visitor facility deficiencies are beginning to impair the park's ability to fulfill its mandated purposes as described in its enabling legislation. Specifically, park operations are being compromised by visitor center structural deficiencies that occur with the outdated heating and cooling system, inadequate visitor education and exhibit areas, inadequate storage facilities for cultural artifacts and library collections, an insufficient fire suppression system, and the lack of a storm shelter. Furthermore, there are disparate and inefficient multiple office locations within the park, as well as a dilapidated storage building and aging temporary building/trailer that houses the Carver Science Discovery Center.

According to the GMP (NPS, 1997), the visitor center and parking lot are frequently inadequate to meet increasing numbers of visitors. Furthermore, improvements to the local transportation system (*e.g.*, upgrading U.S. 71 to interstate status) are likely to facilitate easier access to the park in the future leading to higher visitor numbers. In summation, visitation at the park has grown significantly since the opening of the park and is projected to continue growing well into the future (NPS, 2003, and Personal Communication, 2003). Administrative and operational functions required at the visitor center in combination with inadequate space and increasing visitation demonstrate an urgent need for additional space and other improvements, as outlined in the GMP (NPS, 1997).

The Monument has numerous educational and interpretive partnerships with a wide variety of public and private entities. The majority of these partnerships involve the Carver Educational Programs and the Carver Discovery Center. For example, the Missouri Botanical Garden in St. Louis is partnering with the park in the Garden's effort to construct a Carver Garden. Annual Carver Symposia are being planned for Iowa State and the Missouri Botanical Gardens. Other organizations involved with the Educational Programs and Discovery Center include the National Park Foundation, Oklahoma State University, the Smithsonian, Iowa State University, Newton County 4-H, and many other regional academic institutions. The Carver Research Library and Collections has partnerships with Missouri Southern State University, the Carver Association, George Washington University, and the Tuskegee National Historic Site. The Park Marketing and Tourism branch has partnerships with groups such as the Missouri Botanical Gardens, the National Park Foundation, the Carver Association, and several local and regional tourism groups. Also, the National Science Foundation and several states are working with the park on obtaining grants for various educational outreach programs. Staff and space to administer these many programs external to the park are needed.

# 5.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA forms the scientific and analytic basis for the comparisons of alternatives as required by 40 CFR 1502.14. This discussion of impacts (effects) is organized in parallel with Section 4.0 (Affected Environment) and is organized by resource area. The No-Action Alternative and each action alternative are discussed within each resource area. To the extent possible, the direct, indirect, short-term, long-term, beneficial, and adverse impacts of each alternative are described for each resource area. Cumulative impacts are discussed in the context of the definition given in 40 CFR 1508.7.

**Intensity, Duration, and Type of Impact—**Evaluation of alternatives takes into account whether the impacts would be negligible, minor, moderate, or major; with negligible being a change detectable only through analysis or long-term observation, minor being barely detectable to most observers, moderate being clearly detectable to most observers, and major being a substantial and obvious alteration of current conditions. Duration of impacts are evaluated based on the short-term or long-term nature of alternative-associated changes on existing conditions. Type of impact refers to the beneficial or adverse consequences of implementing a given alternative. More exact interpretations of intensity, duration, and type of impact are given for each resource area examined. Professional judgement is used to reach reasonable conclusions as to the intensity and duration of potential impacts.

**Cumulative Impacts—**The CEQ regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

Cumulative impacts are considered for both the No-Action and the action alternatives. Cumulative impacts were determined by combining the impacts of any given alternative with potential other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or foreseeable future projects within the Monument and, if necessary, the surrounding region. Other actions and plans that were considered during the analysis of cumulative impacts were presented in Section 2.2, Relationship to Other Actions and Plans and are reiterated below.

Reasonable future cumulative actions listed in the 1997 General Management Plan (GMP) for the Monument and discussed with park staff at the Choosing-by-Advantages meeting in December 2003 include:

- Continuing improvements to U.S. 71 and eventual upgrade to Interstate 49 (NPS, 1997)
- Possible relocation of a Missouri Welcome Center to the U.S. 71 and I-44 interchange (Personal communication with Superintendent Scott Bentley).
- Possible improvements to County Road V (NPS, 1997)
- Possible NPS acquisition of 30-acres of adjacent property formerly used in zinc and lead mining (NPS, 1997)
- Extension of a municipal water line to the park (Personal communication with Superintendent Scott Bentley).

**Impairment Analysis**—The *National Park Service Management Policies* (NPS, 2001) requires analysis of potential effects to determine whether or not actions would impair park resources or values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values and to prevent impairment of those resources. George Washington Carver National Monument's enabling legislation, as amended, also mandates resource protection. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, actions that would adversely affect park resources and values (NPS Management Policies, 2001, Section 1.4 Park Management).

These laws give the NPS the management discretion that would allow impacts to George Washington Carver National Monument resources and values when necessary and appropriate to fulfill the purposes of the park, so long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within NPS units, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

Prohibited impairment is an impact that, in the professional judgment of the responsible NPS 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. An impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the George Washington Carver National Monument;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the George Washington Carver National Monument; or
- Identified as a goal in the George Washington Carver National Monument general management plan or other relevant NPS planning documents.

## 5.1 Impacts on Storm Water and Erosion Control

### 5.1.1 Methodology

Impact analysis focused on the protection of water quality in Carver Branch and its tributaries both during construction and through constructed facility operations. Control of erosion during construction and minimization of changes in storm water quantity and quality after construction would be key concerns.

**Basis of Analysis—**The basis for analysis was storm water quantity and quality that would be affected temporarily by construction activities and permanently by changes in impervious surface area and storm water controls. Maintaining natural buffers between construction sites and operating facilities and Carver Branch and/or its tributaries would also reduce potential storm water impacts. The potential for erosion during and after construction is assessed as well.

**Intensity:**

- **Negligible—**Neither surface water quality nor erosion potential would be changed from current conditions although there could be slight increases or decreases in the quantity of storm water runoff.

- **Minor—**Changes in surface water quality/quantity or erosion potential would be measurable, although the changes would likely be small and the effects would be localized. No mitigation beyond standard erosion control measures would be necessary.

- **Moderate—**Changes in surface water quality/quantity and/or erosion potential would be measurable and long-term but would be relatively local. Supplemental mitigation measures would be necessary and would be effective.

- **Major—**Changes in surface water quality and/or erosion potential would be measurable and noticeable. Supplemental mitigation measures would be necessary though their success would not be guaranteed.

**Duration:**

- **Short-Term—**Lasting only during construction.
- **Long-Term—**Permanent post-construction changes.

### 5.1.2 No-Action Alternative

**Analysis—**The No-Action Alternative would not disturb soil as a result of new construction and would not change the existing amount of impervious surface area at the Monument. Consequently, there would be no change in storm water runoff quantity or quality or in erosion potential.

**Cumulative Impacts—**Other foreseeable future actions within the general vicinity of the proposed visitor center addition that could have some impact on storm water issues and erosion control within the Carver Branch watershed include the possible NPS acquisition of 30-acres of adjacent property formerly used in zinc and lead mining, and possible improvements to County Road V. Any future NPS construction on the 30-acre adjacent property could have some impact on the quantity and quality of storm water runoff from this site. The possible future improvements to County Road V may include additional impervious surface area and a small permanent increase in runoff. Consequently, the No-Action Alternative in combination with these two potential actions would result in cumulative long-term, negligible, adverse impacts to storm water runoff and erosion potential. The No-Action Alternative's contribution to these cumulative impacts would extremely slight.

**Conclusions—**The No-Action Alternative individually would have no impact upon storm water or erosion control issues. However, this alternative in combination with other possible future actions within the general area could still have cumulative long-term, negligible adverse impacts on local storm water quality and quantity.

### 5.1.3 Alternative 1

**Analysis—**Alternative 1 would disturb grass and prairie-covered soils adjacent to the existing visitor center and create approximately 11,000 square feet of new impervious rooftop surface area for the visitor center addition plus additional new impervious surface areas for sidewalks, patio areas and improved drives. Storm water runoff from roof areas and any subsurface drainage around the lower level of the new visitor center addition would be directed via surface swales to an existing depression approximately 40 ft southwest of the planned new addition in the restored prairie area. Replacement of the existing septic system leach field located approximately 300 ft southwest of the visitor center would temporarily disturb roughly 13,000 square feet of ground surface within the prairie area. These actions would result in a long-term, negligible, adverse impact on storm water runoff and a short-term, negligible, adverse impact from an increase in erosion potential during construction.

**Cumulative Impacts—**Other foreseeable future actions within the general vicinity of the proposed visitor center addition that could have some impact on storm water issues and erosion control within the Carver Branch watershed include the possible NPS acquisition of 30-acres of adjacent property formerly used in zinc and lead mining and possible improvements to County Road V. Any future NPS construction on the 30-acre adjacent property could have some impact on the quantity and quality of storm water runoff from this site. The possible future improvements to County Road V may include additional impervious surface area and a small permanent increase in runoff into Carver Branch. Consequently, Alternative 1 in combination with these two potential actions would result in cumulative long-term, minor, adverse impacts to storm water runoff and erosion potential. Alternative 1 would contribute minimally to these cumulative impacts.

**Conclusions**—Alternative 1 would have individual and cumulative long-term, negligible to minor, adverse impacts to storm water runoff; and individual, short-term, negligible, adverse impacts on erosion control.

### 5.1.4 Alternative 2

**Analysis—**Alternative 2 would disturb grass and prairie-covered soils adjacent to the existing visitor center and create approximately 10,000 square feet of new impervious rooftop surface area for the visitor center addition, plus new impervious surface areas for sidewalks, patios areas, and improved drives. Storm water runoff from roof areas and any subsurface drainage around the lower level of the new visitor center addition would be directed via surface swales to an existing depression approximately 40 ft southwest of the planned new addition. Replacement of the existing septic system leach field located approximately 300 ft southwest of the visitor center would disturb roughly 13,000 square feet of ground surface within the restored prairie area. These actions would result in an individual, long-term, negligible to minor, adverse impact on storm water runoff and a short-term, negligible, adverse impact from an increase in erosion potential during construction.

**Cumulative Impacts—**Other foreseeable future actions within the general vicinity of the proposed visitor center addition that could have some impact on storm water issues and erosion control within the Carver Branch watershed include the possible NPS acquisition of 30-acres of adjacent property formerly used in zinc and lead mining and possible improvements to County

Road V. Any future NPS construction on the 30-acre adjacent property could have some impact on the quantity and quality of storm water runoff from this site. The possible future improvements to County Road V may include additional impervious surface area and a small permanent increase in runoff. Consequently, Alternative 2 in combination with these two potential actions would result in cumulative long-term, minor, adverse impacts to storm water runoff and erosion potential. However, Alternative 2's contribution to these cumulative impacts would be very small.

**Conclusions—**Alternative 2 would have individual and cumulative long-term, negligible to minor, adverse impacts to storm water runoff; and individual, short-term, negligible, adverse impacts to erosion control.

### 5.1.5 Alternative 3 (Preferred Alternative)

**Analysis—**Alternative 3 would disturb grass and prairie-covered soils adjacent to the existing visitor center and create approximately 10,000 square feet of new impervious rooftop surface area for the visitor center addition plus new impervious surface areas for sidewalks, patio areas, and improved drives. Storm water runoff from roof areas and any subsurface drainage around the lower level of the new visitor center addition would be directed via surface swales to an existing depression approximately 40 ft southwest of the planned new addition. Replacement of the existing septic system leach field located approximately 300 ft southwest of the visitor center would disturb roughly 13,000 square feet of ground surface within the restored prairie area. These actions would result in an individual, long-term, negligible to minor, adverse impact on storm water runoff; and an individual, short-term, negligible, adverse impact from an increase in erosion potential during construction.

**Cumulative Impacts—**Other foreseeable future actions within the general vicinity of the proposed visitor center addition that could have some impact on storm water issues and erosion control within the Carver Branch watershed include the possible NPS acquisition of 30-acres of adjacent property formerly used in zinc and lead mining, and possible improvements to County Road V. Any future NPS construction on the 30-acre adjacent property could have some impact on the quantity and quality of storm water runoff from this site. The possible future improvements to County Road V may include additional impervious surface area and a small permanent increase in runoff. Consequently, Alternative 3 in combination with these two potential actions would result in cumulative long-term, minor, adverse impacts to storm water runoff and erosion potential. However, Alternative 3's contribution to these cumulative impacts would be very small.

**Conclusions—**Alternative 3 would have individual and cumulative long-term negligible to minor, adverse impacts to storm water runoff; and individual, short-term, negligible, adverse impacts on erosion control.

## 5.2 Impacts on Energy and Utilities

### 5.2.1 Methodology

Impact analysis focused on energy and utility needs required for the proposed addition to the visitor center.

**Basis of Analysis—**The basis for analysis was the impact that the proposed action would have on energy and utility systems efficiency.

**Intensity:**

- **Negligible—**There would be no noticeable change from the existing conditions in energy use or efficiency/safety of utility systems.

- **Minor—**Small changes (either adverse or beneficial) in energy use and/or utility systems efficiencies/safety related to construction and operation of visitor facilities would occur as a result of standard equipment improvements.

- **Moderate—**Noticeable changes (either adverse or beneficial) would occur in energy use and/or utility systems efficiencies/safety related to construction and operation of all visitor facilities would occur as a result of standard equipment improvements and the use of new non-standard materials, equipment, and approaches

- **Major—**Substantial changes (either adverse or beneficial) would occur in energy use and/or utility systems efficiencies/safety related to construction and operation of all park facilities would occur as a result of standard equipment improvements and the use of new non-standard materials, equipment, and approaches.

**Duration:**

- **Short-Term—**Lasting only during construction.
- **Long-Term—**Permanent post-construction changes.

### 5.2.2 No-Action Alternative

**Analysis—**The No-Action Alternative would result in the continuing use of inefficient HVAC systems, an inadequate septic system, inadequate propane storage and distribution, and the lack of a fire safety sprinkler system. Consequently, the No-Action Alternative would result in long-term, moderate, adverse impacts to energy efficiency and utility system functioning and reliability.

**Cumulative Impacts—**The extension of the municipal water line to the park, as a separate project, would improve the potable water system at the Monument. Consequently, in a cumulative sense, this independent action would have a long-term, minor, beneficial impact despite implementation of the No-Action Alternative. The No-Action Alternative would have an extremely limited role in these cumulative impacts.

**Conclusions—**The No-Action Alternative individually would result in long-term, moderate, adverse impacts on energy efficiency and utility system functioning and reliability. Cumulatively, installation of the planned municipal water line to the park combined with the No-Action Alternative would have an individual and cumulative long-term, minor, beneficial impact on water system functioning and reliability.

### 5.2.3 Alternative 1

**Analysis—**Alternative 1 would expand and improve the electrical distribution system and security systems for visitor center facilities at the Monument. Wiring for computer networking and state-of-the-art electronics would be installed for audio-visual equipment and exhibits. A new, more energy-efficient, HVAC system, possibly utilizing geothermal energy (see Section 3.1.3 for detailed description), would be installed with supplemental electric heating and cooling systems. The existing propane-fire heating system would be removed. The existing septic system would be replaced as part of this alternative, and the new system would include a lift station to eliminate the current problem of sewer line backups resulting from poor gravity flow. A new leach field would also be approximately 300 feet southwest of the visitor center in the prairie area. A fire suppression (sprinkler) system would be installed in the visitor center with water storage for the system in the existing 36,000-gallon underground tank adjacent to the maintenance building. The potable water well in the maintenance yard would be capped, and the existing well near the headquarters building would be used strictly as backup to a new municipal water supply for the fire suppression system and for irrigation. Overall, Alternative 1 would result in an individual, long-term, moderate, beneficial impact on energy efficiency and utility system functioning and reliability at the Monument visitor center facilities.

**Cumulative Impacts—**The proposed extension of a municipal water line to the park in combination with other planned water system and fire suppression system improvements and in combination with Alternative 1 would result in a cumulative long-term, moderate, beneficial impact. Alternative 1's role in this cumulative impact would be extremely small.

**Conclusions**—Alternative 1 would have individual and cumulative, long-term, moderate, beneficial impacts on energy efficiency and utility system functioning and reliability.

### 5.2.4 Alternative 2

**Analysis—**Alternative 2 would involve the same changes and improvements to energy and utility systems as described for Alternative 1. These would include:

- Electrical system and security system upgrades.
- Installation of computer network wiring and state-of-the-art electronics.
- Possible installation of a geothermal system for heating and cooling with supplemental electrically powered HVAC systems.
- New septic system with lift station and new leach field.
- New fire suppression system.
- Closure of one existing potable water well and conversion of the other well to a fire suppression system and/or irrigation system backup to municipal water.

Therefore, as with Alternative 1, Alternative 2 would have an individual, long-term, moderate, beneficial impact on energy efficiency and utility functioning and reliability.

**Cumulative Impacts—**The proposed extension of a municipal water line to the park in combination with other planned water system and fire suppression system improvements and in combination with Alterative 2, would result in a cumulative long-term, moderate ,beneficial impact. Alternative 2's role in cumulative impacts would be very small.

**Conclusions—**Alternative 2 would have individual and cumulative, long-term, moderate, beneficial impacts on energy efficiency and utility system functioning and reliability.

### 5.2.5 Alternative 3 (Preferred Alternative)

**Analysis—**Alternative 3 would involve the same changes and improvements to energy and utility systems as described for Alternatives 1 and 2. These would include:

- Electrical system and security system upgrades.
- Installation of computer network wiring and state-of-the-art electronics.
- Possible installation of a geothermal system for heating and cooling with supplemental electrically powered HVAC systems
- New septic system with lift station and new leach field.
- New fire suppression system.
- Closure of one existing potable water well and conversion of the other well to a fire suppression system and/or irrigation system backup to municipal water.

Therefore, as with the previous two alternatives, Alternative 3 would have an individual, long-term, moderate, beneficial impact on energy efficiency and utility functioning and reliability.

**Cumulative Impacts—**The proposed extension of a municipal water line to the park in combination with other planned water system and fire suppression system improvements in combination with Alternative 3 would result in a cumulative long-term, moderate, beneficial impact. Alternative 3's contribution to this cumulative impact would be extremely small.

**Conclusions—**Alternative 3 would have individual and cumulative, long-term, moderate, beneficial impacts on energy efficiency and utility system functioning and reliability.

## 5.3 Impacts on Museum Collections and Storage

### 5.3.1 Methodology

Museum collections (which may be historic artifacts, natural specimens, archival and manuscript material) may be threatened by fire, theft, vandalism, natural disasters, poor climatic conditions, and careless acts. The preservation of Dr. Carver's legacy is directly tied to the preservation of the collections at the Monument. For purposes of analyzing potential impacts, the basis of analysis and thresholds of change for intensity of impact are defined as follows:

**Basis of Analysis—**The primary goal is preservation of artifacts in as stable condition as possible to prevent damage and minimize deterioration.

**Intensity:**

- **Negligible—**Impacts are barely measurable with any perceptible consequences, either adverse or beneficial, to museum collections. There would be very little noticeable change in ambient atmosphere (humidity, temperature, UV light) or protection from insect and/or storm damage.

- **Minor—**An adverse impact would affect the integrity of a few items in the museum collection, but would not degrade the usefulness of the collection for future uses. There would be a slight adverse impact on the protection of the collection from ambient atmosphere and/or protection from insect/storm damage. A beneficial impact would stabilize the current condition of the collection or its constituent components to minimize degradation. There would be a slight beneficial change in the protection of the collection from ambient atmospheric conditions and insect/storm damage.

- **Moderate—**An adverse impact would affect the integrity of many items in the museum collection and diminish the usefulness of the collection for future uses. An adverse impact would substantially degrade the collection from either exposure to ambient atmospheric conditions or insect/storm damage. A beneficial impact would improve the condition of the collection or its constituent parts from the threat of degradation. A beneficial impact would substantially protect the collection from both exposures to ambient atmospheric conditions and/or insect/storm damage.

- **Major—**An adverse impact would affect the integrity of most of the items in the collection and destroy the usefulness of the collection for future uses. Such an adverse impact would result from complete destruction of the collection from either ambient atmospheric conditions or major insect or storm event. A beneficial impact would completely secure the condition of the collection as a whole or its constituent components from the threat of any further degradation.

**Duration:**

- **Short-Term—**Impacts to collections would occur either during initial transfer or for only during a few months following construction.
- **Long-Term—**Impacts to collections would be semi-permanent to permanent.

### 5.3.2 No-Action Alternative

**Analysis—**Currently, the museum collections and storage of artifacts are spread out among several facilities. The majority of the collection is located on-site in a converted park staff apartment located 0.2 miles from the existing visitor center. The park staff also reports that there is a lack of appropriate storage space for the entire collection. This lack of space has resulted in the park renting temporary storage space. With this alternative, both the current collection location and storage conditions of the Carver collection are likely to continue. This would leave the collection susceptible to threats from inadequately controlled room climatic conditions, fire,

and storm damage. The level of impact would be moderately adverse because the integrity of a few or many items in the museum collection may be affected, but not so as to substantially degrade the collection or to result in the complete destruction of the collection. There would also be no change in the existing visitor center in regard to museum collections with this alternative. Therefore, this alternative would have an individual, short-term and long-term, moderate adverse impact on the museum collections and storage of artifacts.

**Cumulative Impacts—**Past actions, including curation and storage of the Carver collection in inadequate facilities, have had moderate adverse impacts to museum collections. In conjunction with past actions and reasonably foreseeable future actions, the No-Action Alternative would contribute a moderate, adverse increment to cumulative impacts on museum collections. The role of the No-Action Alternative in these cumulative impacts would be substantial.

**Conclusions—**This alternative would maintain the museum collection/storage area in its present location/s, which still allows them to be susceptible to damage from various sources. Keeping the museum collections as they presently are also restricts access to staff, the public, and researchers. Therefore, this alternative would have an individual and cumulative, short-term and long-term, moderate adverse impact on the museum collections and storage of artifacts.

**Impairment—**Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to museum collections.

### 5.3.3 Alternative 1

**Analysis—**This alternative would locate the Carver collection/storage area in the lower level of the new addition with state-of-the-art temperature and humidity controls and with protection of sensitive materials from damaging UV light exposure. This alternative would locate the collection/storage area adjacent to the library/conference area for easy access to researchers. This area would also be located against an interior wall for greater protection from potential storm damage. An additional functional benefit of this alternative would be that museum artifacts would be stored in a single building, rather than in various facilities—making cataloging and curatorial responsibilities more manageable. Expanding museum and discovery spaces within the visitor center would also provide room for more exhibits of historical artifacts that are currently in storage. This alternative provides restricted access to office spaces, collection storage, and the library. This alternative would also change the existing visitor center facilities by keeping the museum area in its present location, but would add another entry from the new addition. Generally, this alternative would have an individual, long-term, moderate, beneficial impact on museum collections, storage, and research facilities.

**Cumulative Impacts**—The proposed actions under Alternative 1 would have moderate beneficial impacts on museum collections. Past actions, including curation and storage of the Carver collection in inadequate facilities, have had moderate adverse impacts to museum collections. In conjunction with past actions and reasonably foreseeable future actions, Alternative 1 would contribute a moderate beneficial increment to cumulative impacts on museum collections.

**Conclusions—**Alternative 1 would have an individual and cumulative, long-term, moderate, beneficial impact on the park's museum collections.

**Impairment—**Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to museum collections at George Washington Carver National Monument.

### 5.3.4 Alternative 2

**Analysis—**In this alternative, the Carver collection/storage area would be located in the lower level of the proposed addition with state-of-the-art temperature and humidity controls and with protection of sensitive materials from damaging UV light exposure. According to preliminary architectural designs, the Alternative 2 collection/storage area would have a low ceiling and would be adjacent to the mail room and copy areas. This alternative provides restricted access to both the office spaces and the collection/storage area at the perimeter of the lower level. It also locates the collection storage area against an interior wall for greater protection from potential storm damage. An additional functional benefit of this alternative would be that museum artifacts would be stored in a single building, rather than in various facilities—making cataloging and curatorial responsibilities more manageable. Expanding museum and discovery spaces within the visitor center would also provide room for more exhibitions of historical artifacts that are currently in storage. This alternative would also change the existing visitor center facilities by keeping the museum area in its present location, but adding another entry from the new addition. Generally, this alternative would have a long-term, minor, beneficial impact on museum collections, storage, and research facilities. The minor beneficial designation results from the low ceiling in the collection storage room as indicated in preliminary design.

**Cumulative Impacts—**The proposed actions under Alternative 1 would have moderate beneficial impacts on museum collections. Past actions, including curation and storage of the Carver collection in inadequate facilities, have had moderate adverse impacts to museum collections. In conjunction with past actions and reasonably foreseeable future actions, Alternative 2 would contribute a moderate beneficial increment to cumulative impacts on museum collections.

**Conclusions—**This alternative would have an individual and cumulative long-term, minor, beneficial impact on the park's collections.

**Impairment—**Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to museum collections at George Washington Carver National Monument.

### 5.3.5 Alternative 3 (Preferred Alternative)

**Analysis—**Collections and storage in this alternative would be located on the north side of the proposed addition. This configuration places the collection and storage area between several other interior rooms on the lower level. The north-side, lower level location would provide substantial severe storm protection. Access to the collections/storage area would be provided only through staff offices thus providing a maximum amount of security. An additional functional benefit of this alternative would be that museum artifacts would be stored in a single building, rather than in various facilities—making cataloging and curatorial responsibilities more manageable. Expanding museum and discovery spaces within the visitor center would also provide room for more exhibitions of historical artifacts that are currently in storage. This alternative would also keep the museum in its current location with direct access from both the lobby and theater. This alternative would have an individual, long-term, moderate, beneficial impact on museum collections, storage, and research facilities.

**Cumulative Impacts—**The proposed actions under Alternative 3 would have moderate beneficial impacts on museum collections. Past actions, including curation and storage of the Carver collection in inadequate facilities, have had moderate adverse impacts to museum collections. In conjunction with past actions and reasonably foreseeable future actions, Alternative 3 would contribute a moderate beneficial increment to cumulative impacts on museum collections.

**Conclusions—**This alternative would have an individual and cumulative, long-term, moderate, beneficial impact on the park's collections.

**Impairment—**Because there would be no major adverse impacts to a resource or value whose conservation is 1) necessary to fulfill specific purposes identified in the park's establishing legislation, 2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or 3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there would be no impairment of park resources or values related to museum collections at George Washington Carver National Monument.

## 5.4 Impacts on Visitor Experience and Aesthetic Resources

### 5.4.1 Methodology

Visitation levels have steadily increased, particularly among school groups, and this rise in visitors is projected to keep growing. The purpose of this analysis is to determine if the Proposed Action is compatible or in conflict with the purpose of the Monument, its visitor experience goals, and the direction provided by NPS *Management Policies* (NPS, 2001).

**Basis of Analysis—**Impact analysis evaluated the ability of:

- NPS staff to adequately provide information to visitors regarding park resources, interpret natural and cultural resources, and improve overall visitor satisfaction.
- The visitor to effectively experience and understand the resources key to the park's enabling legislation.
- The ability of both interior and exterior aesthetics to create a setting conducive to learning about Dr. Carver's life and message.

**Intensity:**

- **Negligible—**First-time and return visitors would not likely be aware of the effects associated with facility, program, or aesthetic changes implemented for visitor use and enjoyment of park resources.

- **Minor—**Return visitors familiar with the Monument would likely be aware of the effects associated with changes implemented for visitor use and enjoyment of park resources; however, the changes in visitor use and experience would be slight and possibly short-term. There would be slight changes that could be positive or negative to the interior and exterior aesthetics of the park. Other areas in the park would remain available for visitor experiences much as they are now.

- **Moderate—**First-time and return visitors would be aware of the effects associated with changes implemented for visitor use and enjoyment of park resources, as well as adverse or beneficial changes in the interior or exterior aesthetics of the park. Other areas in the park would remain available for visitor experiences much as they are now. However, visitor satisfaction would be measurably affected (visitors could be either satisfied or dissatisfied) by the availability and quality of educational programs, museum exhibits, experiential educational opportunities, landscaping and aesthetics of the park, etc.

- **Major—**First-time and return visitors would be highly aware of the effects associated with changes implemented for visitor use and enjoyment of park resources. An adverse impact would change visitor use and experience and/or perception of the aesthetic resources of the park to such a degree that it would prematurely terminate their park visit, not return, and discourage others from visiting the park. A beneficial impact would greatly increase visitor satisfaction of park resources, aesthetics, and values thus encouraging subsequent visits, attainment of additional knowledge concerning Dr. Carver's life, and a desire to communicate their positive experiences to others visiting the area.

**Duration:**

- **Short-Term—**Lasting only during the phased aspects of construction.
- **Long-Term**—Permanent, post-construction changes.

### 5.4.2 No-Action Alternative

**Analysis—**The No-Action alternative would maintain the existing visitor center at its current location and size. The associated buildings now used as the Carver Science Discovery Center and collection and archival storage would continue to be used by the park. Visitors would continue to access the park through two different routes (depending upon if they are visiting the visitor center or the Carver Science Discovery Center). The cap on visitors would remain at 12,000, thus reducing the park staff's ability to expand their educational focus. There would be no storm shelter constructed for staff and visitor protection.

This alternative would continue to inhibit park staff from providing adequate interpretation of the park's resources to the visitors. In addition, the lack of a centralized visitor center and inadequate storage of the Carver collection would discourage visitors from conducting research using the

park's archival resources. The noise disturbances in the existing theater from the lobby and sales area would continue. Visitors would continue to walk or be transported a quarter-mile from the visitor center to the Carver Science Discovery Center. This separation of park resources could cause visitors to shorten their visit and skip one of the areas. As park resources become further crowded and interpretive staff remains limited, the ability of visitors to effectively experience and understand the resources key to the park's enabling legislation would be reduced. Crowded conditions may also encourage visitors to travel elsewhere to learn about Dr. Carver's contributions. Aesthetic improvements would be focused on maintaining the existing landscape. The restored prairie would continue to be a focus of the landscape at the Monument.

This alternative would have an individual short-term and long-term, moderate, adverse impact on visitor experience and aesthetics.

**Cumulative Impacts—**Cumulative impacts outside the park that may affect visitor experience and aesthetic resources include the continuing improvements to U.S. 71 and upgrading of I-49; the possible relocation of the Missouri Welcome Center; improvements to County Road V. These factors would give visitors increased opportunities to visit the park by improving the roadways leading to the park and by increasing the general public's knowledge of the park through outside information sources. However, if the existing visitor center is not improved, additional visitors may further degrade the park's resources. Within the park, planned improvements such as the extension of the municipal water line into the park would minimally affect visitors, but may improve water service overall—leading to increased satisfaction by park visitors. The possible acquisition of additional acreage of adjacent property would give visitors a wider range of learning opportunities within the park and would allow them to experience more of Dr. Carver's early life, thus supporting the enabling legislation of the park. Taken with these other reasonably foreseeable future actions, the No-Action Alternative would have a long-term, negligible, adverse impact on visitor experience. However, the No-Action Alternative would have a very small role in these cumulative impacts.

**Conclusions—**The No-Action Alternative would have an individual short-term and long-term, moderate, adverse impact on visitor experience and aesthetics.
This alternative would have a cumulative long-term, minor, adverse impact on visitor experience and aesthetic resources within the park.

### 5.4.3 Alternative 1

**Analysis—**Alternative 1 would construct a 15,900 square foot addition (5,300 square foot lower level and a 10,600 square foot upper level) to the existing visitor center at the Monument. This addition would eliminate the need for the five separate buildings currently used by the park to provide staff office space and a range of visitor services. This new addition would keep the museum in its current location, but would provide an interior connection to the new Carver science discovery area. The existing breezeway between the visitor center and the restrooms would be converted into the main entrance of the building with a central information desk. This would assist visitors in getting oriented to the park and its resources. The larger visitor center associated with this alternative would be constructed to accommodate much larger groups of visitors, allowing NPS staff to remove their current cap of 12,000 visitors/year.

The proposed new addition would greatly increase the ability of NPS staff to provide services to the public. The additional space and the layout of the visitor center floor plan into specific discovery and activity areas would allow NPS staff to increase their interpretive programs and consolidate their activities within one facility. The much larger and centralized visitor center would enhance and expand the park's educational program, allowing them to bring in more and/or larger school groups. In addition, larger and more centralized spaces for the Carver collection, library research, and a conference room would allow NPS staff to provide greater access to visitors using the park for research purposes.

Visitors would benefit from the proposed addition because it would concentrate all of the visitor services into one location rather than having the Carver Discovery Center and classroom facility almost a quarter-mile away from the visitor center. Once inside the proposed new visitor center, visitors would have access to eight different activity, discovery, and focus areas. The museum and the history and science discovery areas would be located within the same structure allowing visitors to view Dr. Carver's works and then try out some of his experiments in the focus areas. Visitors would also benefit from increased safety within the park. The lower level of the proposed addition would also function as an emergency storm shelter to be used by visitors and park staff in case of a violent or sudden storm event in the area. However, with this alternative, lower level storm shelter space is somewhat limited and would shelter visitors in more sensitive areas such as staff office space and the collections/storage area.

All of these improvements associated with Alternative 1 would further the enabling legislation of the park, but would particularly fulfill the charge to create opportunities for visitors to learn about Dr. Carver's life-long experiences. In particular, the improvements to the interior and exterior would aesthetically illustrate to visitors Dr. Carver's successes and challenges in education, his early years in an agrarian setting that set the stage for his later works, and the results of his scientific contributions. With this alternative, visitors would still have access to the current system of trails within the park.

There would be short-term disruptions of some visitor services and access to some facilities during actual construction. However, these disruptions would be of short duration and would be mitigated to the maximum extent possible by planning construction activities to maintain maximum visitor access throughout the duration of construction while maintaining safety.

Overall, Alternative 1 would have an individual, short-term, minor, adverse impact and a long-term, moderate, beneficial impact on visitor experiences and park aesthetics. However, because of limited lower-level storm shelter space, this alternative would have an individual, long-term, minor, beneficial impact on visitor safety.

**Cumulative Impacts**—Potential projects and actions outside the park that may cumulatively affect visitor experience and aesthetic resources include the continuing improvements to U.S. 71 and upgrading of I-49; the possible relocation of the Missouri Welcome Center; and improvements to County Road V. These factors would give visitors increased opportunities to visit the park by improving the roadways leading to the park and by increasing the general public's knowledge of the park through outside information sources. Within the park, planned improvements such as the extension of the municipal water line into the park would minimally affect visitors, but may improve water service overall—leading to increased satisfaction by park visitors. The possible acquisition of additional acreage of adjacent property and eventual relocation of park maintenance facilities away from the visitor center area would enhance

aesthetics around the visitor center and provide additional storage space for furniture, equipment, and other large items used in visitor programs. These other possible future actions, both inside and outside of the park, combined with Alternative 1 would result in a cumulative, long-term, moderate, beneficial impact on visitor experience and park aesthetics. Alternative 1's contribution to this cumulative impact would be small.

**Conclusions**—Alternative 1 would have an individual, short-term, minor, adverse impact on visitor experience and aesthetic resources during construction activities. The individual, long-term impacts would be moderately beneficial to visitor experience and aesthetic resources within the park, but would result in only long-term, minor, beneficial impacts to visitor safety as a result limited storm shelter space. Cumulatively, Alternative 1 combined with other potential future action would have a long-term, moderate, beneficial impact on visitor experience and park aesthetics.

### 5.4.4 Alternative 2

**Analysis—**Alternative 2 would construct a 17,200 square foot addition (7,200 square foot lower level and a 10,000 square foot upper level) to the existing visitor center at the Monument. This addition would eliminate the need for the five separate buildings currently used by the park to provide staff office space and a range of visitor services. This new addition would keep the museum in its current location, but would provide an interior connection to the proposed addition. The existing breezeway between the visitor center and the restrooms would remain as a covered, but open, area. The main entrance to the visitor center would remain where it is presently located at the southeast corner of the visitor center. The majority of both visitor and NPS staff services would be located in the larger lower level of Alternative 2. Contiguous humanitarian and multipurpose areas in the lower level could be separated using a moveable partition. The upper level of the proposed addition would include a new theater, a history discovery area, outdoor observation decks, and a science discovery area. This larger visitor center would accommodate much larger groups of visitors, allowing NPS staff to remove their current cap of 12,000 visitors/ year.

The proposed new addition would greatly increase the ability of NPS to provide services to the public. The additional space and the layout of the visitor center floor plan into specific discovery and activity areas would allow NPS staff to increase their interpretive programs and consolidate their activities within one facility. The much larger and centralized visitor center would enhance and expand the park's educational program, allowing them to bring in more and/or larger school groups. In addition, larger and more centralized spaces for the Carver collection, library research, and a conference room would allow NPS staff to provide greater access to visitors using the park for research purposes

Visitors would benefit from the proposed addition because it would concentrate all of the visitor services into one location rather than having the Carver Discovery Center and classroom facility almost a quarter-mile away from the visitor center. Once inside the proposed new visitor center, visitors would have access to eight different activity, discovery, and focus areas. The museum and the history and science discovery and focus areas would be located within the same structure allowing visitors to view Dr. Carver's works and then try out some of his experiments in the focus areas. Visitors would also benefit from increased safety within the park. Unlike Alternative 1, the lower level of Alternative 2 contains a large open area (humanitarian room and

multipurpose room) in the center of the lower level. This area would be ideal for use as a storm shelter, which would be quickly accessible and able to accommodate a large number of people while still maintaining security for staff offices and the collections/storage area.

All of the interior and exterior improvements would further the enabling legislation of the park, but would particularly fulfill the charge to create opportunities for visitors to learn about Dr. Carver's life-long experiences. In particular, these improvements would aesthetically illustrate to visitors Dr. Carver's successes and challenges in education, his early years in an agrarian setting that set the stage for his later works, and the results of his scientific contributions. With this alternative, visitors would still have access to the current system of trails within the park.

There would be short-term disruptions of some visitor services and access to some facilities during actual construction of this alternative. However, these disruptions would be of short duration and would be mitigated to the maximum extent possible by planning construction activities to maintain maximum visitor access and safety throughout the duration of construction.

Overall, Alternative 2 would have an individual, short-term, minor, adverse impact and a long-term, minor, beneficial impact on visitor experiences and park aesthetics. This alternative would also have a long-term, moderate, beneficial impact on visitor safety as a result of a large interior, lower-level area that could serve as a storm shelter.

**Cumulative Impacts—**Potential actions and projects outside the park that may cumulatively affect visitor experience and aesthetic resources include the continuing improvements to U.S. 71 and upgrading of I-49; the possible relocation of the Missouri Welcome Center; and improvements to County Road V. These factors would give visitors increased opportunities to visit the park by improving the roadways leading to the park and by increasing the general public's knowledge of the park through outside information sources. Within the park, planned improvements such as the extension of the municipal water line into the park would minimally affect visitors, but may improve water service overall—leading to increased satisfaction by park visitors. The possible acquisition of additional acreage of adjacent property and eventual relocation of park maintenance facilities away from the visitor center area would enhance aesthetics around the visitor center and provide additional storage space for furniture, equipment, and other large items used in visitor programs. These other possible future actions, both inside and outside of the park, combined with Alternative 2 would result in a cumulative, long-term, moderate, beneficial impact on visitor experience and park aesthetics. Alternative 2's contribution to this overall cumulative impact would be small.

**Conclusions**—This alternative would have an individual, short-term, minor, adverse impact on visitor experience and aesthetic resources during construction activities. The individual and cumulative long-term impacts would be moderately beneficial to visitor experience and aesthetic resources as well as to visitor safety within the park.

### 5.4.5 Alternative 3 (Preferred Alternative)

**Analysis—**Alternative 3 would construct a 16,900 square foot addition (10,000 square foot lower level and a 6,900 square foot upper level) to the existing visitor center at the Monument. This alternative would allow NPS to remove their current cap of 12,000 visitors/year. This addition would eliminate the need for the five separate buildings currently used by the park to provide

staff office space and a range of visitor services. As with Alternative 1, Alternative 3 would involve enclosing the existing breezeway between the visitor center and the restrooms. This area would become the main entrance to the facility with a centralized lobby with a welcome/ information desk. This would assist visitors in getting oriented to the park and its resources. The layout of the new addition would lead visitors from the main entrance to the museum and then onto the history and science discovery areas. As with Alternative 2, the upper level would also include both history and science focus areas (for more hands on learning opportunities) as well as an observation deck, which would allow visitors to view the restored prairie and surrounding grounds. The lower level of this alternative would include a large humanitarian focus area and multipurpose area that could be divided by a moveable partition.

The proposed new addition would greatly increase the ability of NPS to provide services to the public. The additional space and the layout of the visitor center floor plan into specific discovery and activity areas would allow NPS staff to increase their interpretive programs and consolidate their activities within one facility. The much larger and centralized visitor center would enhance and expand the park's educational program, allowing them to bring in more and/or larger school groups. In addition, larger and more centralized spaces for the Carver collection, library research, and a conference room would allow NPS staff to provide greater access to visitors using the park for research purposes.

Visitors would benefit from the proposed addition because it would concentrate all of the visitor services into one location rather than having the Carver Discovery Center and classroom facility almost a quarter-mile away from the visitor center. Once inside the proposed new visitor center, visitors would have access to eight different activity, discovery, and focus areas. Additionally, the centralized information desk immediately inside the new entrance would enhance staff-visitor contact and provide an easily found location where visitors could obtain park orientation information. The museum and the history and science discovery and focus areas would be located within the same structure allowing visitors to view Dr. Carver's works and then try out some of his experiments in the focus areas. Visitors would also benefit from increased safety within the park. As with Alternative 2, the lower level of Alternative 3 contains a large open area (humanitarian room and multipurpose room) in the center of the lower level. This area would be ideal for use as a storm shelter, which would be quickly accessible and able to accommodate a large number of people while still maintaining security for staff offices and the collections/storage area.

All of these aesthetic improvements would further the enabling legislation of the park, but would particularly fulfill the charge to create opportunities for visitors to learn about Dr. Carver's life-long experiences. In particular, these improvements would aesthetically illustrate to visitors Dr. Carver's successes and challenges in education, his early years in an agrarian setting that set the stage for his later works, and the results of his scientific contributions. With this alternative, visitors would still have access to the current system of trails within the park.

There would be short-term disruptions of some visitor services and access to some facilities during actual construction of this alternative. However, these disruptions would be of short duration and would be mitigated to the maximum extent possible in order to maintain maximum visitor access and safety throughout the duration of construction.

Overall, Alternative 3 would have an individual, short-term, minor, adverse impact and a long-term, moderate, beneficial impact on visitor experiences and park aesthetics. This alternative

would have an individual, long-term, moderate, beneficial impact on visitor safety as a result of a large interior, and a lower-level area that could serve as an emergency storm shelter.

**Cumulative Impacts—**Potential actions and projects outside the park that may cumulatively affect visitor experience and aesthetic resources include the continuing improvements to U.S. 71 and upgrading of I-49; the possible relocation of the Missouri Welcome Center; and improvements to County Road V. These factors would give visitors increased opportunities to visit the park by improving the roadways leading to the park and by increasing the general public's knowledge of the park through outside information sources. Within the park, planned improvements such as the extension of the municipal water line into the park would minimally affect visitors, but may improve water service overall—leading to increased satisfaction by park visitors. The possible acquisition of additional acreage of adjacent property and eventual relocation of park maintenance facilities away from the visitor center area would enhance aesthetics around the visitor center and provide additional storage space for furniture, equipment, and other large items used in visitor programs. These other possible future actions, both inside and outside of the park, combined with Alternative 3 would result in a cumulative, long-term, moderate, beneficial impact on visitor experience and park aesthetics. Alternative 3's contribution to this overall cumulative impact would be small.

**Conclusions—**Alternative 3 would have an individual, short-term, minor, adverse impact on visitor experience and aesthetic resources during construction. The individual and long-term impacts would be moderately beneficial to visitor experience, aesthetic resources, and visitor safety within the park.

## 5.5 Impact on Park Operations

### 5.5.1 Methodology

Park operations are currently divided between several locations. Office space is divided among five buildings, storage areas are inadequate, the infrastructure within the park is outdated, and the staff and Carver Association facilities within the visitor center are crowded and located next to the public areas. Efficiency of staff operations would be impacted by changes in facility location, security, space utilization, administrative work area layout, storage, and maintenance.

**Basis of Analysis—**Impact analysis is focused on the proposed action development plans and potential effects on park operations.

**Intensity:**

- **Negligible—**Changes in park operations would be minimal within existing facilities and would not have an appreciable effect on staffing, space utilization, administrative work layout, storage, or maintenance. Examples of such changes would include, but not be limited to, installation of new computers or other office equipment, minor reorganization of existing office space, an upgrade of existing security systems, or more efficiently arranged storage.

- **Minor—**Changes in park operations would be minimal but would be beyond office equipment upgrades and/or reorganization of existing office space. Beneficial or adverse impacts would result in a slight increase or decrease in efficiency in one or more of the

following areas: staffing, space utilization, security, administrative work layout, storage, or maintenance. Examples of such beneficial changes would include, but not be limited to, consolidation and/or expansion of administrative offices in one location through the use of additional temporary buildings, installation of a local area network for the park computer system, or substantial upgrade of fire suppression systems. Examples of minor adverse changes would include, but not be limited to, a loss of some existing staff office space to other functions, a lack of upgrades for staff computers and office equipment, and no improvements to existing security and fire suppression systems.

- **Moderate—**Changes in park operations would be substantial and result in very measurable and noticeable increases or decreases in efficiency in one or more of the following areas: staffing, space utilization, security, administrative work layout, storage, or maintenance. Examples of such beneficial changes would include, but not be limited to, consolidation and/or expansion of administrative offices in one permanent building location, consolidation of office support equipment in a location adjacent to staff office spaces, improvements in park physical security and staff presence in visitor contact areas. Examples of such adverse changes would include, but not be limited to, loss of some existing staff office space and actual staff resulting from the poor facilities, further encroachment of visitor areas into existing and needed storage space, deterioration of facilities and grounds maintenance resulting from lack of staff and equipment, and reduced staff presence in visitor contact areas.

- **Major—**Changes in park operations would be significant and result in highly noticeable increases or decreases in efficiency in one or more of the following areas: staffing, space utilization, security, administrative work layout, storage, or maintenance. Such a beneficial change would move park operational efficiency to an unprecedented level of excellence while such an adverse change would substantially impair the functioning of the park. Examples of beneficial changes would include, but not be limited to, significantly expanded, state-of-the-art equipped office space to accommodate staffing levels above those currently authorized; large-scale expansion of interpretive programs with much higher levels of interpretive staff availability; or significant expansion of storage areas, a new, fully-equipped park maintenance facility. Examples of such adverse changes would include substantial loss of staff facilities and a resultant loss of staff, significant reduction in staff-visitor contact and interpretive programs, continued deterioration of office equipment and park infrastructure, or forced reductions in grounds and facility maintenance from lack of personnel equipment and funds.

**Duration**

- **Short-term**—Lasting less than two years.
- **Long-term—**Lasting more than two years and essentially a permanent change in operations.

### 5.5.2 No-Action Alternative

**Analysis—**The No-Action Alternative would not expand the existing visitor center and would maintain the existing system of separate buildings to house all of the park's operations. With the increased visitor numbers, the expansion of the park's educational component, and the deterioration of the existing infrastructure, staff operations within the park would continue to be degraded. Park staff would find that duties would be increasingly more difficult with this

alternative. The separation of park offices from the visitor center would continue to impair the ability of park staff to respond quickly to visitor needs. The No-Action Alternative would have an individual, long-term, moderate, adverse impact on park operations.

**Cumulative Impacts—**Cumulative impacts of other possible planned actions within the park, such as the possible acquisition of 30 additional acres of adjacent property and the extension of the municipal water line into the park could impact park operations. In particular, the addition of contiguous acreage would increase parks staff landscape and/or trail management responsibilities. This increase in responsibilities, in conjunction with the No-Action Alternative, may further strain park staff and limit their ability to adequately provide interpretive services to visitors. The No-Action Alternative in combination with these other possible planned actions within the park would have a cumulative, long-term, moderate, adverse impact on park operations.

**Conclusions—**The No-Action Alternative would have individual and cumulative, long-term, moderate, adverse impacts on park operations.

### 5.5.3 Alternative 1

**Analysis—**Park operations would be affected in this alternative by improvements and expansion of staff space and resources. Expanded staff spaces and security improvements that would be part of this alternative include:

- Construction of an elevator and other resources to make the visitor center fully compliant with the Uniform Federal Accessibility Standards implementing the provisions of the Architectural Barriers Act of 1968.
- Placement of the reception/lobby area to best monitor activities going on both inside and directly outside of the visitor center as well as providing a high-visibility location for visitors seeking park information.
- The addition of up to 19 additional office spaces and/or work-rooms between the upper and lower levels of the new and remodeled facility.
- Addition of a mail/copy/filing area and a computer room adjacent to but separate from staff offices

The proposed addition to the visitor center would also improve park operations by consolidating all park offices in one location. This would allow park staff to better respond to visitor needs quickly and efficiently, as well as increase communication among park staff. In addition, increased library and conference areas would further the park's partnerships with outside organizations by providing both meeting and research spaces. A larger facility would also enable park staff to better fulfill the mission as stated in the park's enabling legislation. With the proposed addition, the park staff plans to organize the visitor center into eight different focus areas. These focus areas would allow park staff to bring a greater array of Dr. Carver's life work to visitors through the museum, the history discovery area, the science discovery area, and the humanitarian and multipurpose rooms. Larger, centralized, and climate-controlled storage areas within the proposed addition would allow park staff better access to archival resources. Alternative 1 would have an individual, short-term, minor adverse impact on park operations during construction. However, the alternative would have an individual, long-term, moderate, beneficial impact after completion of construction.

**Cumulative Impacts—**Cumulative impacts of other possible planned actions within the park, such as the possible acquisition of 30 additional acres of adjacent property and the extension of the municipal water line into the park could impact park operations. In particular, the addition of contiguous acreage would increase staff landscape and/or trail management responsibilities. However, improvements in park operations from expanded, modernized, and more efficient staff facilities would largely offset an increase in operational demands from these other possible future actions. Alternative 1, in combination with these other actions, would have a cumulative, long-term, minor, beneficial impact.

**Conclusion—**Alternative 1would have an individual, long-term, moderate, beneficial impact on park operations, despite short-term, minor, adverse impacts due to the construction work and some temporary disruption of staff activities resulting from moving to new workspaces. This alternative would have a cumulative, long-term, minor, beneficial impact on park operations.

### 5.5.4 Alternative 2

**Analysis—**Park operations would be affected in Alternative 2 by improvements and expansion of staff space and resources. Further staff spaces and security improvements that would be part of this alternative include:

- Construction of an elevator and other resources to make the visitor center fully compliant with the Uniform Federal Accessibility Standards implementing the provisions of the Architectural Barriers Act of 1968.
- The addition of up to 18 additional office spaces and/or work-rooms between the upper and lower levels.
- Addition of a mail/copy/filing area adjacent to the reception area and library and a computer room—all conveniently close to staff office spaces.

The proposed addition to the visitor center would also improve park operations by consolidating all park offices in one location. This would allow park staff to better respond to visitor needs quickly and efficiently, as well as increase communications between park staff. In addition, increased library and conference areas would further the park's partnerships with outside organizations by providing both meeting and research spaces. A larger facility would also enable park staff to better fulfill the mission as stated in the park's enabling legislation by creating more opportunities for park staff to interpret and showcase Dr. Carver's work. With the proposed addition, the park staff plans to organize the visitor center into eight different focus areas. These focus areas would allow park staff to bring a greater array of Dr. Carver's life work to visitors through the museum, the history discovery area, the science discovery area, and the humanitarian and multipurpose rooms. Larger, centralized, and climate-controlled storage areas within the proposed addition would also allow park staff better access to archival resources. One disadvantage of Alternative 2 compared with Alternatives 1 and 3 is that it does not include a new central lobby/information desk location in the area now occupied by the breezeway between the existing visitor center and the restrooms. The inclusion of such a centralized lobby would improved visitor center operations enabling a single staff member to assist visitors with information and also allow the staff member to visual monitor a substantial portion of the visitor center facility. Alternative 2 would have an individual, short-term, minor, adverse impact on park operations during construction, but would have a long-term, minor, beneficial impact on overall park operations.

**Cumulative Impacts—**Cumulative impacts of other possible planned actions within the park, such as the possible acquisition of 30 additional acres of adjacent property and the extension of the municipal water line into the park could impact park operations. In particular, the addition of contiguous acreage would increase staff landscape and/or trail management responsibilities. However, improvements in park operations from expanded, modernized, and more efficient staff facilities would largely offset an increase in operational demands from these other possible future actions. Alternative 2, in combination with these other actions, would have a cumulative, long-term, minor, beneficial impact.

**Conclusion—**Alternative 2 would have an individual, long-term, minor, beneficial impact on park operations, despite short-term, minor, adverse impacts due to the construction work and some temporary disruption of staff activities resulting from moving to new workspaces. This alternative would also have a cumulative, long-term, minor, beneficial impact on park operations.

### 5.5.5 Alternative 3 (Preferred Alternative)

**Analysis—**Alternative 3 would affect park operations through improvements and expansion of staff space and resources. Further staff spaces and security improvements that would be part of this alternative include:

- Construction of an elevator and other resources to make the visitor center fully compliant with the Uniform Federal Accessibility Standards implementing the provisions of the Architectural Barriers Act of 1968.
- Placement of the reception/lobby area to best monitor activities going on both inside and directly outside of the visitor center as well as providing a high-visibility location for visitors seeking park information.
- The addition of up to 14 office spaces between the upper and lower levels and/or workrooms.
- Addition of a mail/copy/filing area adjacent to the reception area and library and a computer room—all conveniently close to staff office spaces

The proposed addition to the visitor center would also improve park operations by consolidating all park offices in one location. This would allow park staff to better respond to visitor needs quickly and efficiently, as well as increase communications between park staff. In addition, increased library and conference areas would further the park's partnerships with outside organizations by providing both meeting and research spaces. A larger facility would also enable park staff to better fulfill the mission as stated in the park's enabling legislation by creating more opportunities for park staff to interpret and showcase Dr. Carver's work. With the proposed addition, the park staff plans to organize the visitor center into eight different focus areas. These focus areas would allow park staff to bring a greater array of Dr. Carver's life work to visitors through the museum, the history discovery area, the science discovery area, and the humanitarian and multipurpose rooms. Larger, centralized, and climate controlled storage areas within the proposed addition would also allow park staff better access to archival resources.
Alternative 3 would have an individual, short-term, minor adverse impact on park operations during construction. However, the alternative would have an individual, long-term, moderate, beneficial impact after completion of construction.

**Cumulative Impacts—**Cumulative impacts of other possible planned actions within the park, such as the possible acquisition of 30 additional acres of adjacent property and the extension of the municipal water line into the park could impact park operations. In particular, the addition of contiguous acreage would increase staff landscape and/or trail management responsibilities. However, improvements in park operations from expanded, modernized, and more efficient staff facilities would largely offset an increase in operational demands from these other possible future actions. Alternative 3, in combination with these other actions, would have a cumulative, long-term, minor, beneficial impact.

**Conclusions—**Alternative 3 would have an individual, long-term, moderate, beneficial impact on park operations, despite short-term, minor, adverse impacts due to the construction work and some temporary disruption of staff activities resulting from moving to new workspaces. This alternative would have a cumulative, long-term, minor, beneficial impact on park operations.

# 6.0 CONSULTATION AND COORDINATION

RECEIVED
AUG 1 8 2003
BY:

STATE OF MISSOURI
Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.state.mo.us

August 8, 2003

Scott J. Bentley, Superintendent
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

Re: Carver Discovery Center (NPS) Newton County, Missouri

Dear Mr. Bentley:

Thank you for submitting information about the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

Based on the information provided and the meeting with you and Judith Deel of this office, we concur with your determination that the Mission 66 era Visitors Center, Maintenance building, three (3) Residences and Roads have undergone significant alterations and are not eligible for inclusion in the National Register of Historic Places, nor do they contribute to the George Washington Carver National Monument. We also concur with your determination that the proposed addition of the Carver Discovery Center as proposed in the Schemmer Conceptual design and the expanded parking will have "no adverse effect" on the Carver Monument as the size, scale, mass and materials are in conformance with the Secretary of the Interior's Standards and Guidelines for Rehabilitation.

Please be advised that, should project plans change, information documenting the revisions should be submitted to this office for further review and comment on possible effects to historic properties.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the **SHPO Log Number (010-NE-03)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy State
Historic Preservation Officer

c Ron Cockrell, NPS/Omaha

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**United States Department of the Interior**
**NATIONAL PARK SERVICE**
**George Washington Carver National Monument**
**5646 Carver Road**
**Diamond, MO 64840-8314**
(417) 325-4151

In reply to:
N1621 (GWCA)
D2217 (GWCA)

Rick Hansen
U.S. Fish and Wildlife Service
Columbia Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, Missouri 65203-007

Dear Mr. Hansen,

I am writing to request informal consultation with the U.S. Fish and Wildlife Service to comply with section 7 of the Endangered Species Act of 1973, as amended.

The National Park Service has initiated a planning process to remodel and expand the visitor center at George Washington Carver National Monument, which includes the preparation of an environmental assessment. The park is located in Newton County, Missouri, on Carver Road about 400 meters south of State Highway "V" (see enclosed map).

An environmental assessment was conducted that included a small scale expansion of the visitor center in 1996. Consultation was conducted with your office during this process. Dr. Paul McKenzie and Field Supervisor Gary D. Frazer were the park's point-of-contacts. In a letter dated July 7, 1996 (Reference FWS/AES-CMFO), it was noted by your agency that there are no federally-listed or species proposed for listing documented at the park. Since this time, studies have not identified any federally-listed species or proposed listed species.

This project does not occur within the Carver Branch of the Shoal Creek flood plains or wetlands.

The park currently operates under the General Management Plan that was approved after our consultations with your office in 1996. At this time, we would like to confirm with you that there are no threatened, endangered, proposed, or candidate species or designated critical habitats within the proposed project area. A series of drawings and maps have been included to provide you detailed information on the proposed area of work including drawings indicating the limit of work area.

Please send us any list of species that could potentially be affected by the project. This information will be used to continue the evaluation of potential impacts concerning the remodeling and expansion of the George Washington Carver National Monument visitor center.

We greatly appreciate your assistance in the review of this proposed project. Should you have any questions, or if we can be of any further assistance, please feel free to contact me at 417-325-4151 or scott_bentley@nps.gov.

Sincerely,

Scott J. Bentley
Superintendent
George Washington Carver National Monument

Enc. ( 12) Park Map, Map to Park, Existing Floor Plans (A1.0), Preferred Alternative Lower Level Plans (A1.1), Preferred Alternative Upper Level Plans (A1.2), Preferred Alternative Exterior Elevations (A2.1& A2.2), Preferred Alternatives Building Sections (A3.1), Grading, Layout & Materials Plan (L1), Rendered Elevations, Mass & Scale Model, and park brochure.

**United States Department of the Interior**
**NATIONAL PARK SERVICE**
**George Washington Carver National Monument**
**5646 Carver Road**
**Diamond, MO 64840-8314**
(417) 325-4151

In reply to:
H32 (GWCA)

Judith Deel, Archaeologist
Missouri Department of Natural Resources
Historic Preservation Program
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Judith,

It was wonderful talking with you again this week. I very much appreciate your time and assistance with George Washington Carver National Monument. Based on the new and updated information contained in this letter, the National Park Service continues to maintain the determination that the expansion of the Monument's visitor center will have no adverse effect on George Washington Carver National Monument's cultural and archeological resources pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-655) and the Advisory Council on Historic Preservation's regulations 36 CFR Part 800. The intent of this letter is to provide you with the updated information concerning the "Carver Discovery Center (NPS) Newton County, Missouri" project and to seek your review and concurrence with this determination of "no adverse effect."

As we discussed on the phone, we have completed the design process of the expanded visitor center and some extensive archeological surveys. While the visitor center is not eligible for inclusion in the National Register of Historic Places, we have still maintained the recommendation of your office in keeping with a sympathetic design to the existing architecture of the visitor center and maintenance facility. We reviewed three additional options since we last communicated. The preferred alternative included in this letter is a combination of the benefits of the three designs evaluated.

**Archeological Work Conducted:**

An archeological survey of the areas impacted by the visitor center expansion project was conducted under the direction of the Midwest Archeological Center (MWAC) Archeologist William J. Hunt, Jr. The goal of this work was to determine whether archeological resources occur in the construction area and to ensure no adverse impacts occurred to park archeological resources during the course of this project.

Immediately north of the Visitor Center is a significant and very complex archeological site (23NE119) associated with the Carver birthplace cabin. It is known that the site contains the

remains of two cabins and a frame house constructed by Moses Carver. It should also contain an array of farm outbuilding remains associated with the Carver era although their locations and functions have not been identified to present. The site also contains the remnants of the 20th century Shartel farmstead. The multi-component prehistoric occupation is little understood but appears to have been utilized by Early Archaic (ca. 7000-5000 BC) and Late Woodland (ca. 1000 AD) peoples and possibly contains a Late Archaic occupation (ca. 3000-0 BC) as well.

The site has been impacted by the Shartel family's modifications, archeological excavation of the birthplace cabin (Beaubien 1953), and landscaping by the National Park Service. Nevertheless, a significant amount of this site remains intact. Its exact content and the boundaries are not entirely clear despite Beaubien's work in the early 1950s and a shovel testing inventory in 1981 (Benn 1982).

The Birthplace Cabin component of 23NE119 is a contributing element of the George Washington Carver NM District which was entered on the National Register of Historic Places on Oct. 15, 1966. Other components of the site are also significant and may be eligible for the National Register of Historic Places.

MWAC Archeologist Bauermeister, assisted by GWCA staff members and volunteers, performed a geophysical survey of the area to be affected. This work was accomplished primarily using a magnetic gradiometer to inventory the equivalent of twenty one 20 x 20 m blocks (Attachment One). No archeological sites were identified during this survey work. One possible area of an old fence line was found on and outside the southern limit of the project area. The geophysical survey was extended south from this area, but no other indication of this partial fence type structure was identified.

Archaeologist Hunt directed a subsurface inventory using a technique called shovel testing. Essentially, small holes (30-40 cm diameter X $\geq$ 50 cm deep) were dug, each spaced 10 m apart over the target area, an area confined to the areas to be directly and indirectly impacted by construction (Attachment Two). The fill from each hole was screened through ¼ in mesh hardware cloth to retrieve any artifacts that may exist. Information on the hole location, soils, contents, and the positions of the positive and negative tests were recorded on MWAC Shovel Test Forms. No archeological sites were discovered and only a very small amount of charcoal, one square headed nail and a flack were identified in all of the digs that were conducted.

The field inventory was also documented through a daily log of crew activity, descriptions of inventoried areas, and photo documentation through black and white film, color film, and digital photographs of inventoried locales and other documentary photographs as necessary (Attachment Three).

A determination was made by Archeologist Hunt that no archeological sites exist within the limit of work for the project and that the expansion will not adversely affect the Monument's archeological resources.

**Facility Design:**

Attached to this letter is a copy of the current facility design. The design is sympathetic to the existing architecture of the visitor center and maintenance facility. It is the determination of the National Park Service that the revised design does not adversely impact the Monument as the size, scale, mass and materials are in conformance with Secretary of the Interior's Standards and Guidelines for Rehabilitation. See Attachments Four – Fifteen.

We greatly appreciate your assistance in conducting a second review of this proposed project. Should you have any questions, or if we can be of any further assistance, please feel free to contact me at 417-325-4151 or scott_bentley@nps.gov.

Sincerely,

Scott J. Bentley
Superintendent

Enc. ( 15) Geophysical Survey Map, Subsurface Inventory Map, Archeological Work Photographs, Existing Visitor Center Photographs, Park Map, Map to Park, Existing Floor Plans (A1.0), Preferred Alternative Lower Level Plans (A1.1), Preferred Alternative Upper Level Plans (A1.2), Preferred Alternative Exterior Elevations (A2.1& A2.2), Preferred Alternatives Building Sections (A3.1), Grading, Layout & Materials Plan (L1), Rendered Elevations, Mass & Scale Model, and park brochure.

RECEIVED
JUN 1 2004
BY:

STATE OF MISSOURI
Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

May 25, 2004

Scott J. Bentley, Superintendent
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

Re: Carver Discovery Center (NPS) Newton County, Missouri

Dear Mr. Bentley:

Thank you for submitting information about the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

We have reviewed the additional information provided concerning the above referenced project. We had previously concurred with your determination that the Mission 66 Era Visitors center, Maintenance Building three (3) Residences and Roads have undergone significant alterations are not eligible for inclusion in the National Register of Historic Places. We also concur with your determination that the revised proposed new construction will have **no adverse effect** on the historic fabric of the George Washington Carver National Monument as the plans and specifications are in conformance with the Secretary of the Interior's Standards and Guidelines for Rehabilitation.

Please be advised that, should project plans change, information documenting the revisions should be submitted to this office for further review and comment on possible effects to historic properties.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the SHPO Log Number **(010-NE-03)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy State
Historic Preservation Officer

MAM:jd

c Ron Cockrell, NPS/Omaha

*Integrity and excellence in all we do*

Missouri Department of Natural Resources

# 7.0 REFERENCES

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U.S. Fish and Wildlife Service. Undated. "National Wetland Inventory Map: Granby, Missouri quadrangle."

# 8.0 LIST OF PREPARERS

## 8.1 NPS

- Nancy Baker—Denver Service Center, Project Manager
- Jane Sikoryak—Denver Service Center, Cultural Resource Specialist
- Paul Wharry—Denver Service Center, Natural Resource Specialist
- Scott Bentley—George Washington Carver National Monument, Park Superintendent
- Lana Henry—George Washington Carver National Monument, Chief Ranger

## 8.2 Consultants

- Jerry Lang, Ph.D.—Woolpert LLP, Program Manager
- Martha Alarie—Woolpert LLP, Environmental Planner
- Dave Dister—Woolpert LLP, Natural Resource Specialist
- Will Ballard—Woolpert LLP, Planner

## 8.3 Architect

- Ed Chamberlin—Chamberlin Architects

# APPENDICES

# APPENDIX A
# PHOTO LOG

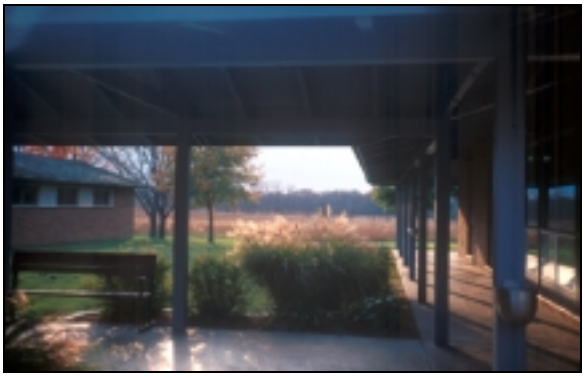
*North view of restroom building and visitor center from the Carver Trail.*

*Main entrance to the visitor center.*

*Side entrance to the visitor center (Carver bust and patio area in background).*

*View of the northwest corner of the visitor center and restroom building (general area where new addition would be constructed).*

*Wayside interpretive station along the Carver Trail.*



*West view of prairie area between the visitor center and the maintenance building.*

*Restored prairie and tree lawn immediately west of the visitor center (general area of proposed visitor center addition construction).*

*Looking south at the west side of the visitor center and restroom building (general area of proposed visitor center addition construction).*

*Looking northeast at the west side of the visitor center. Maintenance building in foreground.*

# APPENDIX B
# CHOOSING BY ADVANTAGES WORKSHOP

WOOLPERT

# Meeting Minutes

**Date of Meeting:** December 11, 2003 **Re:** Choosing By Advantages Workshop

**Location:** GWCA **Issue Date:** December 15, 2003

**Submitted By:** Woolpert LLP

**In Attendance: (THIS IS NOT A COMPLETE LIST)**

Scott Bentley, Superintendent, GWCA
Nancy Baker, DSC, NPS
Terry Urbanowski, DSC, NPS
Lana Henry, Chief Ranger, GWCA
Dena Matteson, Ranger, GWCA
Ed Chamberlin, Chamberlin Architects
Will Ballard, Woolpert

## ITEMS DISCUSSED

A Choosing By Advantages (CBA) workshop was conducted at GWCA on Thursday December, 11 2003. The workshop was conducted to identify the Preferred Alternative for remodeling and expansion of the existing Visitor Center. Issues and topics discussed during the CBA are summarized as follows:

- The workshop began with an overview of the agenda by Terry Urbanowski. The agenda for the workshop was:
  - Introductions
  - Overview of the CBA process
  - Project Background
  - Concepts/Alternatives
  - Stakeholders
  - Attributes
  - Evaluation
  - Reconsider
- The basic elements of the CBA process include:
  - Establish evaluation factors
  - Summarize the attributes of each alternative

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- Decide the advantages of each alternative
- Decide the importance of each advantage
- Select the paramount advantage
- Weigh the importance of each advantage
- Evaluate the alternative
- Look at advantages versus costs
- Reconsider

- **For more detail about the CBA process, see the attached Power Point Presentation.**

- The process for this project goes back several years, and included the period of time when the GWCA General Management Plan was being prepared.

- Value analyses and CBA's have been conducted previously, however there were informal processes.

- Other alternatives have been considered, including building a three-story addition to the Visitor Center to reduce the footprint of the building.

- Public involvement regarding the GWCA Visitor Center has been conducted.

- GWCA has developed a strong relationship with regional educational systems over the years.

- Recently, the NPS has begun to focus on more specific needs, including project scope, alternative sites, programs to meet GWCA and regional needs for the Visitor Center.

- This is a project with a short turn-around. The project will be presented at the March DAB.

- The alternatives development focused on three build alternatives. The framework was based on up to 60,000 annual visitors and up to 40,000 students (approximately 200 students per day).

- Students typically come in big groups. These groups can be as large as 80 students.

- Students are typically outdoors during good weather and indoors during poor weather.

- There are eight different areas at GWCA that students will visit.

- The current Visitor Center is a good scale for the landscape. Keeping the scale of the building will continue to be an important element of the design.

- Alternatives 1 and 3 have renovation costs associated with the design.
- The new septic system is a common element for all three alternatives. The intent is to bring the new leach/drainage field a little closer to the developed area.
- There are four major groupings in the program:
  - Visitor area
  - Focus/discovery area
  - Multipurpose/kitchen area
  - Administrative offices
- A change to the interpretive areas would provide a better link to the discovery area and visitor flow.
- Approximately 12 feet below the surface is limestone bedrock. There is also potential for a perched water table. The topography of the site will need to be addressed to ensure adequate drainage from the building.
- Excavation of bedrock, if needed, would effect the existing building and negatively effect parking.
- Potable water will be provided by the city's water supply.
- For the purposes of the CBA, all site improvements and utility improvements are considered as common elements.
- Reasons for the alternative building footprints include:
  - The location of cultural resources to the north
  - Fire safety concerns associated with the prairie, and
  - Location of existing utilities
- Informal discussion of differences between alternatives included the following topics:
  - There is a separate student entrance
  - Alternative power required
  - Natural lighting for the lower level
  - Indoor and outdoor rest rooms and the number and location of those rest rooms
  - Placement of rooms
  - Excavation required
  - Utilities
  - Entrance experience
  - Theater\media experience

- Location of admin space away from visitors and resource
- Access to trails
- Building/roof line
- Access to upper floors
- Entrance to building
- Separated admin functions
- Exterior lower level door (lack of immediate exterior egress)
- Multipurpose room width (span)
- Accessibility from floor to floor (perceived inaccessibility/separation of space)
- Open floor plan vs. close floor plan (closed off vs unified spaces)
- Relationship of library to the collections
- Visitor circulation varies

- Random thoughts/issues from meeting participants:
  - The focus areas would enhance overall visitor experience. Could consider design that would allow closing-off rooms to mitigate noise.
  - Sound absorbing materials could be incorporated into the interior to mitigate noise.
  - The multipurpose room would be an advantage if located in the lower level, because it could handle large groups of children that would be separated from other visitors; can isolate the room for after hours events.
  - The gift shop could be a theater exit experience.
  - Due to staffing, the GWCA requires one location for Visitor Center reception and gift shop sales.
  - The observation decks would be about 10-12 feet above ground level, which would provide a better visitor experience. They would allow a better view of the natural area and the historic area.

- Thoughts/issues regarding Alternatives:
  - Alternative 1:
    - Entrance relocated to NE corner
    - Allows use of gift shop as theater lobby
    - Allows visual access (window) to courtyard
    - Would transfer some staff restroom square footage upstairs for public
    - Smallest footprint, less excavation, layout more efficient
    - Location of service road may be a problem for the multipurpose room
    - Not so much separation of school groups and visitors
    - There would be some level of public interaction, which is good, but there has to be some control mechanism, this alternative provides greatest amount of control
    - The one level would be more advantageous to seniors/disabled
    - Emergency shelter would be in the admin area, which is not good. should not mix public and admin/files and collections areas.

Meeting Minutes
December 11, 2003
Page 5

- There would more time required to move people to different locations in the lower level.
- Collections room is located on outside wall, which is not optimum.

- Alternative 2:

  - Entrance remains is current location
  - Requires a long span for multipurpose room
  - Separate group entrance provides opportunity (on exterior wall) for signage to instruct groups on how to proceed
  - Because of lower level public space, would require staff exiting building to access breakroom
  - Enhanced visitor experience/discovery with two-level upper level
  - Emergency shelter would work much better than Alt 1
  - No/minimal windows for staff offices

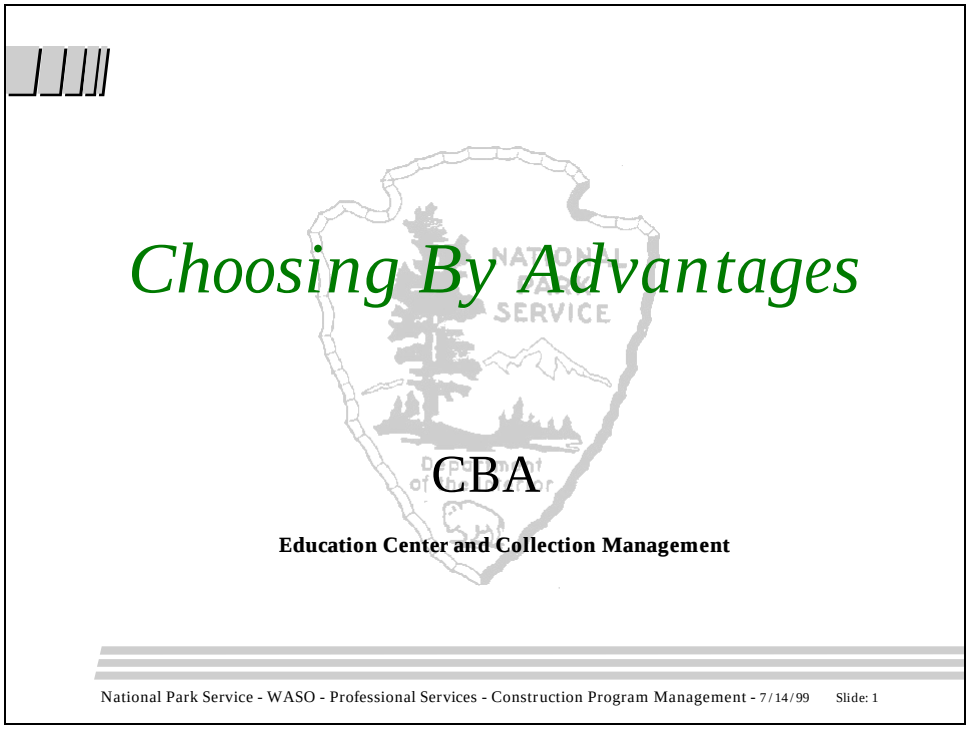
- Alternative 3:

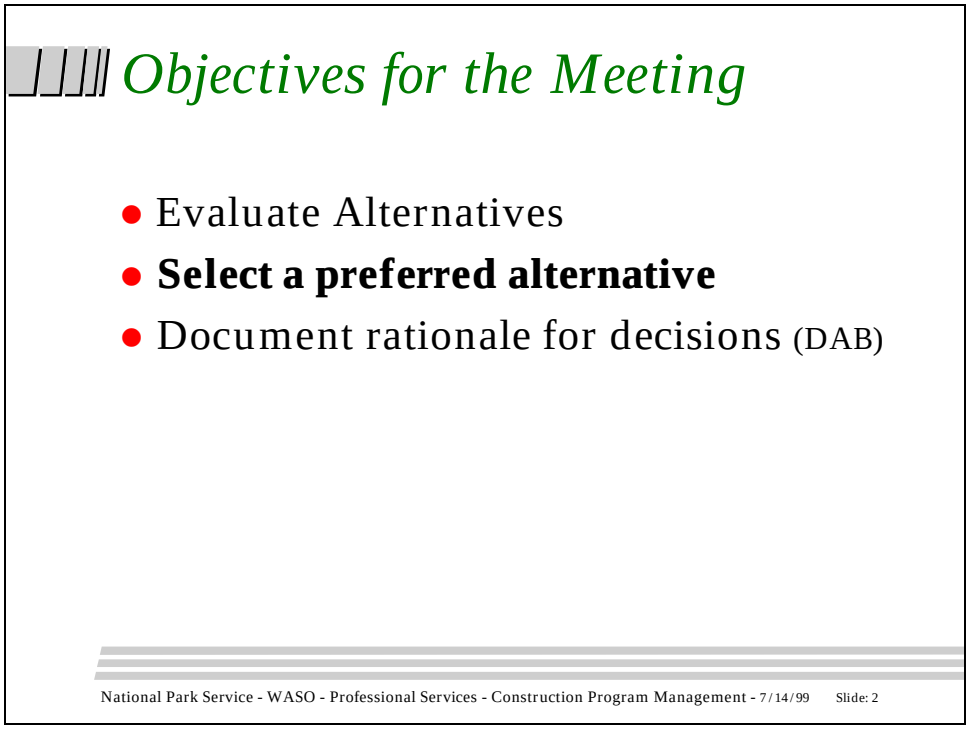
  - Group entrance provides opportunity (on exterior wall) for signage to instruct groups on how to proceed
  - North museum wall cuts off visual access to rest of center
  - Admin file area can be secured, not in Alts 1 & 2
  - Because of lower level public space, would require staff exiting building to access breakroom
  - Visitor flow, access to theater is good
  - Better access to trail
  - Enhanced visitor experience/discovery with two-level upper level
  - Emergency shelter would work much better than Alt 1
  - No/minimal windows for staff offices
  - Good location for elevator

- **For additional discussion of each alternative refer to the attached CBA table.**

- The result of the CBA was that a new "Preferred Alternative" would be developed. The Preferred Alternative was generally created by incorporating the most advantageous elements of Alternatives 1, 2 and 3. It was decided that Chamberlin Architects would prepare a fourth "Preferred Alternative".

- A separate conference call will be conducted the week of December 15 to discuss the landscape/site design for the Visitor Center.


Choosing By Advantages
CBA
Education Center and Collection Management
National Park Service - WASO - Professional Services - Construction Program Management - 7/14/99 Slide: 1


Objectives for the Meeting
Evaluate Alternatives
Select a preferred alternative
Document rationale for decisions (DAB)
National Park Service - WASO - Professional Services - Construction Program Management - 7/14/99 Slide: 2

## *Choosing By Advantages*

***Purpose . . .***

- To simplify, clarify and unify decision making

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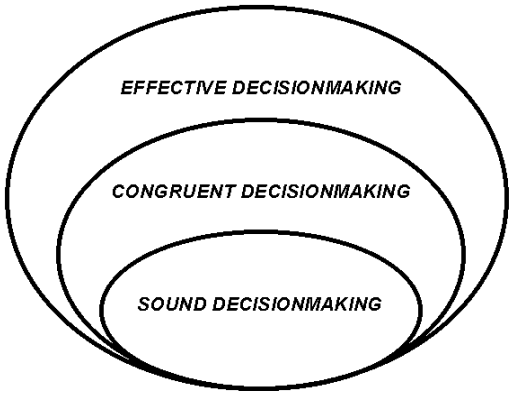


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## *Choosing by Advantages (CBA) **IS** about…..*

- Sound, Defensible, Value-based Decision Making
- Providing essential functions for an appropriate cost
- Benefit to Cost Relationships and working both sides of the equation.
- Managing the Decision Points
- Making better decisions!!!

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## *Choosing By Advantages **THREE DEFINITIONS.....***

- **Factor**
- **Attribute**
- **Advantage**

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## *Choosing By Advantages*

### ***A FACTOR is . . .***

- An element, or a component, of a decision
- A container for two kinds of data
  - Attributes
  - Advantages

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## *Choosing By Advantages*

### ***An ATTRIBUTE is . . .***

- A fact
- A difference between two alternatives

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## *Choosing By Advantages*

***An ADVANTAGE is . . .***

- **A FAVORABLE** difference between the attributes of alternatives.

**" Without exception, a Disadvantage of one alternative is an Advantage of another. "**

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## *Principle of Anchoring*

- **Decisions must be anchored in the relevant facts**
- **Decisions must be based on actuality, not on numbers or words.**

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## Fundamental Rule of Sound Decisionmaking

- **Decisions must be based on the Importance of Advantages**

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## Steps in Choosing By Advantages

- Establish the Evaluation Factors
- Summarize the **Attributes** of each alternative
- Decide the **Advantages** of each alternative
- Decide the **Importance** of each advantage
- Select the **Paramount** Advantage
- **Weigh** the Importance of Each Advantage
- **Evaluate** the Alternative
- Look at advantages vs. costs
- **Reconsider**

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## NPS Evaluation Factors

- Prevent loss of Resources
- Maintain or improve condition of Resources
- Provide visitor services and educational and recreational opportunities
- Protect public health, safety, and welfare
- Improve operational efficiency and sustainability
- Protect employee health, safety, and welfare
- Provide other advantages to the national park system

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## Steps in Choosing By Advantages

2. Summarize the **ATTRIBUTES** of each alternative (above the dashed line)

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## Summarize Attributes

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| **FACTOR 1 – Water** | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | | | | | | |
| **FACTOR 2 – Tent Spot** | | | | | | |
| Attributes | • | | • | | • | |
| Advantages | | | | | | |
| **FACTOR 3 - Table** | | | | | | |
| Attributes | • | | • | | • | |
| Advantages | | | | | | |
| **FACTOR 4 - Privacy** | | | | | | |
| Attributes | • | | • | | • | |
| Advantages | | | | | | |
| **TOTAL IMPORTANCES OF ADVANTAGES** | | | | | | |

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## Steps in Choosing By Advantages

3. Decide the Advantages of each alternative
   - **Underline** the Least-Preferred Attributes
   - **Summarize** the differences from the least preferred attributes (below the dashed line). These differences are the advantage of the the alternatives

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## Least Preferred and Advantages

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| **FACTOR 1 – Water** | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | 200Feet Closer | | | | 110 Feet Closer | |
| **FACTOR 2 – Tent Spot** | | | | | | |
| Attributes | • | | • | | • | |
| Advantages | | | | | | |
| **FACTOR 3 - Table** | | | | | | |
| Attributes | • | | • | | • | |
| Advantages | | | | | | |
| **FACTOR 4 - Privacy** | | | | | | |
| Attributes | • • | | • • | | • • | |
| Advantages | | | | | | |
| **TOTAL IMPORTANCES OF ADVANTAGES** | | | | | | |

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## Steps in Choosing By Advantages

4. Decide the Importance of each advantage
   - Circle the most important advantage

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## Circle Most Important Advantages

| FACTOR | ALTERNATIVES | | |
|---|---|---|---|
| | SITE NO. 8 | SITE NO. 19 | SITE NO. 23 |
| **FACTOR 1 – Water** | | | |
| Attributes | • 60 Feet Away | • 260 Feet Away | • 150 Feet Away |
| Advantages | | | 110 Feet Closer |
| **FACTOR 2 – Tent Spot** | | | |
| Attributes | • Moderately Level | • Almost Level | • Quite Sloping |
| Advantages | Moderately more Level | | |
| **FACTOR 3 - Table** | | | |
| Attributes | • Without | • Without | • With |
| Advantages | | | |
| **FACTOR 4 - Privacy** | | | |
| Attributes | • Close sites<br>• Near Road | • screened<br>• distant sites | • screened<br>• Close sites |
| Advantages | | | Moderately more Privacy due to screening |
| **TOTAL IMPORTANCES OF ADVANTAGES** | | | |



## Steps in Choosing By Advantages

5. Select the Paramount advantage
   - Establish a scale

## Paramount Advantage

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| **FACTOR 1 – Water** | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | 200Feet Closer | | | | 110 Feet Closer | |
| **FACTOR 2 – Tent Spot** | | | | | | |
| Attributes | • Moderately Level | | • Almost Level | | • Quite Sloping | |
| Advantages | Moderately more Level | | Much more Level | | | |
| **FACTOR 3 - Table** | | | | | | |
| Attributes | • Without | | • Without | | • With | |
| Advantages | | | | | With versus Without | |
| **FACTOR 4 - Privacy** | | | | | | |
| Attributes | • Close sites<br>• Near Road | | • screened<br>• distant sites | | • screened<br>• Close sites | |
| Advantages | | | Much More Privacy due to screening and remoteness | 100 | Moderately more Privacy due to screening | |
| TOTAL IMPORTANCES OF ADVANTAGES | | | | | | |



## Steps in Choosing By Advantages

6. Weigh the Importance of each Advantage
   - Assign a number to weigh the importance of each
   - Compare with the paramount advantage
   - Decide the importance of each remaining advantage

## Weigh Most Important in Factor

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| **FACTOR 1 – Water** | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | 200Feet Closer | 40 | | | 110 Feet Closer | |
| **FACTOR 2 – Tent Spot** | | | | | | |
| Attributes | • Moderately Level | | • Almost Level | | • Quite Sloping | |
| Advantages | Moderately more Level | | Much more Level | 70 | | |
| **FACTOR 3 - Table** | | | | | | |
| Attributes | • Without | | • Without | | • With | |
| Advantages | | | | | With versus Without | 65 |
| **FACTOR 4 - Privacy** | | | | | | |
| Attributes | • Close sites<br>• Near Road | | • screened<br>• distant sites | | • screened<br>• Close sites | |
| Advantages | | | Much More Privacy due to screening and remoteness | 100 | Moderately more Privacy due to screening | |
| TOTAL IMPORTANCES OF ADVANTAGES | | | | | | |



## Decide the importance

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| **FACTOR 1 – Water** | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | 200Feet Closer | 40 | | | 110 Feet Closer | 30 |
| **FACTOR 2 – Tent Spot** | | | | | | |
| Attributes | • Moderately Level | | • Almost Level | | • Quite Sloping | |
| Advantages | Moderately more Level | 30 | Much more Level | 70 | | |
| **FACTOR 3 - Table** | | | | | | |
| Attributes | • Without | | • Without | | • With | |
| Advantages | | | | | With versus Without | 65 |
| **FACTOR 4 - Privacy** | | | | | | |
| Attributes | • Close sites<br>• Near Road | | • screened<br>• distant sites | | • screened<br>• Close sites | |
| Advantages | | | Much More Privacy due to screening and remoteness | 100 | Moderately more Privacy due to screening | 45 |
| TOTAL IMPORTANCES OF ADVANTAGES | | | | | | |

## Steps in Choosing By Advantages

- Evaluate the Alternatives
  - Add up the numbers

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## Greatest TOTAL IMPORTANCE

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| **FACTOR 1 – Water** | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | 200Feet Closer | 40 | | | 110 Feet Closer | 30 |
| **FACTOR 2 – Tent Spot** | | | | | | |
| Attributes | • Moderately Level | | • Almost Level | | • Quite Sloping | |
| Advantages | Moderately more Level | 30 | Much more Level | 70 | | |
| **FACTOR 3 - Table** | | | | | | |
| Attributes | • Without | | • Without | | • With | |
| Advantages | | | | | With versus Without | 65 |
| **FACTOR 4 - Privacy** | | | | | | |
| Attributes | • Close sites<br>• Near Road | | • screened<br>• distant sites | | • screened<br>• Close sites | |
| Advantages | | | Much More Privacy due to screening and remoteness | 100 | Moderately more Privacy due to screening | 45 |
| TOTAL IMPORTANCES OF ADVANTAGES | | 70 | | 170 | | 140 |

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## Steps in Choosing By Advantages

8. Look at the advantages compared to the costs

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## Cost

| FACTOR | ALTERNATIVES | | | | | |
|---|---|---|---|---|---|---|
| | SITE NO. 8 | | SITE NO. 19 | | SITE NO. 23 | |
| FACTOR 1 – Water | | | | | | |
| Attributes | • 60 Feet Away | | • 260 Feet Away | | • 150 Feet Away | |
| Advantages | 200Feet Closer | 40 | | | 110 Feet Closer | 30 |
| FACTOR 2 – Tent Spot | | | | | | |
| Attributes | • Moderately Level | | • Almost Level | | • Quite Sloping | |
| Advantages | Moderately more Level | 30 | Much more Level | 70 | | |
| FACTOR 3 - Table | | | | | | |
| Attributes | • Without | | • Without | | • With | |
| Advantages | | | | | With versus Without | 65 |
| FACTOR 4 - Privacy | | | | | | |
| Attributes | • Close sites<br>• Near Road | | • screened<br>• distant sites | | • screened<br>• Close sites | |
| Advantages | | | Much More Privacy due to screening and remoteness | 100 | Moderately more Privacy due to screening | 45 |
| TOTAL IMPORTANCES OF ADVANTAGES | | 70 | | 170 | | 140 |
| TOTAL COST | $3.00 | | $4.50 | | $20.00 | |

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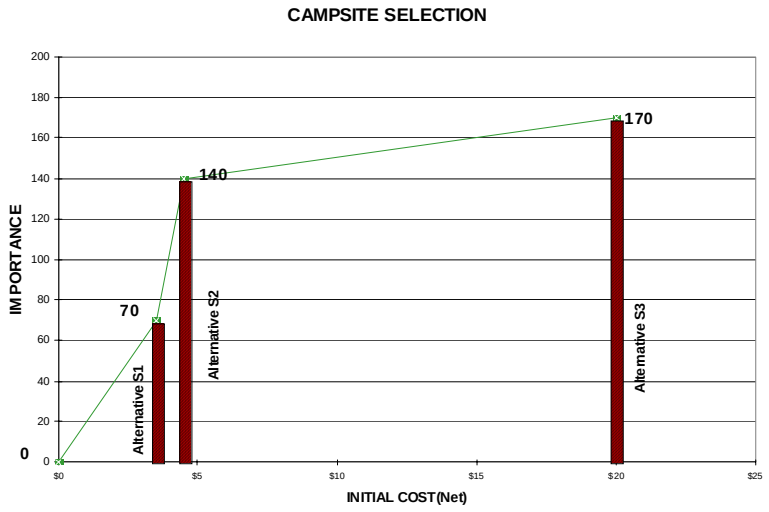
## Importance to Cost Graph

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## Steps in Choosing By Advantages

- 9. Reconsider

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Thank you!
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**DRAFT**

**George Washington Carver National Monument—Museum Addition Alternatives**

**Choosing by Advantages**

| ALTERNATIVES | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alternative 1 | | Alternative 2 | | Alternative 3 | | Alternative 4 |
| | | | | | | | |
| FACTOR 1—Protect Natural and Cultural Resources | | | | | | | |
| FACTOR 1A—Prevent Loss of Resources | | | | | | | |
| Attributes<br>• Excavation<br>• Size of footprint<br>• Location of collections storage | • 12' Excavation Below existing grade<br>• Smallest excavation (lower level)<br>• Largest footprint = most surface disturbance (upper level) | | • 10' Excavation below existing grade<br>• More excavation than Alt. 1<br>• Less surface disturbance than Alt. 1 | | • 9' Excavation below existing grade<br>• More excavation than Alt. 1<br>• Less surface disturbance than Alt. 1 | | |
| Advantages | Greater protection of collections | | | | | | |

**Note:** Alternative 2 and Alternative 4 discussed here were later combined into a modified Alternative 3, which is the Preferred Alternative analyzed in the EA.

| ALTERNATIVES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative 1 | | Alternative 2 | | Alternative 3 | | Alternative 4 | |
| FACTOR 2—Maintain or Improve Condition of Resources | | | | | | | | |
| FACTOR 2A | | | | | | | | |
| Attributes<br>• Roof lines<br>• Massing | • Most visible on approach to VC<br>• Large blank walls facing prairie<br>• Collections are located against an inside wall (storm safety and protection from condensation) | | • Least visible<br>• Collections are located against an inside wall (storm safety and protection from condensation) | | • Slightly more visible than Alt. 2<br>• Collections are located against an outside wall | | | |
| Advantages | • Horizontal north-south roof lines work well with landscape<br>• Greater protection of collections | 20 | • Building blends with surroundings<br>• Greater protection of collections | 30 | • Building blends with surroundings<br>• Horizontal north-south roof lines work well with landscape | | • Reconfigure basement to put collections against an inside wall<br>• Building blends with surroundings<br>• Horizontal north-south roof lines work well with landscape | 30 |

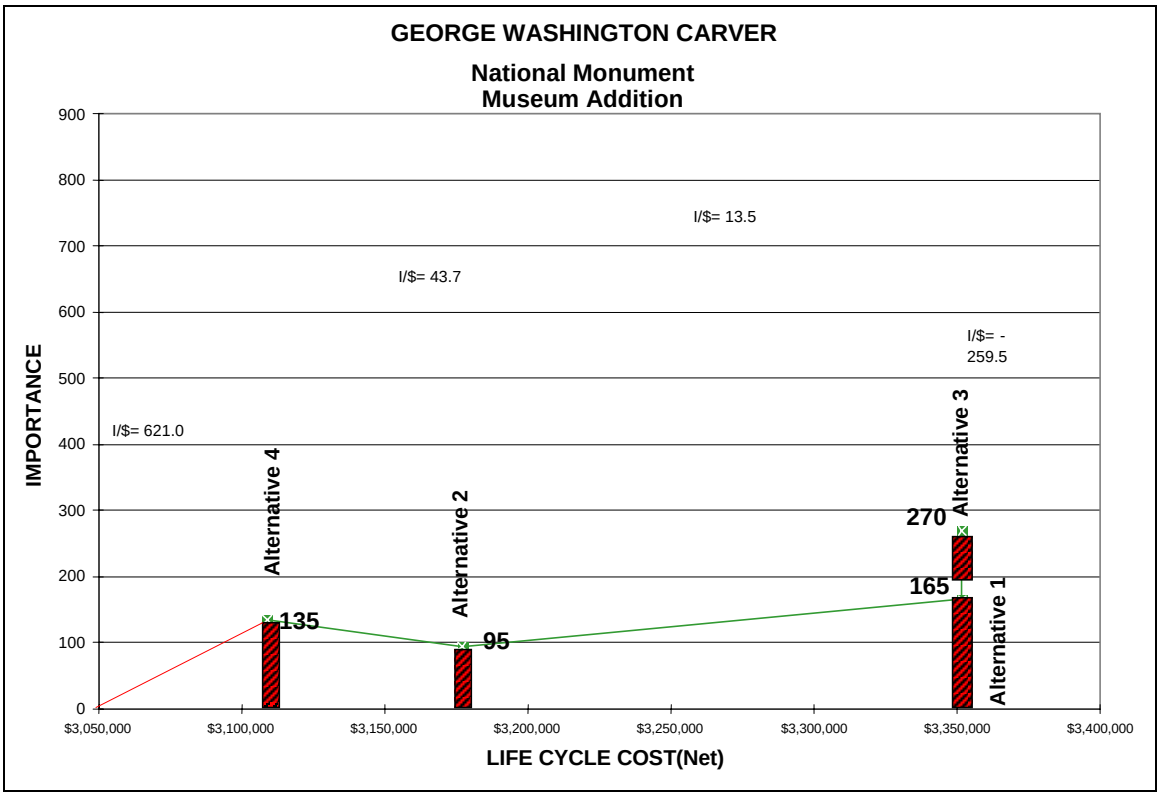
| ALTERNATIVES | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alternative 1 | | Alternative 2 | | Alternative 3 | | Alternative 4 |
| | | | | | | | |
| FACTOR 3—Provide Visitor Services, Education, and Recreational Opportunities | | | | | | | |
| FACTOR 3A | | | | | | | |
| Attributes:<br>• Separation of User Groups on arrival and dispersal<br>• Separate entrances to separate restrooms<br>• Accessibility<br>• Circulation<br>• Floor levels | • Library, collections and office spaces separated from public spaces<br>• Logical arrival and building entry sequence for regular visitor<br>• Access to rest of building without going through museum | | • Upper floor split level<br>• Different entrances for different user groups - separation of group entrance from regular entrance | | • Upper floor split level<br>• Different entrances for different user groups - separation of group entrance from regular entrance<br>• Opportunity to combine spaces: create larger lobby and entrance area<br>• Logical arrival and building entry sequence for regular visitor<br>• Access to rest of building without going through museum | | |

| | ALTERNATIVES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative 1 | | Alternative 2 | | Alternative 3 | | Alternative 4 | |
| Advantages | • All visitor functions are together on same floor; provides easy accessibility<br>• Separate space for gift shop<br>• Direct access to theater<br>• Theater is located in space with attractive wood ceiling | | • Possible sense of discovery with exhibit areas on higher level; higher floor level gives longer views over prairie<br>• Multipurpose room on lower level allows separation of group arrival, lunch and other activities from quieter areas; also allows separation of service area from pedestrian areas<br>• Access to multipurpose room from exterior for after-hours functions<br>• Group entrance adjacent to restrooms | 40 | • Possible sense of discovery with exhibit areas on higher level; higher floor level gives longer views over prairie<br>• Multipurpose room on lower level allows separation of group arrival, lunch and other activities from quieter areas; also allows separation of service area from pedestrian areas<br>• Access to multipurpose room from exterior for after-hours functions<br>• Group entrance adjacent to restrooms<br>• Better ability to secure files<br>• Separate space for gift shop<br>• Direct access to theater<br>• Theater is located in space with attractive wood ceiling<br>• Quick access to trails from lobby without going out the main entrance door | 100 | • Possible sense of discovery with exhibit areas on higher level; higher floor level gives longer views over prairie<br>• Multipurpose room on lower level allows separation of group arrival, lunch and other activities from quieter areas; also allows separation of service area from pedestrian areas<br>• Access to multipurpose room from exterior for after-hours functions<br>• Group entrance adjacent to restrooms<br>• Better ability to secure files<br>• Separate space for gift shop<br>• Direct access to theater<br>• Theater is located in space with attractive wood ceiling<br>• Quick access to trails from lobby without going out the main entrance door | 100 |

| ALTERNATIVES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative 1 | | Alternative 2 | | Alternative 3 | | Alternative 4 | |
| | | | | | | | | |
| FACTOR 3B—Room Relationships | | | | | | | | |
| Attributes:<br>• Relationship of library to collections<br>• Relationship of lobby and gift store<br>• Multipurpose relationship to theater<br>• Theater location<br>• Relationship to outdoors | | | | | | | | |
| FACTOR 4—Protect Health, Safety, and Welfare | | | | | | | | |
| FACTOR 4A—Public Health, Safety, and Welfare | | | | | | | | |
| Attributes:<br>• Size of storm shelter<br>• Adjacencies of storm shelter and non-public areas | • Stairway lobby, library, mail/copy room and restrooms would be used for storm shelter | | • Large basement space (multi-purpose room) well suited for storm shelter<br>• Quicker to get visitors and staff to safety | | • Large basement space (multi-purpose room)<br>• Quicker to get visitors and staff to safety | | | |
| Advantages | No advantage | | Well suited for storm shelter | 65 | Well suited for storm shelter | 65 | Well suited for storm shelter | 65 |

| | ALTERNATIVES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative 1 | | Alternative 2 | | Alternative 3 | | Alternative 4 | |
| | | | | | | | | |
| FACTOR 4B—Employee Health, Safety, and Welfare | | | | | | | | |
| Attributes:<br>• Staff office locations<br>• Light<br>• Access and egress | • No direct access to outdoors | | • Offices are on north side of basement level | | • Offices are on north side of basement level | | | |
| Advantages | Offices are on south and west; good light | 75 | Direct access to outdoors | | Direct access to outdoors | | Move offices to south and west; keep direct access to outdoors | 75 |
| TOTAL IMPORTANCES OF ADVANTAGES | | 95 | | 135 | | 165 | | 270 |
| Initial Cost (Net) | $3,176,868 | | $3,109,092 | | $3,351,606 | | $3,351,606 | |
| Compliance | | | | | | | | |
| Life Cycle Cost (Net) | | | | | | | | |
| TOTAL | | | | | | | | |

## Comparative Costs Summary Chart
## (Showing Enlarged Summary of Cost to Benefits)



## Comparative Costs Summary Chart
## (Showing Full Size Scale Starting at 0)