



Fire Management Plan Environmental Assessment/Assessment of Effect



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Fire Management Plan Environmental Assessment/Assessment of Effect

Montezuma Castle/Tuzigoot National Monuments • Arizona

Summary

Montezuma Castle and Tuzigoot National Monuments currently follow the 2004 *Fire Management Plan* to guide their wildland fire program. In the past, national park system units could use the 2003 Healthy Forest Initiative Categorical Exclusion to be in compliance with National Environmental Policy Act requirements. However, based on reinterpretation of policy in response to recent case law, the decision was made in 2008 to discontinue the use of the 2003 Healthy Forest Initiative Categorical Exclusion for compliance with the National Environmental Policy Act and to prepare an environmental assessment. Impacts from the no-action alternative and the preferred alternative on geology and soils, vegetation, special status species, wildlife, air quality, soundscapes, hydrology and water quality, visitor use and experience, monument operations, archeological and ethnographic resources, and historic structures and cultural landscapes were assessed. This document also serves as an assessment of effect in compliance with the National Historic Preservation Act.

The preferred alternative would allow for implementation of a range of fire management activities. These activities and treatments would be centered on public and firefighter safety, communities identified as at risk from wildfires (wildland-urban interface), current condition class, and collaboration with other agencies and stakeholders. These activities would be part of potential planned events (prescribed burns, mechanical or manual fuel reduction, and ecological restoration) and or in response to unplanned (wildland fires) events. Fire management actions could include the use of mechanical and herbicide treatments to buildings, utilities, and cultural resources. Pile burning would also be considered for mechanical and/or manual hazardous fuels reduction. Prescribed burns may be used in order to maintain open native grassland areas at the Montezuma Well unit of Montezuma Castle National Monument.

Public Comment

If you wish to comment on the environmental assessment/assessment of effect, you may mail comments to the name and address below or post comments online at <http://parkplanning.nps.gov/moca>. This environmental assessment/assessment of effect will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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A: Scoping Report

CHAPTER 1: PURPOSE AND NEED

INTRODUCTION

Montezuma Castle and Tuzigoot National Monuments are in the Verde Valley of central Arizona in Yavapai County. Montezuma Castle is approximately 5 miles by road north-northwest of the city of Camp Verde, the Montezuma Well Unit of Montezuma Castle is located farther north approximately 13 miles by road north-northwest of the city of Camp Verde, and Tuzigoot is 3 miles northeast of the town of Clarkdale. Together they comprise approximately 1,386 acres.

Montezuma Castle National Monument consists of two detached units. Montezuma Castle is a prehistoric 20-room, 5-story cliff dwelling built by the Southern Sinagua people. Montezuma Well is a large, spring-fed travertine pool that contains pueblos and sites of prehistoric Hohokam and Southern Sinagua. Montezuma Castle National Monument was established in 1906 to protect one of the best-preserved cliff dwellings in the United States. Land was later added to the monument to protect additional sensitive resources and Beaver Creek. Montezuma Well was added to the monument in 1943.

Tuzigoot National Monument, established in 1939, protects prehistoric and historic resources, including an 87-room dwelling built by the Southern Sinagua people. The monument includes the spring-fed Tavasci Marsh, used by early Native Americans and Anglo-American farmers, ranchers, and miners (USDI NPS 2004). Tavasci Marsh was added in December 2005. Over a century of farming greatly changed the marsh, but actions to restore it are underway (USDI NPS 2010).

PURPOSE AND NEED

Montezuma Castle and Tuzigoot National Monuments currently follow the 2004 *Fire Management Plan* to guide their wildland fire program. The plan was developed with the Saguaro National Park Fire Management Office, which actually leads fire management activities at both monuments. In the past, national park system units could use the 2003 Healthy Forest Initiative Categorical Exclusion to be in compliance with National Environmental Policy Act requirements. The Healthy Forest Initiative Categorical Exclusion was codified in “Interim Guidance Director’s Order 12 Categorical Exclusions” on May 22, 2009. The reference for this categorical exclusion under Director’s Order #12 guidance is 3.4 G, 1. However, based on reinterpretation of policy in response to recent case law, the decision was made to discontinue the use of the 2003 Healthy Forest Initiative Categorical Exclusion for compliance with the National Environmental Policy Act and to prepare an environmental assessment.

This environmental assessment for the fire management plan would bring the monuments into compliance with Director’s Order #18 and National Environmental Policy Act requirements and allow Montezuma Castle and Tuzigoot National Monuments to continue implementing applicable fire management programs. Potential impacts of the no-action alternative and the preferred alternative on monument resources are described in Chapter 3. This document also serves as an assessment of effect in compliance with the National Historic Preservation Act.

The National Park Service *Management Policies 2006* and Director’s Order #18 require that “each park with vegetation capable of burning would prepare a fire management plan to guide a fire management program that is responsive to the park’s natural and cultural resource objectives and to safety considerations for park visitors, employees, and developed facilities” (USDI NPS 2006). Parks with an approved fire management plan and accompanying National Environmental Policy Act compliance may use wildfire to achieve resource benefits in predetermined fire management units. Parks lacking an approved fire management plan may not use resource benefits as a primary

consideration influencing the selection of a wildfire strategy, but they must consider the resource impacts of alternatives in their decisions (USDI NPS 2006).

The 2008 Interagency Standards for Fire and Fire Aviation Operations “Red Book” states that the Superintendent will “identify resource management objectives in a current FMP.” The activities defined in the fire management plan will be implemented in accordance with agency and departmental policy, including, but not limited to, procedural updates contained in the following documents:

- Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (September 2006)
- Wildland Fire Use Implementation Procedures Reference Guide (May 2005, as amended in March 2006)
- Interagency Standards for Fire and Fire Aviation Operations (January 2008)
- Direction to Leaders – 2008 Action Plan
- Guidance for Implementation of Federal Wildland Fire Management Policy (February 2009)

This environmental assessment/assessment of effect has been prepared in accordance with the National Environmental Policy Act and its implementing regulations, 40 Code of Federal Regulations Parts 1500-1508; National Park Service Director’s Order #12, *Conservation Planning, Environmental Impact Analysis, and Decision-making*; and Section 106 of the National Historic Preservation Act of 1966 as amended, and its implementing regulations in 36 Code of Federal Regulations Part 800.

BACKGROUND

Fire History

One fire in 1959 has been recorded in the monuments during National Park Service management, though other wildland fires have occurred in the Verde Valley. In 1995, a notable fire occurred on U.S. Forest Service and private land to the southeast of Camp Verde. It started in mesquite scrub, and rapidly spread aided by grassy fuels and strong winds (USDI NPS 2004). In 2005 and 2010 two small human-ignited fires were reported in Montezuma Castle and Montezuma Well which were quickly suppressed.

There is no precise information about long-term fire history for the monuments or Verde Valley and literature sources are very limited. Data indicate that the vegetation pre-1850’s was dominantly broad mesquite bosques, riparian gallery forests, grasslands, and shrublands (Stoutamire 2011). Fires caused by lightning or human ignition may have been frequent. Shrubs have increased since this time due to livestock grazing, fire suppression, and drier climatic patterns. Because of the mosaic pattern of available fuels, it is unlikely that the fire frequency was consistent, such as found in ponderosa pine forest (5 to 15 years) or chaparral (20 to 25 years). Humans have used fire as a clearing and vegetation management tool for centuries for agriculture and other reasons. Controlled burns were used by Euroamerican settlers in the Verde Valley and are still used to burn off agricultural fields (USDI NPS 2004).

Herbaceous species are less visible yet occur widely in this area. Much of the herbaceous cover in the Verde River floodplain is comprised of either native bunchgrasses or non-native grasses and forbs such as western cheatgrass, red brome, and Russian thistle. These non-native species are widespread, highly flammable, and readily ignitable most of the year. They are very invasive, especially on disturbed sites (USDI NPS 2004).

Pile and burn projects were initiated at the Montezuma Well unit in the mid-1990s in order to reduce the amount of large woody debris around the bases of the biggest cottonwood and sycamore trees. The clearing project was very selective and smaller debris was left in place. The objective was to reduce the large fuel in the large gallery woodland to lessen the potential for their loss during a fire event. None of this debris was burned due to difficulty of scheduling crews from Saguaro National Park to assist in the disposal. Dumpsters were used to transfer debris to a landfill. On January 23, 2008 Montezuma Well piles were burned from dead and down material cleared from the historic irrigation ditch. At Tuzigoot, tamarisk and Russian olive piles were burned on April 17, 2009.

Some work removing hazardous fuels was performed in June-July 2011 with assistance from the Zion Fire Use Module to clear defensible space around administration sites and residences. Additional work is planned in the future to reduce the amount of mesquite trees and other potential fuels in these areas.

The monuments' fire season tends to match the Southwest's average fire season, which is approximately May through September. These dates may be modified to adjust to early or late spring and winter depending on the overall Southwest weather patterns (USDI NPS 2004).

Potential Fire Behavior

Vegetation at the monuments is varied. Typically the fuels consist of mesquite, fourwing saltbush, cattails, and creosote. Ground fuels consist mostly of shrubs, native bunch grasses, and exotic annual grasses with the exception of the cattails and bulrushes in Tavasci Marsh at Tuzigoot. Extreme years in the grasslands are due to increased spring rainfall promoting new growth followed by a period of hot and dry weather. Extreme years in brush types are due to extended drought and very low live fuel moistures. All monuments have had few fires; however, there is potential for fire to carry given the current fuel conditions, especially Tuzigoot with the dense marsh cattails and to a lesser extent Montezuma Castle and Montezuma Well (USDI NPS 2004). All three monuments have the potential for high severity crown fires in the riparian vegetation, with a high potential for spotting.

Expected fire behavior at Tuzigoot is for low to moderate ground fire in the lower portion of the monument underneath the mesquite (bosques). Under severe conditions the mesquite may torch. High intensity fires could occur in the cattails and riparian areas. The area near the river has potential for fire to carry; as the grasses and cattails cure out, the potential increases for fire to carry. Cattails will prove to be difficult to control as the fire will burn quickly, and access is limited.

Expected fire behavior at Montezuma Castle includes low intensity ground fire to high intensity fires. Portions of Montezuma Castle have very thick brush (mostly mesquite) with little understory fuels. Other portions of Montezuma Castle do have some short grass in open areas. Under extremely hot and dry conditions the fire may get into tree crowns and pose control problems.

Expected fire behavior at Montezuma Well is expected to be low to moderate intensity ground fire. Riparian areas could experience fires in the continuous ground cover of non-native annual grasses with the potential for crown fires especially due to the amount of dead and down.

GENERAL MANAGEMENT CONSIDERATIONS

The monuments' fire management program seeks to safely and effectively manage wildland and prescribed fires, while providing for the protection of life, property, and the monuments' natural and cultural resources. The program's aim is to recover, maintain, increase, or facilitate the interaction of native ecosystem processes in an effort to restore and perpetuate the native diversity, resiliency, resistance, and sustainability of the monuments' natural environments. The program is based on the most up to date scientific research and monitoring (at a variety of spatial scales), and considers past and present human disturbances and effects on the natural and cultural environment. The fire

program is also based on the adaptive management concept and therefore implements deliberate and measurable actions that are monitored to determine if the conditions produced are favorable, sustainable, and maintain or improve ecosystem health.

WILDLAND FIRE MANAGEMENT GOALS

1. Provide the means for staff and the public to preserve, protect, understand, and enjoy the natural and cultural resources of the monuments through an integrated program where management activities support naturally functioning ecosystems consistent with cultural resource preservation needs.
2. Educate, inform, consult, collaborate, and maintain cooperative fire planning with other land agencies, landowners, and local communities.
3. Achieve ecologically sustainable vegetative conditions across broad vegetation communities by restoring a natural range of variability and bio-diversity.
4. Identify and mitigate hazards related to the wildland-urban interface through coordination and collaboration with neighboring agencies and landowners over time and across boundaries.

The following fire management objectives developed by the National Park Service Intermountain Region support these goals:

Objective #1: Protect life, property, and the monuments' natural and cultural resources from the effects of unwanted fire.

- Give primary consideration to firefighter, employee, and public safety and provide for the safety of the monuments' visitors, neighbors, and employees during all phases of fire management operations.
- Conduct all fire management activities commensurate with applicable laws, policies, and regulations.
- Suppress all unwanted fires in the monuments.
- Cooperate extensively with adjacent land management agencies to facilitate safe and prompt suppression of wildfires in the interagency mutual aid zone.
- Efficiently use available fiscal resources to suppress wildfires.
- Use prescribed fire and/or mechanical treatments in the monuments' developed zones to reduce the risk of property damage due to wildland fire and to provide for human safety and resource protection.
- Create defensible space zones around structures and developed areas in the monuments by using manual and mechanical treatments and/or prescribed fire to clear vegetation and reduce continuity of fuels.
- Implement a cooperative fire prevention program to eliminate unplanned human-caused ignitions.
- Conduct inventories, identify sensitive natural and cultural resources, and develop mitigation plans that provide for the preservation and protection of the monuments' natural and cultural resources.

Objective #2: Prevent or mitigate impacts due to fire suppression activities.

- Use Minimum Impact Suppression Tactics and rehabilitate disturbed areas to protect and mitigate impacts on the monuments' natural, cultural, wilderness, and scenic resources.

- Ensure that a resource advisor is present and/or consulted on all major fire program activities.
- Inform and train firefighters about the impacts of fire suppression on the monuments' sensitive natural and cultural resources.
- Avoid the use of non-native seed to rehabilitate sites disturbed by wildland fires or their suppression.

Objective #3: Institute and maintain a comprehensive Fire Information and Education Program.

- Conduct wildland fire prevention, information, education, and other activities in communities within and abutting the monuments, working in collaboration with local communities and county, state, and federal agencies with fire management interests.
- Educate employees and the public about the scope and effect of wildland and prescribed fire management, including fuels management, smoke management, resource protection, fire prevention, hazard/risk assessment, mitigation, rehabilitation, the wildland/urban interface problem, and the role of fire in ecosystem management.
- Emphasize interagency communications for fire management activities, such as job training, sharing of staff, sharing of resources, and evaluation of fire management actions and activities.
- Maintain relationships with the Native American community and encourage their participation in the management of traditional gathering areas. Facilitate the transfer of knowledge about fire management and traditional cultural practices.
- Collaborate with county and state air resources agencies to monitor smoke levels and manage smoke-related effects on visitors, residents, and employees.

Objective #4: Restore and maintain fire-dependent ecosystems with the appropriate use of fire.

- Using the best available scientific data, continue to refine and develop a range of desired future conditions and ecologically sound fire and resource management objectives for the monuments' vegetation and wildlife communities.
- Include fire and resource management objectives specific to each prescribed fire in the prescribed fire burn plan.
- Use fire to promote the maintenance of native vegetation and discourage non-native vegetation invasions.
- Use research and monitoring to improve our understanding of the role of fire in the monuments' vegetation and wildlife communities. Based on this information, modify actions and strategies to achieve fire and resource management goals and objectives.

Objective #5: Use prescribed fire to meet fire and resource management goals and objectives.

- Where applicable, restore fuel loads and plant community structure and composition to ranges of natural variability comparable to pre-Anglo settlement using a predetermined regimen of management-ignited prescribed fires.
- Use management ignited prescribed fires to reduce hazardous fuels and minimize the occurrence of unnaturally intense wildland fires.

- Avoid prescribed fires that would reduce air quality below federal, state, and local regulations.
- Train the monuments' staff and cooperators to conduct safe, objective-oriented prescribed fires consistent with DO-18 requirements.
- Ensure that a resource advisor is present or consulted on all prescribed fires.
- Institute and maintain a Fire Ecology Program that, at a minimum, utilizes the National Park Service's Fire Monitoring Handbook and Fire Effects Assessment Tool to ensure that fire effects are monitored, recorded, and evaluated for all prescribed fires in the monuments.

WILDLAND FIRE MANAGEMENT OPTIONS

Fire Suppression

Suppression involves extinguishing a wildland fire that is burning outside of prescription parameters (e.g., rate of spread is too high), is not meeting fire and resource objectives, is in a location designated as a suppression zone, or may pose an immediate threat to life or property. All non-planned human caused fires will be suppressed. Tactics for suppression are varied and depend on the particular situation (e.g., location, weather, safety considerations, etc.) for each individual fire. Suppression actions can include hand crews cutting a line around the fire perimeter to remove live and dead vegetation; water and retardant drops from aircraft; manual and mechanical thinning; "burn out" situations in which fire is used to remove live and dead vegetation in an effort to stop the fire; and "cold trailing" in areas of low fuel loads, where crews physically feel the ground and put out "hot spots."

In areas with sensitive natural or cultural resources, Minimum Impact Suppression Tactics are used and/or resource advisors are consulted.

Prescribed Fire

Prescribed fires are intentionally lit under predetermined conditions to meet fire and resource management goals and objectives. Prescribed fires include pile burning, where vegetation is cut and moved to a central location and burned, or broadcast burning, where fires are ignited within a predefined area and allowed to move through the vegetation within those boundaries. All environmental compliance must be met prior to any fire ignition and a written and approved prescribed fire plan must exist. Within the prescribed fire plan are detailed prescription parameters that must be followed.

Non-fire Fuel Treatments

Non-fire fuel treatments include manual and mechanical thinning. In general, thinning involves removing live and dead vegetation (fuels) according to a prescribed plan to meet specific objectives related to hazardous fuels management. Thinning is also used as a pre-treatment for prescribed burning to remove smaller diameter trees, ladder fuels, shrubs, snags, and ground litter to help keep the fire within the designated area or to protect specific resources. When multiple burns are needed to reduce hazardous levels of fuels, thinning pre-treatments can expedite the process by several years. Thinning is also used in suppression actions and as an effective treatment to reduce fuels in the wildland urban interface.

Adaptive Management

Adaptive management is generally considered to be the process of continually adjusting management strategies in response to new information, knowledge, or technologies. Adaptive

management is a process for implementing management decisions that requires monitoring of management actions and adjustment of decisions based on past and present knowledge. Adaptive management applies scientific principles and methods to improve management decisions incrementally as experience is gained and in response to new scientific findings and societal changes.

The adaptive management cycle begins with developing a plan that articulates the project's goals, objectives, and strategies. The plan is then implemented and the actions and responses are monitored. The results of this monitoring are evaluated to determine if the actions were appropriate and achieved the stated goals and objectives, or if a change in action or method is necessary to meet objectives.

Fire Ecology Program

In order to use prescribed fire on National Park Service lands, a Fire Ecology Program must be in place. This vegetation monitoring program uses the best available information (such as data collected on-site, scientific journals, and knowledge from resource specialists) to formulate realistic objectives for desired future resource conditions. Involving staff at many levels, as well as local scientists from universities or cooperating/neighborhood agencies, is important to this process. Once desired future resource conditions are agreed upon, specific and measurable objectives are written, a desired degree of certainty in the results is determined, and vegetation sampling protocols are established and implemented. After the data have been collected, they are used to evaluate if fire and resource management objectives are being met and to determine if additional research is needed. If unexpected trends are identified, objectives may need to be revised and/or the program re-evaluated. When this information is used to re-evaluate program goals or objectives, the adaptive management process comes full-circle.

The over-riding goals and objectives of the Fire Ecology Program are to:

1. Use an adaptive management approach to work with resource and fire managers to identify resource management challenges, desired future conditions, and monitoring objectives for vegetation types to be treated with prescribed fire.
2. Record basic fire behavior and weather information for all prescribed fires.
3. Establish and implement a sampling design and data collection protocol for each vegetation community to be treated with prescribed fire.
4. Document and analyze short and long-term fire effects on vegetation.
5. Use all available information to determine if fire and resource management objectives are being met.
6. Identify where or if additional fire effects research is needed.

Fire Monitoring

Monitoring of all fires, including suppression fires, prescribed fires, and those requiring other appropriate management response involves the systematic collection and recording of data on fuels, topography, weather, air quality, and fire behavior. At a minimum, monitoring at the monuments follows the protocols outlined in the National Park Service Fire Monitoring Handbook. This fire behavior and weather information is broadcast over radios to all fire personnel during the fire event and then later provided to fire managers in a report. All prescribed fire monitors are trained and certified in both basic fire behavior and prescribed fire monitoring techniques.

RELATIONSHIP OF THE PROPOSED ACTION TO PREVIOUS PLANNING EFFORTS

The following previously completed plans and activities relate to the fire management plan and proposed fire management activities. The general management plan provides broad guidance for decisions about natural and cultural resource protection. The invasive plant management plan covers herbicide application which is also proposed as fire management tool for thinning in the fire management plan. The pile burning and fuels treatments around structures include activities that are part of the proposed fire management plan.

Montezuma Castle and Tuzigoot National Monuments General Management Plan and Environmental Assessment (2010). The general management plan provides broad guidance for decisions about natural and cultural resource protection, appropriate types and levels of visitor activities, and facility development. The plan discusses each monument's mission, purpose, and significance, and defines the resource conditions and visitor experiences that should be achieved and maintained over time. This environmental assessment/assessment of effect is consistent with the general management plan in that all fire-fighting activities would avoid or minimize effects to natural resources and all known archeological sites and features, and planning strategies would ensure that adequate firefighting resources are available and positioned to safeguard staff and visitors.

Invasive Plant Management Plan and Environmental Assessment for Montezuma Castle and Tuzigoot National Monuments (2007). Since 2007, Montezuma Castle and Tuzigoot National Monuments have had an active invasive exotic plant management program. In fiscal year 2010, 27.8 acres of invasive plants were treated. This program is continuing to expand with additional staff and volunteer efforts at both monuments.

Invasive Tree Pile Burning at Tuzigoot National Monument (April 2009). Tamarisk and tree of heaven piles resulting from 2006 to 2009 invasive plant mechanical removals were burned by the Saguaro National Park fire crews in 2009 over one day. Most piles were located in the southern portion of Tavasci Marsh, between the old historic east-west road bisecting the marsh and the Verde River.

Fire Hazard Assessment and Fuels Treatment around Monument Buildings and Utilities (June-July 2011). A regional fire crew was sent to Montezuma Castle and Tuzigoot National Monuments to assess buildings, utilities, and cultural resources from fire dangers. Following "firewise" guidelines, areas around buildings were cleared of ladder fuels out to 30 feet, and utilities were cleared to 10 feet.

SCOPING

On November 18, 2010 an interdisciplinary team meeting was convened to initiate a process related to the preparation of an environmental document in support of the fire management plan. Each monument's significance, legislative intent, and purpose and mission statements were discussed. At that time, the interdisciplinary team developed the purpose and need statement, goals and objectives, issues, and proposed alternatives related to the fire management plan. Montezuma Castle and Tuzigoot National Monuments actively sought to engage potentially affected or interested federal, state, and local agencies; tribal entities; and the public during the formal scoping period. Scoping for the environmental assessment/assessment of effect commenced on April 1, 2011, and concluded on May 1, 2011. A summary of the scoping process and results is included as Appendix B.

IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS

The impact topics retained for further analysis are as follows:

- Geology and Soils
- Vegetation
- Special Status Species
- Wildlife
- Air Quality
- Soundscapes
- Hydrology/Water Quality
- Visitor Use and Experience
- Monument Operations
- Archeological and Ethnographic Resources
- Historic Structures and Cultural Landscapes

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

The National Park Service defines “measurable” impacts as moderate or greater effects. It equates “no measurable effects” as negligible or less effects. The use of “no measurable effects” in this environmental assessment/assessment of effect pertains to whether the National Park Service dismisses an impact topic from further detailed evaluation in this environmental assessment/assessment of effect.

Some impact topics were dismissed from further evaluation in this environmental assessment/assessment of effect if:

- They do not exist in the analysis area, or
- They would not be affected by the proposal, or the likelihood of impacts are not reasonably expected, or
- Through the application of mitigation measures, there would be negligible or less effects (i.e., no measurable effects) from the proposal, and there is little controversy on the subject or reasons to otherwise include the topic

Dismissed impact topics include the following:

PRIME AND UNIQUE FARMLANDS

There are no farmlands within the monuments. Therefore, this topic was dismissed from further consideration.

NIGHT SKY

The activities proposed under all alternatives would largely occur during the day and if occurring at night would result in negligible light pollution within the monuments. Therefore, this topic was dismissed from further consideration.

ENERGY

Energy use during planned and unplanned events would be minimal and confined largely to vehicle use. Therefore, this topic was dismissed from further consideration.

WILDERNESS

Neither monument has any proposed or designated wilderness areas. Therefore, this topic was dismissed from further consideration.

TRANSPORTATION

Activities during planned and unplanned events would not or would only negligibly affect transportation in the short-term. Therefore, this topic was dismissed from further consideration.

MUSEUM COLLECTIONS

Activities during planned and unplanned events would not affect museum collections as they would occur entirely outdoors. Because this plan focuses on avoiding archeological resources within the monuments, additions to collections are not expected to result from proposed actions. Therefore, this topic was dismissed from further consideration.

SOCIOECONOMICS

Brief influxes of personnel to conduct fire management activities may result in only short-term negligible benefits to socioeconomics. Therefore, this topic was dismissed from further consideration.

ENVIRONMENTAL JUSTICE

The proposed action would not disproportionately affect low-income or minority communities; therefore, this impact topic is dismissed from further analysis.

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CHAPTER 2: ALTERNATIVES

The no-action alternative and the proposed action alternative were developed by staff of Montezuma Castle and Tuzigoot National Monuments and the Fire Management Office at Saguaro National Park. Each alternative addresses specific management objectives and are feasible for local implementation. Alternatives that did not meet these criteria were eliminated from further analysis. In compliance with the National Environmental Policy Act, this environmental assessment/assessment of effect evaluates the potential effects of alternative fire management strategies at Montezuma Castle and Tuzigoot National Monuments.

In both alternatives, the national monuments would be considered a single fire management unit. Within this fire management unit, fire management activities may occur throughout the monuments. The containment of invasive plants following fire would be focused on areas where fire management activities occurred, but would not be restricted to those areas.

Under both alternatives, all wildfires would be aggressively suppressed in a prompt, safe, and cost-effective manner to produce a fast, efficient action with minimum damage to resources. The fire management plan does not differentiate between human- and lightning-caused fires. Under both alternatives, the monuments may use non-fire treatments to reduce fuel loads and create fuel breaks around developments.

Minimum impact management philosophy guides the selection of fire management actions. Minimum impact management strives to minimize landscape alteration and disturbance to natural and cultural resources while safeguarding human lives and accomplishing resource-related objectives. Monument staff would manage wildfires in ways that minimize unnecessary impacts to resources and would convey the importance of this strategy to all fire management forces. Without compromising safety, lines would be located where they would do the least damage, minimize cutting, and use natural firebreaks when possible. Staging areas would be placed with care. Agency resource advisors would be consulted prior to implementing management tactics.

Despite the best intentions of minimum impact management, wildland fire actions often create the need for short-term or long-term rehabilitation. Staff would consult with specialists (archeologists, ecologists, wildlife biologists, etc.) to determine short-term and long-term needs and evaluate the need to write rehabilitation plans for each fire. Common rehabilitation recommendations include flush cutting stumps, brushing in handlines, removing all trash, installing erosion control devices, and revegetating burned areas.

NO-ACTION ALTERNATIVE

Under the no-action alternative the monuments would continue to manage wildfires consistent with the existing *2004 Fire Management Plan* and Healthy Forest Initiative Categorical Exclusion. Under this alternative all wildfires would be managed commensurate with values to be protected and human safety. Firefighters with hand tools such as shovels, and in some situations with mechanized equipment such as chainsaws, would be rapidly assigned to suppress all fires. A fire-fighting strategy could include fireline construction using hand tools, chainsaws, and water hose lines. The use of chemical retardants would require the superintendent's approval. Off road vehicle use could be permitted on a case-by-case basis and would be preapproved by a monument's resource advisor.

Under the no-action alternative, there would be no fire management tools implemented such as the reduction of hazardous fuels or prescribed fire. Though pile burning has been occurring at all three

units, in all three units under this alternative it would be conducted only as part of the control of invasive plants.

PROPOSED ACTION OR PREFERRED ALTERNATIVE

Under the preferred alternative, the proposed action alternative would allow for implementation of a range of fire management activities. These activities and treatments would be centered on public and firefighter safety, communities identified as at risk from wildfires (wildland-urban interface), current condition class, and collaboration with other agencies and stakeholders. These activities would be part of potential planned events (prescribed burns, mechanical or manual fuel reduction, and ecological restoration) and/or in response to unplanned (wildland fires) events. Pile burning, which has been occurring at all three units, would also be considered for mechanical and/or manual hazardous fuels reduction. Prescribed burns may be used in order to maintain open native grassland areas at the Montezuma Well unit of Montezuma Castle National Monument. Proposed actions within the next five years at Montezuma Well are cutting and thinning of 40 acres and pile burning of 12 acres. Proposed actions within the next five years at Tuzigoot are 4 acres of cutting and thinning; prescribed burning of Tavasci Marsh is outside the scope of this proposed project and would require additional compliance prior to implementation. Due to the small size of the monuments and proximity of private property, the importance of its cultural resources, and the sensitivity of native plant communities to fire, wildfires would be suppressed. The exact nature of that response to put the fire out may vary, based on firefighter and public safety and values to be protected. Foot and/or vehicle traffic to access the fire, water drops, burnouts to lessen fuel levels, and construction of firelines are possible responses.

MITIGATION MEASURES

- Because disturbed soils are susceptible to erosion until revegetation takes place, standard erosion control measures such as silt fences and/or sand bags would be used to minimize any potential soil erosion.
- To reduce noise and emissions, heavy equipment would not be permitted to idle for long periods of time.
- To minimize possible petrochemical leaks from heavy equipment, the equipment operators would regularly monitor and check heavy equipment to identify and repair any leaks.
- Project workers and supervisors would be informed about special status species.
- All ground disturbance would be monitored by the monument archeologist and/or archeological technicians. Should fire activities threaten any known sites or unearth previously undiscovered cultural resources, work would be stopped in the area of any discovery and the monument would consult with the Arizona State Historic Preservation Office and the Advisory Council on Historic Preservation, as necessary, according to Section 36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.
- The National Park Service would ensure that all workers, contractors, and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Project workers and supervisors would be informed about the special sensitivity of monument's values, regulations, and appropriate housekeeping.
- Project activities generating high levels of noise would be avoided during the sensitive breeding season from March through September as much as possible.

- Activities generating potential soil runoff events would be avoided during the heavy monsoon period of July-September.

The following mitigation measures have been developed to minimize the degree and/or severity of effects specifically to wetland areas, such as Tavasci Marsh, and are from National Park Service Procedural Manual #77-1: *Wetland Protection* and “Best Management Practices and Conditions for Proposed Actions with the Potential to Have Adverse Impacts on Wetlands.” These would primarily apply to planned events; emergency events related to human safety could supersede these measures.

- **Effects on hydrology:** Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on. Care must be taken to avoid any rutting caused by vehicles or equipment
- **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements
- **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date
- **Effects on fauna:** Action must have only negligible effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions
- **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations
- **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with National Park Service policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community
- **Native plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with National Park Service policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species
- **Endangered species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat
- **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing in the National Register of Historic Places

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act, which guides the Council on Environmental Quality. The Council on Environmental Quality provides direction that “The environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA’s Section 101. In order to carry out the policy set forth in this Act, it is the continuing responsibility of the

Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate federal plans, functions, programs, and resources to the end that the nation may:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
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;
5. Achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

The proposed action (the National Park Service preferred alternative) is also the environmentally preferred alternative. The proposed action allows for flexibility in response to wildfires and provides more opportunities for management of hazardous fuels. Using a range of fire-fighting and containment strategies may lower risks to the public, firefighters and resources. Under the proposed action, managers may select a combination of treatments of hazardous fuels, and thus would be most effective. The fire management plan would provide for the health and safety of visitors and employees, and the preservation of natural and cultural resources. The public and cultural and natural resources would receive protection from unwanted wildfires with fewer disturbances.

Table 1 describes how each fire management objective will be met. Table 2 compares fire management options between the two alternatives. Table 3 compares impacts between the two alternatives.

Table 1. Methods Each Alternative Uses to Ensure Each Objective Is Met

Objective	No-action Alternative	Preferred Alternative
<p>Objective #1: Protect life, property, and the site's natural and cultural resources from the effects of unwanted fire.</p>	<ul style="list-style-type: none"> • Give primary consideration to firefighter, employee, and public safety and provide for the safety of the site's visitors, neighbors, and employees during all phases of fire management operations. • Conduct all fire management activities commensurate with applicable laws, policies, and regulations. • Suppress all unwanted fires in the site. • Cooperate extensively with adjacent land management agencies to facilitate safe and prompt suppression of wildfires in the interagency mutual aid zone. • Efficiently use available fiscal resources to suppress wildfires. • Implement a cooperative fire prevention program to eliminate unplanned human-caused ignitions. • Conduct inventories, identify sensitive natural and cultural resources, and develop mitigation plans that provide for the preservation and protection of the site's natural and cultural resources. 	<p>Same methods as the No-action Alternative as well as the following:</p> <ul style="list-style-type: none"> • Use prescribed fire and/or mechanical treatments in the site's developed zones to reduce the risk of property damage due to wildland fire and to provide for human safety and resource protection. • Create defensible space zones around structures and developed areas in the site by using manual and mechanical treatments and/or prescribed fire to clear vegetation and reduce continuity of fuels.
<p>Objective #2: Prevent or mitigate impacts due to fire suppression activities.</p>	<ul style="list-style-type: none"> • Use Minimum Impact Suppression Tactics and rehabilitate disturbed areas to protect and mitigate impacts on the site's natural, cultural, wilderness, and scenic resources. • Ensure that a resource advisor is present and/or consulted on all major fire program activities. • Inform and train firefighters about the impacts of fire suppression on the site's sensitive natural and cultural resources. • Avoid the use of non-native seed to rehabilitate sites disturbed by wildland fires or their suppression. 	<p>Same methods as the No-action Alternative.</p>
<p>Objective #3: Institute and maintain a comprehensive Fire Information and Education Program.</p>	<ul style="list-style-type: none"> • Conduct wildland fire prevention, information, education, and other activities in communities within and abutting the site, working in collaboration with local communities and county, state, and federal agencies with fire management interests. • Educate employees and the public about the scope and effect of wildland and prescribed fire management, including fuels management, smoke management, resource protection, fire prevention, hazard/risk assessment, mitigation, rehabilitation, the wildland/urban interface problem, and the role of fire in ecosystem management. • Emphasize interagency communications for fire management activities, such as job training, sharing of staff, sharing of resources, and evaluation of fire management actions and activities. • Maintain relationships with the Native American community and encourage their participation in the management of traditional 	<p>Same methods as the No-action Alternative.</p>

Objective	No-action Alternative	Preferred Alternative
	<p>gathering areas. Facilitate the transfer of knowledge about fire management and traditional cultural practices.</p> <ul style="list-style-type: none"> • Collaborate with county and state air resources agencies to monitor smoke levels and manage smoke-related effects on visitors, residents, and employees. 	
<p>Objective #4: Restore and maintain fire-dependent ecosystems with the appropriate use of fire.</p>	<ul style="list-style-type: none"> • Using the best available scientific data, continue to refine and develop a range of desired future conditions and ecologically sound fire and resource management objectives for the site's vegetation and wildlife communities. • Include fire and resource management objectives specific to each prescribed fire in the prescribed fire burn plan. • Use research and monitoring to improve our understanding of the role of fire in the site's vegetation and wildlife communities. Based on this information, modify actions and strategies to achieve fire and resource management goals and objectives. 	<p>Same methods as the No-action Alternative as well as the following:</p> <ul style="list-style-type: none"> • Use fire to promote the maintenance of native vegetation and discourage non-native vegetation invasions.
<p>Objective #5: Use prescribed fire to meet fire and resource management goals and objectives.</p>		<ul style="list-style-type: none"> • Where applicable, restore fuel loads and plant community structure and composition to ranges of natural variability comparable to pre-Anglo settlement using a predetermined regimen of management-ignited prescribed fires. • Use management ignited prescribed fires to reduce hazardous fuels and minimize the occurrence of unnaturally intense wildland fires. • Avoid prescribed fires that would reduce air quality below federal, state, and local regulations. • Train the site's staff and cooperators to conduct safe, objective-oriented prescribed fires consistent with DO-18 requirements. • Ensure that a resource advisor is present or consulted on all prescribed fires. • Institute and maintain a Fire Ecology Program that, at a minimum, utilizes the National Park Service's Fire Monitoring Handbook and Fire Effects Assessment Tool to ensure that fire effects are monitored, recorded, and evaluated for all prescribed fires in the site.

Table 2. Comparison of Alternatives

No-action Alternative	Preferred Alternative
<p><u>Unplanned Events:</u> Suppression actions can include hand crews cutting a line around the fire perimeter to remove live and dead vegetation; water and retardant drops from aircraft; manual and mechanical thinning; “burn out” situations in which fire is used to remove live and dead vegetation in an effort to stop the fire; and “cold trailing” in areas of low fuel loads, where crews physically feel the ground and put out “hot spots.”</p> <p>In areas with sensitive natural or cultural resources, Minimum Impact Suppression Tactics are used and/or resource advisors are consulted.</p> <p><u>Planned Events:</u> Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments increasing the risk of an unplanned wildfire.</p>	<p><u>Unplanned Events:</u> Suppression actions can include hand crews cutting a line around the fire perimeter to remove live and dead vegetation; water and retardant drops from aircraft; manual and mechanical thinning; “burn out” situations in which fire is used to remove live and dead vegetation in an effort to stop the fire; and “cold trailing” in areas of low fuel loads, where crews physically feel the ground and put out “hot spots.”</p> <p>In areas with sensitive natural or cultural resources, Minimum Impact Suppression Tactics are used and/or resource advisors are consulted.</p> <p><u>Planned Events:</u> Mechanical and manual fuel reduction treatments and herbicide applications could occur. Some prescribed burning or pile burning may also occur.</p>

Table 3. Summary of Impacts by Alternative

Impact Topic	No-action Alternative	Preferred Alternative
Geology and Soils	<p>Under the no-action alternative, direct, minor, short-term and long-term, adverse effects would occur to the soil resources locally from fires (unplanned events) and subsequent fire-fighting actions. geologic resources would not be impacted as a result of the no-action alternative.</p>	<p>Overall, the short-term adverse effects of the preferred alternative on soil resources would result from surface disturbance caused by mechanical and/or manual hazardous fuel reduction treatments as part of planned events and during fire-fighting activities during unplanned events. Impacts would be direct, local, short-term, minor, and adverse. Indirect beneficial long-term impacts to soils would result from the reduced threat of severe wildfires which could cause sterilization and also create hydrophobic soils. The preferred alternative would not result in any impacts on geologic resources.</p>
Vegetation	<p>Direct short-term minor adverse impacts with the loss or damage of vegetation and the potential shift in species composition after a fire could occur under the no-action alternative. Wildfire fire-fighting activities would result in trampling or loss of vegetation locally. The buildup of hazardous fuels could result in a decline in species diversity, increase in wildfires, and an increase in damage to vegetation. Overall, impacts on vegetation would be indirect, local, long-term, minor, and adverse.</p>	<p>Site-specific minor short-term adverse impacts would result from surface disturbance and damage to vegetation as a result of implementing hazardous fuels treatments. If these treatments occur in areas previously disturbed, it could increase the potential for noxious weeds. However, implementing these treatments would reduce fuel loads and the threat of future fires and improve species diversity resulting in a direct, local, long-term, beneficial impact.</p>
Special Status Species	<p>Impacts to special status species for planned events would be indirect, site-specific, negligible to minor, long-term, and adverse from alteration of habitat. Impacts would be indirect, local, long-term, minor, and adverse for unplanned events.</p>	<p>For planned fire management events effects to special status species would be indirect, local, negligible to minor, short-term, and beneficial. For unplanned events, impacts would be indirect, local, long-term, minor, and adverse.</p>

Impact Topic	No-action Alternative	Preferred Alternative
Wildlife	Under the no-action alternative, current management would result in indirect, site-specific, minor, short-term, adverse impacts to wildlife from the effects of wildfire and wildfire fire-fighting activities on individual species and habitat. The buildup of hazardous fuels could result in fires and species displacement or mortality that would result in an indirect local long-term minor adverse impact on wildlife.	The preferred alternative would generally result in an indirect local minor long-term beneficial impact on wildlife. Implementing mechanical and/or manual hazardous fuel reduction treatments would initially displace wildlife species in the short-term but increase plant diversity and improve habitat with indirect local long-term minor beneficial benefits to wildlife.
Air Quality	Under the no-action alternative, adverse impacts to air quality and scenic values would be indirect, local, short-term, minor, and adverse as a result of wildfire and fire fire-fighting activities, especially if fires occurred during the summer season. The buildup of hazardous fuels would increase the risk of wildfire events over time which would result in adverse impacts on air quality and visibility.	Under the preferred alternative, minor adverse impacts on air quality locally would be short-term, minor, and adverse. Pile burning would cause direct, short-term, direct local minor impacts on air quality which would be offset in the long-term by the reduced risk of wildfires in the future from fuels reduction activities.
Soundscapes	Under the no-action alternative, impacts on the monuments' soundscapes would be local, short-term, minor, and adverse from mechanized wildfire fire-fighting activities during unplanned events.	Under the preferred alternative impacts on the monuments' soundscapes would be direct, local, short-term, minor, and adverse from mechanized fuels reduction and/or wildfire fire-fighting activities.
Hydrology/Water Quality	Under the no-action alternative, adverse impacts to hydrology/water quality would be indirect, short-term, minor in intensity, and as a result of wildfire and fire fire-fighting activities, especially if fires occurred during the summer season. The buildup of hazardous fuels could increase the sediment load from unplanned wildfires and the risk of wildfire events over time which would result in adverse impacts on hydrology/water quality.	Under the preferred alternative, minor adverse impacts on hydrology/water quality locally would be short-term. Pile burning would cause short-term, direct local minor impacts on hydrology/water quality which would be offset in the long-term by the reduced risk of wildfires in the future. Implementing fire management treatments would reduce fuel loads and reduce the potential sediment load from unplanned wildfires into the streams.
Visitor Use and Experience	There would be no impacts to visitor use and experience as a result of planned events. Impacts would be direct, local, short-term, minor, and adverse during unplanned events.	There would be direct local minor short-term adverse impacts to visitor use and experience as a result of planned events. Impacts would be direct, local, short-term, minor, and adverse during unplanned events.
Monument Operations	There would be no impacts to monument operations as a result of planned events. Impacts to monument operations as a result of unplanned events would be direct, local, short-term, minor, and adverse.	There would be direct, local, minor, short-term, adverse impacts to monument operations as a result of planned events. Impacts to monument operations as a result of unplanned events would be direct, local, short-term, minor, and adverse.
Archeological and Ethnographic Resources	The no-action alternative would have an indirect minor short- to long-term adverse impact to archaeological resources resulting from wildfires and fire-fighting activities. The buildup of hazardous fuels could increase the potential for fires and may result in direct, adverse, and long-term impacts on archeological and ethnographic resources.	The preferred alternative would have a direct minor short-term adverse impact to archaeological sites resulting from surface disturbance associated with implementation of hazardous fuels activities. Minor adverse impacts would occur to surface and subsurface artifacts. Archeological and ethnographic resources would benefit from implementation of mechanical and/or manual hazardous fuel reduction projects that would lessen the potential for wildfires that can damage or destroy fire-susceptible archeological sites.

Impact Topic	No-action Alternative	Preferred Alternative
<p>Historic Structures and Cultural Landscapes</p>	<p>Historic structures and cultural landscapes would be impacted from wildfire and fire-fighting actions ranging from minor short-term to direct long-term minor adverse effects during unplanned wildfires.</p>	<p>Ground disturbing mechanical and/or manual hazardous fuel reduction treatments could result in minor adverse impacts on historic resources. Historic structures and cultural landscapes would benefit from implementation of mechanical and/or manual hazardous fuel reduction projects that would lessen the potential for wildfires that can damage or destroy fire-susceptible sites.</p>

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CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The National Park Service considers all potential impacts, including the direct, indirect, and cumulative effects of the proposed action on the environment, along with connected and cumulative actions. Impacts are described in terms of context and duration and are specific to each resource. The context or extent of the impact is described as local or widespread. The duration of impacts is described as short-term, ranging from days to three years in duration, or long-term, extending up to 20 years or longer. The intensity and type of impacts is described as negligible, minor, moderate, or major, and as beneficial or adverse. The National Park Service equates “major” effects as “significant” effects. The identification of “major” effects could trigger the need for an environmental impact statement. Where the intensity of an impact could be described quantitatively, the numerical data are presented; however, most impact analyses are qualitative and use best professional judgment in making the assessment.

The National Environmental Policy Act decision-making process evaluated potential impacts of the no-action alternative and the preferred alternative on the natural, cultural, and sociocultural environment at Montezuma Castle and Tuzigoot National Monuments. The interdisciplinary planning team completed the assessment of potential impacts on the environment following input from the public.

METHODOLOGY

The analysis of each resource includes a description of the affected environment and evaluation of potential impacts. Impact topics that would be subject to only a negligible impact under all alternatives were not analyzed in detail.

Impacts are defined in terms of type, context, connection, duration, and intensity. Intensity and the duration timeline vary by resource. The following definitions are consistent for all resources:

Type

Adverse: An effect that detracts from its condition or appearance or moves the resource away from a desired condition.

Beneficial: A positive effect in the condition or appearance of the resource or an effect that moves the resource toward a desired condition or accomplishes stated objectives.

Context

Site-specific: Influences the location of the resource.

Local: Influences adjacent and nearby areas.

Regional: Influences an area that may span several counties up to several states.

National/International: Influences most of the country/influences adjacent countries or areas worldwide.

Connection

Direct: Impacts caused by an action that occur at the same time and place as the impact.

Indirect: Impacts that occur later in time or farther removed from the resource, but are reasonably foreseeable.

Cumulative: Impacts that result from incremental actions when added to past, present, and reasonably foreseeable future actions.

Duration

Short-term: An effect that would no longer be detectable after a relatively brief period of time (days to months) as the resource is returned to its predisturbance condition or appearance.

Long-term: An effect that does not return the resource to a predisturbance condition or appearance and can last from a several years to decades.

CULTURAL RESOURCES IMPACT METHODOLOGY

Cultural resource impacts were analyzed qualitatively, in accordance with criteria of adverse effect (36 Code of Federal Regulations 800.5(a)(1)), based on their presence in the project area and the modifications that would be made to character-defining features, features that qualify them for inclusion in the National Register. Cultural resources were all considered eligible for the National Register, and not dependent on whether a determination of eligibility has officially been made. Adverse impacts result when impacts of the proposed action diminish the characteristics that make the feature eligible for the National Register or that diminish the overall integrity of the landscape.

Section 106 of the National Historic Preservation Act Methods for Assessing Effect —

Pursuant to Director's Order 12 (sections 2.14(6) (3), 6.2 F, and 6.3 F and Appendix 3); 40 Code of Federal Regulations 1508.7, 1508.8, and 1508.27; and 36 Code of Federal Regulations 800.8; effect intensity, duration, context, and type as they relate to historic properties are determined with the criteria established in 36 Code of Federal Regulations Part 800. When the effect of an action results in an alteration to the characteristics of a cultural resource that qualifies it for inclusion in the National Register of Historic Places, the action is considered to have an adverse effect under Section 106 of the National Historic Preservation Act. The National Historic Preservation Act defines three types of effects as applied to historic properties. These include no effect, no adverse effect, and adverse effect.

No Historic Properties Affected — A “no historic properties affected” determination indicates that no historic properties are in the Area of Potential Effect or that there are historic properties in the Area of Potential Effect, but the undertaking would not alter the characteristics that qualify it for inclusion in or eligibility for the national register.

No Adverse Effect — A no adverse effect determination indicates that there would be an effect on the historic property by the undertaking, but the effect does not meet the criteria of adverse effect in 36 Code of Federal Regulations 800.5(a)(1) and would not alter any of the characteristics that make it eligible for listing on the national register in a manner that would diminish the integrity of the historic property. Operations, maintenance, rehabilitation, restoration, and preservation actions typically fall under this no adverse effect category.

Adverse Effect — An adverse effect indicates that the undertaking would alter, directly or indirectly, any of the characteristics that qualify it for inclusion in the national register in a manner that would diminish the integrity of the property. Adverse effects can be resolved by developing a three-party memorandum of agreement or programmatic agreement with the State Historic Preservation Officer and the Advisory Council on Historic Preservation, in consultation with the associated American Indian tribal governments, other consulting parties, and the public (36 Code of Federal Regulations 800.6).

CUMULATIVE IMPACT PROJECTS

Tavasci Marsh Restoration and Management Plan/Environmental Assessment (2011). A comprehensive restoration and management plan has been developed for the recently acquired 324-acre expansion to Tuzigoot National Monument which includes Tavasci Marsh. Tavasci Marsh

is a spring-fed freshwater wetland that occupies an abandoned oxbow of the Verde River to the north and east of Tuzigoot ridge. The system has been disturbed by human use since the time of the Southern Sinagua people and has a varied management history including supporting irrigated agriculture fields, pasture for a dairy operation, soil extraction, flushing through of waters from the adjacent Pecks Lake for nutrient management, and hydrological modifications to increase wetland areas for waterfowl and wildlife habitat. The management plan will address preservation and enhancement of current habitat values while providing adequate visitor use infrastructure to allow the public to enjoy the resource.

Invasive Plant Management Plan and Environmental Assessment for Montezuma Castle and Tuzigoot National Monuments (2007-present). Since 2007, Montezuma Castle and Tuzigoot National Monuments have had an active invasive exotic plant management program. In fiscal year 2010, 27.8 acres were treated. This program is continuing to expand with additional staff and volunteer efforts at both monuments.

Invasive Tree Pile Burning at Tuzigoot National Monument (2009). Tamarisk and tree of heaven piles resulting from 2006 to 2009 invasive plant mechanical removals were burned by the Saguaro National Park fire crews in 2009 over one day. Most piles were located in the southern portion of the marsh, between the old historic east-west road bisecting the marsh and the Verde River.

Fire Hazard Assessment and Fuels Treatment around Monument Buildings and Utilities (June-July 2011). A regional fire crew was sent to Montezuma Castle and Tuzigoot National Monuments to assess buildings, utilities, and cultural resources from fire dangers. Following firewise guidelines, areas around buildings were cleared of ladder fuels out to 30 feet, and utilities were cleared to 10 feet.

Integrative Pest Management Action Plan and Environmental Assessment (expected in 2012). This plan will be based on the principles of integrated pest management and includes a combination of mechanical, cultural, chemical, and biological techniques. Pest management guidelines will be provided to help preserve man-made structures (prehistoric, historic, and modern), protect human health and safety, protect stored artifacts and museum resources for both monuments, as well as administrative buildings leased outside of the monuments' boundaries. Preventive methods such as exclusion, sanitation and habitat modification may be used, as well as direct actions such as trapping and the use of directed, low-risk pesticide applications.

GEOLOGY AND SOILS

AFFECTED ENVIRONMENT

The major rock unit forming cliffs in the Verde Valley found in all three units is the Verde Formation limestone. This unit started to form about eight million years ago when volcanic eruptions nearby dammed the Verde River. Over the next approximately six million years layer upon layer of sedimentary rock formed in this lakebed and was eventually exposed as the climate dried out and the dam was breached. Other geologic units include Quaternary deposits of alluvium and colluvium.

Two types of soils dominant the monuments. Upland soils have been developed from the Verde Limestone on mesas, ridges, and side-slopes. These areas are characterized by limestone outcrops. Bottomland soils have been developed from stream deposits. These are alluvial deposits ranging in size from clay to boulders and terrace deposits ranging from clay to gravel (USDI NPS 2010).

At Montezuma Castle National Monument, the Retriever soil series is dominant and characterized by limestone outcrops and limestone-derived soils on upland mesas, ridges, and side-slopes. The river

corridor soils at Montezuma Castle National Monument are primarily alluvial in nature. The Riverwash soils are primarily stratified sand, silt, and clay, with scattered deposits of gravel, cobbles, stones, and boulders. The terrace deposits border the wide channel of the river and consist of a mixture of unconsolidated but finely stratified clay, silt, sand, and gravel. At Montezuma Well, the dominant soil type is the Guest soil series, characterized by bottomland, clayey soil derived from flood-borne, fine sediment deposits. The second most common soil type is the Riverwash soil. At Tuzigoot National Monument the floodplain is quite broad, the Verde River is wider and more meandering, and the stream bottom composition contains more gravel and cobble that form large bars at low flows. Retriever soils are present in all areas of the monument except Tavasci Marsh (USDI NPS 2010).

REGULATIONS AND POLICIES

According to National Park Service *Management Policies 2006* (USDI NPS 2006), all units in the national park system are to preserve and protect geologic and soil resources. They are to strive to understand soil resources, and to the extent possible, prevent their unnatural erosion, physical removal, or contamination, and their contamination of other resources. Table 4 describes impact intensity thresholds for geology and soils.

Table 4. Geology and Soils Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Geology and Soils	Impacts to geologic resources or soils would not be measureable or of perceptible consequence.	Changes are detectable but local. Mitigation to offset adverse effects would be standard, noncomplex, and effective.	Effects are apparent over a large portion of the monuments. Necessary measures to mitigate adverse effects would be likely successful.	Impacts are severe or of exceptional benefit over a wide area. Mitigation to offset adverse effects would be needed, but success not assured.	Short-term refers to durations of less than 5 years. Long-term refers to durations in excess of 5 years.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. This could result in a decrease in soil infiltration, an increase in erosion, and possible sterilization. Impacts would be site-specific to local, long-term, minor, and adverse.

Unplanned Events: Impacts to soils from wildfire generally occur from wildfires or from fire-fighting tactics. Where low-intensity wildfires occur or where wildfire occurs in highly local areas, changes to soils would be minor. Loss of vegetative cover due to wildfire could affect soil quality through the loss of soil structure and temporary reduced porosity of soils in these impacted areas. The direct effects of wildfire on soil properties may include changes in soil chemistry (e.g., loss of nitrogen), and a reduction in porosity and organic matter. Surface disturbance associated with wildfire fire-fighting activities such as the use of heavy equipment or the construction of firelines and the buildup of hazardous fuels could have direct short-term adverse effects on soils due to compaction and potential erosion. Impacts on soil resources would be minor, local and short-term. Geologic resources would not be impacted.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in a combined, short-term, minor adverse impact on geology and soils. In the long-term, the fuel reduction projects and restoration of Tavasci Marsh could improve vegetative health and improve soil stability and productivity.

Conclusion

Under the no-action alternative, minor, short-term and long-term, adverse effects would occur to the soil resources locally from fires (unplanned events) and subsequent fire-fighting actions. Geologic resources would not be impacted as a result of the no-action alternative.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to geology and soils would be local, negligible to minor, short-term and adverse. Disturbance may occur as crews thin in woody vegetation types, conduct burns, and apply herbicides near buildings and other infrastructure. Mechanical and/or manual hazardous fuel reduction activities would be implemented to protect human life and property and prevent damage to cultural and natural resources and physical facilities, and to reduce future wildfires. Mechanical and/or manual hazardous fuel reduction activities would include mechanical and chemical treatments and prescribed fire. Mechanical treatments such as slashing and the removal of dead shrubs, pile burning, and prescribed fire could initially result in minor short-term surface disturbance and minor impacts on soil locally. However, these treatments would reduce fuel loads and could help protect existing vegetation from the threat of future wildfires and indirectly protect existing soil resources in the long-term.

Unplanned Events: Impacts to soils may occur from fires or from fire fire-fighting activities. Minor soil movement would be expected from fires in areas where ground cover was removed and mineral soils exposed. A low-intensity fire may cause minor changes in soil chemistry (e.g., loss of nitrogen), reduction in porosity, and consumption of organic matter. With the planned fire management projects, the risk of fire would be lessened.

Fires would be suppressed using preexisting natural and artificial barriers. Fires beyond the capacity of hand tools would be managed using engines where road access is available and may require the use of other heavy equipment. Off road use of heavy equipment would require approval by the superintendent and accompaniment by a designated resource advisor. The use of hand tools and heavy machinery could result in surface disturbance and compaction and erosion locally. However, minimum impact management would reduce the amount and extent of surface disturbance and impacts on soil resources.

During an unplanned event there would be foot and/or vehicle traffic to access the fire which could potentially result in an increase in soil trampling. After a fire, soils could become sterile and lose much of their nutrient value.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments could initially result in surface disturbance and minor adverse impacts on soil resources locally. In

the long-term, the fuel reduction projects and restoration of Tavasci Marsh could improve vegetation cover and improve soil stability and productivity.

Conclusion

Overall, the short-term adverse effects of the preferred alternative on soil resources would result from surface disturbance caused by mechanical and/or manual hazardous fuel reduction treatments as part of planned events and during fire-fighting activities during unplanned events. Impacts would be local, short-term, minor, and adverse. Beneficial long-term impacts to soils would result from the reduced threat of wildfires which could cause sterilization and also create hydrophobic soils. The preferred alternative would not result in any impacts on geologic resources.

VEGETATION

AFFECTED ENVIRONMENT

The dominant upland vegetation community of the monuments is desert scrub with elements of semi-desert grassland and coniferous woodland (Figures 1 through 3). Common species include creosotebush (*Larrea divaricate* ssp. *tridentate*), mariola (*Parthenium incanum*), velvet mesquite (*Prosopis velutina*), perennial grasses such as tobosa (*Pleuraphis mutica*), and often scattered one-seed juniper (*Juniperus monosperma*), Utah juniper (*J. osteosperma*), and crucifixion thorn (*Canotia holacantha*). The dominant community in the lowlands is riparian woodland/gallery forest, with riparian trees such as the Arizona sycamore (*Platanus wrightii*) and Arizona ash (*Fraxinus pennsylvanica* ssp. *velutina*) and understory species such as the Gooding willow (*Salix gooddingii*) as well as grasses and flowering plants (Rowlands 1999). In Tuzigoot National Monument Tavasci Marsh vegetation includes emergents such as cattails and bulrush (*Scirpus* spp.). Along the banks of the Verde River numerous small, semiaquatic plants grow within the marsh communities (Minckley and Brown 1982).

An inventory of invasive nonnative plants for the three national park system units found 44 species present. Redstem storksbill (*Erodium cicutarium*) and red brome (*Bromus madritensis* ssp. *rubens*) were the most dominant non-native species across the units. Barley (*Hordeum* spp.), and London rocket (*Sisymbrium irio*) also occurred widely. Bermuda grass (*Cynodon dactylon*) and johnsongrass (*Sorghum halepense*) occupied half to almost the entire area of small, concentrated patches in the Montezuma Well unit (Mau-Crimmins *et al.* 2009).

Figure 1. Vegetation Communities of the Montezuma Castle Unit

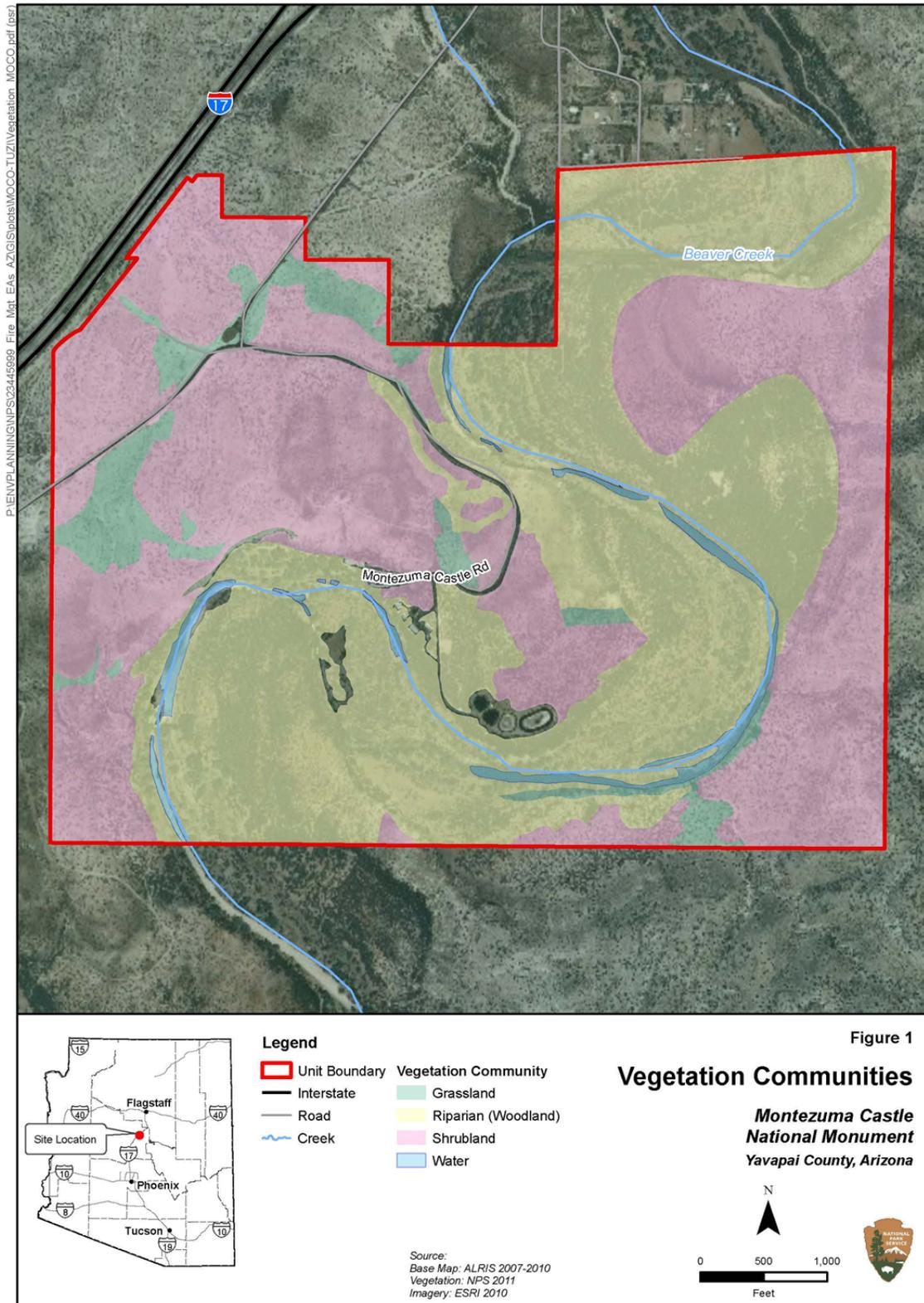


Figure 2. Vegetation Communities of the Montezuma Well Unit

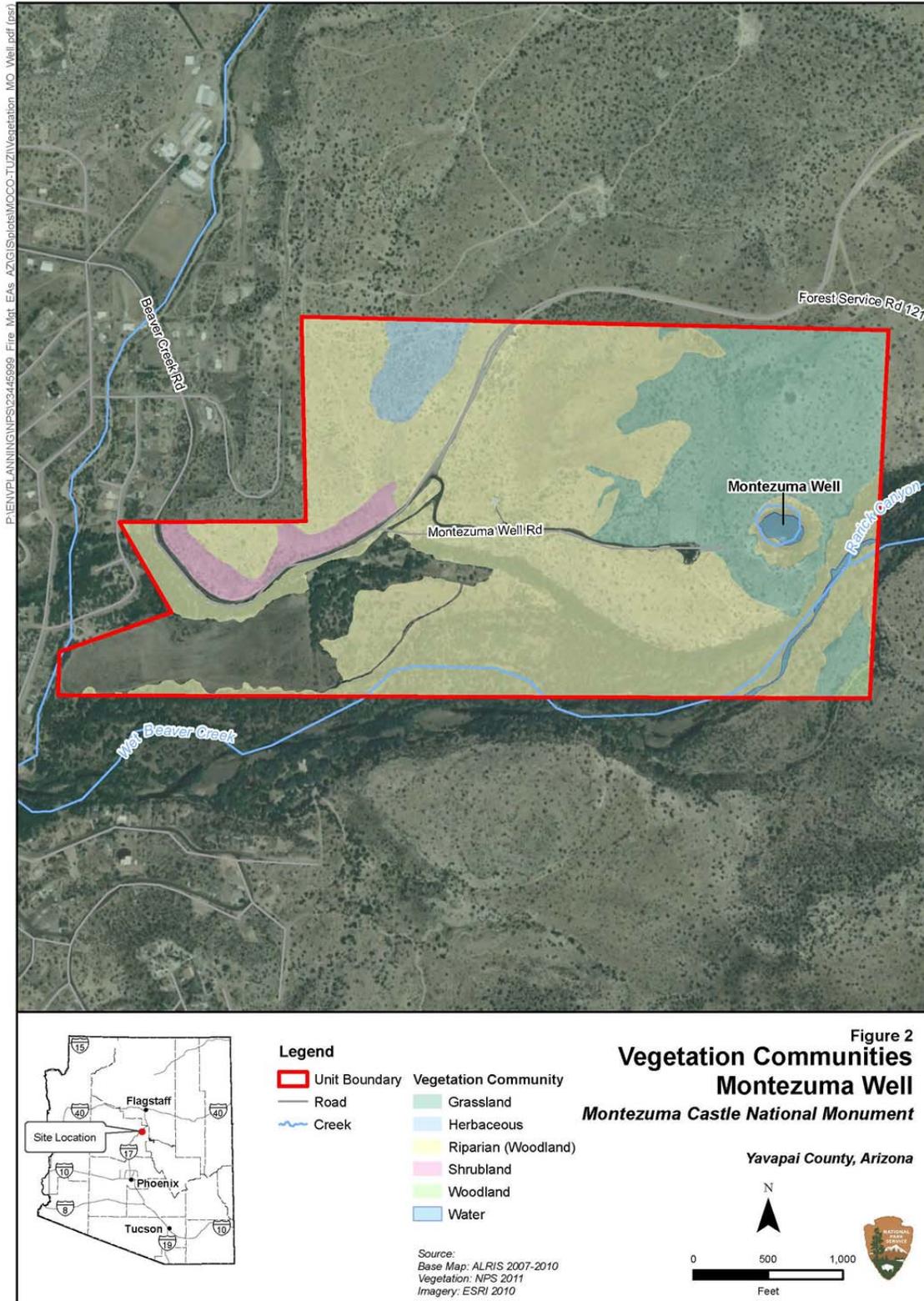
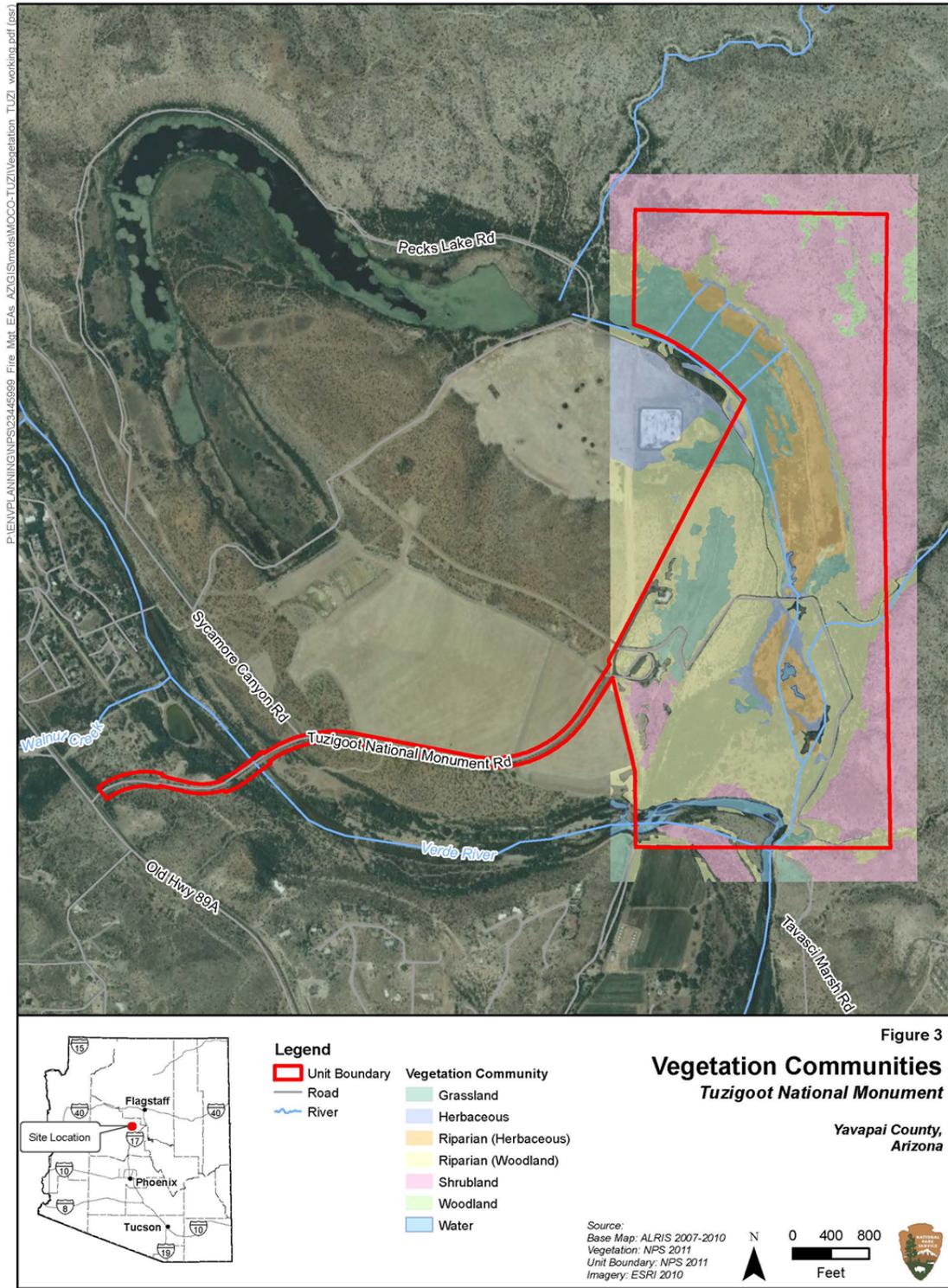


Figure 3. Vegetation Communities of the Tuzigoot Unit



REGULATIONS AND POLICIES

According to the National Park Service *Management Policies 2006* (USDI NPS 2006), national park system units are to maintain the components and processes of naturally evolving ecosystems, which include the natural abundance, diversity, and ecological integrity of plants. In addition, Director's Order #12 – *Conservation Planning, Environmental Impact Analysis, and Decision-making*, and Director's Order #77-7 – *Integrated Pest Management* require that all national park system units use integrated pest management to address invasive plant and other pest issues.

Table 5 describes impact intensity thresholds for vegetation.

Table 5. Vegetation Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Vegetation	Vegetation would not be affected; effects limited to small areas.	Effects would be local on one or more species or populations. Response to fire and/or other treatments would be within the range of fire effects. Any adverse effects can be effectively mitigated.	A large segment of one or more species populations show effects that are of importance, but relatively local. Response to fire and/or other treatments would be within the expected range of fire effects. Mitigation could be extensive, but likely effective.	Considerable effects on populations over large areas. Impact is severe or of exceptional benefit to native species. Response to fire and/or other treatments would be outside the range of expected fire effects. Extensive mitigation required offsetting adverse effects to native species, but success not assured.	Short-term refers to a period of 1-3 years. Long-term refers to a period longer than 3 years.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. Vegetation would grow increasingly dense and encroach on structures. Impacts would be site-specific, long-term, minor, and adverse.

Unplanned Events: The direct impacts of wildfire could include the removal and loss of vegetation. Depending on the timing, wildfire could shift species composition; although different vegetation communities would experience varying impacts. The degree of shift would in most cases be minor. The absence of mechanical fuel reductions could lead to an increase or buildup of fuels which could lead to more wildfires in the long-term and potentially result in the loss of native grass and shrub species.

Wildfire fire-fighting activities such as the construction of firelines or the use of vehicles or other heavy equipment could result in soil disturbance and trampling or loss of vegetation locally. This could make these disturbed areas more susceptible to noxious weed establishment. Noxious weeds could continue to increase in number and outcompete the favorable native species. However, rehabilitation efforts and monitoring for noxious weeds would mitigate these concerns. Impacts on vegetation from wildfire and fire-fighting activities would be local, long-term, minor, and adverse.

Foot and/or vehicle traffic to access the fire could trample individual plants. Increased disturbance from burned areas may lead to an increase in invasive plants. Some mortality in individuals could occur. A fire could potentially adversely affect a large swath of vegetation such as mesquite bosque, or riparian woodland.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments could result in the short-term loss or damage of vegetation. Restoring Tavasci Marsh and opening up some native vegetation stands would have long-term minor beneficial impacts on vegetation from the increase in and health of native plant communities and the decrease in establishment of invasive species.

Conclusion

Direct minor adverse impacts with the loss or damage of vegetation and the potential shift in species composition after a fire would occur under the no-action alternative. Wildfire fire-fighting activities would result in trampling or loss of vegetation locally. The buildup of hazardous fuels could result in a decline in species diversity and wildfires could increase damage to vegetation. Overall, impacts on vegetation would be local, long-term, minor, and adverse.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to vegetation would be local, minor, long-term and both adverse (to those plants removed) and beneficial (to remaining plants). Disturbance may occur as crews thin in woody vegetation types, conduct burns, and apply herbicides near buildings and other infrastructure.

Mechanical and/or manual hazardous fuel reduction activities would be implemented to restore areas to protect human life and property and prevent damage to cultural and natural resources and facilities, and to reduce future wildfires. Mechanical and/or manual hazardous fuel reduction activities would include mechanical and chemical treatments and prescribed fire. Mechanical and/or manual hazardous fuel reduction activities such as slashing and the removal of dead shrubs, creating fuel breaks, pile burning, and prescribed fire could initially result in minor short-term surface disturbance and loss or damage to vegetation locally. In the long-term, mechanical and/or manual hazardous fuel reduction treatments would reduce fuel loads and could help protect existing vegetation from the threat of future wildfires.

Unplanned Events: The primary strategy on small fires would be direct attack with hand tools or hose lays. Fires would be suppressed using preexisting natural and artificial barriers. Fires beyond the capacity of hand tools would be managed using engines where road access is available and may require the use of other heavy equipment. Off road use of heavy equipment would require approval by the superintendent and accompaniment by a designated resource advisor. The use of hand tools and heavy machinery could result in surface disturbance and damage or loss of vegetation locally. However, minimum impact management would reduce the degree and extent of surface disturbance and impacts on vegetation.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments could result in the short-term loss or damage of vegetation. Restoring Tavasci Marsh and opening up some native vegetation stands would have long-term minor beneficial impacts on vegetation from the increase in and health of native plant communities and the decrease in establishment of invasive species.

Conclusion

Site-specific minor short-term adverse impacts would result from surface disturbance and damage to vegetation as a result of implementing hazardous fuels treatments. However, implementing these treatments would reduce fuel loads and the threat of future fires and improve species diversity in the long-term.

SPECIAL STATUS SPECIES

AFFECTED ENVIRONMENT

This section addresses species that are listed, or are a candidate for listing, on the U.S. Fish and Wildlife Service Endangered Species List or are afforded protection by the Arizona Game and Fish Department. According to the U.S. Fish and Wildlife Service and monument staff (personal communication, Sharon Kim) several special-status species could potentially occur in the national park system units in this part of Yavapai County, Arizona, as shown in Table 6 and described below.

Table 6. Federally Listed and Candidate Species of Montezuma Castle/Tuzigoot National Monuments

Species	Federal Listed Status	Critical Habitat	TUZI	MOCA
Razorback Sucker (<i>Xyrauchen texanus</i>)	Endangered*	X-TUZI	X	X
Gila Chub (<i>Gila intermedia</i>)	Endangered			X
Loach Minnow (<i>Tiaroga cobitis</i>)	Threatened	X-MOCA		
Spikedace (<i>Meda fulgida</i>)	Threatened	X-MOCA/ TUZI		
Colorado Pikeminnow (<i>Ptychocheilus lucius</i>)	Endangered*		X	
Roundtail Chub (<i>Gila robusta</i>)	Candidate		X	X
Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>)	Endangered	X-Proposed for TUZI	X	X
Yuma Clapper Rail (<i>Rallus longirostris yumanensis</i>)	Endangered		X	
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	Candidate		X	X
Northern Mexican Gartersnake (<i>Thamnophis eques megalops</i>)	Candidate		X	
Page Springsnail (<i>Pyrgulopsis morrisoni</i>)	Candidate		X	

*Experimental nonessential population in the Verde River.

Razorback sucker (*Xyrauchen texanus*)

The razorback sucker is found in backwaters, flooded bottomlands, pools, side channels, and other slower moving habitats under 6,000 feet elevation. Historically it was found in areas near strong currents, and the Verde River is critical habitat for the sucker. The Arizona Game and Fish Department has stocked experimental populations in the Verde River.

Gila chub (*Gila intermedia*)

Gila chub commonly inhabit pools in smaller streams, cienegas, and artificial impoundments ranging in elevation from 2,000 to 3,500 feet. Common riparian plants associated with these populations include willow, tamarisk, cottonwoods, seep-willow, and ash species. Gila chub prefer quiet deeper waters, especially pools, or remaining near cover including terrestrial vegetation, boulders, and fallen logs. The Gila chub has critical habitat designated on Wet Beaver Creek immediately upstream from Montezuma Well but has the potential to occur in Montezuma Castle National Monument.

Loach minnow (*Tiaroga cobitis*)

The Loach minnow is a bottom dweller of small to large perennial creeks and rivers, typically in shallow turbulent riffles with cobble substrate, swift currents, and filamentous algae and are found below 8,000 feet elevation. Recurrent flooding is instrumental in maintenance of quality habitat. Present populations are geographically isolated and inhabit the upstream ends of their historical range.

Spikedace (*Meda fulgida*)

The spikedace can be found in moderate to large perennial streams, where it inhabits moderate to fast velocity waters over gravel and rubble substrates. Recurrent flooding helps the spikedace maintain its competitive edge over invading exotic species. Typically occupied streams are found under 6,000 feet in elevation. Populations are believed to be present in the Verde River.

Colorado pikeminnow (*Ptychocheilus lucius*)

Colorado pikeminnows can be found in rivers with high silt content, warm water, turbulence, and variable flow by season and under 4,000 feet in elevation. Adults are migratory and inhabit pools and eddies just outside of the main current, while young are found in backwater areas. Experimental nonessential populations have been reintroduced into the Verde and Salt rivers in Yavapai and Gila counties, Arizona.

Southwestern willow flycatcher (*Empidonax traillii extimus*)

The southwestern willow flycatcher occurs in dense riparian habitats along streams, rivers and other wetlands where cottonwood, willow, boxelder, tamarisk, Russian olive, buttonbush and arrowweed are present. Habitat occurs below 8500 feet. The riparian corridor of Beaver Creek within Montezuma Castle National Monument is not designated critical habitat; however, flycatchers are known to nest south of the monument on the Verde River. The riparian corridor may be used for migration and feeding. On August 12, 2011, the U.S. Fish and Wildlife Service designated reaches of the Verde River as critical habitat for the southwestern willow flycatcher, including the Verde River within Tuzigoot National Monument. On August 12, 2011, the U.S. Fish and Wildlife Service designated reaches of the Verde River as critical habitat for the southwestern willow flycatcher, including the Verde River within Tuzigoot National Monument.

Yellow-billed Cuckoo (*Coccyzus americanus*)

Habitat for the yellow billed-cuckoo in the southwestern United States is limited to narrow, and often widely separated, riparian cottonwood-willow galleries (salt cedar is also used by the cuckoo). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat. The species is usually found at elevations less than 6,600 feet. The loss, degradation, and fragmentation of riparian habitat have been identified as the primary factors causing yellow-billed cuckoo declines in the western United States (AGFD 2011).

Northern Mexican Gartersnake (*Thamnophis eques megalops*)

The Northern Mexican Gartersnake are most abundant in densely vegetated habitat surrounding cienegas, cienega-streams, and stock tanks and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat. They occasionally are found in desert and lower oak woodland habitats as well. The species is found in Arizona at elevations

between 3,000 and 5,000 feet, but have been found at elevations up to 8,500 feet. Threats to the species population and habitat are predation by introduced bullfrogs and predatory fishes, urbanization and lowered water tables, and habitat destruction, including that due to overgrazing (AGFD 2011).

Page Springsnail (*Pyrgulopsis morrisoni*)

Page springsnails are mostly found on firm substrates such as rocks, vegetation, floating algal mats and submerged woody debris in springs and seeps with slow to moderate water flow at elevations between 3,300 and 3,600 feet. The population of springsnails seems to decrease with increasing distance from the water source. Threats to the species are in response to their restricted geographic distribution with associated potential for extinction due to chance events; loss of habitat due to water development activities, including drawdowns and (at fish hatchery) water chlorination (AGFD 2011).

Yuma Clapper Rail

A marsh bird around the size of a chicken, the Yuma Clapper Rail is gray-brown above and buffy-cinnamon below. It has brownish-gray cheeks and flanks barred with black and white with a long orange, slightly down-curved bill. In Arizona it occurs in Gila, Pinal, Yuma, La Paz, Maricopa, and Mohave counties. In the monuments, it occurs along the Verde River.

Roundtail Chub

The roundtail chub is a member of the minnow family Cyprinidae. Roundtail chub are streamlined, similar to trout in appearance, and characterized by a robust body and tail, are olive gray in color, with silvery sides and a white belly. Roundtail chub occur in cool to warm water over a wide range of elevations in rivers and streams throughout the Colorado River basin, often occupying open areas of the deepest pools and eddies of mid-sized to larger streams. Roundtail chubs are often associated with areas of cover in the form of boulders, overhanging cliffs, undercut banks, or vegetation. The species is common to rare in the mainstem Colorado River and its larger tributaries in the upper Colorado River basin in Wyoming, Utah and Colorado; and is common to rare in the lower Colorado River basin in approximately 31 localities in tributaries of the Little Colorado and Bill Williams rivers, and in the mainstem and tributaries of the Gila, Salt, and Verde rivers.

Arizona State Species of Concern

In addition to the federal species above, the Arizona Game and Fish Department Species of Concern in the region, as presented in the Arizona Heritage Data Management System (AGFD 2011), are presented in Table 7. All of the species listed in Table 7 have the potential of occurring in Montezuma Castle and Tuzigoot National Monuments.

Table 7. State of Arizona Species of Concern of Montezuma Castle/Tuzigoot National Monuments

Species	State Listed Status
Snowy egret (<i>Egretta thula</i>)	Species of Concern
Osprey (<i>Pandion haliaetus</i>)	Species of Concern
Northern goshawk (<i>Accipiter gentilis</i>)	Species of Concern
Common black-hawk (<i>Buteogallus anthracinus</i>)	Species of Concern
Ferruginous hawk (<i>Buteo regalis</i>)	Species of Concern
Peregrine falcon (<i>Falco peregrines</i>)	Species of Concern
Belted kingfisher (<i>Ceryle alcyon</i>)	Species of Concern
Spotted bat (<i>Euderma maculatum</i>)	Species of Concern
Western red bat (<i>Lasiurus blossevillii</i>)	Species of Concern
Southwestern river otter (<i>Lontra canadensis</i>)	Species of Concern
Velvet mesquite (<i>Prosopis velutina</i>)	Species of Concern

REGULATIONS AND POLICIES

According to the National Park Service *Management Policies 2006* (USDI NPS 2006), park system units are to maintain the components and processes of naturally evolving ecosystems, which include the natural abundance, diversity, and ecological integrity of animals. Listed species are regulated by the federal government under the Endangered Species Act of 1973. The Endangered Species Act requires all federal agencies to promote the conservation of listed threatened or endangered species and their critical habitats. Table 8 describes impact intensity thresholds for special status species.

Table 8. Special Status Species Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Special Status Species	Effects to special status species would not be affected, or effects would not be measurable. Any effects to abundance, distribution, and reproduction would be slight. No mitigation would be required.	Effects to special status species effects would be measurable. There would be effects to abundance, distribution, and reproduction and to available habitat. Mitigation measures would be required and would be sufficient to offset effects.	Effects to special status species effects would be readily apparent. There would be noticeable effects to abundance, distribution, and reproduction and to available habitat. Mitigation measures would be required and could be sufficient to offset effects.	Effects to special status species effects would be readily apparent and would result in the direct or indirect loss of occupied breeding sites, take of individuals, or suitable habitat. Mitigation measures would be required but may not be sufficient to offset effects.	Short-term refers to hours or days, i.e., the duration of the fire incident. Long-term is substantially beyond the incident or action.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. Impacts to special status species would be site-specific, negligible to minor, long-term, and adverse from alteration of habitat.

Unplanned Events: There could be a loss of habitat due to a fire, increased disturbance from firefighting activities, mortality due to fire (especially during nesting or breeding season). For fish, sediment inputs could cause some mortality events, although many native fish are adapted to some sediment loading. Impacts would be local, long-term, minor, and adverse.

Cumulative Impacts

Restoration of Tavasci Marsh and implementing integrated pest management treatments would result in a local long-term minor beneficial cumulative impact on special status species.

Conclusion

Impacts to special status species for planned events would be site-specific, negligible to minor, long-term, and adverse from alteration of habitat. Impacts would be local, long-term, minor, and adverse for unplanned events.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to special status species would be local, negligible to minor, short-term, and adverse. Disturbance may occur as crews thin in woody vegetation types, conduct burns, and apply herbicides near buildings and other infrastructure. Planned fire management activities that decrease fuel loading in wildlife habitat would decrease the risk of unplanned fires, leading to a long-term beneficial effect.

Unplanned Events: There could be a loss of habitat due to fire, increased disturbance from fire-fighting activities, mortality due to fire (especially during nesting or breeding season). For fish, sediment inputs could cause some mortality events, although many native fish are adapted to some sediment loading. Impacts would be local, long-term, minor, and adverse.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in a local long-term minor beneficial cumulative impact on special status species.

Conclusion

For planned fire management events effects to special status species would be local, negligible to minor, short-term, and adverse. Planned events would be beneficial long-term for special status due to the decreased risk from catastrophic fires due to the planned fire management activities that decrease fuel loading in their habitats. For unplanned events, impacts would be local, long-term, minor, and adverse.

WILDLIFE

AFFECTED ENVIRONMENT

The riparian and upland environments of the three national park system units support a wide variety of wildlife including the following:

- Approximately 50 mammal species such as the desert cottontail (*Sylvilagus audubonii*), ground squirrels (*Sciuridae* family), elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), grey fox (*Urocyon cinereoargenteus*), bobcat (*Felis rufus*), and coyote (*Canis latrans*)
- 211 species of birds found at Montezuma Castle including Montezuma Well (Schmidt et al. 2006), and 248 species of birds found at Tuzigoot National Monument (Schmidt et al. 2005). Breeding bird species include the black-throated sparrow (*Amphispiza bilineata*), Bewick's wren (*Thryomanes bewickii*), and Gila woodpecker (*Melanerpes uropygialis*).
- Reptiles such as anurans, turtles, spiny lizards, collared lizards, and diamondback rattlesnakes
- Native fish include desert sucker, roundtail chub, and Sonora sucker
- Endemic water species in Montezuma Well, such as diatoms, springtails, water scorpions, amphipods, and leeches (USDI NPS 2010).

REGULATIONS AND POLICIES

According to the National Park Service *Management Policies 2006* (USDI NPS 2006), park system units are to maintain the components and processes of naturally evolving ecosystems, which include the natural abundance, diversity, and ecological integrity of animals. Table 9 describes impact intensity thresholds for wildlife.

Table 9. Wildlife Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Wildlife	Slight changes in wildlife populations and/or habitats would not be of measureable to perceptible consequence.	Small local changes in populations or habitats would be of little consequence. Response to fire and/or other treatments would be within the range of normal fire effects. Any adverse effects can be effectively mitigated.	Changes in populations or habitats would be of consequence, but relatively local. Response to fire and/or treatments would be within the range of normal fire effects. Mitigation could be expensive but likely successful.	Considerable effects, possibly permanent, to native populations or habitats. Response to fire and/or other treatments would be outside the normal range of fire effects. Mitigation may be required and extensive, and success not assured.	Short-term refers to a period of 1-3 years. Long-term refers to a period longer than 3 years.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. Impacts to wildlife would be site-specific, negligible to minor, long-term, and adverse from alteration of habitat.

Unplanned Events: The impacts of wildfire on wildlife vary depending on fire size and timing. Short-term adverse direct impacts from wildfire on wildlife species could include species mortality, habitat destruction, and habitat displacement from fire heat and the loss of vegetation (USGS 2008). Loss of vegetation could impact forage availability. Fire management activities have the potential to directly and indirectly affect wildlife in the monuments. Species that could be affected include ground nesting birds such as quail, reptiles such as the Gila monster, and rodents. Effects would be dependent upon treatment timing, extent, location, elevation, duration, and fuel of fires, as well as the vegetation community and soil type of treated area (Severson and Rinne 1990). Any effects to vegetation of wildlife habitat have the potential to indirectly affect the species.

Wildfire fire-fighting activities such as constructing firelines and the use of heavy equipment could indirectly disturb existing vegetation and result in short-term local impacts on wildlife habitat and displacement of individual wildlife species. The buildup of hazardous fuels over time could increase the potential for more wildfires which could increase damage to vegetation and indirectly impact wildlife and wildlife habitat. Impacts from wildfire and wildfire fire-fighting activities on local wildlife and wildlife habitat would be local, short-term, minor, and adverse.

There could be a loss of habitat due to fire, increased disturbance from fire-fighting activities, mortality due to fire (especially during nesting or breeding season). For fish, sediment inputs could cause some mortality events; although many native fish are adapted to some sediment loading.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments could result in the loss or damage of vegetation and indirectly displace wildlife species and adversely impact habitat. Restoring Tavasci Marsh would have direct and minor beneficial impacts on wildlife and wildlife habitat from the increase in native plant communities and plant diversity and the decrease in establishment of invasive species. Restoration would improve waterfowl and marsh bird habitat.

Conclusion

Under the no-action alternative, current management would result in site-specific, minor, short-term, adverse impacts to wildlife from the direct effects of wildfire and wildfire fire-fighting activities on individual species and habitat. The buildup of hazardous fuels could result in fires and species displacement or mortality that would result in a local long-term minor adverse impact on wildlife.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to wildlife would be local, negligible to minor, short-term, and adverse. Disturbance may occur as crews thin in woody vegetation types, conduct burns, and apply herbicides near buildings and other infrastructure. Planned fire management activities that decrease fuel loading in wildlife habitat would decrease the risk of unplanned fires, leading to a long-term beneficial effect.

Unplanned Events: Fire management activities have the potential to directly and indirectly affect wildlife in the monuments. Species that could be affected include ground nesting birds such as quail; reptiles such as the Gila monster, and rodents. Effects would be dependent upon treatment timing, extent, location, elevation, duration, and fuel of fires, as well as the vegetation community and soil type of treated area (Severson and Rinne 1990). Any effects to vegetation of wildlife habitat have the potential to indirectly affect the species. The primary strategy on small fires would be direct attack with hand tools or hose lays. Fires beyond the capacity of hand tools would be managed using engines where road access is available and may require the use of other heavy equipment. Off road use of heavy equipment would require approval by the superintendent and accompaniment by a designated resource advisor. Direct effects from wildfire fire-fighting could include damaged vegetation (including forage resources) from the use of heavy equipment, potential noxious weed invasion, and an increase in areas of undesirable habitat. These effects could result in temporary species displacement. Effects to wildlife would be local, long-term, minor, and adverse.

Many species favor some level of succession after fire for food or breeding habitat. Browsers frequent resprouting shrub fields that follow a fire. Increased berry yields after fire favor birds. The effect of fire can encourage diversity, vigor and distribution in wildlife populations depending on the intensity of a fire.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments could result in the loss or damage of vegetation and indirectly displace wildlife species. However, minor and direct beneficial impacts on wildlife and wildlife habitat would result from the increase in

native plant communities and plant diversity and the decrease in the establishment of invasive species.

Conclusion

The preferred alternative would generally result in a local minor long-term beneficial impact on wildlife. Implementing mechanical and/or manual hazardous fuel reduction treatments would initially displace wildlife species in the short-term but increase plant diversity and improve habitat with indirect local long-term minor beneficial benefits to wildlife.

AIR QUALITY

Both monuments are designated as Class II air quality areas under the Clean Air Act, which regulates sulfur dioxide and particulate matter (smoke and dust). Most elements of each monument’s environment, such as visibility, vegetation, water quality, wildlife, and cultural objects, are sensitive to air pollution (USDI NPS 2010).

REGULATIONS AND POLICIES

The Clean Air Act of 1963 (42 United States Code 7401 *et seq.*) provides special protection for air quality in national park system units. Park system units must meet all federal, state, and local air quality standards, and protect values such as visibility, plants, animals, water, cultural resources, and visitor health from pollution impacts (USDI NPS 2006). Table 10 describes impact intensity thresholds for air quality.

Table 10. Air Quality Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Air Quality	Impact barely detectable and not measurable; if detected, would not be of any perceptible consequence, or would be transient.	Impact measurable but local and of little consequence. No mitigation measures are necessary.	Changes have consequences to sensitive receptors, but effects remain local. Mitigation measures necessary and likely effective.	Changes have substantial consequences to sensitive receptors. Mitigation measures are necessary but success of measures not assured.	Short-term refers to hours or days, i.e., the duration of the fire incident. Long-term is substantially beyond the incident or action.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. There would be no impacts to air quality.

Unplanned Events: Direct impacts to air quality would include the release of particulates and smoke during wildfire events, and the slight increase in fugitive dust from wildfire fire-fighting activities. These impacts would generally be short-term, adverse, and of minor intensity; assuming that wildfires are extinguished immediately. If hazardous fuel loads continue to build on the monuments, the risk of impacts from wildfire events increases over time which would increase impacts to air quality and visibility. Indirect, local, short-term, minor, adverse effects from emissions would include reduced visibility along roads, the temporary reduction of scenic values, and possible adverse health effects to monuments residents and visitors.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in local, short-term, negligible, adverse cumulative impacts on air quality.

Conclusion

Under the no-action alternative, adverse impacts to air quality and scenic values would be local, short-term, minor, and adverse as a result of wildfire and fire fire-fighting activities, especially if fires occurred during the summer season. The buildup of hazardous fuels would increase the risk of wildfire events over time which would result in adverse impacts on air quality and visibility.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to air quality would be local, minor, short-term, and adverse. Smoke would result as crews conduct burns.

Prescribed fire treatments could result in a temporary decrease in visibility and a minor increase in emissions. However, prescribed fires are smaller and are planned when weather conditions and fuel characteristics are optimal in order to disperse air pollutants. Prescribed fire could decrease the potential for the occurrence of wildfires which would enable the monuments to manage wildfire and associated emissions more effectively. The use of prescribed fire would result in temporary and minor short-term impacts on air quality but would not exceed National Ambient Air Quality Standards.

Hazardous fuels treatments could cause minor short-term increases in particulate matter and fugitive dust from vehicles and equipment during and immediately after application of treatments. However, these treatments would undergo environmental review to ensure compliance with air quality standards and to minimize impacts on sensitive areas. Using hazardous fuels treatments could benefit air quality by reducing the potential for fires in the future.

Unplanned Events: Direct impacts to air quality would include the release of particulates and smoke during wildfire events, and the slight increase in fugitive dust from wildfire fire-fighting activities. These impacts would generally be short-term, adverse, and of minor intensity; assuming that wildfires are extinguished immediately. If hazardous fuel loads are reduced in the monuments, the risk of impacts from wildfire events would decrease over time which would lessen impacts to air quality. Indirect effects from an unplanned event would include reduced visibility along roads, the temporary reduction of scenic values, and possible adverse health effects to the monuments' residents and visitors.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in local, short-term, negligible, adverse cumulative impacts on air quality.

Conclusion

Under the preferred alternative, minor adverse impacts on air quality locally would be short-term, minor, and adverse. Pile burning would cause short-term, direct local minor impacts on air quality which would be offset in the long-term by the reduced risk of wildfires in the future.

SOUNDSCAPES

AFFECTED ENVIRONMENT

A natural soundscape is the total of all natural sounds (excluding human-caused sounds) along with the physical capacity for transmitting natural sounds. Natural sounds are within and beyond the range of human perception and can be transmitted through air, water, or solid materials. Visitor experience and reverence for cultural resources are enhanced by the absence of human-caused noise. Lack of noise is also important for wildlife communication, courtship and mating, and effective use of habitat. Human sounds are generally confined to the developed areas of the monuments (USDI NPS 2003, 2010).

REGULATIONS AND POLICIES

According to *Management Policies 2006* and Director's Order #47, *Sound Preservation and Noise Management*, the National Park Service is to preserve natural soundscapes and not allow visitor uses that would unreasonably interfere with the natural soundscapes maintained in natural, historic, or commemorative locations. Table 11 describes impact intensity thresholds for soundscapes.

Table 11. Soundscapes Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Soundscapes	Impact barely detectable and not measurable; if detected, would not be of any perceptible consequence, or would be transient.	Impact measurable but local and of little consequence. No mitigation measures are necessary.	Changes have consequences to sensitive receptors, but effects remain local. Mitigation measures necessary and likely effective.	Changes have substantial consequences to sensitive receptors. Mitigation measures are necessary but success of measures not assured.	Short-term refers to hours or days, i.e., the duration of the fire incident. Long-term is substantially beyond the incident or action.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. There would be no impact to the monuments' soundscapes.

Unplanned Events: Fire-fighting activities could affect the monuments' soundscapes as the various large vehicles, helicopters, etc. used to fight an unplanned fire do emit noise. There would be a site-specific, short-term, minor, adverse impact on soundscapes.

Cumulative Impacts

Unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in local short-term minor adverse impacts on the monuments' soundscapes if these projects involve the use of motorized equipment or machinery.

Conclusion

Under the no-action alternative, impacts on the monuments' soundscapes would be local, short-term, minor, and adverse from mechanized wildfire fire-fighting activities.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to soundscapes would be local, negligible to minor, short-term, and adverse. Vehicular use as crews conduct thinning activities or burns or apply herbicides may result in some disturbance of the monuments' soundscapes. The monuments' soundscapes could be impacted by noise associated with the use of heavy equipment and machinery or vehicle use used in mechanical treatments or to suppress fires. Noise would be temporary and result in minor short-term impacts on the monuments' soundscapes.

Unplanned Events: Fire-fighting activities could affect the monuments' soundscapes as the various large vehicles, helicopters, etc. used to fight an unplanned fire emit noise. Impacts would be local, short-term, minor, and adverse.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in local short-term negligible adverse cumulative impacts on the monuments' soundscapes if these projects involve the use of motorized equipment or machinery.

Conclusion

Under the preferred alternative impacts on the monuments' soundscapes would be local, short-term, minor, and adverse from mechanized fuels reduction and/or wildfire fire-fighting activities.

HYDROLOGY AND WATER QUALITY

AFFECTED ENVIRONMENT

Montezuma Castle and Montezuma Well protect riparian areas and water resources along Beaver and Wet Beaver Creeks respectively. Tuzigoot National Monument includes the Verde River and Tavasci Marsh. Surface and groundwater resources create and sustain aquatic and riparian ecosystems in the monuments and supported prehistoric and historic land occupation and uses. These highly productive ecosystems have been greatly reduced in areal extent and complexity in the Southwest by groundwater overdrafts, overgrazing, streambed channelization, road construction, surface water flow alterations, impoundments, mining, and developments. These uses often conflict with protection and preservation of natural and cultural resources (USDI NPS 2010).

The Verde River, Arizona’s only Wild and Scenic River, flows through the Prescott National Forest, the Coconino National Forest, and through Tuzigoot National Monument. (The designated Wild and Scenic segment is downstream of the monuments.)

Beaver Creek, a tributary to the Verde River, flows through Montezuma Castle National Monument. Through part of the monument, it is a perennial stream. Downstream from the picnic area in the monument, the creek has intermittent surface flow, especially during the dryer early summer months. The creek periodically floods, particularly following winter and monsoon rains. Its flow has been modified by upstream withdrawals, and there are now periods when the creek is essentially dry except for remnant deep pools. (K. Davis, NPS Superintendent and D. Casper, NPS Ecologist, pers. comm.)

Wet Beaver Creek, which flows through Montezuma Well, is a perennial stream throughout the monument. Its flow regime has also been modified by upstream withdrawals, but Wet Beaver Creek does not have a pronounced dry period (USDI NPS 2010).

Montezuma Well is a large travertine pool which has an influx of 1,100 gallons of warm water/minute from underground springs. The water leaves the Well through the Swallet and emerges at the Outlet, which is the start of an extensive prehistoric canal system.

Tavasci Marsh in Tuzigoot National Monument is the largest wetland within the monuments. Several permanent springs along the northeast edge of the marsh, including Shea Spring, are the natural water sources. The marsh also receives water from Peck’s Lake which is located up gradient from the Tavasci Marsh. Peck’s Lake is filled with natural spring water and water from Verde River. The river water is funneled from the river through Brewers tunnel into Peck’s Lake, which contributes most of the lake volume. Peck’s Lake discharges water into the marsh through a culvert that flows under an old road and into an outflow channel called the Tavasci Ditch (USDI NPS 2010).

REGULATIONS AND POLICIES

National Park Service *Management Policies 2006* (USDI NPS 2006), Director’s Order #77-1 – Wetland Protection, and Director’s Order #77-2 – Floodplain Management provide some guidance on management of hydrologic systems. Table 12 describes impact intensity thresholds for hydrology/water quality.

Table 12. Hydrology/Water Quality Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Hydrology/ Water Quality	There would be no observable or measurable impacts to hydrology or water quality. Impacts would be well within natural fluctuations.	Impacts would be detectable and/or localized, but they would not be expected to be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be simple and successful.	The impact to hydrology and water quality would be readily apparent and result in a change over a relatively wide area. Mitigation measures would be necessary to offset adverse effects and likely be successful.	The impact to hydrology and water quality would be readily apparent and substantially change over a wide area. Mitigation measures to offset adverse effects would be necessary, extensive, and their success could not be guaranteed.	Short-term—would occur within days and several weeks following duration of the fire incident. Long-term—would occur months to years following duration of the fire incident.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. There would be no immediate impacts to hydrology/water quality but there could be site-specific to local, minor, long-term, adverse impacts from a wildfire.

Unplanned Events: Disturbance of soils as crews fight an unplanned fire and subsequent ash runoff may result in slight degradation of the monuments' surface water. A burn could lead to erosion and sediment input into creeks resulting in a local, short- to long-term, minor, adverse impact on water quality with more indirect impact downstream. Small burns could still lead to run-off and some sediment input into surface water. The buildup of hazardous fuels could result in increases for fuel loading during unplanned wildfires and increase sediment load into streams.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in long-term, negligible to minor adverse cumulative impacts on water quality. Restoration of the marsh would offset some of the adverse impacts of the other project activities.

Conclusion

There would be no immediate impacts from planned events to hydrology/water quality but there could be site-specific to local, minor, long-term, adverse impacts from a wildfire. Disturbance of soils as crews fight an unplanned fire and subsequent ash runoff may result in slight degradation of the monuments' surface water. A burn could lead to erosion and sediment input into creeks resulting in a local, short- to long-term, minor, adverse impact on water quality with more indirect impact downstream.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to hydrology and water quality would be local, minor, short-term, and adverse. Disturbance of soils as crews conduct thinning activities, ash from prescribed burns, or runoff from herbicide treatments may result in slight degradation of the monuments' surface water.

Unplanned Events: Disturbance of soils as crews fight an unplanned fire and subsequent ash runoff may result in slight degradation of the monuments' surface water. A burn could lead to erosion and sediment input into creeks resulting in a local, short- to long-term, minor, adverse impact on water quality with more indirect impact downstream. Small burns could still lead to run-off and some sediment input into surface water. The buildup of hazardous fuels could result in increases for fuel loading during unplanned wildfires and increase sediment load into streams.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in long-term, negligible to minor adverse cumulative impacts on water quality. Restoration of the marsh would offset some of the adverse impacts of the other project activities.

Conclusion

Disturbance of soils as crews conduct thinning activities, ash from prescribed burns, or runoff from herbicide treatments may result in slight degradation of the monuments' surface water. A burn could lead to erosion and sediment input into creeks resulting in a local, short- to long-term, minor, adverse impact on water quality with more indirect impact downstream. The buildup of hazardous fuels could result in increases for fuel loading during unplanned wildfires and increase sediment load into streams. Implementing fire management treatments would reduce fuel loads and reduce the potential sediment load from unplanned wildland fires into the streams.

VISITOR USE AND EXPERIENCE

AFFECTED ENVIRONMENT

Visitation at Montezuma Castle for the past six years has been relatively stable at more than 600,000 visitors annually; approximately 420,000 visit the Castle unit and 180,000 visit the Well unit. Despite its small size, Montezuma Castle National Monument is among the most heavily visited national park system units in the Southwest, is one of the most visited prehistoric southwestern pueblos, and is the best-known Sinaguan site. The visit to Montezuma Well can be a side trip for visitors to the Castle and other public lands in the region. However, the shaded, scenic picnic area at Montezuma Well attracts a relatively high amount of return, local visitation. Tuzigoot visitation has stabilized at about 115, 000 visitors annually. The distance of this national monument from major, regional travel routes results in visitation numbers that are lower than those of Montezuma Castle National Monument. Recreation activities available to visitors at the monuments include hiking, sightseeing, wildlife watching, walking, interpretation, and picnicking. At both monuments guided ranger programs are available in addition to contact with roving interpreters (USDI NPS 2010).

The primary risks to visitor safety are participating in outdoor visitor activities in a desert environment. Visitors may also perceive risk to personal safety through contact with other visitors in a public setting. The safety risk associated with visiting the monuments is considered low (USDI NPS 2010).

REGULATIONS AND POLICIES

National Park Service *Management Policies 2006* (USDI NPS 2006), Director's Order #17 – Tourism, Director's Order #6 – Interpretation and Education, and Director's Order #50-C – Public Risk Management Program provide guidance on management of visitor use and experience and public health and safety. Table 13 describes impact intensity thresholds for visitor use and experience.

Table 13. Visitor Use and Experience Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Visitor Use and Experience	Park visitors would not likely be aware of the effects associated with the fire management activities.	Park visitors would likely be aware of the effects associated with fire management activities; however the changes in visitor use and experience would be slight and likely short term.	Park visitors would be aware of the effects associated with fire management activities. Changes in visitor use and experience would be readily apparent and likely long term.	Park visitors would be highly aware of the effects associated with fire management activities. Changes in visitor use and experience would be readily apparent and long term. The change in visitor use and experience proposed in the alternative would preclude future generations of some visitors from enjoying park resources and values.	Short-term—occurs during project activities and within one year of these activities. Long-term—occurs during project activities and after one year of these activities.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. There would be no impacts to visitor use and experience.

Unplanned Events: Visitor use could be limited during fire-fighting activities to ensure visitor and firefighter safety. Visitors would likely not be able to be in locations being used by emergency vehicles for access to a fire near the fire itself. Depending on the location of the fire, visitor centers and other visitor facilities could be closed during fire control activities to ensure public safety and allow for monument staff to commit to fighting the blaze. The increased fuel loading resulting from no planned fire fuels management activities over time could increase the potential for wildfires which could lengthen the time that visitors would be affected. Impacts would be local, short-term, minor, and adverse.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavaschi Marsh, and implementing integrated pest management treatments would result in short-term, negligible to minor adverse cumulative impacts on visitor use as a result of any closures.

Conclusion

There would be no impacts to visitor use and experience as a result of planned events. Impacts would be local, short-term, minor, and adverse during unplanned events.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to visitor use and experience would be local, minor, short-term, and adverse. As crews conduct thinning activities, prescribed burns, or apply herbicide

treatments these particular portions of the monuments would be closed to the public for short periods of time. Some planned activities could be done outside of visitor hours, as all of the monuments are day-use monuments only.

Unplanned Events: Visitor use could be limited during fire-fighting activities to ensure visitor and firefighter safety. Visitors would likely not be able to be in locations being used by emergency vehicles for access to a fire near the fire itself. Depending on the location of the fire, visitor centers and other visitor facilities could be closed during fire control activities to ensure public safety and allow for monument staff to commit to fighting the blaze. Impacts would be local, short-term, minor, and adverse.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavaschi Marsh, and implementing integrated pest management treatments would result in short-term, negligible to minor adverse cumulative impacts on visitor use as a result of any closures.

Conclusion

There would be local minor short-term adverse impacts to visitor use and experience as a result of planned events. Impacts would be local, short-term, minor, and adverse during unplanned events.

MONUMENT OPERATIONS

AFFECTED ENVIRONMENT

Montezuma Castle National Monument has a visitor center that includes exhibits and artifacts depicting the lifestyle, history, and culture of the Sinaguan Indians. The site also contains restrooms and a picnic area. A parking facility for approximately 65 cars and three oversized vehicles and recreational vehicles is near the visitor center. Additional infrastructure includes a water tank in the central portion of the monument and a sewage treatment facility on the south side of the monument. Several administrative buildings housing ranger operations are south of the parking facility.

Montezuma Well contains a picnic area, restrooms, and hiking trails. A visitor contact station is also provided at Montezuma Well, consisting of a small prefabricated concrete building. A parking facility near the visitor contact station accommodates approximately 10 cars. Two housing units and a maintenance building are located east of the picnic restrooms and Back Cabin.

Tuzigoot National Monument has a visitor center and museum with one of the finest collections of Sinaguan artifacts. This site also contains a nature trail and restrooms but no picnic facilities. Monument housing and administrative offices are located north of the visitor center. A parking facility accommodates approximately 40 cars and approximately six buses or recreational vehicles (USDI NPS 2010).

The units are managed collectively under a single administrative organization. Currently, the monuments employ 29.5 full time equivalent employees. Monument staff for all the divisions are distributed between the monument sites, but the higher visitation at Montezuma Castle dictates an increased ranger and maintenance presence there (USDI NPS 2010).

REGULATIONS AND POLICIES

National Park Service *Management Policies 2006* (USDI NPS 2006) and Director’s Order #80 – Real Property Asset Management provide some guidance on monument operations and management. Table 14 describes impact intensity thresholds for monument operations.

Table 14. Monument Operations Impact Intensity Thresholds

Impact Topic	Negligible	Minor	Moderate	Major	Duration of Impact
Monument Operations	A localized change in operations, barely perceptible or measurable. No measurable difference in operating costs from existing levels and no change in financial balance between revenue sources and operating costs. Park operations not affected or effect at or below lower levels of detection; no appreciable effect on park operations.	A slight and localized change in operations with few measurable consequences. Slight additions or reductions in operating costs from existing levels. Slight change in current staffing arrangements or operations required.	An apparent change with measurable consequences to in-park services. Requires additions or reductions in operating costs from existing levels. Changes required in park operations or result in a financial imbalance between available funding and annual operating costs.	A readily apparent change with measurable consequences in and outside the park. Substantial additions or reductions in operating costs from existing levels. Changes require result in a significant financial imbalance between available funding and annual operating costs..	Short-term— occurs during project activities and within one year of these activities. Long-term— occurs during project activities and within one year of these activities.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. There would be no impacts to monument operations.

Unplanned Events: Depending on the location of the fire, visitor centers and other visitor facilities could be closed during fire control activities to ensure public safety and allow for monument staff to commit to fighting the blaze. The increased fuel loading resulting from no planned fire fuels management activities over time could increase the potential for wildfires which could increase the effect on monument operations during unplanned fire events. Impacts would be local, short-term, minor, and adverse.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in short-term, negligible to minor adverse cumulative impacts on monument operations as a result of any closures.

Conclusion

There would be no impacts to monument operations as a result of planned events. Impacts to monument operations as a result of unplanned events would be local, short-term, minor, and adverse.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to monument operations would be local, minor, short-term, and adverse. Crews that would conduct thinning activities or prescribed burns are typically from Saguaro National Park. Closing particular portions of the monuments to the public for short periods of time would require signage and perhaps law enforcement.

Unplanned Events: Depending on the location of the fire, visitor centers and other visitor facilities could be closed during fire control activities to ensure public safety and allow for monument staff to commit to fighting the blaze. Impacts to monument operations as a result of unplanned events would be local, short-term, minor, and adverse.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in short-term, negligible to minor adverse cumulative impacts on monument operations as a result of any closures.

Conclusion

There would be local, minor, short-term, adverse impacts to monument operations as a result of planned events. Impacts to monument operations as a result of unplanned events would be local, short-term, minor, and adverse.

IMPACTS TO CULTURAL RESOURCES AND SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

In this environmental assessment/assessment of effect, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to archeological resources and the cultural landscape were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of either adverse effect or no adverse effect must also be made for affected National Register eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register (e.g., diminishing the integrity of the resource's

location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g., reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis sections under the preferred alternative. The Section 106 Summary is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

ARCHEOLOGICAL AND ETHNOGRAPHIC RESOURCES

AFFECTED ENVIRONMENT

The monuments were created to protect nonrenewable and irreplaceable cultural resources that include 70 archeological sites in Montezuma Castle National Monument and eight sites within the authorized boundaries of Tuzigoot National Monument as well as ethnographic resources such as Tavasci Marsh (USDI NPS 2010). All 78 archeological sites are eligible for the National Register of Historic Places based on the National Register Bulletin 36: Guidelines for Evaluation and Registering Archeological Properties as they are in the monuments' boundaries. Both Montezuma Castle (1988) and Tuzigoot (1986) have been 100% surveyed for archeological sites. Sites within the monument boundaries are primarily associated with the Southern Sinagua, but sites representing what may be Hohokam, Apache, Yavapai and early Euroamerican settlement also exist. Prehistoric sites consist of pithouse villages, lithic and ceramic scatters, surface pueblos, field houses, rockshelters and cliff dwellings as well as historic artifact scatters. Contemporary Native American groups have and continue to use areas within park boundaries to collect natural resources.

Montezuma Castle National Monument has a total of 16 sites on the List of Classified Structures (11 prehistoric sites, 5 historic) while Tuzigoot National Monument has a total of 6 (1 prehistoric, 5 historic).

REGULATIONS AND POLICIES

Section 106 of the National Historic Preservation Act (16 United States Code 470 *et seq.*), requires the consideration of impacts on historic properties that are listed, or eligible to be listed, in the National Register of Historic Places. Federal agencies are required to coordinate consultation with State Historic Preservation Officers regarding the potential effects to the properties.

According to the National Park Service *Management Policies 2006* (USDI NPS 2006), Director's Order #28A – *Archeology*, and the mission of the National Park Service, the national park system

units are charged with preserving archeological resources as elements of our national heritage for the benefit and enjoyment of present and future generations.

Current laws and policies require that the following conditions be achieved in the monument (Table 15):

Table 15. Archeology Desired Conditions

Desired Condition	Source
Archeological sites are identified and inventoried, and their significance is determined and documented. Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable. In those cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged.	National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; Archeological Resources Protection Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies

METHODOLOGY

Certain important research questions about human history can only be answered by the actual physical material of cultural resources. Archeological resources have the potential to answer, in whole or in part, such research questions. In order for an archeological resource to be eligible for the National Register of Historic Places it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the archeological resource must possess integrity of location, design, setting, materials, workmanship, feeling, association (National Register Bulletin, Guidelines for Evaluating and Registering Archeological Properties). For purposes of analyzing impacts to archeological resources either listed in or eligible to be listed in the National Register, the thresholds of change for intensity of an impact are defined below:

Negligible: Impact is at the lowest levels of detection – barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor: **Adverse:** disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is unaffected. For purposes of Section 106, the determination of effect would be no adverse effect.

Beneficial: maintenance preservation of a site(s). For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate: **Adverse:** disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be adverse effect.

Beneficial: stabilization of the site(s). For purposes of Section 106, the determination of effect would be no adverse effect.

Major: **Adverse:** disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be adverse effect.

Beneficial: active intervention to preserve the site. For purposes of Section 106, the determination of effect would be no adverse effect.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. Impacts to archeological and ethnographic resources would be site-specific, minor, long-term, and adverse if properties were not proactively protected from fires.

Unplanned Events: The no-action alternative would have the potential to adversely affect archeological and ethnographic resources. Fire effects on archeological and ethnographic resources vary depending on temperature and duration of exposure to heat. Archeological and ethnographic resources that are scattered throughout the monuments would be at risk from wildfires. Potential impacts on archeological and ethnographic resources from wildfire could include cracking, charring, sooting, combustive residue, fracture, scorching, and melting (Sturtevant 2011). The buildup of hazardous fuels could increase the potential for fires and may present an even greater threat to archeological and ethnographic resources than the actual fire. Impacts on archeological and ethnographic resources could be direct, adverse, and long-term.

During fire-fighting activities, known archeological sites, and features, such as the monuments' cultural resources would be avoided and protected; and fire qualified archeologists would monitor any ground disturbing activities. Protection of these areas is of paramount importance in the event of a fire and planning strategies would ensure that adequate firefighting resources are available and positioned to safeguard them.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in surface disturbance and damage to surface and sub-surface artifacts.

Conclusion

The no-action alternative would have a minor short-term to minor long-term adverse impact to archaeological resources resulting from wildfires and fire-fighting activities. The buildup of hazardous fuels could increase the potential for fires and may result in direct, adverse, and long-term impacts on archeological and ethnographic resources.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to archeological and ethnographic resources would be local, minor, long-term, and beneficial. Crews that would conduct thinning activities or prescribed burns or apply herbicide treatments would avoid disturbance of these resources and protect them from damaging fires.

Unplanned Events: Unplanned Events: Fire effects on archeological and ethnographic resources vary depending on temperature and duration of exposure to heat. Archeological and ethnographic

resources that are scattered throughout the monuments would be at risk from wildfires. Potential impacts on archeological and ethnographic resources from wildfire could include cracking, charring, sooting, combustive residue, fracture, scorching, and melting (Sturtevant 2011). The planned management of hazardous fuels could decrease the potential for fires. Impacts on archeological and ethnographic resources could be direct, adverse, and long-term.

During fire-fighting activities, known archeological sites, and features, such as the monuments' cultural resources would be avoided and protected; and fire qualified archeologists would monitor any ground disturbing activities. Protection of these areas is of paramount importance in the event of a fire and planning strategies would ensure that adequate firefighting resources are available and positioned to safeguard them.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would result in surface disturbance and damage to surface and sub-surface artifacts.

Conclusion

The preferred alternative would have a minor short-term adverse impact to archaeological sites resulting from surface disturbance associated with implementation of hazardous fuels activities. Minor adverse impacts would occur to surface and subsurface artifacts. Archeological and ethnographic resources would benefit from implementation of mechanical and/or manual hazardous fuel reduction projects that would lessen the potential for wildfires that can damage or destroy fire-susceptible archeological sites.

Section 106 Summary

Section 106 consultation has been initiated with the Arizona State Historic Preservation Officer. This environmental assessment/assessment of effect will be sent to the State Historic Preservation Office for review and comment which would partially complete Section 106 compliance. Government-to-government consultation with American Indian tribes will be initiated to ensure no adverse impacts to ethnographic resources and values.

This environmental assessment/assessment of effect analyzed the potential impacts associated with implementation of two alternatives: the no-action and preferred alternatives. The environmental assessment/assessment of effect proposes mitigation measures to avoid adverse effects on cultural resources. This project is at the plan level, and site-specific consultation will be completed. The adaptive management approach proposed under the preferred alternative commits the National Park Service to continued consultation with interested tribes, stakeholders, and the State Historic Preservation Office. Pursuant to 36 CFR 800.5 (these regulations implement the National Historic Preservation Act and address the criteria of effect and adverse effect) the National Park Service finds that implementation of projects and mitigation measures in the fire management plan for Montezuma Castle/Tuzigoot National Monuments would result in a "no adverse effect" determination for archeological and ethnographic resources eligible for or listed on the National Register of Historic Places.

HISTORIC STRUCTURES AND CULTURAL LANDSCAPES

AFFECTED ENVIRONMENT

There are numerous historic structures within the Montezuma and Tuzigoot monuments that are currently listed on the List of Classified Structures (LCS). They include pueblos, rockshelters, irrigation channels, walls, and the Tuzigoot museum and headquarters building (USDI NPS 2010). Montezuma Castle National Monument has a total of 16 LCS sites (11 prehistoric sites, 5 historic) while Tuzigoot National Monument has a total of 6 (1 prehistoric, 5 historic) (Table 15).

The List of Classified Structures is an evaluated inventory of all historic and prehistoric structures that have historical, architectural, and/or engineering significance within parks of the National Park System in which the National Park Service has, or plans to acquire, any legally enforceable interest. The list is evaluated or “classified” by the National Register of Historic Places criteria. Following LCS guidelines, structures are constructed works that serve some form of human activity and are generally immovable. They include buildings and monuments, dams, millraces and canals, nautical vessels, bridges, tunnels and roads, railroad locomotives, rolling stock and track, stockades and fences, defensive works, temple mounds and kivas, ruins of all structural types that still have integrity as structures, and outdoor sculpture. Table 16 presents the List of Classified Structures at Montezuma Castle/Tuzigoot National Monuments.

Table 16. List of Classified Structures

Structure Number	Preferred Structure Name	Significance Level
AZ N: 4:01 (ASM)	Tuzigoot Ruins	Contributing
AZ O:5:14 (ASM)	Montezuma Castle	Contributing
AZ O:5:62 (ASM)	Rockshelter with Masonry Rooms	Contributing
AZ O:5:69 (ASM)	Masonry Structure	Contributing
AZ O:5:75 (ASM)	Montezuma Castle Unit Cavates	Contributing
AZ O:5:88 (ASM)	Rockshelter with Masonry Room	Contributing
AZ O:5:89 (ASM)	Rockshelter with Masonry Rooms	Contributing
AZ O:5:90 (ASM)	Pueblo	National
AZ O:5:91 (ASM)	Pueblo	National
AZ O:5:93 (ASM)	Swallet Cave Ruin	National
AZ O:5:94 (ASM)	Prehistoric Irrigation Canals	National
AZ O:5:95 (ASM)	Castle A	Contributing
MB-3	Equipment Shed	Local
MB22	1874 Log Cabin	Local
MG-06	Historic Irrigation Ditch System	National
MG-10	CCC Revetment	Local
MH-4	Residence #4	Local
MH-5	Residence #5	Local
MH7	Ranger's Residence	Local
TB-1	Museum and Headquarters Building	Local
TB-3	Storage Tool House	Local
TB-4	Pump House	Local
TG-2	Retaining Wall	Local

REGULATIONS AND POLICIES

Section 106 of the National Historic Preservation Act (16 United States Code 470 *et seq.*), requires the consideration of impacts on historic properties that are listed, or eligible to be listed, in the National Register of Historic Places. Federal agencies are required to coordinate consultation with State Historic Preservation Officers regarding the potential effects to the properties (USDI NPS 2006).

According to the National Park Service Management Policies 2006 (USDI NPS 2006) Director’s Order #28 – Cultural Resource Management Guidelines, and the mission of the National Park Service, the park system units are charged with preserving cultural resources as elements of our national heritage for the benefit and enjoyment of present and future generations.

Current laws and policies require that the following conditions be achieved in the monument regarding historic structures (Table 17):

Table 17. Historic Structure Desired Conditions

Desired Condition	Source
<p>Historic properties are inventoried and their significance and integrity are evaluated under National Register criteria.</p> <p>The qualities that contribute to the eligibility for listing or listing of historic properties on the NRHP are protected in accordance with the Secretary of the Interior’s Standards (unless it is determined through a formal process that disturbance or natural deterioration is unavoidable).</p>	<p>National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies</p>

Current laws and policies require that the following conditions be achieved in the park monument regarding cultural landscapes (Table 18):

Table 18. Cultural Landscape Desired Conditions

Desired Condition	Source
<p>The treatment of a cultural landscape will preserve significant physical attributes, biotic systems, and uses when those uses contribute to historical significance. Treatment decisions will be based on a cultural landscape’s historical significance over time, existing conditions, and use. Treatment decisions will consider both the natural and built characteristics and features of a landscape, the dynamics inherent in natural processes and continued use, and the concerns of traditionally associated peoples.</p> <p>The treatment implemented will be based on sound preservation practices to enable long-term preservation of a resource’s historic features, qualities, and materials. There are three types of treatment for extant cultural landscapes: preservation, rehabilitation, and restoration.</p> <p>Cultural landscapes are listed in the National Register when their significant cultural values have been documented and evaluated within appropriate thematic contexts and physical investigation determines that they retain integrity. Cultural landscapes are classified in the National Register as sites or districts or may be included as contributing elements of larger districts.</p>	<p>National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies</p>

HISTORIC STRUCTURE METHODOLOGY

In order for a structure or building to be listed in the National Register of Historic Places, it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the structure or building must possess integrity of location, design, setting, materials, workmanship, feeling, association (National Register Bulletin, How to Apply the National Register Criteria for Evaluation). For purposes of analyzing potential impacts to historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

- Negligible:* Impact(s) is at the lowest levels of detection – barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.
- Minor:* **Adverse:** impact would not affect the character defining features of a National Register of Historic Places eligible or listed structure or building. For purposes of Section 106, the determination of effect would be no adverse effect.
- Beneficial:** stabilization/preservation of character defining features in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. For purposes of Section 106, the determination of effect would be no adverse effect.
- Moderate:* **Adverse:** impact would alter a character defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be no adverse effect.
- Beneficial:** rehabilitation of a structure or building in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. For purposes of Section 106, the determination of effect would be no adverse effect.
- Major:* **Adverse:** impact would alter a character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be adverse effect.
- Beneficial:** restoration of a structure or building in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. For purposes of Section 106, the determination of effect would be no adverse effect.

CULTURAL LANDSCAPE METHODOLOGY

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

In order for a cultural landscape to be listed in the National Register, it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution

to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; D) have yielded, or may be likely to yield, information important in prehistory or history (National Register Bulletin, How to Apply the National Register Criteria for Evaluation). The landscape must also have integrity of those patterns and features - spatial organization and land forms; topography; vegetation; circulation networks; water features; and structures/buildings, site furnishings or objects - necessary to convey its significance (Secretary of the Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes). For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

- Negligible:** Impact(s) is at the lowest levels of detection – barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Minor:** **Adverse:** impact would not affect a character defining pattern(s) or feature(s) of a National Register of Historic Places eligible or listed cultural landscape. For purposes of Section 106, the determination of effect would be *no adverse effect*.
Beneficial: preservation of character defining patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Moderate:** **Adverse:** impact would alter a character defining pattern (s) or feature(s) of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be *no adverse effect*.
Beneficial: rehabilitation of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Major:** **Adverse:** impact would alter a character defining pattern(s) or feature(s) of the cultural landscape to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.
Beneficial: restoration of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Planned Events: Under the no-action alternative there would be no planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, increasing the risk of an unplanned wildfire. Impacts to historic resources would be site-specific, minor, long-term, and adverse if properties were not proactively protected from fires.

Unplanned Events: The no-action alternative would have the potential to adversely affect historic resources. Fire effects on these resources would vary depending on temperature and duration of exposure to heat. Fire-fighting efforts (e.g., establishment of firelines, safety zones, and fire camps) may be ground-disturbing and could destroy artifacts and the integrity of historic resources (Winthrop 2004). Water, foam detergents, and fire retardants could damage historic resources and features by causing swelling and subsequent contraction. Other potential short-term impacts would include rapid cooling and subsequent damage (e.g., breakage, spalling, corrosion, staining, rusting) of historic and archaeological materials (Winthrop 2004). Discoloration or warping of metallic surfaces could also occur. All historic resources that are located throughout the monuments would be at risk from wildfire. Effects could be short- or long-term depending on the intensity or context of the fire management activity. The buildup of hazardous fuels could increase the potential for fires and may present an even greater threat to historic resources. Impacts could be long-term and adverse.

During fire-fighting activities, known historic resources, such as the Smoke House, would be avoided and protected; and fire qualified cultural resource specialist would monitor any ground disturbing activities. Protection of these areas is of paramount importance in the event of a fire and planning strategies would ensure that adequate firefighting resources are available and positioned to protect them.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would not result in cumulative impacts on historic resources.

Conclusion

Historic resources would be impacted from wildfire and fire-fighting actions ranging from minor short-term to direct long-term minor adverse effects, if structures were damaged by wildfire.

IMPACTS OF THE PREFERRED ALTERNATIVE

Planned Events: For planned fire management events, such as thinning activities, prescribed fire, pile burning, and herbicide treatments, effects to historic resources would be local, minor, long-term, and beneficial. Crews that would conduct thinning activities or prescribed burns or apply herbicide treatments would avoid disturbance of these resources and protect them from damaging fires.

Prescribed fires typically burn at a lower temperature and shorter duration than wildfire, therefore potential impacts from prescribed fire would be less severe than unmanaged wildfire. Prescribed fire events are occasionally preceded by non-fire fuels reduction actions to obtain a smaller, more manageable, and less intense planned burn which could further reduce potential impacts on historic resources (Rude and Trinkle Jones 2001).

During all mechanical and/or manual hazardous fuels reduction activities, known historical sites and features would be avoided and protected and fire qualified cultural resource specialist would monitor any ground disturbing activities. Protection of these areas is of paramount importance in the event of a fire. Planning strategies would ensure that adequate firefighting resources are available to safeguard archeological sites while firefighting tactics are performed to prevent additional resource damage.

Mechanical and/or manual hazardous fuels reduction treatments can directly impact historic resources, depending upon their location and type. Ground-disturbing treatments (e.g., brush crunching) are more likely to impact historic resources than chemical treatments (Rude and Trinkle

Jones 2001). Historic resources such as Back Cabin could benefit from implementation of mechanical and/or manual hazardous fuel reduction projects that would lessen the potential for wildfires that can damage or destroy fire-susceptible sites.

Unplanned Events: Fire effects on these resources would vary depending on temperature and duration of exposure to heat. Fire-fighting efforts (e.g., establishment of firelines, safety zones, and fire camps) may be ground-disturbing and could destroy artifacts and the integrity of historic resources (Winthrop 2004). Water, foam detergents, and fire retardants could damage historic resources and features by causing swelling and subsequent contraction. Other potential short-term impacts would include rapid cooling and subsequent damage (e.g., breakage, spalling, corrosion, staining, rusting) of historic and archaeological materials (Winthrop 2004). Discoloration or warping of metallic surfaces could also occur. All historic resources that are located throughout the monuments would be at risk from wildfire. Effects could be short- or long-term depending on the intensity or context of the fire management activity. The management of hazardous fuels could decrease the potential for fires. Impacts could be long-term and adverse, although less fires would be expected following planned fire management activities leading to fewer adverse impacts.

During fire-fighting activities, known historic resources, such as the Smoke House, would be avoided and protected; and fire qualified cultural resource specialist would monitor any ground disturbing activities. Protection of these areas is of paramount importance in the event of a fire and planning strategies would ensure that adequate firefighting resources are available and positioned to protect them.

Cumulative Impacts

Hazardous fuel treatments around buildings and utilities, pile burning, unplanned wildfire fire-fighting activities, restoration of Tavasci Marsh, and implementing integrated pest management treatments would not result in cumulative impacts on historic resources.

Conclusion

Ground disturbing mechanical and/or manual hazardous fuel reduction treatments could result in minor adverse impacts on historic resources. Historic resources would benefit from implementation of mechanical and/or manual hazardous fuel reduction projects that would lessen the potential for wildfires that can damage or destroy fire-susceptible sites.

Section 106 Summary

Section 106 consultation has been initiated with the Arizona State Historic Preservation Officer. This environmental assessment/assessment of effect will be sent to the State Historic Preservation Office for review and comment which would partially complete Section 106 compliance. Government-to-government consultation with American Indian tribes will be initiated to ensure no adverse impacts to ethnographic resources and values.

This environmental assessment/assessment of effect analyzed the potential impacts associated with implementation of two alternatives: the no-action and preferred alternatives. The environmental assessment/assessment of effect proposes mitigation measures to avoid adverse effects on cultural resources. This project is at the plan level, and site-specific consultation will be completed. The adaptive management approach proposed under the preferred alternative commits the National Park Service to continued consultation with interested tribes, stakeholders, and the State Historic Preservation Office. Pursuant to 36 CFR 800.5 (these regulations implement the National Historic Preservation Act and address the criteria of effect and adverse effect) the National Park Service finds that implementation of projects and mitigation measures in the fire management plan for

Montezuma Castle/Tuzigoot National Monuments would result in a “no adverse effect” determination for historic structures and cultural landscapes eligible for or listed on the National Register of Historic Places.

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CHAPTER 4: CONSULTATION/COORDINATION

AGENCIES, TRIBES, ORGANIZATIONS, AND INDIVIDUALS CONTACTED

Public notification and scoping included the April 2011 distribution of a scoping letter emailed or mailed to 90 individuals, organizations, government agencies and tribes. The Arizona State Historic Preservation Office, U.S. Fish and Wildlife Service, and Arizona Game and Fish Department received this notice. The scoping letter outlined the environmental assessment/assessment of effect purpose, fire management goals and objectives, and solicited public input on issues, concerns, and potential alternatives. The issues and concerns raised by this process are summarized in the Public Scoping Report. The National Park Service will consult the U.S. Fish and Wildlife Service to satisfy ESA Section 7 requirements and will consult with the Arizona SHPO to satisfy NHPA Section 106 requirements.

Table 19 presents personnel involved in the preparation of this environmental assessment/assessment of effect.

Table 19. Document Preparers and Reviewers

Name	Role on Project	Title
National Park Service		
Kevin Parrish	Project Coordinator	Project Leader
Kathy Davis	Monuments Information	Superintendent
Sharon Kim	Technical Reviewer	Chief of Resources
Matt Guebard	Cultural Resource Consultation	Archeologist
Karen Hughes	Park Resources	Supervisory Park Ranger
Ed Cummins	Visitor Services and Resource Protection	Chief Ranger
Case Griffing	Interpretation	Park Ranger (Interpretation)
Dennis Casper	Biology Consultation	Ecologist
Michele Girard	Reviewer	Southern Arizona Office Ecologist
URS Corporation		
Leslie Watson	Co-Project Manager	Project Manager
Keith Pohs	Co-Project Manager, Technical Writer-Editor, Resources, Contributing Author	Senior Environmental Planner
David Konopka	Resources, Contributing Author	Environmental Planner
Allison Getty	Resources, Contributing Author	Environmental Planner

LIST OF RECIPIENTS

Ninety names and addresses of individuals, organizations and federal or tribal government agencies will be notified of the availability of this document.

All comments received during the public review period will be assessed by the National Park Service. Should substantive comments be received, the National Park Service would decide whether to rewrite this document or prepare an environmental impact statement.

FEDERAL AGENCIES

U.S. Fish and Wildlife Service

U.S. Forest Service

TRIBAL GOVERNMENTS

Yavapai-Apache Nation

Yavapai-Prescott Indian Tribe

Hopi Tribe

Zuni Pueblo

Ak-Chin Indian Community

Gila River Indian Community

Salt River Pima-Maricopa Indian Community

Tohono O'odham Nation

STATE AGENCIES

Arizona Game and Fish Department

Arizona State Historic Preservation Office

Arizona State Parks

Arizona State Lands Department

LOCAL AGENCIES

Town of Camp Verde

Town of Clarkdale

Town of Rimrock

City of Cottonwood

Yavapai County

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APPENDIX A: SCOPING REPORT

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**MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS
FIRE MANAGEMENT PLAN
ENVIRONMENTAL ASSESSMENT**

SCOPING SUMMARY REPORT

Prepared for:
National Park Service
Montezuma Castle and Tuzigoot National Monuments, Arizona

May 2011

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LIST OF ABBREVIATIONS AND ACRONYMS

EA	Environmental Assessment
NEPA	National Environmental Policy Act
PEPC	Planning, Environment, and Public Comment

1.0 INTRODUCTION

1.1 OVERVIEW

The National Park Service's *Management Policies 2006* and Director's Order #18 require that "each park with vegetation capable of burning will prepare a Fire Management Plan to guide a fire management program that is responsive to the park's natural and cultural resource objectives and to safety considerations for park visitors, employees, and developed facilities. Parks with an approved Fire Management Plan and accompanying National Environment Policy Act compliance may use wildland fire to achieve resource benefits in pre-determined fire management units. Parks lacking an approved Fire Management Plan may not use resource benefits as a primary consideration influencing the selection of a suppression strategy, but they must consider the resource impacts of suppression alternatives in their decisions."

Montezuma Castle and Tuzigoot National Monuments currently follow a 2004 *Fire Management Plan* to guide its wildland fire program. In the past, parks could use the 2003 Healthy Forest Initiative Categorical Exclusion to be in compliance with National Environmental Policy Act (NEPA) requirements. However, based on reinterpretation of policy based on recent case law, the decision was made to not rely on the 2003 Healthy Forest Initiative Categorical Exclusion (2006).

An environmental assessment (EA) for the fire management plan is being prepared to bring the monument into compliance with Director's Order 18 and NEPA requirements and allow them to continue implementing the existing fire management plan and applicable fire management programs. The EA analyzes the environmental consequences of implementing the existing fire management plan. The EA impact analysis is based on whether the no-action alternative and preferred alternative could impact resources and management actions at Montezuma Castle and Tuzigoot National Monuments.

One of the first steps of the NEPA process for the EA was scoping, which is "an early and open process for determining the issues to be addressed and for identifying the significant issues related to proposed action" (Title 40 Code of Federal Regulations Part 1501.7). During scoping, Montezuma Castle and Tuzigoot National Monuments actively sought to engage potentially affected or interested federal, state, and local agencies; tribal entities; and the public. Scoping for the EA commenced on April 1, 2011, and concluded on May 1, 2011. This report is a summary of the scoping process and results.

1.2 PRELIMINARY ALTERNATIVES

The no-action alternative and the proposed action were developed through discussions among Montezuma Castle and Tuzigoot National Monuments, the Fire Management Office at Saguaro National Park, and the National Park Service Intermountain Region. Each alternative addresses specific management objectives and are feasible for local implementation.

The no-action alternative would continue to manage wildland fires consistent with the existing Fire Management Plan and Healthy Forest Initiative Categorical Exclusion. Under this alternative however only one component of the existing 2004 plan could be implemented; all wildland fires would receive full and aggressive suppression commensurate with values to be protected and human safety. Firefighters with hand tools, and in some situations with mechanized equipment, would be rapidly assigned to suppress all fires. The full suppression strategy could include fire line construction using hand tools, chainsaws, and water hose lines. The use of chemical retardants would require the superintendent's approval. Off road vehicle use could be permitted on a case-by-case basis and would be preapproved by a monument resource advisor. Under the no-action alternative, there would be no fire management tools implemented such as the reduction of hazardous fuels or prescribed fire. These management activities could be conducted after completing appropriate NEPA compliance for individual projects.

The proposed action alternative would allow for implementation of a full range of fire management activities. These activities and treatments would be centered on public and firefighter safety, communities identified as at risk from wildland fires (wildland-urban interface), historic fire regimes, current condition class, and collaboration with other agencies and stakeholders. Wildland fire management actions could include suppression, and the use of physical and herbicide treatments.

The proposed action (the National Park Service preferred alternative) is also the environmentally preferred alternative. The proposed action allows for flexibility in response to wildland fire and provides more opportunities for management of hazardous fuels. Using a range of suppression and containment strategies may lower risks to the public, firefighters and resources. Under the proposed action, managers may select a combination of treatments of hazardous fuels, and thus would be most effective. The fire management plan would provide for the health and safety of visitors and employees, and the preservation of natural and cultural resources. The public and cultural and natural resources would receive protection from unwanted wildland fire with fewer disturbances.

2.0 SCOPING PROCESS

This section provides a summary of the objectives of scoping and a description of the scoping process and agency coordination for the EA.

2.1 OBJECTIVES

The objectives of the scoping process include the following:

- Coordinate with affected federal, state, and local agencies, affected tribal entities and other interested parties to:
 - Invite agencies to participate as cooperating agencies in the EA process
 - Establish a process to integrate and expedite environmental reviews
 - Establish the planning and decision-making schedule
- Determine the scope of analysis, significant issues to be analyzed in detail in the EA, insignificant issues for which detailed analysis is not warranted, and the range of alternatives and impacts.
- Identify
 - Issues that have been covered by prior environmental review and can be eliminated from detailed study
 - Cumulative actions and environmental assessments or environmental impact statements that are being or will be prepared that are related to but are not part of the scope of the EA under consideration
 - Other environmental review and consultation requirements (e.g., Endangered Species Act, National Historic Preservation Act) so the required analyses and studies can be prepared and integrated with the EA

2.2 DESCRIPTION OF THE SCOPING PROCESS

Methods used to involve the public and facilitate exchange of updated project information throughout the planning process have included various types of announcements, and agency and tribal coordination.

2.2.1 Announcements

2.2.1.1 Letter

An announcement letter was distributed to 80 entities or persons on April 1, 2011 to notify government agencies, nongovernmental organizations, and other interested parties of the intent to prepare an EA and the scoping process (Appendix A). The mailing list included local elected or municipal officials; federal and state agencies, tribal entities; and other interested parties.

The mailing list for future notices will be supplemented throughout the process as people notify the monuments of their interest in the project through direct requests, participation in the public meeting, or submission of comments.

2.2.1.2 Planning, Environment and Public Comment (PEPC) Website

The public website for the project, located at <http://parkplanning.nps.gov>, offers interested parties online information pertaining to the project. This website is designed to encourage participation by offering online comment submissions and the option to be added to the mailing list.

2.2.2 Agency and Tribal Coordination and Consultation

In addition to sending the announcement letter to agency and tribal representatives, notification letters were mailed to 11 agencies and 1 tribe expected to have an interest in fire management or a regulatory review responsibility. The letter invited scoping comments and provided information on who to contact to request additional information. Copies of the consultation and coordination letters are included in Appendix B.

3.0 SUMMARY OF SCOPING COMMENTS

3.1 INTRODUCTION

This section provides a summary of the method used to organize and analyze comments, a quantification of how many comments were received and issues identified, and the nature of the issues identified during scoping. Although the National Park Service will continue to consider comments throughout the EA process, the scoping comments documented in this report were received during the formal scoping period that ended May 1, 2011.

Comments regarding the proposed action alternatives will be considered by the National Park Service in refining the project description and alternatives that will serve as the basis for the impact assessment. Council on Environmental Quality regulations implementing NEPA requires agencies to identify alternative ways of meeting their need for the action. Council on Environmental Quality regulations also require an analysis of the impacts of a proposed action on the environment. These impacts include effects on natural, human, and cultural resources. Discussions with affected public or agencies, such as those that have occurred through this scoping effort, help to define and evaluate effects of the different alternatives on the environment. Comments relating to environmental impacts were considered by the National Park Service in developing the scope of the EA. The affected environment and impacts of the alternatives in the environmental consequences section of the EA address the resource issues identified during scoping. Concerns about the EA and decision-making processes were considered in refining and modifying these processes throughout the remainder of the EA preparation.

3.2 COMMENT ORGANIZATION

Hard copy letters and e-mail messages received were documented, and entered into a database to facilitate organization, sorting, analytical review, and management of the comments in several different ways. The database is structured to organize comments into separate issue categories, identify the type (e.g., letter, e-mail, comment form), and source of submittal (e.g., agency, special interest group, citizen), and tally the number of comments using various combinations of identifiers.

Using the experience and professional judgment of the study team, the comments were organized into one major issue category; on a broad scale, the category pertains to environmental impacts.

Environmental Impacts: Comments addressed the need to evaluate the potential impacts of fire management on natural resources. Impact topics included the following:

- Biological Resources
- Water Resources
- Recreation
- Alternatives

3.3 SUMMARY OF PUBLIC COMMENTS

One comment submission was received from one agency and entered into the project database. Comments were parsed from the e-mail into four main issue categories and six concern statements. The comments and issues are summarized in Section 3.4 along with a sample of representative quotations.

Although quantifying comments and issues is helpful in summarizing comments for public review and helping to guide future EA studies, it is important to note that the level of importance of comments to the decision-making process is not influenced by the frequency of a specific issue. In some cases, for example, a person may have submitted more than one letter or mentioned the same issue several times in their letter; therefore, his or her issues may have been recorded several times. In contrast, if only one comment was made about a certain issue, it will have the same level of importance as any other comment.

3.4 ISSUES IDENTIFIED DURING SCOPING

The National Environmental Policy Act requires Federal agencies to focus their analysis and documentation on the important issues related to a proposed action. These issues serve as the basis for developing and comparing alternatives. The following section provides a summary of the key issues identified during scoping, including a sample of representative quotations from the comment submissions. These issues will be considered and analyzed in the EA. Those issues that will not be addressed in the EA are identified under Section 3.5.

3.4.1 Biological Resources

Concern #1: Federally listed and proposed species and designated or proposed critical habitat within the monuments.

Representative Quotations

- “ The following listed and proposed species and designated or proposed critical habitat may occur in the area: the experimental non-essential population of Colorado pikeminnow (*Ptychocheilus Lucius*), the endangered razorback sucker (*Xyrauchen texanus*) and its critical habitat, the endangered Gila chub (*Gila intermedia*), the endangered southwestern willow flycatcher (*Empidonax traillii extimus*), the threatened spikedace (*Meda fulgida*) and its proposed critical habitat, proposed critical habitat for the threatened loach minnow (*Tiaroga cobitis*). The candidate northern Mexican gartersnake (*Thamnophis eques megalops*), the roundtail chub (*Gila robusta*), the candidate yellow-billed cuckoo (*Coccyzus americanus*), and the endangered Yuma clapper rail (*Rallus longirostris yumanensis*).”

- “The bald eagle is no longer on the Endangered Species list, and there is no need to consult under section 7 of the Endangered Species Act. However, bald and golden eagles continue to be protected by the Bald and Golden Eagle Protection Act (Eagle Act)”.

Concern #2: Fire management activities and their effect on wildlife habitat.

- “The EA should analyze potential effects of the various components of the FMP with regards to wildlife and wildlife habitat. This habitat can be negatively affected by actions that do not correspond with natural conditions, such as fire suppression where fire historically occurred, occurrence of fire where historically it was absent, and thinning projects that remove important niches, nesting areas, and so forth”.

Concern #3: Spread of invasive or nonnative species and displacement of native species.

Representative Quotation

- “The EA should discuss how the various management actions either hinder or further the spread of invasive species”.
- “Any actions that may further the spread of invasive or benefit invasive species more so than natives should not be considered suitable for the monuments”.

Concern #3: Management activities impact on recreation and nearby water resources

3.4.2 Water Resources

Concern #4: Fire management activities and their impact on nearby water resources.

Representative Quotation

- “Large-scale fires certainly have the potential to degrade nearby waters, but fire suppression, prescribed burns, and thinning have the potential to affect these resources.”

3.4.3 Recreation

Concern #5: Fire management activities and their impact on recreation.

Representative Quotation

- “Both monuments offer outstanding recreation opportunities, including hiking, wildlife viewing, cultural education, and much more. Effects on these opportunities should be minimized.”

3.4.4 Alternatives

Concern #6: The use of prescribed fire as a management tool.

Representative Quotations

- “In general, the Arizona Wildlife Federation is supportive of the use of prescribed fire for resource benefits.”
- “In general, we are not in favor of fire suppression unless it occurs in areas where fire did not naturally occur historically or in areas where it poses a public safety hazard. Similarly, tree

cutting and thinning should only be used when absolutely necessary to restore natural conditions or protect public safety”.

4.0 SUMMARY OF FUTURE STEPS IN THE EA PROCESS

The EA process requires a team of interdisciplinary resource specialists to prepare and review the analysis combined with additional opportunities for public input. An important part of the National Park Service planning process is engaging tribes, the public, and relevant agencies from the earliest stages of and throughout the planning process to address issues, comments, and concerns. The steps of the planning process and agency authority and decisions to be made are:

- Distribute the public review EA
- Analyze and incorporate public and agency comments
- Prepare a Finding of No Significant Impact, if appropriate, and EA errata, if appropriate

4.1 PUBLIC SCOPING AND IDENTIFICATION OF ISSUES

Issues were identified through the scoping process, which initiated the NEPA planning process. The scoping period and the issues identified are documented in this scoping report, which is also available on the PEPC Project website (<http://parkplanning.nps.gov>).

4.2 FORMULATE ALTERNATIVES

The National Park Service conducted an evaluation of the actions that would satisfy the purpose of and need for fire management. Preliminary alternatives were developed through this evaluation and were shared with the public during scoping so the public could offer comments. This input will be considered in the formulations of the alternatives that will be analyzed in the EA.

4.3 PREPARE AND RELEASE EA

4.3.1 Data Collection and Data Gaps

Much of the data and information, which form the baseline resource inventory, will be compiled and used from existing NPS data or through other agencies. The public also is encouraged to provide any data or data sources that may be relevant to or assist with the EA analysis.

Data include published and unpublished reports, maps, and digital format files used in a geographic information system (GIS).

4.3.2 Assess Impacts

The resources to be addressed in the EA include the following:

- Geology and Soils
- Vegetation and Nonnative species

- Wildlife
- Archeological and Ethnographic resources
- Historic Structures and Cultural Landscapes
- Air Quality and Soundscapes

The impacts that could result from implementing the alternatives will be analyzed. Where applicable, measures to mitigate those impacts will be identified.

4.4 PUBLIC REVIEW OF EA

A summary of the scoping process, methodology, and the findings of the impact assessment will be documented in the EA. The EA will be made available for public review, which is currently expected to be in July 2011. The availability of the EA will be announced on the PEPC website. Public comments will be accepted for a minimum of 30 days during this review period.

APPENDIX A
ANNOUNCEMENTS



United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
527 S. Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Dear Friends and Neighbors:

The National Park Service (NPS) has initiated an environmental assessment (EA) for Montezuma Castle and Tuzigoot National Monuments regarding the management of fire and hazardous fuel reductions within the national monument boundaries. We are seeking public comment for this project during the public scoping period.

Why an assessment is needed

The park has an existing Fire Management Plan. However, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet NPS policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the EA will be used to revise the current plan, if necessary.

How you can help

We would like to hear your ideas and concerns about fire management including fire suppression, the use of prescribed fire to protect cultural and natural resources, and the use of physical treatment methods to reduce hazardous fuel loads and protect structures.

Plan alternatives

Currently there are two proposed alternatives. The proposed action alternative would allow for implementation of a full range of fire management activities. Wildland fire management actions could include suppression and the use of prescribed fire for resource benefit. The main focus of these activities and treatments is centered on public and firefighter safety, communities identified as at risk from wildland fires (Wildland Urban Interface), historic fire regimes, current condition class, and collaboration with other agencies and stakeholders.

The no action alternative would continue to manage wildland fires consistent with the existing Fire Management Plan and Categorical Exclusion. Fire management activities would be in response to emergencies and to protect people and park resources.

What's next?

At this time, the Superintendent is announcing a 30-day public scoping period to solicit public comments on this proposal. During this scoping period, the public is invited to identify any issues or concerns they might have with the proposed project so that the National Park Service can appropriately consider them in the preparation of the Environmental Assessment. You may submit suggestions, comments, and concerns electronically (the NPS's preferred method of receiving comments) at the NPS's Planning, Environment, and Public Comment (PEPC) website at:

<http://parkplanning.nps.gov/> (select Montezuma Castle & Tuzigoot National Monuments).

Written comments may be sent to:

Superintendent
Kathy Davis
527 South Main Street
Camp Verde, Arizona 86322

Please submit your scoping comments by May 1, 2011. Once the draft EA is completed, it will be made available for public review for a 30-day period. If you wish to be added to the park's mailing list for this or other announcements, please be sure to indicate that in your response.

Sincerely,



Kathy Davis
Superintendent

bcc:

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APPENDIX B
AGENCY AND TRIBAL COORDINATION AND CONSULTATION



United States Department of the Interior
NATIONAL PARK SERVICE



Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
527 S. Main Street
Camp Verde, Arizona 86322

In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Steve Spangle, Field Supervisor
U.S. Fish and Wildlife Service
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021

Subject: Request for Input with ESA Species List and Notice of Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear Mr. Spangle:

In accordance with the provisions of the National Environmental Policy Act (NEPA), the Montezuma Castle and Tuzigoot National Monuments have initiated a NEPA analysis (an Environmental Assessment) on how the National Park Service (NPS) should manage wildland fire and hazard fuel reduction within the park. NPS Policy, which adheres to the federal policy, recognizes the need for wildland fire to be managed in order to fulfill the agency's goals to protect, perpetuate or recreate natural environments and historic scenes/landscapes. In addition, NPS policy specifies that every NPS unit with burnable vegetation will have an updated Fire Management Plan; parks can no longer use the Healthy Forest Initiative (HFI) Categorical Exclusion. The National Park Service will use the decisions reached through the NEPA process to prepare the corresponding fire management plans.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the HFI. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management. Wildland fire activities would include suppression and wildland fire use for resource benefit. Fuels management activities would include prescribed fire, mechanical, and herbicide treatments. The main focus of these activities and treatments is centered on public and firefighter safety, communities identified as at risk from wildland fires (wildland urban interface), historic fire regimes, current condition class, and collaboration with other agencies and stakeholders.

Based on current threatened and endangered species and critical habitat information from surveys and from the U.S. Fish and Wildlife Service's list, the following tables outline listed and candidate species within the Montezuma Castle and Tuzigoot National Monument boundaries that we have identified.

Table A: Federally Listed Species			
Common Name	Scientific Name	Federal Status	Status in Montezuma Castle and Tuzigoot National Monuments
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened	Current
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Current
Yuma Clapper Rail	<i>Rallus longirostris yumanensis</i>	Endangered	Current
Razorback Sucker	<i>Xyrauchen texanus</i>	Endangered	Current (Critical Habitat)
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	Endangered	Current
Gila Chub	<i>Gila intermedia</i>	Endangered	Current
Spikedace	<i>Meda fulgida</i>	Threatened	Current (Critical Habitat)

Table B: Candidate Species			
Common Name	Scientific Name	Federal Status	Found in Park Unit
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	Candidate	Current
Northern Mexican Gartersnake	<i>Thamnophis eques megalops</i>	Candidate	Current
Roundtail Chub	<i>Gila robusta</i>	Candidate	Current

To facilitate our compliance with NEPA for this proposed federal action, we request your input on the lists of species presented in Tables A and B. For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195, x226 or sharon_kim@nps.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
Post Office Box 219
527 S. Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Gary Hovatter
Deputy Director
Arizona Game and Fish Department
5000 W. Carefree Highway
Phoenix, Arizona 85086-5000

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear Mr. Hovatter:

Montezuma Castle and Tuzigoot National Monuments are initiating a new Fire Management Plan/Environmental Assessment. Although the monuments have an existing 2004 Fire Management Plan (FMP) documenting the environmental analysis under the Healthy Forest Initiative Categorical Exclusion, this level of environmental analysis completed for the plan is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment will be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website. To access our sites on <http://parkplanning.nps.gov/>, select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the

preliminary fire management planning criteria, planning process, and/or issues associated with the plan. We would like to discuss agency coordination regarding Arizona's Species of Concern and address these in the EA.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195, x226 or sharon_kim@nps.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE



Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
527 S. Main Street
Camp Verde, Arizona 86322

In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Coconino National Forest
Red Rock Ranger District
[Name], District Ranger
P.O. Box 20429
8375 State Route 179
Sedona, AZ 86341

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments are initiating a new Fire Management Plan/Environmental Assessment. Although the monuments have an existing 2004 Fire Management Plan (FMP) documenting the environmental analysis under the Healthy Forest Initiative Categorical Exclusion, this level of environmental analysis completed for the plan is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment will be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website. To access our sites on <http://parkplanning.nps.gov/>, select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan. We would like to discuss agency coordination regarding the Coconino National Forest Sensitive Species and address these in the EA.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195,x226 or sharon_kim@nps.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Prescott National Forest
Verde Ranger District
[Name], District Ranger
P.O. Box 670
Camp Verde, Arizona 86322

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments has an existing Fire Management Plan (FMP) however, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/> and select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan. We would like to discuss agency coordination regarding the Prescott National Forest Sensitive Species and address these in the EA.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most

appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6196 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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IMDE Files



United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Mr. James Garrison
State Historic Preservation Officer
Arizona State Historic Preservation Office
1300 West Washington
Phoenix, AZ 85007

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear Mr. Garrison:

In accordance with the provisions of the National Environmental Policy Act (NEPA), the Montezuma Castle and Tuzigoot National Monuments have initiated a NEPA analysis (an Environmental Assessment 'EA') on how the National Park Service (NPS) should manage wildland fire and hazard fuel reduction within the parks. NPS Policy, which adheres to the federal policy, recognizes the need for wildland fire to be managed in order to fulfill the agency's goals to protect, perpetuate or recreate natural environments and historic scenes/landscapes. In addition, NPS policy specifies that every NPS unit with burnable vegetation will have an updated Fire Management Plan. Due to NPS direction dated May 28, 2008, NPS units located in the Supreme Court 9th Circuit Court of Appeals jurisdiction may no longer use the Healthy Forest Initiative (HFI) Categorical Exclusion. The National Park Service will use the decisions reached through the NEPA process to prepare the corresponding fire management plans.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the HFI. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management. Wildland fire activities would include suppression and wildland fire use for resource benefit. Fuels management activities would include prescribed fire, mechanical, and herbicide treatments. The main focus of these activities and treatments is centered on public and firefighter safety, communities identified as at risk from wildland fires (wildland urban interface), historic fire regimes, current condition class, and collaboration with other agencies and stakeholders.

Section 106 consultation as defined in the National Historic Preservation Act of 1966 will be completed by NPS cultural resource specialists prior to the implementation of the updated Fire Management Plan. Although general guidelines for the treatment of cultural resources will be discussed in the EA, the level of documentation required to satisfy the Arizona State Historic Preservation Office requires site location maps and site forms. Because this information cannot be included in the EA, a public document, we will prepare compliance documents associated with Section 106 consultation in addition to preparation of the EA.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments January 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Arizona State Land Department
[Name], [Title]
1616 W. Adams Street
Phoenix, Arizona 85007

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments has an existing Fire Management Plan (FMP) however, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/> and select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Arizona State Parks
[Name], [Title]
1300 W. Washington Street
Phoenix, Arizona 85007

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments has an existing Fire Management Plan (FMP) however, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/> and select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle and Tuzigoot National Monuments
Post Office Box 219
527 S. Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Tribal Contact
Street Address
City, State, Zip

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for Montezuma Castle and Tuzigoot National Monuments

Dear Tribal Contact:

In accordance with the provisions of the National Environmental Policy Act (NEPA), Montezuma Castle and Tuzigoot National Monuments have initiated a NEPA analysis (an Environmental Assessment 'EA') on how the National Park Service (NPS) should manage wildland fire and hazard fuel reduction within the parks. NPS Policy, which adheres to the federal policy, recognizes the need for wildland fire to be managed in order to fulfill the agency's goals to protect, perpetuate or recreate natural environments and historic scenes/landscapes. In addition, NPS policy specifies that every NPS unit with burnable vegetation will have an updated Fire Management Plan. Due to NPS direction dated May 28, 2008, NPS units located in the Supreme Court 9th Circuit Court of Appeals jurisdiction may no longer use the Healthy Forest Initiative (HFI) Categorical Exclusion. The National Park Service will use the decisions reached through the NEPA process to prepare the corresponding fire management plans.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the HFI. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management. Wildland fire activities would include suppression and wildland fire use for resource benefit. Fuels management activities would include prescribed fire, mechanical, and herbicide treatments. The main focus of these activities and treatments is centered on public and firefighter safety, communities identified as at risk from wildland fires (wildland urban interface), historic fire regimes, current condition class, and collaboration with other agencies and stakeholders.

Section 106 consultation as defined in the National Historic Preservation Act of 1966 will be completed by NPS cultural resource specialists prior to the implementation of the updated Fire

Management Plan. We understand that our parks were historically used and continue to be used by Tribal people. We welcome your comments regarding sacred sites or traditional cultural properties within the parks. Much of the information regarding the location of archeological sites cannot be included in the EA. However, this information will be provided as part of S.106 consultation.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

City of Camp Verde
[Name], [Title]
473 South Main Street
Camp Verde, Arizona 86322

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for
Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments has an existing Fire Management Plan (FMP) however, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/> and select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

City of Cottonwood
[Name], [Title]
827 North Main Street
Cottonwood, Arizona 86326

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for
Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments has an existing Fire Management Plan (FMP) however, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/> and select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by April 10, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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United States Department of the Interior
NATIONAL PARK SERVICE

Montezuma Castle & Tuzigoot National Monuments
527 South Main Street
Camp Verde, Arizona 86322



In reply refer to:
NFPORS 3069623
MOCA/TUZI

April 1, 2011

Yavapai County Arizona
[Name], [Title]
[Address]

Subject: Notice of drafting Proposed Environmental Assessment for the Fire Management Plan for
Montezuma Castle and Tuzigoot National Monuments

Dear: [Name]

Montezuma Castle and Tuzigoot National Monuments has an existing Fire Management Plan (FMP) however, the level of environmental analysis completed for the plan, called the Healthy Forest Initiative Categorical Exclusion, is no longer considered adequate to meet National Park Service (NPS) policy. Therefore a more detailed assessment needs to be conducted. Decisions reached in the Environmental Assessment (EA) will be used to revise the current plan, if necessary.

There are two proposed alternatives. **Alternative A (No Action)** would continue to manage wildland fires consistent with the existing Fire Management Plan and the Healthy Forest Initiative. Fire management activities would be in response to emergencies and to protect people and park resources. **Alternative B (Proposed Action/NPS Preferred Alternative)** allows for implementation of a full range of fire management activities, including wildland fire and fuels management.

The National Park Service will work collaboratively with agencies, tribes, communities, organizations, and other public interested in participating in the EA process. With this letter, we would like to ask that you be a cooperating agency by requesting your early and continued input in the EA process. NPS will post a Scoping Announcement at the NPS's Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/> and select Montezuma Castle and Tuzigoot National Monuments. The Public Announcement will provide an introduction to the FMP EA, which begins the scoping process for this effort.

To assist in the preparation of the EA, the National Park Service has contracted with a consultant, URS Corporation, which has a goal of completing the EA by October 2011. NPS resource specialists and their counterparts at URS Corporation may contact you if necessary to discuss the preliminary fire management planning criteria, planning process, and/or issues associated with the plan.

For your records, the title of this project is Fire Management Plan Environmental Assessment/Assessment of Effect, Montezuma Castle and Tuzigoot National Monuments, January 2011. Your reply will be most appreciated and helpful if we receive it by May 1, 2011. Should you have any questions or need additional information at this time, you can contact Sharon Kim at 928-649-6195 or Sharon_Kim@NPS.gov.

Sincerely,

Kathy Davis
Superintendent

bcc:

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