



National Park Service  
US Department of the Interior  
Mesa Verde National Park  
Colorado

## FINDING OF NO SIGNIFICANT IMPACT

---

### Spruce Tree House Alcove Arch Stabilization

Recommended:

**KATHRYN COLLINS** Digitally signed by KATHRYN COLLINS  
Date: 2024.01.31 12:39:37 -07'00' January 31, 2024

Kayci Cook Collins  
Superintendent, Mesa Verde National Park  
National Park Service

Date

Approved:

**KATHARINE HAMMOND** Digitally signed by KATHARINE HAMMOND  
Date: 2024.02.13 20:18:59 -07'00' February 13, 2024

Kate Hammond  
Regional Director, Interior Regions 6, 7, and 8  
National Park Service

Date

## Table of Contents

INTRODUCTION .....	1
BACKGROUND .....	1
SELECTED ACTION AND RATIONALE FOR THE DECISION .....	2
Selected Action.....	2
Rationale For Decision.....	3
MITIGATION MEASURES .....	4
AGENCIES AND PERSONS CONSULTED .....	4
POTENTIALLY AFFECTED ENVIRONMENT .....	7
Visitor Use and Experience.....	7
Cultural Resources .....	8
Special Status Plant Species .....	8
THE DEGREE OF EFFECTS OF THE ACTION .....	9
Beneficial, Adverse, And Short- And Long-Term Effects Of The Proposed Action .....	9
Visitor Use and Experience .....	9
Cultural Resources.....	10
Special Status Plant Species.....	11
CONCLUSION .....	12
APPENDIX A. MITIGATION MEASURES	

## INTRODUCTION

The National Park Service (NPS) has prepared an Environmental Assessment (EA) in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) to protect the Spruce Tree House (STH) cliff dwelling at Mesa Verde National Park from the potential collapse of the sandstone alcove arch above the site. In adherence with the park's enabling legislation and NPS management policies 5.3.5.1.1 and 5.3.5.1.2, action is needed to prevent substantial damage to the cliff dwelling and other park resources. Action is also needed to ensure staff and visitor safety, so the NPS could reopen the site to the public.

The statements and conclusions reached in this Finding of No Significant Impact (FONSI) are based on documentation and analysis provided in the EA and associated decision file. To the extent necessary, relevant sections of the EA are incorporated by reference below. The EA is available at the following link: <https://parkplanning.nps.gov/document.cfm?parkID=79&projectID=79217&documentID=127101>

## BACKGROUND

Congress established Mesa Verde National Park (park) on June 29, 1906. The park's purposes, according to its enabling legislation and subsequent legislation, include protecting—unimpaired—the cultural resources and values of the park for the enjoyment, education, and inspiration of current and future generations, and the preservation of forests, wildlife, and other natural features. The park's purposes also include providing the public with opportunities to experience the park's resources and to appreciate the way of life of the Ancestral Pueblo people who occupied the area from about 550 common era (CE)<sup>1</sup> to 1300 CE.

The STH alcove cliff dwelling is the third-largest and one of the best-preserved cliff dwellings in MVNP. It is an Ancestral Pueblo habitation compound, built over 700 years ago, that was constructed in a naturally occurring sandstone alcove about 216 feet wide by 89 feet deep. STH is on the east side of Spruce Canyon across from the park's headquarters area on Chapin Mesa. STH is recognized as one of MVNP's fundamental resources as part of the Mesa Verde archeological landscape and the Mesa Verde Archeological District (5MT4341). It is considered essential to achieving the park's purpose and maintaining its significance, fundamental resources, and values. Fundamental resources and values are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes. The NPS recognizes and respects other perspectives on the means and methods of protecting fundamental resources and honoring park values and purposes.

The NPS closed the STH cliff dwelling to visitors in 2015 due to increasing rock falls and concerns about overall alcove arch stability. Detailed engineering analyses have confirmed that the efforts to stabilize the arch in 1962 are at the end of their useful life. The alcove arch needs to be strengthened and stabilized if the NPS wants to preserve it from collapse; prevent substantial damage to the STH cliff dwelling; and re-open the cliff dwelling to visitors.

---

<sup>1</sup> CE stands for "common era" or "current era" and is used in recent literature as the secular equivalent of AD (*anno Domini*), which means "in the year of the Lord" in Latin.

## SELECTED ACTION AND RATIONALE FOR THE DECISION

### SELECTED ACTION

Based on the analysis presented in the EA, the NPS selected Alternative B, the proposed action and NPS preferred alternative (described on pages 2-1 through 2-10 of the EA). Project work and support areas include the construction site above the alcove, an established off-site material staging area, and a temporary access route of approximately 0.24 miles in length beginning at the Mesa Top Loop Road and continuing to the construction site.

Proposed stabilization work will be limited to the sandstone geologic formation in which the STH cliff dwelling was constructed. The proposed work will alter and upgrade previous efforts to stabilize the sandstone arch. None of the precontact, human-made fabric of STH will be stabilized as part of this alternative, although the NPS will work with the construction contractor on temporary measures to protect the cultural site during construction. A protection system designed by the contractor and approved by the NPS will be developed once the project is approved. The protection system will also be available for review by Tribes and Pueblos and the Colorado State Historic Preservation Office (SHPO). This protection plan will serve to prevent damage to the cultural site within the alcove during stabilization work. Stabilization activities are anticipated to occur over 180 days, from late September through mid-March.

Specific stabilization measures include:

- Installation of up to 75 20-foot-long tensioned rockbolts in a reticulated or net-like pattern to stabilize the overall alcove arch.
- Installation of 120 passive 6- to 8-foot rockbolts to stabilize smaller local rock features.
- Encapsulation of every completed rockbolt with custom-colored mortar that will match the color and texture of the adjacent surrounding sandstone and provide corrosion protection.
- Treatment of shrinkage cracks in the existing concrete plug (installed in 1963) between the sandstone at the back of the alcove arch and the outer face of the alcove roof.
- Removal of loose surface rocks, detached rock slabs, and vegetation (minor scaling) using hand and power tools.
- Installation of several small, rectangular-shaped corbels<sup>2</sup> (constructed of reinforced concrete and color matched to the local sandstone) that will be tucked up and under several hanging rock blocks that form part of the alcove's outer surface. Their position will minimize exposure and visibility.
- Installation of geotechnical instrumentation with remote data logging and transmitting capabilities (located in the park's headquarters) to constantly monitor the alcove arch's stability.

Stabilization work will be conducted by suspending workers and equipment in a movable work platform from a crane stationed on the stable sandstone area above the alcove arch. The locations of the rockbolt anchors will be predetermined prior to core drilling of 3-inch-diameter holes to a 20-foot depth. After drilling the holes, a steel reinforcement bar will be inserted and grouted. Comprehensive measures will be taken to

---

<sup>2</sup> A corbel is a very short structural support projecting from a wall or column for the purpose of reinforcing or carrying a load.

prevent any spills or discoloration of the arch sandstone and cliff dwelling during the drilling and grouting processes.

Other equipment and materials for construction, including a grout plant and water-holding tank, will be positioned on the top of the mesa, well behind the back edge of the alcove arch, in an existing open area covering 0.37 acres. Mats or other coverings to protect the exposed sandstone will be placed under equipment to minimize the potential damage of the rock surfaces.

The mesa top and alcove arch will be accessed via a 0.24-mile temporary road constructed from Mesa Top Loop Road, along an existing road and trails leading to the staging area. Some vegetation and tree limbs will be removed, with native vegetation salvaged where feasible, for reuse during restoration. The route will be cleared or partially graded to a width of 15 feet to allow for larger vehicles. The access route will be covered with geotextile fabric and then surfaced with aggregate. The geotextile fabric will enable the aggregate to be cleanly removed when stabilization is complete. Preparing the access route will be monitored by a qualified archaeologist.

A secondary 1.1-acre construction staging area will be located in a designated job construction site northwest of the headquarters' four-way intersection in an open area that the NPS routinely uses for maintenance and staging vehicles and equipment. Stabilization activities are anticipated to occur over 180 days from late September through mid-March.

The NPS will monitor the proposed stabilization activities during construction. Upon completing the proposed stabilization activities, the NPS will determine the alcove arch's stability. When the construction work is approved, STH will be considered safe for reopening.

Consistent with the selected alternative, NPS anticipates reopening the site for visitation in the same manner as prior to the closure in 2015. When previously open, public access was self-guided along the existing trail, with rangers present at the site. During the winter months, ranger-guided tours were conducted daily. The NPS will allow access to the roofed kiva at the site, and visitors could enter this kiva, consistent with the management prior to the 2015 emergency closure of STH. However, NPS may need to consider changes to these assumptions based on future conditions or additional ongoing consultation with associated Tribes and Pueblos.

The NPS will also reopen the upper Petroglyph Point Trail. The project area, access route, and adjacent staging areas will be restored to their original site conditions. The aggregate will be removed from the access route using a skid-steer loader, the geotextile will be picked up by hand, restoration or repairs to the trail will be made with hand tools, and repairs to the bike path will be conducted by another maintenance project.

## **RATIONALE FOR DECISION**

The NPS has selected Alternative B because it best meets the project purpose to stabilize the STH alcove arch while also providing access for the public. STH is recognized as one of MVNP's fundamental resources that is considered essential to achieving the park's purpose and maintaining its significance, fundamental resources, and values. The proposed action is needed to prevent substantial damage to the cliff dwelling and other park resources and to ensure staff and visitor safety, so the NPS could reopen the site to the public. The park's purposes include providing the public with opportunities to experience the park's resources and to appreciate the way of life of the Ancestral Pueblo people. In our decision the NPS are considering preserving

unimpaired the opportunity for Tribes and the Pueblos to connect with the dwelling in the alcove for ceremonies and other traditional activities. The park will continue to work with the consulting Tribes and Pueblos on protecting the site, honoring the special connections the tribes have, and creating appropriate visitor experiences that foster respect for those connections.

Other alternatives considered in the EA include a no-action alternative (Alternative A) and a secondary action alternative (Alternative C). Alternative C would also stabilize the STH alcove arch, but the NPS would not reopen the STH cliff dwelling for visitation. An important opportunity for visitors to experience the site up-close would not be restored under this alternative. The no-action alternative does not meet the purpose and need, and it conflicts with the mission of the NPS and the park to preserve fundamental park values and resources.

## **MITIGATION MEASURES**

The NPS strongly emphasizes avoiding, minimizing, and mitigating potentially adverse environmental impacts. Therefore, the NPS will require multiple mitigation measures and best management practices to protect environmental and cultural resources potentially affected by the project. These measures and practices are described in Appendix A of this document.

The authority for mitigation for this project comes from laws and policies, including:

- NPS Organic Act (16 USC § 1)
- 1978 National Parks and Recreation Act
- Endangered Species Act, as amended (16 USC § 1531 et seq.)
- National Environmental Policy Act (NEPA)
- Council on Environmental Quality Regulations (40 CFR 1500-1508)
- Department of the Interior NEPA Regulations (43 CFR Subtitle A Part 46)
- National Historic Preservation Act (NHPA)
- NPS Management Policies 2006 (chapters 4, 5, and 6)
- Departmental Manual – (516 DM 2)
- Director’s Order-12 Conservation Planning, Environmental Impact Analysis, and Decision-Making
- Clean Water Act (CWA)

## **AGENCIES AND PERSONS CONSULTED**

As part of the planning process, the NPS initiated a 30-day, civic engagement comment period from December 6<sup>th</sup>, 2021, through January 7<sup>th</sup>, 2022. During this timeframe, the NPS received a total of 40 pieces of correspondence with approximately 93 comments from individuals and tribes.

On March 9, 2023, the NPS released the Spruce Tree House Alcove Arch Stabilization EA to the public for review and comment. The EA was available for public review until April 10, 2023. Members of the public were asked to submit their comments electronically through the NPS Planning, Environment, and Public Comment

(PEPC) website. Announcements were distributed to the interested public, agencies, Tribal government leadership and Tribal Historic Preservation Officers (THPOs). All were asked to submit their comments electronically through the NPS Planning, Environment, and Public Comment (PEPC) website.

The NPS received a total of 43 pieces of correspondence during the Public Comment period. Responses to substantive comments on the EA are included in Attachment 1: Errata and Response to Public Comments. Further information on the civic engagement and EA public comment process are included in the project record.

The following agencies and organizations were contacted and invited to participate in the planning process.

- Bureau of Land Management – Tres Rios Field Office
- Bureau of Indian Affairs – Ute Mountain Ute Agency
- Natural Resources Conservation Service – Colorado Field Office
- U.S. Environmental Protection Agency – Region 8
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Forest Service – San Juan National Forest
- Colorado History, Colorado SHPO
- Colorado Parks and Wildlife
- Montezuma County
- Colorado State Land Board, Southwest District
- Colorado Department of Transportation – Region 5
- City of Durango, Colorado
- Town of Dolores, Colorado
- Cortez Area Chamber of Commerce
- Durango Chamber of Commerce
- Mancos Valley Chamber of Commerce
- Mesa Verde Foundation
- Crow Canyon Archaeological Center
- Colorado Natural Heritage Program

Consultation with the SHPO was initiated on December 15, 2021. The SHPO requested and received additional detailed information on the proposed stabilization from MVNP. MVNP also conducted an archaeological survey and submitted the report. The SHPO concurred with the determination of effects and recommendations of which resources contribute or do not contribute to the historic district. The proposed action is not expected to result in an adverse effect as defined by 36 CFR 800.5. On February 27, 2023, MVNP requested SHPO concurrence on the Area of Potential Effect and the NPS' finding of No Adverse Effect, with a requirement for a treatment plan to protect Spruce Tree House from falling debris and implementing mitigations outlined in Appendix A. Additional documentation for the project specifications on how resources would be protected was submitted to SHPO on November 15, 2023. The SHPO concurred on a finding of No Adverse Effect in a letter dated November 20, 2023, completing the Section 106 process.

No formal Section 7 ESA consultation with the USFWS was required.

MVNP consults with 26 affiliated and associated Tribes and Pueblos. The Spruce Tree Arch Stabilization project was presented and discussed at MVNP's annual tribal consultation meetings held on April 6, 2016; April 5, 2017; April 4, 2018; and May 5, 2022. The project was not discussed at the 2019 annual consultation meeting and no meetings were held in 2020 or 2021 because of safety concerns related to Covid-19.

In a correspondence dated November 19, 2021, the 26 Tribes and Pueblos were invited to participate in civic engagement as part of the NEPA process. The park received responses from the Hopi Tribe, Pueblo of Acoma, Navajo Nation, Pueblo of Santa Clara Pueblo, and Ysleta del Sur Pueblo.

Representatives of the 26 Tribes and Pueblos were contacted by letter again upon the release of the EA. After the close of the comment period, the MVNP Superintendent conducted additional outreach by telephone and email with several of the representatives. Outreach to the Hopi Tribe, Pueblo of Acoma, Pueblo of Santa Clara, Tesuque, and the Pueblo of Santa Ana, yielded comments reaffirming, clarifying or modifying previously expressed views on the proposed stabilization. The Hopi representative stated that he understands that the NPS mission of preservation mandates stabilizing certain resources, although those values are not in alignment with the traditional Hopi view expressed previously that all things have a limited existence. These comments have been incorporated with the comments received and documented in the project record. Although solicited, there were no updated responses received from representatives of the Navajo Nation and the Pueblo of Laguna. MVNP will continue to consult with Tribes and Pueblos throughout implementation of the activities covered by the EA.

The following are the 26 federally recognized tribes that MVNP staff consult with:

- Hopi Tribe of Arizona
- Jicarilla Apache Tribe
- Kewa Pueblo
- Mescalero Apache Tribe
- Navajo Nation
- Ohkay Owingeh
- Pueblo of Cochiti
- Pueblo of Nambe
- Pueblo of Picuris
- Pueblo of Sandia
- Pueblo of Taos
- Pueblo of Acoma
- Pueblo of Isleta
- Pueblo of Jemez
- Pueblo of Laguna
- Pueblo of Pojoaque
- Pueblo of San Felipe
- Pueblo of San Ildefonso
- Pueblo of Santa Ana
- Pueblo of Santa Clara
- Pueblo of Tesuque



Pueblo of Zia  
Pueblo of Zuni  
Southern Ute Indian Tribe  
Ute Mountain Ute Tribe  
Ysleta del Sur Pueblo

## POTENTIALLY AFFECTED ENVIRONMENT

As described above, the project work and support areas for the selected alternative include the construction site above the alcove, an established off-site material staging area near the four-way intersection at the Headquarters Loop, and a temporary access route of approximately 0.24 miles in length.

The following topics have been considered in evaluating the degree of the effects (40 CFR 1501.3(b)(2)) for the selected action. Beneficial, Adverse, and Short- and Long-term Effects of the Proposed Action have been considered. Impact topics that were dismissed because they did not warrant a full analysis or were found to have no potential for significant impacts include air quality, geology, water resources, vegetation, wildlife, Mexican spotted owl, and human health and safety.

### Visitor Use and Experience

The alcove containing STH is highly visible, and visitors can observe the numerous structures associated with the cliff dwelling from various vantage points along the trail leading to the STH site. The cliff dwelling is also visible from multiple viewpoints near the Chapin Mesa Archeological Museum.

The area surrounding the STH cliff dwelling is also frequented by park visitors who access the nearby 2.4-mile Petroglyph Point Trail, one of several hiking trails on Chapin Mesa. The trail is a loop that begins and ends at Chapin Mesa Archeological Museum. The trail switchbacks down Spruce Canyon to various overlooks of STH, proceeding down the canyon 1.4 miles to a petroglyph panel. Visitors then hike up the canyon wall and head back toward the museum on the mesa top. As the trail heads back to the museum, it passes the STH stabilization staging area where a segment of the trail will be used as a temporary access road before turning south toward the park headquarters and museum.

STH is one of the most recognizable places at MVNP visited by the public and is one of a limited number of dwellings that have been made accessible to visitors to enhance public education and understanding of Ancestral Pueblo occupation at Mesa Verde. While there are 604 known cliff dwelling or storage sites within the park, visitors are only allowed to enter or get close to 11 cliff dwellings through ranger-guided tours. Of these 11 sites, STH is the most easily accessible site for visitors. STH was the only cliff dwelling open year-round to the public and was only one of two cliff dwellings that visitors can experience up close without paying for a tour ticket.

These highly visible, stabilized archeological sites are essential to sustaining the authenticity and integrity of the overall archeological landscape. They are linked to the park's interpretive and preservation missions. Most archeological resources in the park are preserved in place with little human intervention, visitor access, or interpretation.

### Cultural Resources

The STH cliff dwelling is an Ancestral Pueblo habitation compound, built over 700 years ago in a naturally occurring sandstone alcove. STH is the third-largest cliff dwelling in the park, with 130 rooms and eight kivas. It provides a high-quality interpretive experience.

Much of the project area is included in a cultural landscape inventory of the Headquarters Loop area (5MT23530). The project area is crossed by roads that are included in the Chapin Mesa Loop Roads Historic District (5MT23457). A portion of the project area lies within the Mesa Verde Archeological District (5MT4341) designated for sites dating to the Ancestral Pueblo occupation. Other districts in the immediate vicinity of the project area include the Mesa Verde Administration District - National Historic Landmark (5MT9790), the Spruce Tree Campground Historic District (5MT13629), and the Navajo Hogans Historic District (5MT13627).

During 2020–2021, archeologists with MVNP’s Cultural Resources operation completed a cultural resource inventory of 6.19 acres for the proposed access route for the crane and equipment needed for the STH alcove arch stabilization, to comply with Section 106 of the NHPA. The cultural resource inventory included an examination of 100 feet on either side of the proposed access route, which connects the Mesa Top Loop Road with the construction area. The archeologists also examined the proposed construction area, encompassing much of the sandstone bedrock on the mesa top above the STH alcove arch, for cultural resources.

Seven archeological sites were located within 100 feet of the proposed access route and construction area. MVNP staff consulted with the SHPO and received concurrence on the seven sites’ NRHP eligibility on June 23, 2022.

### Special Status Plant Species

Chapin Mesa milkvetch (*Astragalus schmollii*) is a flowering herb endemic to a small part of the Mesa Verde cuesta in southwest Colorado. Specifically, it is found in MVNP and the Ute Mountain Ute Tribal Park. It grows primarily in red loess soil on Chapin Mesa, in old-growth piñon-juniper woodlands between 5,800 and 7,500 feet in elevation.

Chapin Mesa milkvetch’s habitat occurs in aeolian mesa topsoil of piñon-juniper woodlands on Chapin Mesa; a few are on Park Mesa and the adjoining canyon edges. Chapin Mesa milkvetch’s range is suspected to be about 4,000 acres, mostly on Chapin Mesa, with about half of its habitat (2,012 acres) within MVNP. The Chapin Mesa milkvetch’s preferred habitat is the partially shaded understory of intact old-growth piñon-juniper woodland canopy with deep, loess soils on Chapin Mesa. The most recent total population estimate for the species was 500,000 plants in 2001.

A 2021 survey conducted for the site of the access route and portions of the associated trails discovered a total of 403 Chapin Mesa milkvetch plants in the area surveyed; seven of these were seedlings, and 396 were adults. The survey of additional areas included the entire paved bike lane (not just the crane access path), which is wider than the area that will be impacted by the crane and pickups traveling between the work site and staging area.

## THE DEGREE OF EFFECTS OF THE ACTION

The following topics have been considered in evaluating the degree of the effects (40 Code of Federal Regulations 1501.3(b)(2)) for the selected alternative.

### BENEFICIAL, ADVERSE, AND SHORT- AND LONG-TERM EFFECTS OF THE PROPOSED ACTION

As described in the EA and briefly summarized below, the selected alternative has the potential for beneficial and adverse impacts on special status plant species, visitor use and experience, and cultural resources; however, the NPS identified no potential for significant adverse impacts.

#### Visitor Use and Experience

Alternative B will have temporary adverse impacts on visitor use and experience from audible construction noise and the presence of large equipment on the mesa top. Heavy equipment (the crane, grout plant, and water storage) mobilized to the construction site above the alcove arch will remain in place for the duration of the 180-day work period. These construction-related features will detract from the area's natural surroundings and will be immediately observable by visitors from various locations near the site. Active stabilization work will be especially visible from the Chapin Mesa Archeological Museum.

Project design features will ensure that noise limits are applied during the 180-day construction period. Adhering to the measures will minimize the unnatural sounds visitors experience at MVNP. Noise impacts on visitors during winter months will be especially noticeable. Compared with summer months, when noise from visitor traffic and other high season-related sounds contribute to background levels, noise from construction activities will be more perceptible when such background sources are less present. The proposed action's visual impacts will also be evident during preconstruction staging and active stabilization work at the site.

Vegetation removal on up to 0.44 acres will be required to provide up to a maximum of 15 feet of horizontal space to accommodate the passage of large equipment along the Petroglyph Point Trail temporary access route. This will create a readily apparent visual contrast with surrounding vegetation. This effect will persist until the NPS restores the area upon completion of the project. Visible signs of construction-related disturbance will diminish over time as forest vegetation is recovered; however, full restoration of the visual setting may not occur if any mature piñon-juniper trees are removed.

The required closure of public access to Petroglyph Point Trail during the 180-day work period (which is expected to last from September through March to avoid the migratory bird-nesting and breeding season) will coincide with normal seasonal trail closures that occur during winter. As a result, the impact on visitors' access to the trail will be minimal.

Traffic control needed to move equipment along park roads to and from staging areas could contribute briefly to the congestion. Traffic congestion affecting visitors will likely be minimal, except during the initial mobilization and demobilization since these activities could be expected to occur during higher visitor use periods in the fall and spring.

The NPS will minimize adverse effects on the visitor experience during active stabilization by allowing visitors to learn about the project through interpretive exhibits. These exhibits will enhance the museum experience

and provide educational opportunities. As a result, impacts on visitor use and experience will be somewhat mitigated through educational opportunities for the public to learn about the stabilization process.

The expected reopening of the archeological site following stabilization will greatly enhance the visitor use and experience. The visitor use and experience at the STH cliff dwelling could be similar to what they were before the 2015 site closure; no tour tickets were required, tours were self-guided, rangers were on-site, and the roofed kiva was open for visitation. Regulating the number of self-guided visitors entering the cliff dwelling site was not previously considered necessary because crowding within the site was infrequent and short term, typically lasting less than an hour. Likewise, allowing visitors to learn about and experience the site on their own timeline provided a different experience than a guided/ranger-led tour. Prior to closure, STH was one of only two self-guided cliff dwellings in the primary visitor use area in the park and the only one opened year-round. The NPS may need to consider changes to these assumptions based on future conditions or additional ongoing consultation with associated Tribes and Pueblos. Direct engagement of the public with the site will restore a unique experience that has been a feature of MVNP for generations.

### Cultural Resources

Stabilization activities proposed under Alternative B, which will involve securing individual arch rock blocks and installing geotechnical instrumentation to monitor the arch's stability, will result in increased protections for cultural resources contained within the alcove at STH. Structural improvements of the geologic formation will prevent or delay the collapse of the arch or rockfalls. An estimate of the useful life of the improvements is over 100 years. Stabilization activities will also mitigate the potential for damage to the cliff dwelling from natural factors that currently contribute to the ongoing deterioration of the sandstone arch.

The proposed stabilization will result in beneficial impacts on cultural resources by providing for the preservation of the alcove arch above the site, consistent with the mission of the NPS and the park to preserve the fundamental park values and resources. As described above, the NPS recognizes and respects tribal perspectives on the means and methods of protecting fundamental resources and honoring park values and purposes.

There is the potential for rock falls to occur during stabilization work on the sandstone arch. Given that such events will have the potential to impact the structures at STH, a protection system designed by the contractor and approved by the NPS will be in place once the project is approved. This protection plan will serve to prevent damage to the cultural site within the alcove during stabilization work.

Alternative B will have localized impacts on cultural resources as a result of the vegetation removal required to provide up to a maximum of 15 feet of horizontal space to accommodate the passage of large equipment. These effects will be confined to the access route; portions of the route coincide with the Petroglyph Point Trail. The cultural resources survey conducted for the project identified five NRHP-eligible sites that will potentially be impacted by the proposed action because they are within or directly adjacent to the proposed route or construction area. Details of protection measures for these sites are provided in Appendix A.

The current condition of the historical road, recreational trail, and area of prior use as a horse concession indicates that further use of these areas to provide for access to the construction site will not affect the park's fundamental resources and values. Additional ground disturbance within the designated route will not result in the loss of the historical artifacts that are lightly scattered in the area of the former horse concession. Prior use of the existing access corridor that runs along the road and trail, and through the

former pack and saddle site, has occurred for past stabilization activities. No adverse effects are anticipated from the additional use of the route.

The NPS is complying with Section 106 of the NHPA and its implementing regulations (36 CFR 800) concurrently with the NEPA process. The NPS used the procedure for public involvement under NEPA in lieu of public involvement requirements under the NHPA. The proposed action is not expected to result in an adverse effect as defined by 36 CFR 800.5 and MVNP. MVNP requested the SHPO's concurrence on a finding of No Adverse Effect and the SHPO concurred in a letter dated November 11, 2023.

### Special Status Plant Species

Special status plant species will be adversely affected by the selected alternative. Some existing locations of Chapin Mesa milkvetch (*Astragalus schmollii*) could be affected during construction activities under Alternative B. Plants located along the approximately 0.24-mile access route will be subject to trampling by equipment, such as the heavy crane that will access a construction area above the STH alcove arch.

The use of heavy equipment during construction staging operations on Chapin Mesa and during active site stabilization work, which is anticipated to last 180-days, could involve the trampling of local populations of Chapin Mesa milkvetch. Preparing the access route and use of the staging area at the mesa could impact Chapin Mesa milkvetch by trampling and degrading habitat, potentially reducing the extent or vigor of populations. This could affect the viability of certain Chapin Mesa milkvetch populations and degrade potentially suitable habitat for Chapin Mesa milkvetch. The NPS will minimize potential impacts by identifying plants via preconstruction surveys, flagging, and avoidance to the maximum extent practicable.

Preparing the access route to allow for the passage of large equipment will cause the removal of approximately 0.44 acres of piñon-juniper woodland. This will occur through removal and limbing of trees to provide up to a maximum of 15 feet of horizontal and vertical clear space. The current forest cover in this area is relatively dense and has been previously disturbed.<sup>3</sup> The extent of anticipated disturbance (0.44 acres) will amount to less than 0.1 percent of the total estimated population of Chapin Mesa milkvetch present in the park (2,012 acres).

The NPS will mitigate the effects on this species using the following strategies, per guidance contained in the 2018 Conservation Plan for Chapin Mesa Milkvetch. This plan includes conservation actions to support a viable, stable population of Chapin Mesa milkvetch within intact habitat at MVNP within its known range:

- Surveys and avoidance—The NPS will survey proposed development and disturbance sites for Chapin Mesa milkvetch plants and work to relocate development to a site that will impact fewer or no plants.
- Buffers—Where ground-disturbing activities, including trampling, digging, or other effects, are within 100 feet of plants in suitable habitat, park staff will minimize or mitigate the impacts, as described under Alternative B.

<sup>3</sup> Past thinning projects have reduced the density and spacing of piñon and juniper trees in the project area. The dominant plant species include *Pinus edulis*, *Juniperus osteosperma*, *Achnatherum hymenoides*, *Heterotheca villosa*, *Poa fendleriana*, *Yucca baccata*, *Machaeranthera bigelovii*, *Astragalus schmollii*, and other forbs.

## **DEGREE TO WHICH THE SELECTED ACTION AFFECTS PUBLIC HEALTH AND SAFETY**

There will be no significant impacts on public health and public safety. The selected contractor will be required to submit a comprehensive safety plan to be approved by the NPS in advance of construction. In addition, the public will be excluded from the work zone during construction by fencing, signing, and other safety devices and practices.

There is a risk of rock falls during construction. This risk will be mitigated by rock scaling to remove loose rocks on the alcove arch and the scaling operation will direct loose rocks away from the archeological site and public use areas prior to installation of rockbolts. The installation of rockbolts will stabilize large rock blocks and the overall sandstone arch.

The selected action reduces risks to public health and safety by minimizing the risk that the entire arch will collapse. It also provides monitoring of the stabilized arch after construction to detect movements in the arch that will allow the NPS to continuously evaluate the arch stability for public health and safety purposes and to safely reopen Spruce Tree House for public visitation.

## **EFFECTS THAT WOULD VIOLATE FEDERAL, STATE, TRIBAL, OR LOCAL LAW PROTECTING THE ENVIRONMENT**

Implementation of the NPS-selected alternative does not threaten or violate any applicable federal, state, or local environmental protection law or requirements imposed for the protection of the environment. The selected alternative will not violate any provision or requirement identified under legislation addressing Mesa Verde National Park, the Organic Act, or any other subsequent legislation.

Regarding compliance with Section 7 of the Endangered Species Act, there are no actions in the selected alternative that will affect federal listed species or critical habitat in accordance with Section 7 of the Endangered Species Act.

Regarding compliance with Section 106 of the National Historic Preservation Act (NHPA), the NPS determined the actions proposed in the EA would have “no adverse effect” to historic properties. The Colorado SHPO provided concurrence with “no adverse effect” on November 20, 2023.

## **CONCLUSION**

Considering the criteria for significance (40 Code of Federal Regulations 1501.3[b]), both regarding the affected environment and the degree of the effects described in the EA and this FONSI, the NPS has determined that the selected action does not constitute a major federal action having a significant effect on the human environment. Additionally, the selected action does not constitute an action that normally requires preparation of an Environmental Impact Statement (EIS) (see Section 1.5.E of the NPS NEPA Handbook). Therefore, an EIS will not be required.

---

# Appendix A

## Mitigation Measures

## APPENDIX A. MITIGATION MEASURES

### Project Design and Minimization Measures

Project design includes several minimization measures for reducing the potential for impacts from the proposed stabilization.

Stabilization activities for Alternative B will be limited to daylight work hours; no night work will be permitted. Only lighting fixtures required for equipment will be permitted. The work is anticipated to take from three to five months; however, since the work will be scheduled in the fall and winter season, a six-month (180-day) duration is used in this analysis. A total of three vehicle round trips per day are anticipated for materials and personnel transport between the Headquarters Loop staging area and the construction site.

The temporary access road will allow a heavy crane to access the construction area above the STH alcove arch. To reduce potential surface disturbance, the access route will have a limited number of trips and will require off-road trucks with a maximum tire pressure of 20 pounds per square inch. The access route will be cleared and armored, with vegetation removal and/or limbing of trees up to a maximum of 15 feet of horizontal and vertical space to allow large equipment to pass. Armoring the route will involve the placement of a geotextile fabric and aggregate on the access route; this material will be removed at the completion of the work, and the access route will be rehabilitated and revegetated.

To reduce the likelihood of potential adverse effects on park resources, the NPS will incorporate the following mitigation measures into the project design as a component of Alternative B:

- Salvage native vegetation (as feasible) from project areas for reuse during restoration on disturbed areas.
- Install drains and treat shrinkage cracks in the concrete plug that currently functions as a dam collecting water and saturating the sandstone.
- Use a HEPA<sup>4</sup> filter system during drilling of the holes for the rockbolts. Conduct all drilling without any fluid lubricant (that is, drill in the dry).
- Prohibit night work (sunset to sunrise) due to the potential presence of Mexican spotted owls and other wildlife. Coordinate any work that must occur at night with park natural resources staff and the U.S. Fish and Wildlife Service (USFWS) to maintain compliance with the Endangered Species Act. If at any point surveys detect the presence of MSOs in the project area, then work will be halted and consultation will be initiated with the USFWS immediately.
- Clearly flag limits of disturbance to reduce potential trampling of native vegetation and soil.
- Survey the project area, buffer zone, and staging areas, and flag rare plant species.
- Conduct tree limbing in winter, to the maximum extent practicable, to avoid attracting pine beetles and to avoid the bird-nesting season in the park (April 1 to August 15). If limbing/tree removal

---

<sup>4</sup> Containing a filter usually designed to remove 99.97 percent of airborne particles measuring 0.3 micrometers or greater in diameter passing through it.



operations need to be completed during migratory bird nesting season (April 1 to August 15), then park natural resources will be contacted to conduct pre-limbing/removal nest clearance surveys.

- Wash all vehicles and equipment before entering MVNP. Clear vehicles and equipment of mud, dirt, and any vegetal material to reduce the potential introduction or spread of invasive species.
- Implement erosion control to prevent water and material intrusion.
- Restore the project area and adjacent staging areas upon the project's completion to the original site conditions, including replanting of vegetation, regrading to previous contours, restoring any biological soil crusts, and arranging soil and rock.
- Conduct nest surveys, including a 164-foot buffer. If work occurs between April 1 and August 15 that requires trees or shrubs to be removed, cut, or otherwise affected, require a bird survey. If active nests are detected in the tree or shrub or within 164 feet of the tree or shrub, monitor the nests during the nesting season and avoid disturbance. Do not trim or remove any trees or shrubs containing nests until the nest is deemed inactive.
- If Mexican spotted owls are detected within or adjacent (0.5 miles) to the project area during subsequent annual protocol-level surveys conducted by park staff, stop construction activities temporarily and reinitiate consultation with the USFWS.
- In addition, consider breeding-season restrictions if noise levels are estimated to exceed a noise level of 69 A-weighted decibels (dBA) consistently (more than twice per hour) or for an extended period of time (more than one hour) within 164 feet of nesting sites (if known) or within entire protected activity centers (PACs)<sup>5</sup> if nesting sites are not known. This is to maintain compliance with the Endangered Species Act.
- Incorporate avoidance, minimization, and mitigation recommendations to address potential adverse effects on identified and evaluated historic properties resulting from ongoing consultations. Site-specific proposed recommendations are found in Table 3-2.
- Ensure contractors and subcontractors are informed of the penalties for illegally collecting artifacts and biological or geological specimens, or intentionally damaging paleontological materials, archeological sites, historic properties, or natural resources outside the limited disturbance. Instruct contractors and subcontractors on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction.

#### Special Status Plant Species

- Surveys and avoidance—The NPS will survey proposed development and disturbance sites for Chapin Mesa milkvetch plants and work to relocate development to a site that will impact fewer or no plants.
- Buffers—Where ground-disturbing activities, including trampling, digging, or other effects, are within 100 feet of plants in suitable habitat, park staff will minimize or mitigate the impacts, as described under Alternative B.

<sup>5</sup> PACs are buffer zones around known or suspected Mexican spotted owl nesting sites.

### Visitor Experience and Use

- The NPS will minimize adverse effects on the visitor experience during active stabilization by allowing visitors to learn about the project through interpretive exhibits. These exhibits will enhance the museum experience and provide educational opportunities.
- Conduct noise monitoring during active construction stages and limit noise to 70 dB or less in visitor use receiving noise areas.

### Cultural Resources

- Protective mats will be used under the equipment to minimize damage to sandstone rock surfaces above Spruce Tree House arch.
- To protect the Spruce Tree House cliff dwelling from falling rocks or debris, the engineering contractor will design a protection plan, to be approved by NPS archeologists and reviewed by Tribes and Pueblos and the State Historic Preservation Office before implementation. In the past, protective measures have included padding the site with concrete blankets and/or constructing a free-floating plywood platform over fragile sections of the site.
- The temporary access route will allow a heavy crane to access the construction area above the STH alcove arch. To reduce potential surface disturbance, the access route has a restricted number of trips and requires equipment with maximum 20-pounds per square inch tires.
- If tree trimming is necessary along the access route, the trees will be examined by an archeologist for evidence of historical modification. Any modified trees will be documented prior to limb removal.
- Equipment and vehicle travel will be restricted to the designated route (old access road and Petroglyph Point Trail) and will be monitored by an archeologist to ensure that cultural deposits are not impacted.
- If repeated travel along the access route is required, barrier fencing will be placed in areas where cultural deposits are most likely to be impacted, such as along the margins at the intersection of the access road and the Petroglyph Point Trail.
- On the paved Bike Path connecting the Headquarters Loop with the Mesa Top Loop Road, travel will be confined to the center of the existing roadbed and pedestrian/bicycle path to avoid disturbance of features.

## Management Recommendations for NRHP-Eligible Sites in the Project Area

Site	Site Type	NRHP Eligibility	Relationship to Project Component	Management Recommendation
5MT23058 - Petroglyph Point Trail	Historical hiking trail	Eligible	The proposed access route coincides for approximately 303 feet.	An archeologist should monitor the equipment traffic through the site.
5MV225	Prehistoric habitation	Eligible	The proposed access route goes through the site for approximately 160 feet.	An archeologist should monitor the equipment traffic through the site.
5MV4442 - Pack and Saddle Site	Historic horse concession headquarters and early camping	Eligible	The proposed access route goes through the site for approximately 655 feet.	Equipment travel should be restricted to the designated route (the old access road and Petroglyph Point Trail) and should be monitored by an archeologist to ensure cultural deposits are not impacted. Barrier fencing should be placed in areas where cultural deposits are most likely to be impacted, such as along the margins at the intersection of the access road and the Petroglyph Point Trail. An archeologist should monitor the vegetation removal and tree limbing. Trees with evidence of historical modification should be documented prior to limb removal. After project completion, erosion controls should be implemented along the access road to prevent water channeling and potential impacts on cultural deposits and features along the road.
5MV4478	Prehistoric checkdams	Eligible	The proposed access route goes through the site for approximately 61 feet.	An archeologist should monitor the equipment traffic through the site.
5MV4481 - Ruins Loop Shortcut Road	Historical road	Eligible	The proposed access route coincides for approximately 300 feet.	An archeologist should monitor the vegetation removal and tree limbing. Trees with evidence of historical modification should be documented prior to limb removal. Equipment traffic through the site should be monitored by an archeologist and should be confined to the center of the existing roadbed and pedestrian/bicycle path to avoid disturbance of roadside features.

---

# Attachment 1

Errata and Response to Public Comments

## ATTACHMENT 1: ERRATA AND RESPONSE TO PUBLIC COMMENTS

### SPRUCE TREE HOUSE ALCOVE ARCH STABILIZATION ENVIRONMENTAL ASSESSMENT

MESA VERDE NATIONAL PARK  
JANUARY 2024

The following errata and responses to selected public comments, together with the FONSI and the EA, describe the final decision of the NPS for the Spruce Tree House Alcove Arch Stabilization project at MVNP.

#### ERRATA

These errata are to be attached to the Spruce Tree House Alcove Arch Stabilization EA, dated March 2023, and are intended to correct or clarify statements in the EA other than typographical and minor editorial errors and to address selected comments on these documents received during the public review period. Added text is **red** font color.

##### Chapter 2: Alternatives

###### Page 2-7: Revised text

The mesa top and alcove arch would be accessed via a 0.24-mile temporary road constructed from Mesa Top Loop Road, along an existing road and trails leading to the staging area. Some vegetation and tree limbs would be removed, with native vegetation salvaged, **where feasible, for reuse during restoration**. The route would be **cleared or partially graded** to a width of 15 feet to allow for larger vehicles. **The access route would be covered with geotextile fabric and then surfaced with aggregate. The geotextile fabric would enable the aggregate to be cleanly removed when stabilization is complete. Preparing the access route would be monitored by a qualified archeologist.**

##### Chapter 4: Consultation and Coordination

###### Page 4-1 Additional Text

Representatives of the 26 Tribes and Pueblos were contacted by letter again upon the release of the EA. After the close of the comment period, the MVNP Superintendent conducted additional outreach by telephone and email with several of the representatives. **Outreach to the Hopi Tribe, Pueblo of Acoma, Pueblo of Santa Clara, Tesuque, and the Pueblo of Santa Ana, yielded comments reaffirming, clarifying, or modifying previously expressed views on the proposed stabilization. The Hopi representative stated that he understands that the NPS mission of preservation mandates stabilizing certain resources, although those values are not in alignment with the traditional Hopi view expressed previously that all things have a limited existence.** These comments have been incorporated with the comments received and documented in the project record. Although solicited, there were no updated responses received from representatives of the Navajo Nation and the Pueblo of Laguna. MVNP will continue to consult with Tribes and Pueblos throughout implementation of the activities covered by the EA.

## RESPONSE TO PUBLIC COMMENTS

On March 9, 2023, the NPS released the Spruce Tree House Alcove Arch Stabilization EA to the public for review and comment. The EA was available for public review until April 10, 2023. Members of the public were asked to submit their comments electronically through the NPS Planning, Environment, and Public Comment (PEPC) website. Announcements were distributed to the interested public, agencies, Tribal government leadership and Tribal Historic Preservation Officers (THPOs).

The NPS received a total of 43 pieces of correspondence during the public comment period. A large majority of the comments were non-substantive and expressed a preference for stabilizing the alcove arch and reopening the STH site to visitation. Comments included expressions of the importance of restoring the experience of visiting the Spruce Tree House site up close and the cultural and educational benefits that would be enjoyed by Park visitors. Commenters also noted that Spruce Tree House is a fundamental resource that is essential to the Park's purpose and not stabilizing the arch could result in irreversible losses to the cultural resources below the arch.

Responses to substantive comments on the EA are summarized and included here:

### Stabilization Methods

1. **COMMENT:** Why is the proposed stabilization of the alcove arch limited to the sandstone geologic formation and not include work on the structures of the Spruce Tree House site?

**RESPONSE:** The preferred alternative addresses the deficiencies and stabilization of the alcove arch. Consistent with current historic preservation practices and cultural perspectives, stabilization work on the pre-contact, human-made fabric of the Spruce Tree House is beyond the scope of this EA and will be addressed by separate preservation projects. However, NPS would work with the construction contractor on temporary measures to protect the cultural site during construction.

### Cultural Resource Issues

1. **COMMENT:** Concerns were expressed about potential impacts on cultural resources during construction on the arch and to cultural resources along the construction access routes.

**RESPONSE:** The NPS is complying with Section 106 of the NHPA and its implementing regulations (36 CFR 800) concurrently with the NEPA process. The NPS used the procedure for public involvement under NEPA in lieu of public involvement requirements under the NHPA. The proposed action is not expected to result in an adverse effect as defined by 36 CFR 800.5 and MVNP has received the SHPO's concurrence on a finding of No Adverse Effect. The contractor would prepare a protection plan to minimize impacts to cultural resources during the stabilization of the arch. To ensure adequacy, the protection plan would be reviewed by the SHPO and approved by the NPS before

being implemented. Cultural resources along the access route would be protected through archeological monitoring and installing a barrier fence around sensitive areas.

## Visitor Use or Experience Issues

1. **COMMENT:** Commenters expressed concerns about reopening the site to visitors regarding crowding, potential fees, visitor behavior, and maintaining respect for the site.

**RESPONSE:** Consistent with the selected alternative, NPS anticipates reopening the site for visitation in the same manner as prior to the closure in 2015. When previously open, public access was self-guided along the existing trail, with rangers present at the site. During the winter months, ranger-guided tours were conducted daily. Regulating the number of self-guided visitors entering the cliff-dwelling site is not considered necessary because previously crowding within the site was infrequent and short-term - typically lasting less than an hour. Allowing visitors to learn and experience the site on their own timeline is preferable to timed, formal ranger-led tours, if possible. The NPS will allow access to the roofed kiva at the site, and visitors could enter this kiva, consistent with the management prior to the 2015 emergency closure of STH. However, NPS may need to consider changes to these assumptions based on future conditions or additional ongoing consultation with associated Tribes and Pueblos. The Park would consider adjustments if necessary to maintain the visitor experience and respect for the site.

---

# Attachment 2

Non-Impairment Determination



## ATTACHMENT 2: NON-IMPAIRMENT DETERMINATION

### SPRUCE TREE HOUSE ALCOVE ARCH STABILIZATION ENVIRONMENTAL ASSESSMENT

#### MESA VERDE NATIONAL PARK FEBRUARY 2024

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the US Department of the Interior and the National Park Service (NPS) to manage units “to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (54 USC 100101). NPS *Management Policies 2006*, Section 1.4.4, below, explains the prohibition on impairing park resources and values:

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

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values” (NPS 2006, Section 1.4.5). To determine impairment, the NPS must evaluate the particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park
- Identified in the park’s general management plan or other relevant NPS planning documents as being of significance (NPS 2006, Section 1.4.5)

Fundamental resources and values for Mesa Verde National Park are identified in its enabling legislation, the Foundation for Planning and Management Statement, and the Long-Range Interpretive Plan. Fundamental resources and values that are specifically relevant to the Spruce Tree House Alcove Arch Stabilization project include the *Mesa Verde Archeological Landscape* and *Archeological Preservation and Investigation*.

**Mesa Verde Archeological Landscape:** “The Mesa Verde archeological landscape consists of an assemblage of prehistoric alcove cliff dwellings; partially intact masonry structures (e.g., towers, bi-wall structures, small villages, and extensive community centers); earth and

rubble mound sites; ephemeral field structures and associated agricultural terraces; rock art; isolated subsurface structures, e.g., kivas; middens and artifact scatters; trails, bedrock toe and handholds; markers or shrines; and water control features...Included in the archeological landscape... are those resources essential to maintaining the authenticity and integrity of the overall archeological landscape. They are linked to the park's interpretive mission and are often described as the most recognizable places visited by the public, such as Cliff Palace, Spruce Tree House, Balcony House, Square Tower House, and Long House."

**Archeological Preservation and Investigation.** "Since its establishment in 1906, Mesa Verde National Park has served as an archeological laboratory devoted to research, conservation, and innovative field methods. While some of these methods included the use of materials and techniques no longer accepted, much of what has been learned over time—particularly native materials and construction methods—remains in use. Through these efforts Mesa Verde National Park fundamentally contributed to the development of conservation archeology in the American Southwest and beyond."

Cultural resources (archeological resources) that were carried forward for detailed analysis in the EA are considered necessary to fulfill specific purposes in the enabling legislation or proclamation for MVNP. Such resources also are key to its natural or cultural integrity or are identified as a goal in relevant NPS planning documents. Natural resources, specifically rare plants, are other relevant resources and values identified at Mesa Verde National Park.

Non-impairment determinations are not necessary for human health and safety, or visitor use and experience. This is because impairment findings relate to park resources and values; these impact topics are not generally considered park resources or values, according to NPS Management Policies 1.4.6.

Traditional and Contemporary Cultural Connections are intangible fundamental values that are not subject to impairment determination in the same way as physical resources. However, MVNP is committed to preserving unimpaired the opportunity for Tribes/Pueblos to connect with the dwelling in the alcove for ceremonies and other traditional activities.

This non-impairment determination has been prepared for the selected alternative, as described in the Finding of No Significant Impact for the Spruce Tree House Alcove Arch Stabilization Environmental Assessment.

## **CULTURAL RESOURCES (ARCHEOLOGICAL RESOURCES)**

Proposed stabilization activities which involve securing individual arch rock blocks and installing geotechnical instrumentation to monitor the arch's stability, would result in increased protections for cultural resources contained within the alcove at STH. Structural improvements of the geologic formation would prevent or delay the collapse of the arch or rockfalls, in addition to damage to the STH cliff dwelling itself. There is speculation that a shock wave from a catastrophic collapse of the arch could impact the historic buildings across from the STH alcove. Stabilization activities would also mitigate the potential for damage to the cliff dwelling from natural factors that currently contribute to the ongoing deterioration of the sandstone arch. The proposed stabilization would result in beneficial impacts on cultural resources by providing for the preservation of the alcove arch above the site, consistent with the mission of the NPS and the park to preserve the fundamental park values and resources.

Implementation of the proposed stabilization alternative would prevent cumulative adverse effects to the historic structures within the STH alcove that might result from future seismic or rockfall events, as well as ongoing and future park actions in the area such as road paving and residences rehabilitation projects.

There is the potential for rock falls to occur during stabilization work on the sandstone arch. Given that such events would have the potential to impact the structures at STH, a protection system designed by the contractor and approved by the NPS would be in place once the project is approved. This protection plan would serve to prevent damage to the cultural site within the alcove during stabilization work.

Vegetation removal to provide the passage of large equipment to the stabilization work site would have localized impacts on cultural resources. There are five NRHP-eligible sites that would potentially be impacted by the proposed action because they are within or directly adjacent to the proposed route or construction area. Management recommendations have been developed for each of the sites to avoid or minimize adverse effects. Additional ground disturbance within the designated route would not result in the loss of the historical artifacts that are lightly scattered in the area of the former horse concession. Further use of these areas to provide access to the construction site would not affect the park's fundamental resources and values. No cumulative effects to cultural resources are expected from future use of this access route: Prior use of the existing access corridor has occurred, and no adverse effects are anticipated from the additional use of the route (NPS 2022).

The NPS is complying with Section 106 of the NHPA and its implementing regulations (36 CFR 800) concurrently with the NEPA process. The NPS used the procedure for public involvement under NEPA in lieu of public involvement requirements under the NHPA. The proposed action is not expected to result in an adverse effect as defined by 36 CFR 800. The selected alternative would stabilize one of the Park's most iconic cultural resources and would enhance archaeological resources and help ensure the enjoyment of these resources for present and future generations, consistent with the park's interpretive mission and mission of the NPS.

## **RARE PLANTS**

Some existing locations of Chapin Mesa milkvetch (*Astragalus schmollii*) could be affected during access route construction activities under the selected alternative. Plants located along the access route to the construction area above the STH alcove arch would be subject to trampling and disturbance by equipment. No known occurrences of the alkaline pepperweed (*Lepidium crenatum*) have been recorded in the access route or other portions of the project area, although potentially suitable habitat is present.

Localized, short-term effects on Chapin Mesa milkvetch would occur from the use of heavy equipment during construction staging operations on Chapin Mesa and during active site stabilization work, which could involve additional trampling of vegetation in the local area. Preparing the access route and use of the staging area at the mesa could impact Chapin Mesa milkvetch by trampling and degrading habitat, potentially reducing the extent or vigor of populations. This could affect the viability of certain Chapin Mesa milkvetch populations and degrade potentially suitable habitat for both alkaline pepperweed and Chapin Mesa milkvetch. The NPS would minimize potential impacts on both species by identifying plants via preconstruction surveys, flagging, and avoidance to the maximum extent practicable.

Preparing the access route to allow for the passage of large equipment would cause the removal of approximately 0.44 acres of piñon-juniper woodland, which is the habitat type for Chapin Mesa milkvetch. This would occur through removal and limbing of trees to provide up to a maximum of 15 feet of horizontal and vertical clear space. The current forest cover in this area is relatively dense and has been previously disturbed.<sup>1</sup> The extent of anticipated disturbance (0.44 acres) would amount to less than 0.1 percent of the total estimated habitat area of Chapin Mesa milkvetch present in the park (2,012 acres).

The NPS would mitigate the effects on this species per guidance contained in the 2018 Conservation Plan for Chapin Mesa Milkvetch (NPS 2018b). This plan includes conservation actions to support a viable, stable population of Chapin Mesa milkvetch within intact habitat at MVNP within its known range:

- Surveys and avoidance—The NPS will survey proposed development and disturbance sites for Chapin Mesa milkvetch plants and work to relocate development to a site that will impact fewer or no plants.
- Buffers—Where ground-disturbing activities, including trampling, digging, or other effects, are within 100 feet of plants in suitable habitat, park staff will minimize or mitigate the impacts, as described under Alternative B.

With mitigation and avoidance guided by the conservation plan, the potential for loss of individual plants in the project area would remain. These impacts do not represent population-level impacts on or affect the stability of the species within the park. No impairment of park resources and values for rare plants is anticipated as more than 99% of the habitat for Chapin Mesa milkvetch would continue to be available for the enjoyment of present and future generations. Cumulative effects from ongoing and future actions are not anticipated as the park will continue to follow the conservation plan for future actions in Chapin Mesa milkvetch areas, and the fact that the amount of development in these plants' habitats is low. New standard operating procedures in the forthcoming updated Fire Management Plan for the park will also help reduce future adverse effects on the species from wildfires and fuels management actions.

## CONCLUSION

This analysis was guided by best available science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities. The NPS has determined that implementing the selected alternative will not impair the resources or values of Mesa Verde National Park as these resources would continue to be available for the enjoyment of present and future generations. This conclusion is based on the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision-maker, guided by the direction of *NPS Management Policies 2006*.

---

<sup>1</sup> Past thinning projects have reduced the density and spacing of piñon and juniper trees in the project area. The dominant plant species include *Pinus edulis*, *Juniperus osteosperma*, *Achnatherum hymenoides*, *Heterotheca villosa*, *Poa fendleriana*, *Yucca baccata*, *Machaeranthera bigelovii*, *Astragalus schmollii*, and other forbs (NPS GIS 2022).

## REFERENCES

NPS (US National Park Service). 2006. US National Park Service, Management Policies 2006. Internet website: <https://www.nps.gov/orgs/1548/upload/ManagementPolicies2006.pdf>. Washington, DC.