

National Park Service
United States Department of the Interior

Death Valley National Park
California and Nevada



Environmental Assessment

Hunter Mountain Pinyon Pine Ecosystem Fire Treatment and Study

June 2013



ON THE COVER

View of Hunter Meadow through Late Seral Stage Pinyon Pine Forest
Death Valley National Park

ENVIRONMENTAL ASSESSMENT

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Summary

The National Park Service (NPS) proposes a prescribed fire and associated ecosystem study for 50 acres of pinyon pine forest with scattered sagebrush at the intersection of the Hunter Mountain Road and the Hunter Cabin Road in the Cottonwood Mountains of Death Valley National Park (Park). A prescribed fire would restore fire as a natural process in the pinyon pine forest, provide important fire effects information from fire effects study plots within the burn perimeter, reduce the ability of exotic plants to invade natural or previously treated areas, increase forest health by creating a mosaic of native vegetation age classes, promote conditions that would allow for recruitment of native grasses and forbs, and diminish the potential of a catastrophic fire. Several hundred acres near the cabin were outlined for prescribed fire within the 2009 Fire Management Plan 5-year fuels treatment plan, both to protect a historic structure and to address the health of native plant communities. The proposed 50-acre fire and associated study would enable the Park to proceed in an informed way toward its goal of using prescribed fire to return fire to ecosystems through management practices.

Notes to Reviewers and Respondents

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. Our practice is to make comments, including names and home addresses of respondents, available for public review. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. *If you want us to withhold your name and address, you must state this prominently at the beginning of your comment.* We will make all submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

To Comment on this Document

Electronic comments may be provided at the National Park Service Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/HunterMountainEA>

Hard copy comments should be mailed to: Superintendent; Death Valley National Park; Attn: Hunter Mountain Ecosystem Prescribed Fire Study; PO Box 579; Death Valley, CA 92328

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
cm	centimeter(s)
°C	degrees Celsius
°F	degrees Fahrenheit
EA	environmental assessment
FMP	Fire Management Plan
ft ²	square feet
GBBO	Great Basin Bird Observatory
km	kilometer
m	meter(s)
mm	millimeter(s)
MP	milepost
mph	miles per hour
NEPA	National Environmental Policy Act of 1969, as amended
NHPA	National Historic Preservation Act of 1966, as amended
NPS	National Park Service
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Office(r)
SR	State Route
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

ENVIRONMENTAL ASSESSMENT

Chapter 1: Purpose and Need, Project Background, & Impact Topics

INTRODUCTION

The National Park Service (NPS) proposes a prescribed fire and associated ecosystem study for 50 acres of pinyon pine forest with scattered sagebrush at the intersection of the Hunter Mountain Road and the Hunter Cabin Road in the Cottonwood Mountains of Death Valley National Park (Park). The area around William Lyle Hunter Cabin was identified in the Park's 2009 Fire Management Plan (FMP) as a high priority for implementing a prescribed fire. A total area of 700 acres near the cabin was outlined within the FMP's 5-year burn plan, both to protect the historic structure and to maintain the health of native plant communities. A 50-acre fire and associated study would enable the Park to proceed in an informed way toward its goal of prescribed fire ecosystem management.

The proposed project would combine a 50-acre prescribed fire with a fire treatment study involving fire effects study plots in Hunter Mountain's pinyon pine ecosystem. This study would be designed to provide understanding of the effects of fire in Hunter Mountain's unique ecosystem, valuable data that would enable the National Park Service to proceed toward the goal of using prescribed fire to manage the health of native plant communities in this location.

An environmental assessment (EA) analyzes the preferred alternative and other alternatives and their potential impacts on the environment. This environmental assessment has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and regulations of the Council on Environmental Quality (40 *Code of Federal Regulations* (CFR) 1508.9); NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*; and the National Historic Preservation Act of 1966, as amended (NHPA).

PURPOSE AND NEED FOR ACTION

The primary purpose of the proposed action is to restore fire as a natural process in the pinyon pine forest of Hunter Mountain and to gather important fire effects information that would better enable park managers to promote healthy ecosystems within Death Valley National Park. Supplementary purposes of the proposed action include reducing the ability of exotic plants to invade natural or previously treated areas, increasing forest health by creating a mosaic of native vegetation age classes, promoting conditions that would allow for recruitment of native grasses and forbs, and diminishing the potential of a catastrophic fire in the immediate vicinity of important cultural resources.

This action is needed because:

- The pinyon pine forest on Hunter Mountain is almost exclusively a late seral stage forest structure, characterized by old growth trees and minimal recruitment of young trees.

- The fire regime and native plant communities on Hunter Mountain have been disrupted by over 100 years of grazing activity.
- Restoring fire into this forest type could begin to establish an early seral stage forest structure and fire regime that supports a diverse assortment of native plants and animals and regeneration of forest ecosystem processes (Erskine and Goodrich 1999; Paysen, et al 2000).
- Non-native, invasive cheat grass (*Bromus tectorum*) is present in the ecosystem alongside native bunch grasses and forbs, and proactive management (i.e., timing a prescribed fire immediately before cheat grass sets seed) has the potential to allow for increased recruitment of native grasses and forbs (Severson and Rinne 1990).
- Uncontrolled wildfire in pinyon pine ecosystems can lead to large-scale and broad ecosystem changes, including permanent replacement of forest with non-native *Bromus* species (D'Antonio and Vitousek 1992).
- Despite the fact that concern over uncontrollable wildfire in pinyon woodlands in the southwestern United States has led public land managers to seek approaches for mitigating wildfire hazard, little information is available concerning effectiveness and ecological responses of alternative treatments (Huffman et al 2009). No fire ecology information specific to the ecosystem of Hunter Mountain is available.
- The William Lyle Hunter Cabin is the oldest documented structure in the park. Recent, already accomplished mechanical fuels treatment in proximity of the Hunter Cabin, in combination with the proposed action, would add to the amount of defensible space around the historic structure.
- Wilderness resources have been diminished by the impacts of grazing activities and long-term fire suppression, and federal action is required to restore the natural and untrammelled qualities of wilderness character.

PROJECT BACKGROUND, PREVIOUS PLANNING, AND SCOPING

Previous Planning

In 2010, the park completed a multi-year planning process that culminated in an approved Fire Management Plan (FMP) for the approximately 3.4 million acres managed by the National Park Service within Death Valley National Park. As Appendix F of the FMP, a Five-Year Work Plan outlined park priorities for fuels reduction and treatments. Hunter Mountain was identified as an area to accomplish both a mechanical fuels reduction and a prescribed fire to protect the Hunter Cabin and restore native plant communities. Of the mechanical reduction planned for Hunter Mountain, the FMP stated:

“The second priority is the hazard fuel treatments of accumulated fire hazard slash and debris buildup in the Hunter Mountain area. In this area, pinyon and juniper are interspersed with grasslands and, in recent years, trees and brush have invaded the grasslands, increasing the fuel load. The Timbisha Shoshone have historically manipulated fuels in this area, either manually or using prescribed fire. There is a grazing permit in a portion of this area as well as historic structures crowded by heavy fuels. Access is via existing high clearance gravel roads. The first step in reducing hazards in the Hunter Mountain Cabin area is to mechanically remove heavy

fuels from around the structure and along the road used to access the cabin. This is identified as a single project. Prior to treatment, the site needs to be surveyed and recorded for cultural resources. Environmental review is likely to consist of a categorical exclusion.”

Death Valley National Park reviewed the environmental impacts of the mechanical fuels reduction outlined in the FMP and the park superintendent signed a categorical exclusion for the project on 5/20/2010. The mechanical fuels reduction was completed during the summer of 2010.

The FMP stated the following regarding prescribed fire around the Hunter Cabin:

“Later, prescribed fire will also be used to mitigate the heavy fuel load caused by shrub encroachment and restore the native grasslands and wetlands in this area. It is estimated that the burn would include about 700 acres, primarily in light fuels and shrubs. The burn plan would include consultation with the Timbisha Shoshone and additional information is needed regarding the dynamics of grasslands and woody vegetation invasion in the Hunter Mountain area. There is also concern for a newly described butterfly subspecies, the Hunter Mountain Copper Butterfly (*Lycaena xanthoides obsolescens*) that is rare and apparently endemic to the Hunter Mountain area. Treatments in this area will also require consideration of grazing practices in this allotment and may include a short-term grazing deferral after the prescribed fire. Additionally, the entire burn unit will need to be surveyed for archaeological resources. Environmental compliance needs will be identified using an environmental screening form, but it is expected that an environmental assessment will be necessary.”

The park’s interdisciplinary team examined the potential impacts of prescribed fire on Hunter Mountain in late 2011, and recommended a smaller proposed fire accompanied by a fire effects study. An environmental screening form was completed and signed by the park superintendent on 12/20/11. The environmental screening form identified an environmental assessment as the appropriate NEPA pathway for examining the environmental impacts to park resources from the proposed prescribed fire.

The park’s Wilderness and Backcountry Stewardship Plan (NPS 2012, section 2.6.7) also supports the actions to restore natural conditions to wilderness resources, as outlined in the park’s approved Fire Management Plan.

Scoping

The park superintendent met with the Timbisha Shoshone Tribal Chairman, Vice-Chairman, and Tribal Administrator on January 13, 2012 to discuss the prescribed fire and ecosystem study. At that time, the Tribe did not express any concerns, but expressed an interest in wanting to visit the site of the proposed prescribed fire. The park followed up with a formal scoping letter to the Timbisha Shoshone Tribe and an invitation to members of the Tribal Council to tour the site with the Chief of Resources Management; the invitation was accepted. The Timbisha Shoshone Tribe has sent the park a letter stating that the Timbisha traditionally used fire to manage ecosystems, and that the Tribe is satisfied with the work plan for the prescribed fire and the management practice of returning fire to ecosystems. The letter also

requested that the park continue to keep the Tribe informed, so that a tribal monitor could be on site during the prescribed fire. This letter is included in Appendix A.

Agency scoping letters were sent to the State Historic Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service (USFWS) on February 14, 2012. The SHPO's office had no comments at the time. The USFWS response stated that there are no federally listed, proposed, or candidate species, nor their critical habitats, known to exist in the project area. All agency letters and responses are included in Appendix A to this document.

A press release initiating public scoping and describing the proposed action was issued on March 12, 2012, and public comments were solicited via the park's mailing list and the NPS Planning, Environment and Public Comment website during a public scoping period that ended April 13, 2012. Two comments were received. One comment helped identify cultural resources in the area and asked that the environmental assessment clearly outline a plan for the protection of these resources. The other comment was received from the California Department of Fish and Game (CDFG). This comment requested that the EA include a complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis on identifying special status species and locally unique species or communities. To this end the CDFG recommended that the park consult the California Natural Diversity Data Base for areas with project activities. In addition, the CDFG recommended that the EA include a clearly defined purpose and need, a reasonable range of alternatives, and thorough mitigation to offset any impacts to plant or animal species. Finally, the CDFG requested that the park make its approved Fire Management Plan available for reference. The park has since published the Fire Management Plan on its website, available for download here:

<http://www.nps.gov/deva/parkmgmt/planning.htm>

The public and agencies will have an opportunity to review and comment on this environmental assessment. Also, see the "Consultation and Coordination" section of this document.

ISSUES AND IMPACT TOPICS

Issues

Issues and concerns affecting this proposed action were identified from past NPS planning efforts and agency and public input from the scoping process. The important issues that were identified include potential impacts to soils, water resources, air quality, vegetation, wildlife, special status species, visitor use and experience, health and safety, wilderness, archeological resources, cultural landscapes, historic structures, and ethnographic resources.

NEPA requires the consideration of impacts on affected ecosystems and is the basic national charter for protection of the environment (CEQ Part 1500). NEPA requires federal agencies to use all practicable means to restore and enhance the quality of the human environment and to avoid and minimize any possible adverse effects of their actions on the environment. The preferred alternative would minimize impacts to natural and cultural resources, while enhancing long-term ecosystem health. Issues and mitigation measures are included in the rationale for selection of impact topics for further consideration or for dismissal from further consideration per the ensuing discussion.

Derivation of Impact Topics

Specific impact topics were developed to focus the discussion and to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal law, regulations, executive orders, *NPS Management Policies 2006*, and NPS knowledge of special or vulnerable resources. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

IMPACT TOPICS SELECTED FOR DETAILED ANALYSIS

Soils

The proposed action involves application of fire, and the resulting ash deposition is likely to alter the composition and chemistry of soils. Desert mountain wash and slope soils could also be impacted through disturbance during proposed project activities, runoff of ash deposition after proposed project activities, and potential loss through erosion. Soils are, therefore, addressed as an impact topic in this environmental assessment.

Water Resources

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of U.S. waters; to enhance the quality of water resources; and to prevent, control, and abate water pollution. *NPS Management Policies 2006* provides direction for the preservation, use, and quality of water in national park system units. Surface water expressions of spring and seep flows at the adjacent Hunter Meadow could potentially be impacted by ash deposition resulting from the proposed action. Post-project erosion could result in ash or soil washing into the Hunter Meadow; therefore, water quality is addressed as an impact topic in this environmental assessment.

Air Quality

The 1963 Clean Air Act, as amended (42 USC 7401 et seq.), requires land managers to protect air quality. Section 118 of the Clean Air Act requires parks to meet all federal, state, and local air pollution standards. Section 176(c) of the 1963 Clean Air Act requires all federal activities and projects to conform to state air quality implementation plans to attain and maintain national ambient air quality standards. *NPS Management Policies 2006* address the need to analyze potential impacts to air quality during park planning. Death Valley National Park is classified as a class II “floor” air quality area under the Clean Air Act, as amended, which means it may never be redesignated to class III (NPS 2002). The project area is in the Great Basin Unified Air Pollution Control District, as established by the State of California. This district is classified as a California state nonattainment area for particulate matter (fine dust) less than 10 microns in diameter. The general trend in upper air movement carries pollutants to the park from metropolitan areas, industrial areas, and transportation corridors to the west. In the

summer, surface winds flow from the southwest, where sources that contribute to air pollution in the park include major population centers, industrial areas, and a dry lakebed. In winter, surface winds flow from the northeast. Because northeast winds comprise an air mass that originates in less developed areas, the air quality of the park is generally better in the winter (NPS 2003).

The proposed action would temporarily impact local and regional air quality through the emission of smoke from prescribed fire, as well as through the increased vehicle exhaust and emissions (hydrocarbons, nitrogen oxide, and sulfur dioxide emissions) associated with project activities. Fugitive dust plumes from transportation of equipment across the Saline Valley Road and Hunter Mountain Road would intermittently increase airborne particulates in the area. Therefore, air quality is addressed as an impact topic in this environmental assessment.

Vegetation

NPS policy is to protect the components and processes of naturally occurring biotic communities including the natural abundance, diversity, and ecological integrity of plants and animals (NPS 2006). Existing desert mountain vegetation within the 50-acre footprint of the proposed prescribed fire would be directly impacted by the application of fire, and indirectly impacted by the chemistry and composition of soils and the ecological response to fire after the proposed action. Vegetation immediately adjacent to the 50-acre footprint could be subject to impacts from ash deposition, crushing/soil compaction by vehicles parking on the road shoulder, and erosion events after the proposed fire. Therefore, vegetation is addressed as an impact topic in this environmental assessment.

Wildlife

NPS policy is to protect the components and processes of naturally occurring biotic communities, including the natural abundance, diversity, and ecological integrity of plants and animals (NPS 2006). The proposed prescribed fire would likely have direct impacts to wildlife in the 50-acre project area, with the potential to temporarily or permanently displace or damage wildlife or their habitat. There would be a high risk of mortality for smaller species of wildlife not able to move from the proposed burn site. Proposed project activities such as driving fire engines along the Saline Valley Road and the Hunter Mountain Road could also temporarily increase the risk of wildlife mortalities through accidental killing of individuals or by increased susceptibility to predation or competitive stress. Therefore, wildlife is addressed as an impact topic in this environmental assessment.

Special Status Species

The Endangered Species Act (1973), as amended, requires an examination of impacts on all federally listed threatened or endangered species. NPS policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. Based on informal consultation with U.S. Fish and Wildlife Service, there are no federally listed threatened, endangered, or candidate species in the immediate project area. However, the rare Hunter Mountain Copper Butterfly (*Lycaena xanthoides obsolescens*) is endemic to the Hunter Meadow, which is adjacent to the proposed action, and could be impacted by smoke or human noise or activity. In addition, a 2010 bird survey of Hunter Mountain meadow detected California towhee, which could be the Inyo subspecies (*Melospiza (Pipilo) crissalis eremophilus*). The Inyo California towhee, if present during the proposed action, could be affected by smoke or human noise or activity as well. The Saline Valley Road, which would provide access to trucks and equipment necessary for implementing the proposed action, passes through an area near Lee Flat that has been identified as habitat for Mohave ground squirrel (*Xerospermophilus mohavensis*), a species listed as threatened by the State of California. Vehicle traffic resulting from the proposed action could temporarily increase the risk of wildlife mortalities through accidental killing of individuals or by increased susceptibility to predation or competitive stress. Because of these potential indirect effects to rare or special status wildlife species, special status species are addressed as an impact topic in this environmental assessment.

According to the California Native Diversity Database (CNDDDB), there is one potential special status plant species that may be present in the proposed burn area. Macdougall's lomatium (*Lomatium foeniculaceum ssp. macdougallii*) was found within a mile of the project area in 1982. This plant's rarity is ranked at 2.2 by the California Native Plant Society (CNPS) which is defined as "plants fairly endangered in California but more common elsewhere." A survey of the proposed burn area in May 2012 found no occurrences of this plant.

Although there are no special status plant species found in the proposed burn area, the California dock (*Rumex salicifolius var. denticulatus*) is a Species of Management Concern because it is vital habitat for the rare Hunter Mountain copper butterfly. This butterfly feeds and reproduces on California dock that is found in the wet meadows of Hunter Mountain.

Wilderness

The Wilderness Act (1964) and NPS policy require an examination of whether an action occurring in federally designated wilderness that includes mechanized equipment or installations meets the minimum requirements necessary for the administration of that area as wilderness. Degradation of wilderness is prohibited, and no federal management actions may be taken which are not essential for managing a designated area as wilderness. In addition, NPS policy requires an examination of impacts from a proposed action to wilderness character, if the proposed action is occurring in or adjacent to federally designated wilderness.

The proposed action would occur in federally designated wilderness, would include mechanized equipment, and would involve installations such as study plots and fencing post-fire. Therefore, wilderness is addressed as an impact topic in this environmental assessment, and a minimum requirements analysis is conducted as part of this environmental assessment.

Archeological Resources

The National Historic Preservation Act (16 *United States Code* [USC] 470 et seq.), National Environmental Policy Act, NPS Organic Act, NPS *Management Policies 2006*, Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*, and Director's Order 28: *Cultural Resource Management* require the consideration of impacts on cultural resources, including archeological resources, either listed in or eligible for listing in the national register. The Area of Potential Effect (APE) for the proposed project was defined in accordance with the implementing regulations for Section 106 of the National Historic Preservation Act and in consultation with the California SHPO. The area of potential effect (APE) for the proposed project includes the area of the prescribed burn, scratch lines, portable water tank placement, and vehicle parking and staging locations. Several archeological investigations have taken place in or near the project area, and there are archeological sites immediately adjacent to or within the APE for the proposed project. Therefore, archeological resources are addressed as an impact topic in this environmental assessment.

Cultural Landscapes

The National Historic Preservation Act (16 USC 470 et seq.), National Environmental Policy Act, NPS Organic Act, NPS *Management Policies 2006*, Director's Order 12 and Director's Order 28 require the consideration of impacts on cultural resources including cultural landscapes.

According to Director's Order 28, a cultural landscape is:

a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials such as roads, buildings, walls and vegetation, and by use reflecting cultural values and traditions.

The project falls within an unevaluated cultural landscape: the Hunter Mountain Ranch Historic Rural Landscape. The landscape may be eligible for listing in the National Register of Historic Places at a local level for its association with Death Valley's ranching and mining history. There is a potential for impacts to this cultural landscape from the proposed action. Therefore, cultural landscapes are addressed as an impact topic in this environmental assessment.

Historic Structures

The National Historic Preservation Act (16 USC 470 et seq.), National Environmental Policy Act, NPS Organic Act, NPS *Management Policies 2006*, Director's Order 12, and Director's

Order 28 require consideration of impacts on cultural resources including historic structures. According to Director's Order 28, structures are constructed items built to serve human activity and include buildings, roads, dams, canals, bridges, defense works, mounds, ruins, etc.

Two historic structures, the William Lyle Hunter Cabin (CA-INY-5044/H, LCS 009068) and the "tin shack" (CA-INY-5045/H), could be impacted from the proposed action; therefore, historic structures are addressed as an impact topic in this environmental assessment.

Ethnographic Resources

An ethnographic resource is defined by the National Park Service as a "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (Director's Order 28). The National Park Service is consulting with the Timbisha Shoshone Tribe and copies of the environmental assessment will be forwarded to them for review or comment.

Ethnographic resources of importance to the Timbisha Shoshone have been identified within the proposed project area. Therefore, ethnographic resources are addressed as an impact topic in this environmental assessment.

Visitor Use and Experience

Under the proposed action, short-term impacts to visitor use and experience would be expected during project implementation in the form of road and area closures in the Hunter Mountain locality to effect safety measures. Therefore, visitor use and experience is addressed as an impact topic in this environmental assessment.

Health and Safety

The proposal for a prescribed fire could potentially impact public safety, as fire carries inherent risk in a wildland setting where the public normally travels and recreates. Safety mitigation for the proposed action would necessarily include a plan to close the area to visitation during burn activities, as well as a comprehensive safety plan for those conducting the proposed scope of work. Nevertheless, it is reasonable and prudent to include a comprehensive risk assessment in this environmental assessment. Therefore, health and safety is addressed as an impact topic in this environmental assessment.

IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS

Impact topics for this project have been identified on the basis of federal laws, regulations, and orders; NPS *Management Policies 2006*; and NPS knowledge of resources at Death Valley National Park. In this section of the environmental assessment, the National Park Service provides an evaluation and explanation as to why some impact topics are not evaluated in more detail. In general, impact topics are dismissed from further evaluation in this environmental assessment if:

- they do not exist in the analysis area;
- 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 minor or less effects from the proposal, and there is no controversy on the subject or any other extraordinary circumstances to include the topic.

Designated Critical Habitat, Wild and Scenic Rivers, Other Unique Natural Areas

No areas within the proposed project area are designated as critical habitat or ecologically critical, nor are there any existing or potential wild and scenic rivers within the project area, or receiving runoff from the project site. Death Valley is an important natural area, but the proposed action would not threaten the associated qualities and resources that make the park unique. Therefore, these topics were dismissed from detailed analysis in this environmental assessment.

Wetlands, Riparian Vegetation, and Floodplains

Executive Order 11988, “Floodplain Management” requires an examination of impacts to floodplains and the potential risk involved in placing facilities within floodplains. NPS *Management Policies 2006*, Director’s Order 2: *Planning Guidelines*, and Director’s Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* provide guidelines for proposed actions in floodplains. The proposed action would not occur in a floodplain; therefore, floodplains were dismissed from detailed analysis in this environmental assessment.

Executive Order 11990, “Protection of Wetlands” requires an examination of impacts to wetlands. A riparian habitat, which is not defined as a wetland on USGS maps, was identified in the adjacent Hunter Meadow. However, the proposed project would be restricted to non-riparian pinyon pine woodland, and would not directly impact the riparian habitat. Potential indirect impacts to water resources from erosion or ash deposition will be fully addressed in the discussion regarding water resources. Therefore, wetlands were dismissed from detailed analysis in this environmental assessment.

Prime and Unique Farmlands

In 1980, the Council on Environmental Quality directed federal agencies to assess the effects of proposed actions on farmland soils classified as prime or unique by the U.S. Department of Agriculture, Natural Resources Conservation Service. Prime and unique farmlands are defined as soil, which particularly produces general crops including common foods, fiber, and oil seed; unique farmland produces specialty crops including fruits, vegetables, and nuts. There are no areas or soils where unique crops are produced within Death Valley National Park; therefore, the topic, prime and unique farmlands, was dismissed from detailed analysis in this environmental assessment.

Park Operations

Effects of the proposed action on park operations would be negligible; the proposed action would largely be managed by the Lake Mead Fuels Crew and assisted with resources from the Bureau of Land Management, resulting in negligible impacts to Death Valley staffing levels and no additional equipment needs. Some law enforcement staff commitment would be required to enforce road closures during the proposed project activities, but these impacts would be short-term and negligible. Therefore, park operations were dismissed from detailed analysis in this environmental assessment.

Socioeconomics

The proposed action would not change local or regional land use. The Hunter grazing allotment is adjacent to the proposed prescribed fire area. The Hunter allotment is currently the only open and permitted grazing allotment in Death Valley National Park. Mr. William Lyle Hunter and his descendants have grazed cattle on Hunter Mountain since 1868 (Bureau of Land Management 1989). In 1994, with the passage of the California Desert Protection Act, approximately 68% of the 127,200 acres of the Hunter allotment was transferred to the park (86,400 acres total in the park). The allotment is limited to having no more than 150 head of cattle for an entire season. This allotment is grazed seasonally, and the timing of the proposed prescribed fire would avoid the grazing season, resulting in negligible impacts to the Hunter grazing operation. Approximately 5 acres of the proposed project area overlaps with the grazing allotment. This area would not be fenced after the prescribed fire. Those five acres would likely have reduced forage post-fire; however, five acres is than .004% of the entire allotment. The impacts of the proposed action in the context of the total size of the allotment would be negligible.

Similarly, the proposed action would not appreciably affect local businesses outside Death Valley National Park. The Hunter Mountain locality would be closed to visitation for the duration of 1-3 days during project activities, while the rest of the 3.4 million acre park would remain open, including the most visited and popular areas, such as Furnace Creek, Stovepipe Wells, Badwater, Wildrose, Dante's View, and Telescope Peak. In addition, the proposed action would not affect concessions or inholding businesses within the park. Therefore, socioeconomics was dismissed from detailed analysis in this environmental assessment.

Environmental Justice

Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-income Populations,” requires all agency missions to incorporate environmental justice by identifying and addressing disproportionately high and adverse human health or environmental effects of agency programs and policies on minorities and low-income populations or communities. No alternative under consideration would have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency’s *Draft Environmental Justice Guidance* (July 1996). Environmental justice was, therefore, dismissed from detailed analysis in this environmental assessment.

Museum Objects

Museum collections include historic artifacts, associated records and archives, natural specimens, and archival and manuscript material contained in collections held by the park in designated storage or display areas. The preservation of museum collections is an ongoing process of preventive conservation, supplemented by conservation treatment when necessary. The primary goal is preservation of artifacts in as stable condition as possible to prevent damage and minimize deterioration. The proposed prescribed fire would not affect any designated storage or display areas for museum objects of Death Valley National Park; therefore, museum objects were dismissed from detailed analysis in this environmental assessment.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. Hunter Mountain is mentioned in the Timbisha Shoshone Homeland Act (2000) as part of the Timbisha Shoshone Natural and Cultural Area, but it is not designated as Indian Trust Land, as are other parcels specifically designated by that legislation. There are no Indian trust resources in the project area of the proposed action. Therefore, Indian trust resources were dismissed from detailed analysis in this environmental assessment.

Soundscapes

In accordance with NPS *Management Policies 2006* and Director’s Order 47: *Sound Preservation and Noise Management*, an important part of the NPS mission is preservation of natural soundscapes associated with national park system units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in national park system units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The

frequency, magnitude, and duration of human-caused sound considered acceptable varies among national park system units, as well as potentially throughout Death Valley National Park; being generally greater in developed areas and less in undeveloped areas. Noise associated with the proposed prescribed fire would be short term and localized, with negligible effects. Therefore, soundscapes were dismissed from detailed analysis in this environmental assessment.

Dark Night Skies

In accordance with NPS *Management Policies 2006*, the National Park Service strives to preserve dark night skies, which are natural resources and values that exist in the absence of human-caused light. Death Valley National Park has been designated an International Dark Sky Park because of the superb quality of its night sky resources. Based on vegetation moisture measurements, it is possible that some of the proposed project's activities could take place at night in order to insure a low-risk prescription for controlled fire. Nighttime activities would be accompanied by temporary lighting. However, the proposed project is short-term in duration, and would not appreciably add to an increase in nighttime lighting or degrade Death Valley National Park's dark night skies. Therefore, dark night skies were dismissed from detailed analysis in this environmental assessment.



FIGURE 1. WILLIAM LYLE HUNTER CABIN

Chapter 2: Alternatives

The alternatives section describes two management alternatives for the Hunter Mountain pinyon pine ecosystem at Death Valley National Park. Alternatives for this project were developed primarily to resolve long-term ecological system concerns, while working to avoid adverse impacts to wilderness character, natural resources, cultural resources, public safety, and visitor use and experience.

The no-action alternative describes the action of continuing the present management and current and reasonably foreseeable conditions of the area near the Hunter cabin. The no-action alternative provides a basis for comparing the management direction and environmental consequences of the preferred alternative. Should the no-action alternative be selected, the National Park Service would respond to future management concerns in the Hunter Mountain area using common management tools (e.g., monitoring the impacts of grazing, monitoring the spread of invasive species, appropriate cultural preservation strategies, and wilderness and backcountry management as outlined in the park's approved Wilderness and Backcountry Stewardship Plan of 2013).

The preferred alternative presents the NPS proposed action and defines the rationale for the action in terms of resource protection and management, visitor use, and other applicable factors. Alternatives considered and dismissed from detailed analysis and a summary table comparing the environmental consequences of each alternative completes this environmental assessment section.

ALTERNATIVE A: NO ACTION ALTERNATIVE

The no-action alternative entails the continuation of existing conditions for the Hunter Mountain pinyon pine ecosystem. The prescribed fire outlined and recommended in the park's Fire Management Plan would not be undertaken. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with the Hunter Mountain area without major actions or changes in the present course of management.

The current conditions of the ecosystem would prevail. Community structure would continue to be defined by the past land use and history, including grazing, invasive species spread, and fire suppression. In addition to the primary pinyon pine forest type, a large amount of grasses can be found underneath the drip line of the pinyon pine trees in the Hunter Mountain locality. These grasses are predominately composed of cheat grass (*Bromus tectorum*), a non-native, invasive species. Native bunch grasses are also present. The park would continue to monitor the ecosystem on an ad hoc basis to determine if cheat grass is spreading, but there would be no identified management action to address the spread of the invasive grass species, if such an invasion were determined to be occurring. The park does not currently pull cheat grass because of the infeasibility of hand removal on such a broad scale, nor does the park have a management policy of using herbicide for this species.

The mechanical fuel removal accomplished in 2010 under a categorical exclusion would continue to define the extent of defensible space around the William Lyle Hunter Cabin, until such time as regrowth occurred to replace the mechanically removed fuels.

The forest structure would continue to be largely composed of late seral stage growth, and the potential would remain for uncontrollable wildfire in the proximity of the Hunter Cabin and the Hunter Meadow. If uncontrollable wildfire did occur, it could potentially lead to large-scale and broad ecosystem changes, including permanent replacement of forest with non-native grass species (D'Antonio and Vitousek 1992).

ALTERNATIVE B: PREFERRED ALTERNATIVE

Alternative B is the NPS preferred alternative. The preferred alternative presents the NPS proposed action and defines the rationale for the action in terms of ecosystem management, resource protection, visitor use and experience, and public safety. The preferred alternative meets the park planning objective of managing a healthy ecosystem, while protecting natural and cultural resources and providing for public health and safety. The preferred alternative would implement a prescribed fire in 50 acres of pinyon pine (*Pinus monophylla*) forest with scattered sagebrush at the intersection of Hunter Mountain/Hidden Valley Road and the Hunter Cabin access road between 6,750 and 6,800 feet in elevation on a 0-10% slope. The prescribed fire would be followed by an ecosystem study to determine the effects of low-intensity, seasonally timed fire on native and non-native plant species regeneration and distribution.

The objectives for this prescribed fire and study would include: reducing the potential for accelerated soil erosion, creating a mosaic of vegetation age classes with an increase in native plant diversity, and promoting conditions that allow for recruitment of native grasses and forbs (Severson and Rinne 1990). The proposed action would reduce hazardous fuels in the area to create defensible space for the Hunter cabin, temporarily reduce pinyon pine and sage brush quantities to allow for plant community regeneration, and provide a baseline of data regarding prescribed fire effects in the Hunter Mountain pinyon pine ecosystem.

Phase 1: Implementation of Prescribed Fire

The target window for ignition of a proposed fire would be between June 1 and October 15 to allow for proper fuel moisture and subsequent combustion of fuels. This time frame would also enable resource managers to address the prime season for reducing non-native fine fuel cover and seed production, by timing the potential burn for a window when *Bromus tectorum* had produced seed heads, but had not yet set seed. Ignition of a prescribed fire would not be conducted on a no-burn day as determined by Inyo County Department of Air Quality Management or without National or Regional approval during Preparedness Levels 4 and 5 restrictions on new prescribed fires. Prescribed burning is not allowed on Sundays, the last Saturday in April, or legal holidays, except for multi-day burns that cannot be reasonably treated on other days.

Fuel moisture would be tested prior to ignition, with the prescribed limits of 8-12% fuel moisture for the 100-hour measurement, 7-11% for the 10-hour measurement, and 6-10% for the 1-hour measurement. Any measurement outside of these limits would not allow the prescribed fire to proceed. The prescribed fire would not be ignited if wind speed, or forecast wind speed, was greater than 8 mph.

Onsite line preparation would include the use of hand tools to create a scratch line (an area of exposed bare mineral soil to prevent fire spread on the ground) two feet wide extending from the Hunter Mountain Road to the Hunter cabin access road (see Fig. 2, project map).

Preparation work would also include limbing of trees adjacent to the unit perimeter to reduce chance of torching and installation of a fire hose layout (1.5 inch trunk with lateral hose every 200 ft or less) along the scratch line to support holding operations. The operation would also place a portable water tank for refilling fire engines assigned to the fire in a previously disturbed area on Hunter Mountain Road within .5 miles of the fire perimeter, as depicted in the project map.

A water tender would be placed in a previously disturbed, non-habitat footprint at the junction of California Highway 190 and the Saline Valley Road. This resource would be used by smaller fire engines to refill water resources assigned to the fire. The southern portion of Saline Valley Road and the Hunter Mountain Road would serve as the operational access roads to the proposed prescribed fire site.

Park protection staff and park interpretive staff would accomplish road and area closures by posting website announcements, hard copy bulletins, and a press release about the proposed action at least a week in advance of the ignition. Notifications would be provided at the Interagency Visitor Center in Lone Pine, California, and in the park at the Panamint Springs Resort, the Furnace Creek Visitor Center, the Furnace Creek Ranch and Inn, and the Stovepipe Wells Resort. Park protection staff would post road signs prior to the proposed ignition notifying visitors of the scheduled prescribed fire and associated closure of the Hunter Mountain area for the duration of operations. Signs would be placed:

- At the intersection of Highway 190 and the Saline Valley Road
- At the intersection of the Saline Valley Road and the Hunter Mountain Road
- Along the Hidden Valley Road
- At the intersection of the Saline Valley Road and the Big Pine Road

The area targeted for closure to park visitors would be between the intersection of the Hunter Mountain Road and the Saline Valley Road in the south, and at the northern extreme, the Hunter Mountain Road 1.8 miles north of the intersection with the Hunter Cabin road. Park protection staff would sweep the area within and adjacent to the area targeted for closure in advance of operations and provide direct outreach to any park visitors. This direct outreach would include notification about the proposed action and associated closure, the duration of the proposed action, and alternative places in the park to recreate. Park protection staff would confirm a successful closure with the burn boss assigned to the proposed project before any ignition activities.

Ignition of the project area would require 1 day. An additional two to three days would be required for complete combustion of heavy fuels and targeted suppression and thorough inspection activities on the remainder of the fire to insure the prescribed fire is contained within the designated perimeter and extinguished.

Specific actions would be taken to address cultural, archaeological and historical resources protection during the proposed prescribed fire. An on-site archeologist would be present throughout the duration of fire activities to identify areas that need to be avoided with drip torch fuel or fire to protect sensitive cultural resources. The archeologist would also guide placement of hand lines to avoid impacts to cultural resources. Site preparation would include actions to protect historic cut trees within the burn area. Precautions would include removal of vegetation and duff to mineral soil in a three foot perimeter around the base of historic cut trees, and pre-treatment of the trees with water before fire reaches their proximity. Desired ignition conditions for the protection of archeological resources would be targeted and a test burn would be completed to identify fire behavior potential. Fire behavior would be maintained at an appropriate level to insure desired fuel consumption and proper protection of cultural resources present within the burn perimeter.

The William Lyle Hunter Cabin is located within .5 miles of the burn perimeter. The unit perimeter does not put fire immediately adjacent to this cabin. An engine would be placed at Hunter Cabin to protect the structure. A second historic structure, also located within .5 miles of the burn perimeter, would be protected by running a hose lay to it.

An air quality permit would be obtained from Great Basin Unified Air Pollution Control District. Spot weather forecasts would be requested prior to each burn day and each consecutive day of the burn. Actual on site weather information would be reported back to the weather forecaster to help improve forecasts.

The minimum holding force for the proposed prescribed fire would be three engines, each staffed with three people. One of the squad members could serve as the holding boss. A fire lookout would be posted during all ignition operations. If spot-fires or slop-overs occur, ignition operations would be ceased and suppression actions would be undertaken using all assembled resources as necessary. The burn boss would supervise suppression actions.

An archeological monitor and a tribal monitor for the Timbisha Shoshone Tribe would be present for operations to inform all actions for the protection of cultural resources.

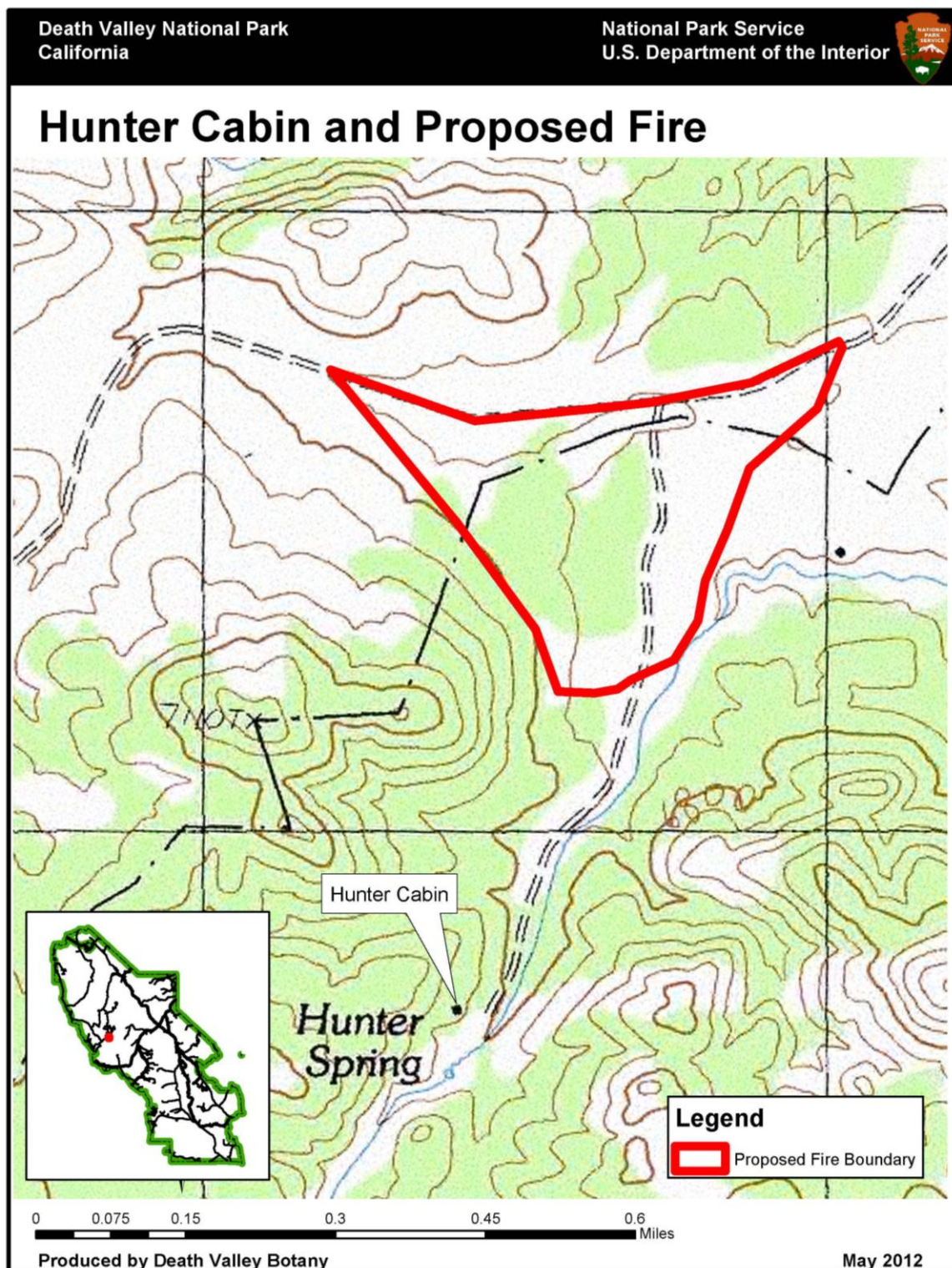


FIGURE 2. MAP OF PROPOSED PROJECT AREA AND HUNTER CABIN

Phase 2: Research Study

An ecosystem study would be a component of the preferred alternative, with plots established before prescribed fire implementation, and a cattle exclusion fence installed post-fire to understand the fire effects both with and without the influence of grazing. The fence and all monitoring plots would be a temporary installation to last 20 years; at the conclusion of that time, the fence and any other installations associated with the ecosystem study would be removed from the area to restore wilderness character.

Forest research plot sampling design would be established following the National Park Service's Fire Monitoring Handbook (USDI 2003). Three burn plots within the burn unit would be established along with three control plots outside the burn unit to accurately assess fire effects within the pinyon pine (*Pinus monophylla*) forest vegetation community. Plots would be established prior to fire ignition and read within one year prior, immediately post burn, and at 1, 2, 5, 10, and 20 year intervals to record ecosystem recovery over time. This information would be used to understand fire effects on ecosystem dynamics on the affected site and used to assess the potential for any subsequent prescribed fire actions in the pinyon pine forest. Research plots would be identified by GPS, with no physical markers installed in the ground.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with Director's Order 12, the National Park Service is required to identify the environmentally preferred alternative in all environmental documents, including environmental assessments. The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act, which is guided by the Council on Environmental Quality. The council provides direction that: "[t]he environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed in section 101 of NEPA, which considers:

1. fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations
2. assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings
3. attaining the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences
4. preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice
5. achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
6. enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources" (NEPA, section 101).

The no-action alternative is not the environmentally preferred alternative because it would not:

- manage the ecosystem of Hunter Mountain for natural processes such as fire, thereby decreasing the diversity in forest structure and the associated ecological community (criteria 1 and 4)
- address the non-native cheatgrass (*Bromus tectorum*) invasion in the Hunter Mountain pinyon pine ecosystem (criteria 1, 2, and 4)
- address the need for defensible space around the William Lyle Hunter Cabin for the purpose of cultural preservation (criterion 4)

The NPS preferred alternative is the environmentally preferred alternative because it would:

- protect public health and safety by decreasing the chances of the ignition of an uncontrollable fire in the vicinity of the William Lyle Hunter Cabin (criteria 2 and 3)
- encourage natural ecosystem processes and healthy forest function by introducing a mosaic of seral stages to the pinyon pine ecosystem of Hunter Mountain (criteria 1 and 4)
- provide for the collection of important data regarding prescribed fire's effects on the ecosystem of Hunter Mountain by means of a pinyon pine ecosystem study (criteria 1 and 2)
- minimize adverse effects to some important historic and cultural aspects of our national heritage to the greatest extent possible (criterion 4)

ALTERNATIVES CONSIDERED BUT DISMISSED

The National Park Service considered two additional alternatives during internal scoping for this project, but dismissed these alternatives because of potential impacts and because they did not meet the purpose and need. These alternatives, which were considered but dismissed, include:

Implementation of a 700-acre prescribed fire in proximity to the William Lyle Hunter Cabin, as outlined in Death Valley National Park's 2010 Fire Management Plan. This proposal was considered and mapped, but ultimately dismissed because of the degree of uncertainty associated with implementation of a prescribed fire of this scale in a remote location. The NPS considered the potential impacts to public safety and cultural and natural resources unacceptable without the experience of having implemented prescribed fire as a management tool in the Hunter Mountain locality, as well as not having implemented a fire effects study to inform managers about the ecology of the Hunter Mountain pinyon pine ecosystem.

Implementation of a 50-acre prescribed fire without an associated ecosystem study. The NPS considered use of prescribed fire as a management tool in the Hunter Mountain pinyon pine ecosystem without the management measure of connecting the controlled burn with a fire effects study. This alternative did not meet the project's purpose and need to manage the forest

ecosystem for long-term health in light of the fact that there is very little information available concerning effectiveness and ecological responses of prescribed fire treatments in pinyon pine ecosystems such as Hunter Mountain (Huffman et al 2009). Therefore, this alternative was dismissed from consideration.

MITIGATION MEASURES OF THE ACTION ALTERNATIVE

Mitigation measures are presented as part of the action alternative. These actions have been developed to lessen the adverse effects of the proposed action.

TABLE 1. MITIGATION MEASURES OF THE ACTION ALTERNATIVE

Resource Area	Mitigation
General Considerations	The NPS project manager would ensure that the project remains confined within the parameters established in the compliance document and that mitigation measures would be properly implemented, and would work in coordination with the burn boss to clearly communicate these measures and guidelines for achieving them.
	Fuel moisture would be tested prior to ignition, with the prescribed limits of 8-12% fuel moisture for the 100-hour measurement, 7-11% for the 10-hour measurement, and 6-10% for the 1-hour measurement. Any measurement outside of these limits would halt the implementation of prescribed fire. The prescribed fire would not be ignited if wind speed, or forecast wind speed, is greater than 8 mph.
	Spot weather forecasts would be requested prior to each burn day and each consecutive day of the burn. Actual on site weather information would be reported back to the weather forecaster to help improve forecasts.
	Ignition of a prescribed fire would not be conducted on a no-burn day as determined by Inyo County Department of Air Quality Management or without appropriate level National or Regional approval during Preparedness Levels 4 and 5 restricting new prescribed fires.
	Vehicle engine idling restrictions would be enforced to reduce emissions.
	Staging for vehicles and equipment would be sited in previously disturbed areas.
	The minimum holding force for the proposed prescribed fire would be three engines, each staffed with three people. One of the squad members could serve as the holding boss. A fire lookout would be posted during all ignition operations. If spot-fires occur, ignition operations would be ceased and suppression actions would be undertaken using all assembled resources as necessary.

TABLE 1. MITIGATION MEASURES OF THE ACTION ALTERNATIVE

Resource Area	Mitigation
Soils	Available woody material (mostly limbs cut from trees adjacent to the unit perimeter—see page 23) would be placed on the steeper slopes, trampled areas, and in areas that focus overland flow in order to limit erosion after the fire. The materials would be arranged with their lengths perpendicular to the slope to help dissipate the energy of runoff and trap sediment.
	The fence around the burn area would be repaired to exclude cattle. Trampling of a burned area by cattle increases the vulnerability of the soil to erosion and delays the return of soil-stabilizing vegetation.
Air Quality	Applicable California air quality permits would be acquired prior to project implementation. State regulations would be followed.
	Duration of prescribed fire ignition activity would be limited to part of one operational period (maximum of 24 hours) for the 50 acre treatment. Post fire mop-up and monitoring of the fire would extinguish any smoke within the fire perimeter.
	A smoke modeling program would be employed ("Simple Approach Smoke Estimation Model [SASEM]") to calculate consumption of fuel, emission of particles, and dispersion of pollutants produced by burning of forest and range vegetation, in order to maximize safe fuel consumption while limiting emissions.
Vegetation	All vehicles, equipment, clothing and boots would be thoroughly cleaned of all soil, seeds and vegetative material before entering Death Valley National Park and the proposed burn area to prevent the introduction of non-native plants into the project area.
	The prescribed fire would be timed to reduce the cover of non-native grasses including red brome and cheat grass. Depending on seasonal precipitation, the fire would occur after June 1 and while grasses still retain seeds on vegetation above ground.
	The burned area would be fenced to exclude cattle, reducing the prevalence and spread of non-native annual grasses.
Wildlife	All vehicles associated with the operation would obey posted speed limits and drive 25 mph or less on dirt roads. Operational staff would receive a briefing on the potential for wildlife presence on roadways. Drivers and passengers would watch for wildlife on roadways and take appropriate actions to avoid hitting wildlife while maintaining human safety.

Special Status Species	Meadow area would be surveyed again for presence of any special status species bird nests, nestlings, or juveniles prior to operation. If discovered, firelines would be established around these sites.
	All vehicles associated with the operation will obey posted speed limits and drive 25 mph or less on dirt roads. Operational staff would receive a briefing on the areas where Mohave ground squirrel could potentially be present. Drivers and passengers will watch for wildlife on roadways and take appropriate actions to avoid hitting wildlife while maintaining human safety.
Wilderness	The study fence and any portions of the Hunter Mountain grazing allotment fence utilized to exclude large animals from the study plot would be removed at the end of the 20-year study period or earlier if the study ends or is abandoned in less than 20 years. The removal of the Hunter Mountain grazing allotment fence is dependent on the retirement of the allotment.
Archeological Resources	
	If concealed or previously unrecorded archeological resources are encountered during project activities, all necessary steps will be taken to protect them and to notify the Park Archeologist immediately.
	Archeologist or archeological technician would be present throughout the duration of fire activities to identify areas where the use of drip torch fuel or fire needs to be avoided to protect sensitive cultural resources.
	Effects to site 11-092-02 would be avoided through the use of flagging: the site boundary would be flagged and vehicle and foot traffic would be excluded from the site.
	The proposed project would not involve the use of heavy equipment. Hand tools would be used to scratch lines around the perimeter of the fire. An archeologist or archeological technician would guide line construction to minimize or avoid impacts to CA-INY-1875/H. Fire engines and other vehicles would remain on existing roads.
	Ethnohistoric/historic axe-cut trees within CA-INY-1875/H would be protected by a combination of clearing duff and brush away from beneath them and by applying water as needed.
	The park would use the proposed fire treatment as an opportunity to conduct research on the effects of prescribed fire on obsidian hydration. Artifacts from CA-INY-1875/H have been collected and submitted for hydration analysis and sourcing. The artifacts would be placed back into the project area prior to the burn and retested afterwards to determine the extent to which hydration bands were affected.

Cultural Landscapes	As features within the Hunter Mountain Ranch Historic Rural Landscape, CA-INY-5044/H (the Hunter Cabin) and CA-INY-5045/H would be protected. Mechanical fuels treatments have reduced the amount of undergrowth and brush around Hunter Cabin to limit the potential for fire to spread and an engine would be placed at the cabin. A hose lay would be placed between the fire perimeter and CA-INY-5045/H (the tin shack) to prevent fire from spreading to the site.
Historic Structures	Mechanical fuels treatments have reduced the amount of undergrowth and brush around Hunter Cabin (CA-INY-5044/H) to limit the potential for fire to spread and an engine would be placed at the cabin. A hose lay would be placed between the fire perimeter and CA-INY-5045/H (the tin shack) to prevent fire from spreading to the site.
Ethnographic Resources	Culturally modified (axe-cut) pinyon trees would be protected by a combination of clearing duff and brush away from beneath them and by applying water as needed.
Health and Safety	A public safety and outreach plan would be implemented in advance of the proposed fire, to include area closure to the public during prescribed fire activities.

TABLE 2. ALTERNATIVES COMPARISON TABLE

Alternative A: No-Action Alternative	Alternative B: Preferred Alternative
<p>There would be no prescribed fire or associated ecosystem study in the Hunter Mountain pinyon pine forest near the William Lyle Hunter Cabin. The area would continue to be monitored on an ad hoc basis, and no management action would be taken to combat continuing exotic grass invasion of the ecosystem.</p> <p>The predominantly late seral stage forest structure would continue to mature, until advent of eventual tree mortality through environmental stresses or uncontrolled wildfire.</p>	<p>A 50-acre prescribed fire would be implemented with appropriate safety measures for containing the burn and for ensuring visitor and employee health and safety during operations, timed to maximize potential for reducing seed crop of non-native grasses. The prescribed fire would be planned and implemented to protect cultural and natural resources in the proposed project area and in areas that could see impacts from connected action, such as staging and transportation.</p> <p>The prescribed fire would be followed by an associated ecosystem study to determine the effectiveness of prescribed fire for managing plant communities and ecosystem health in the pinyon pine forest of Hunter Mountain.</p>

**TABLE 3. SUMMARY OF ENVIRONMENTAL CONSEQUENCES /
IMPACT COMPARISON MATRIX**

Potential Environmental Impacts		
Impact Topic	Alternative A: No-Action Alternative	Alternative B: Preferred Alternative
Soils	Vegetative litter would continue to accumulate at the site. Excessive fuels would increase the likelihood of a high intensity fire, which may result in the formation of a low permeability soil crust. Reduced permeability would increase the potential for overland flow and erosion. Impacts would be minor, long-term, and adverse.	Soils would be temporarily more vulnerable to erosion following the burn, but the erosional susceptibility would remain low. In the longer term the proposed burn may reduce erosional susceptibility by decreasing the likelihood of a high intensity fire which may result in the formation of a low-permeability soil crust.
Water Resources	Excessive fuels would increase the likelihood of a high intensity fire, which may result in the formation of a low permeability soil crust. Reduced permeability would increase the potential for overland flow and erosion, and thereby increase the potential for elevated sediment loads in runoff. Impacts of the no action alternative to water resources are expected to be negligible to minor, long-term, and adverse.	There would be a temporary increased potential for elevated sediment loads in runoff from the burn area. However, because of the gentle slopes and well drained soils, the potential for overland flow from the area would remain low. There would be a potential for wind-blown ash to enter nearby drainages where it may become part of the sediment load during ephemeral runoff events. This is not expected to negatively impact water quality, and the nutrient content of the ash may provide an ecologically beneficial effect. Impacts to water resources would be negligible to minor, short-term adverse and long-term beneficial.
Air Quality	If no prescribed fire is ignited, no direct impacts to air quality will be realized from smoke or dust. There would be negligible impacts from other actions in combination with the no action	Prescribed fires are only ignited under specific conditions. These conditions are chosen to minimize any negative long term impacts to air quality. Air quality would return to good or excellent several

Potential Environmental Impacts		
Impact Topic	Alternative A: No-Action Alternative	Alternative B: Preferred Alternative
	alternative.	days after the burn is extinguished.
Vegetation	Shrubs would continue to encroach on the herbaceous wet meadow and pinyon pines would continue to encroach on shrubland, resulting in a monotypic stand of mature singleleaf pinyon. Butterfly habitat, and specifically the California dock would likely be crowded out and replaced with shrubs and trees. Stand-replacement fire could result in a type conversion of pinyon forest to invasive grassland. The no action alternative, combined with cumulative impacts from grazing activities, would be long-term, minor to moderate, and adverse.	A prescribed fire would present short term minor to moderate adverse impacts to vegetation in the burned area. Recovery would be rapid and meadow habitat would be expected to recover within one year, potentially with a measurable increase in the amount of meadow relative to current conditions. The post-fire vegetation study would contribute important data toward future vegetation management activities in the Hunter Mountain area. Long term impacts to vegetation would be minor and beneficial.
Wildlife	The no action alternative would likely have negligible to minor, long-term adverse impacts to wildlife species and their habitats. Taking no action could lead to larger, more intense fires, with increased wildlife mortality as a result.	There would be local, short-term, minor adverse impacts to wildlife species and habitats from the direct effects of fire in 50 acres. The long-term impact from the anticipated creation of diverse forest and meadow mosaic habitats would be minor and beneficial.
Special Status Species	The no action alternative would result in local, long-term, negligible to minor adverse impacts to the Inyo towhee and Hunter Mountain copper butterfly. There would be no impact to the Mohave ground squirrel.	Impacts on the Hunter Mountain copper butterfly would be local, short-term, and negligible. Long-term impacts would be negligible to minor and beneficial. Mohave ground squirrel would experience short-term, negligible, direct adverse impacts. Impacts on the Inyo towhee would be local, short and long-

Potential Environmental Impacts		
Impact Topic	Alternative A: No-Action Alternative	Alternative B: Preferred Alternative
Special Status Species		term, negligible, direct and indirect and beneficial. The determination of effect for the Inyo towhee under this alternative would be <i>no effect</i> .
Wilderness	Taking no action would continue to degrade the natural quality of wilderness character, leading to a long-term minor adverse impact. Continuing fire suppression activities to prevent catastrophic fire, combined with the cumulative effects of grazing, would degrade the natural quality of wilderness character by removing fire as an ecosystem process and facilitating the spread of non-native grasses. The possibility of a catastrophic fire would increase as the forest ages, increasing the potential impacts to the untrammeled character from actions to contain wildfires and to the unique quality of wilderness associated with the area's cultural resources.	The prescribed fire has been determined the minimum tool necessary for the administration of the wilderness area, in order to protect and restore the natural quality of wilderness character. The study plot fence would have a long term, minor adverse impact to the area's undeveloped quality. Use of chain saws would have a short term adverse impact to the undeveloped quality. The temporary closure to the public would have a short term adverse impact on opportunities for unconfined recreation. Impact levels to all qualities of wilderness character would be minor in intensity.
Archeological Resources	Conditions would remain the same and there would be no immediate direct impact to archeological resources. There would however be a continued accumulation of fuels which would increase the likelihood of an uncontrolled wildfire, which could adversely impact resources.	There would be negligible long-term impacts to CA-INY-1875/H from line construction and implementation of the burn. The potential for impacts from uncontrolled, high intensity wildfire would be reduced.
Cultural Landscapes	Conditions would remain the same and there would be no impacts to cultural landscapes. However, there would be an increased likelihood of uncontrolled wildfire which	There would be no impacts to cultural landscapes from the proposed project. There would be a decreased likelihood of uncontrolled wildfire which could lead to a loss of contributing

Potential Environmental Impacts		
Impact Topic	Alternative A: No-Action Alternative	Alternative B: Preferred Alternative
Cultural Landscapes	could lead to a loss of contributing features such as historic structures.	features such as historic structures.
Historic Structures	There would be no impacts to historic structures. However there would be an increased likelihood of uncontrolled wildfire which could lead to a loss of these structures.	The Hunter Cabin (CA-INY-5044/H) and tin shack (CA-INY-5045/H) are located outside of the area of potential effects for the prescribed burn. Past mechanical fuels reduction projects have created a defensible space around the Hunter Cabin and it would be further protected by an engine during the proposed burn. A hose lay would be placed between the fire perimeter and CA-INY-5045/H. There would be no impacts to historic structures.
Ethnographic Resources	There would be no impacts to ethnographic resources. However there would be an increased likelihood of uncontrolled wildfire which could result in the loss of mature pinyon trees and a replacement of pinyon by invasive grasses.	The proposed project would be consistent with past Timbisha land management practices: areas on Hunter Mountain were historically burned to encourage the growth of tobacco plants. Clearing of invasive species and removal of undergrowth would contribute to the health of pinyon pines on the site. There would be negligible to minor beneficial impacts to ethnographic resources. There would also be a decreased likelihood of uncontrolled wildfire which could result in the loss of mature pinyon trees and a replacement of pinyon by invasive grasses.
Visitor Use and Experience	There would be negligible impacts to visitor experience. Visitors would continue to access the area on a seasonal basis for diverse forms of recreation, and would have ample opportunities	There would be short-term, localized, minor to moderate adverse impacts to visitor use. During the week of operations, anyone seeking to access the Hunter Mountain area would be

Potential Environmental Impacts		
Impact Topic	Alternative A: No-Action Alternative	Alternative B: Preferred Alternative
Visitor Use and Experience	for self-directed exploration.	directly and adversely impacted by its closure. The impacts would be mitigated by outreach to visitors and by providing alternatives to recreate elsewhere in the park.
Health and Safety	The impact to public health and visitor safety would be negligible, beneficial, and long-term. Visitors would continue to be exposed to some risks, which would be mitigated by the park's mechanisms of delivering safety information to visitors to Hunter Mountain.	There would be negligible to minor public health and safety impacts from the proposed prescribed fire. Impacts from smoke could cause health concerns, and the park would mitigate these impacts through outreach. The proposed action's plan to enforce a closure of the area during burn operations would reduce the fire's public health and safety impacts to negligible to minor levels.

Chapter 3: Affected Environment

This section provides a brief description of resources in the Hunter Mountain area, and in the vicinity of the project that may potentially be affected by proposed prescribed fire and the associated ecosystem study.

LOCATION AND GENERAL DESCRIPTION OF THE PARK

Death Valley National Park is one of the largest national park system units in the United States (in the lower 48 contiguous states), encompassing 3,396,192 acres (1,374,390 hectares [ha]). The majority of park lands are in the California counties of Inyo and San Bernardino, but a small portion is in the Nevada counties of Nye and Esmeralda. Access to the park occurs via SR 95 from Las Vegas and Tonopah in Nevada and via U.S. Highway 395 from San Bernardino and Bishop in California. Access within the park occurs primarily from SR 190, which crosses east to west from Death Valley Junction to Lone Pine. The Saline Valley Road provides principal access to the western portions of the park, and is maintained by Inyo County. It is an 80-mile dirt road that runs from Highway 190 in the south to the Big Pine Road in the north, and is currently in a condition that requires a high-clearance vehicle and four-wheel-drive capabilities in order to traverse its length.

The Cottonwood Mountains are one of many north-south trending mountain ranges that define the geography of Death Valley National Park, and while they are bounded by Ubehebe Crater in the north and Highway 190 in the southern extent, the Cottonwood Mountains are part of the larger Panamint Range. The Panamint Range includes, in total, the Owlshead Mountains, Nelson Range, Cottonwood Mountains, and Saline Range. The Amargosa Range to the east includes the smaller Black Mountains, Greenwater Range, Funeral Mountains, Grapevine Mountains, and Last Chance Range. Telescope Peak of the Panamint Range is the highest elevation in the park, rising 11,049 feet (3,368 meters [m]) above sea level, and lies approximately 15 miles from the lowest elevation in the Western Hemisphere—Badwater Basin salt pan 282 feet [86 m] below sea level) (NPS 2002). Important intermontane basins of Death Valley include the valleys of Greenwater, Saline, Eureka, and Mesquite Flat.

The desert mountain ranges rise in contrast to the broad alluvial fans and valleys. The park's mountain areas are particularly attractive to visitors during the hot summers, providing cooler temperatures and wooded habitat. The low elevation landscape within the park is open, providing expansive vistas of basins, valleys, canyons, hills, ridges, slopes, dunes, and desert mountain ranges. Early miners and ranchers developed roads and trails that today provide visitors the opportunity to drive to many remote areas where backcountry camping and exploration is readily available. The expansive roadless areas of the park offer backpackers and hikers opportunities to explore the geology and landscape while observing vegetation and wildlife. There are many cultural sites interpreted for visitors; they include prehistoric use by Indian tribes (most recently by the Timbisha Shoshone Tribe) and historic sites including the William Lyle Hunter Cabin (NPS 2002). Detailed information on resources in Death Valley National Park may be found in the general management plan (NPS 2002) and on the Internet website: <http://www.nps.gov/deva>.

RESOURCES IN THE PROPOSED PROJECT AREA

Soils

The soils in the area of the proposed action are moderately deep to bedrock. The soils are well-drained and were formed in residuum and colluvium from granite. The soils in the proposed burn area are on slopes less than 10%. These soils have a low susceptibility to erosion because of the gentle slopes and good drainage.

Water Quality

The water resources of the region are regulated under the 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, and the California Water Resources Control Board, more specifically, under the Porter-Cologne Water Quality Control Act, as amended (CWRCB 2010). The mean annual precipitation is 250 mm (9.8 inches) in the proposed burn area. The drainages from the site only flow during intense rainfall, or during spring melt (with sufficient snowpack). Most of the area drains to the southeast into an unnamed ephemeral tributary to Cottonwood Canyon. A minor portion of the proposed project area drains northward and enters an unnamed ephemeral drainage which turns east and empties into Grapevine Canyon.

Air Quality

The 1963 Clean Air Act, as amended (42 USC 7401 et seq.), requires land managers to protect air quality. Section 118 of the Clean Air Act requires parks to meet all federal, state, and local air pollution standards. Section 176(c) of the 1963 Clean Air Act requires all federal activities and projects to conform to state air quality implementation plans to attain and maintain national ambient air quality standards. Death Valley National Park is classified as a class II “floor” air quality area under the Clean Air Act, as amended, which means it may never be redesignated to class III (NPS 2002). The project area is in the Great Basin Unified Air Pollution Control District, as established by the State of California. This district is classified as a California state nonattainment area for particulate matter (fine dust) less than 10 microns in diameter. The general trend in upper air movement carries pollutants to the park from metropolitan areas, industrial areas, and transportation corridors to the west. In the summer, surface winds flow from the southwest, where sources that contribute to air pollution in the park include major population centers, industrial areas, and a dry lakebed. In winter, surface winds flow from the northeast. Because northeast winds comprise an air mass that originates in less developed areas, the air quality of the park is generally better in the winter (NPS 2003). A smoke modeling program will be used "Simple Approach Smoke Estimation Model (SASEM)" to calculate consumption of fuel, emission of particles, and dispersion of pollutants produced by burning of forest and range vegetation.

Vegetation

The vegetation found in the proposed burn area can be classified as four different alliances with some transitional vegetation between each: a singleleaf pinyon woodland (*Pinus monophylla*), big sagebrush shrubland (*Artemisia tridentata*), Douglas' sedge meadow (*Carex douglasii*), and

an interior rose thicket (*Rosa woodsii*) (Sawyer et al 2008). Table 4 lists the species found in each vegetation type within the proposed project area, and Figure 3 displays the distribution of vegetation types within the proposed project area.

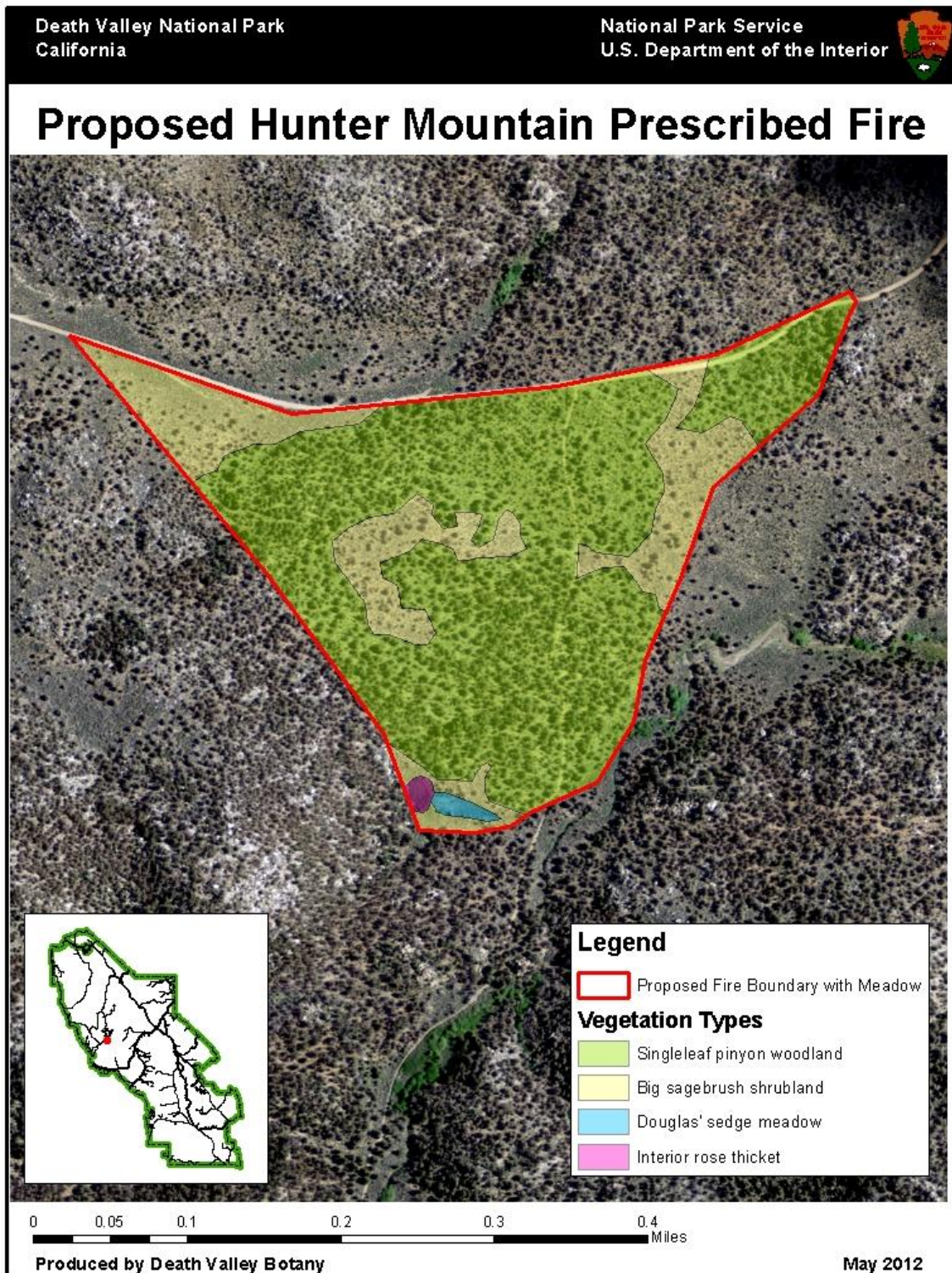


FIGURE 3. MAP OF VEGETATION TYPES IN PROPOSED PROJECT AREA

Taller, woodier vegetation appears to be encroaching and succeeding over smaller, herbaceous vegetation. Pinyon woodland appears to be encroaching into the dry meadows of sagebrush and rabbitbrush (*Chrysothamnus* spp.) while shrubs are encroaching into the wet meadows where Douglas' sedge and California dock. The evidence of this encroachment is seen where young pinyon saplings are growing in meadow clearings, and where shrubs are spreading into the wet sedge meadow at the southern edge of the proposed burn area. While the Douglas' sedge is still present in the shrub dominated meadow on the northwest side of the proposed burn, the California dock is not found in this meadow which suggests that the dock cannot survive shrub encroachment and subsequent lowering of the water table and drying of meadow soils.

TABLE 4. Species lists by vegetation type in the proposed burn area

Pinyon pine woodland		
Trees	<i>Pinus monophylla</i>	Singleleaf pinyon
Shrubs	<i>Artemisia tridentata</i>	Big sagebrush
	<i>Chrysothamnus viscidiflorus</i> ssp. <i>viscidiflorus</i>	Green rabbitbrush
	<i>Ephedra viridis</i>	Green ephedra
	<i>Eriogonum umbellatum</i>	Sulphur buckwheat
	<i>Lupinus argenteus</i> var. <i>palmeri</i>	Palmer's silver lupine
	<i>Opuntia polyacantha</i> var. <i>erinacea</i>	Grizzly bear cactus
	<i>Purshia stansburiana</i>	Stansbury cliffrose
	<i>Ribes montigenum</i>	Mountain gooseberry
	<i>Stephanomeria spinosa</i>	Thorn skeletonweed
Grasses, Sedges and Forbs.	<i>Astragalus casei</i>	Case's milkvetch
	<i>Bromus madritensis</i> ssp. <i>rubens</i> *	Red brome
	<i>Bromus tectorum</i> *	Cheatgrass
	<i>Calochortus</i> sp.(most likely <i>panamintensis</i>)	Mariposa lily
	<i>Calyptidium monandrum</i>	Sand cress
	<i>Collinsia callosa</i>	Desert collinsia
	<i>Cryptantha</i> sp.	Popcorn flower
	<i>Descurainia sophia</i> *	Tansy mustard
	<i>Elymus elymoides</i>	Squirreltail
	<i>Eucrypta micrantha</i>	Dainty desert hideseed
	<i>Lomatium nevadense</i> var. <i>nevadense</i>	Nevada biscuitroot
	<i>Melica stricta</i>	Rock melicgrass
	<i>Phlox gracilis</i>	Slender phlox
	<i>Phlox stansburyi</i>	Colddesert phlox
	<i>Poa fendleriana</i> ssp. <i>longiligula</i>	Longtongued Fendler's grass
	<i>Stipa speciosa</i>	Desert needlegrass
	<i>Viola purpurea</i> ssp. <i>venosa</i>	Desert violet
Big Sagebrush Shrubland		
Shrubs	<i>Artemisia tridentata</i>	Big sagebrush
	<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush
	<i>Chrysothamnus viscidiflorus</i> ssp. <i>viscidiflorus</i>	Green rabbitbrush

Shrubs	<i>Ephedra viridis</i>	Green ephedra
	<i>Leptodactylon pungens</i>	Granite gilia
	<i>Lupinus argenteus</i> var. <i>palmeri</i>	Palmer's silver lupine
	<i>Purshia stansburyana</i>	Stansbury cliffrose
	<i>Ribes montigenum</i>	Mountain gooseberry
	<i>Stephanomeria spinosa</i>	Thorn skeletonweed
Grasses, Sedges and Forbs	<i>Boechera inyoensis</i>	Inyo rock cress
	<i>Carex douglasii</i>	Douglas' sedge
	<i>Crepis acuminata</i>	Tapertip Hawksbeard
	<i>Layia glandulosa</i>	Whitedaisy tidytops
	<i>Leymus cinereus</i>	Giant wildrye
Douglas' Sedge Meadow		
Shrubs (sparse)	<i>Artemisia tridentata</i>	Big sagebrush
	<i>Chrysothamnus viscidiflorus</i> ssp. <i>viscidiflorus</i>	Green rabbitbrush
	<i>Lupinus argenteus</i> var. <i>palmeri</i>	Palmer's silver lupine
Grasses, Sedges and Forbs	<i>Carex douglasii</i>	Douglas' sedge
	<i>Chenopodium</i> sp.	Goosefoot
	<i>Leymus cinereus</i>	Giant wildrye
	<i>Rumex salicifolius</i> var. <i>denticulatus</i>	California dock
Interior Rose Thicket		
Shrubs	<i>Rosa woodsii</i> var. <i>ultramontana</i>	Woods' Rose
	<i>Artemisia douglasiana</i>	Douglas' sagewort

* Non-native species

Wildlife

Other than specific targeted surveys for the Hunter Mountain copper butterfly (addressed under Special Status Species) and avian species, wildlife surveys have not been conducted at this site. However, habitat type indicates that species potentially present include whiptail lizard, gopher snake, common kingsnake, Panamint rattlesnake, Panamint chipmunk, antelope ground squirrel, Panamint kangaroo rat, deer mouse and cactus mouse, coyote, grey fox, mountain lion, bighorn sheep, and mule deer. Potential species richness is reduced in a uniform environment, such as the mature pinyon pine forest.

Forty eight bird species were observed near the project area during two separate surveys in 2010 (Great Basin Bird Observatory (GBBO), 2011). The area surveyed included Hunter Mountain meadow and a 30 meter wide buffer and at its nearest is approximately 1/2 mile southeast of the project area. The habitat is similar to the project area and similar species would be expected. The most abundant species included ravens, yellow-rumped warblers, spotted towhee, pinyon jay and bushtit. Other birds observed included great-horned and short-eared owls, sharp-shinned hawk and red tail hawk, ash-throated flycatcher, Anna's hummingbird, orange-crowned warbler, Bewick's wren, red-breasted nuthatch, western tanager, and mountain chickadee.

Notable invertebrate species in or near the proposed project area include the Hunter Mountain copper butterfly, addressed below under Special Status Species.

Special Status Species

Under the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.), an endangered species is defined as any species in danger of extinction throughout all or a major portion of its range; a threatened species is any species likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range. The California Department of Fish and Game (2010) and the National Park Service (2010) have a list of threatened and endangered plant and wildlife species, including federal status species. Consultation with the U.S. Fish and Wildlife Service has confirmed that no federally listed species are present in the project area (see appendix A).

Hunter Mountain copper butterfly (*Lycaena xanthoides obsolescens*) was described in 1998 from specimens collected at the meadow located approximately 1/2 mile southeast of the project area (Mattoon, 1998). This subspecies is found in association with California dock (*Rumex salicifolius* var. *denticulatus*), on which the larvae feed exclusively; adults were also observed nectaring on California dock (Pratt, 2004). This subspecies is believed to be restricted to riparian areas on Hunter Mountain and has been observed outside the project area at Hunter Mountain meadow and other springs on Hunter Mountain (Pratt, 2004).

Although there are no special status plant species found in the proposed burn area, the California dock (*Rumex salicifolius* var. *denticulatus*) is a species of management concern in that it is vital habitat for the Hunter Mountain copper butterfly. This butterfly feeds and reproduces on California dock that is found in the wet meadows of Hunter Mountain. These meadows are early successional communities being encroached upon by shrubs and trees and could benefit from prescribed fire to clear shrubs and rejuvenate herbaceous growth. The proposed action would include the burning of one meadow, encompassing 0.29 acres, on Hunter Mountain where California dock occurs. Adjacent meadows would remain unburned.

The California Natural Diversity Database was queried for the Harris Hill quad. Four entries on animals exist; two for Panamint kangaroo rat (*Dipodomys panamintinus*), one for American badger (*Taxidea taxus*), and one for several locations where bighorn sheep (*Ovis canadensis*) have been documented. These species may occur at the project site but are not limited to the site, have a wider geographic distribution and occur in a wider range of habitats. The proposed project site has been surveyed for these species and no occurrences were recorded. Therefore these species are not addressed here.

Mohave ground squirrel (*Xerospermophilus mohavensis*) is a medium-sized ground squirrel with an overall pale brown coloring. The known range extends into Panamint Valley and up to Lee Flat (Leitner, 2009). Mohave ground squirrels spend much of their time in burrows to escape both the cold of winter and the heat of summer. The squirrels are found in areas with loose or coarse soils, and various plant communities, including Joshua trees (Smithsonian, 1999). Mohave ground squirrels are not found within the project area but are along the route vehicles will travel to access the project site. It is a California threatened species.

Inyo California towhee (*Melospiza (Pipilo) crissalis eremophilus*), a subspecies of California towhee, is federally listed as threatened and state listed as endangered. It is a desert inhabitant

and is geographically isolated from wider-ranging populations of California towhee. At time of listing it was known only from the Argus Range but subsequently has been located in the Panamint Mountains; Hunter Mountain (Great Basin Bird Observatory, 2010) and Surprise Canyon (LeBerteaux 2004 in Dudek, 2012).

The following information is compiled from the Recovery Plan, 1998.

The Inyo towhee is a medium-sized songbird with drab brownish coloration and no distinct marks. The towhee is omnivorous, eating seeds, small fruits, and invertebrates it gleans from foliage and leaf litter; young are exclusively fed invertebrates. Predators include snakes, raptors, and mammalian carnivores. The towhees are year-round residents but may move within an altitude of habitats in winter to find food.

Inyo towhees nest and forage in willow-dominated dense riparian vegetation and upland shrubs; and forage in more open upland areas, generally a mixed-shrub community (Recovery Plan, 1998). There is no designated critical habitat for this species within Death Valley. Suitable breeding habitat may limit the size of the population; in the Argus Range, the towhee breeds in dense willow habitat, at elevations up to 1433 m (4700 feet) (Laabs, et. al 1995). The project area does not contain willow but may provide foraging habitat. Two Inyo towhees were detected at Hunter Mountain in late June 2010. Breeding was unable to be determined due to the lateness of the season.

Wilderness

The proposed project area is located within the Cottonwood Mountains unit of federally designated wilderness. At 494,000 acres, this is the largest wilderness unit of the much larger 3.1 million acre Death Valley National Park Wilderness. The project area includes approximately 50 acres of designated wilderness located adjacent to the Hunter Mountain Road and the Hunter Cabin Road, both of which are cherry-stemmed backcountry roads through the surrounding wilderness. The Hunter Mountain grazing allotment boundary runs both through the wilderness and through the proposed project area. The proposed project area contains portions of two fences maintained under a categorical exclusion and minimum requirements analysis, which have determined the fencing is necessary to exclude cattle in order to protect and promote natural ecological processes, and thus enhance the natural quality of wilderness character.

Archeological Resources

Cultural resources surveys conducted on Hunter Mountain include Brewer et al 2000, Burton 1996, Davis 1969, and Norwood et al 1980; two surveys (Brosman 2011 and Raschkow 2012) were conducted specifically to identify cultural resources which could be affected by the proposed project. These surveys have revealed evidence of both prehistoric and historic occupation and utilization of the Hunter Mountain area.

Prehistoric sites typically consist of concentrations of lithic debitage and tools, groundstone, pottery, and features such as rock shelters, rock rings, and brush structures. Ethnohistoric and historic sites include historic artifact concentrations, pinyon gathering camps, mining features, and historic ranching features. Three archeological sites fall within the APE of the proposed

project. Two are small lithic scatters (11-092-01, 11-092-02) while the third (CA-INY-1875/H) includes lithics, midden soils, groundstone, and culturally-modified pinyon trees. Site 11-092-01 has been determined not eligible for listing in the National Register. Sites 11-092-02 and CA-INY-1875/H are unevaluated but will be treated as eligible for the purposes of this analysis.

Cultural Landscapes

William Lyle Hunter began grazing pack animals on Hunter Mountain as early as 1875. Hunter established his ranch on Hunter Mountain so he could leave pack animals to graze while he worked mining claims in the Ubehebe Mining District. Hunter's ranch lies along a historic military route and mining trail and appears on military reconnaissance maps as early as 1875 (Greene 1981). He filed claims for water rights to springs on the mountain in 1898-1899. His son Beveridge and grandson Roy continued to graze livestock on the mountain and built fences, spring developments, and corrals. William's great-grandson John continues to hold grazing rights on the Hunter Mountain grazing allotment.

The Hunter Mountain Ranch Historic Rural Landscape may be significant in the context of the development of mining and ranching in Death Valley. While no attempt has yet been made to identify and assess all of the features that may contribute to the ranch as a historic rural landscape, features such as Hunter Cabin, the "tin shack", historic fences, corrals, and spring developments are known to be present.

Historic Structures

The Hunter Cabin (CA-INY-5044/H), associated with William Lyle Hunter, may have been built in 1906 by one of Hunter's ranch hands, a packer named John; other sources indicate a later construction date of 1910 (Greene 1981, Unrau 1997). William's son Beveridge Hunter, and his wife Ruth, reportedly lived in the cabin while grazing cattle on Hunter Mountain (Livingston 2009). In an interview (Perkins 1980) Roy Hunter, William's grandson, identified the log cabin on Hunter Mountain as one the Hunter family's line cabins.

The structure is a one-room log cabin of pinyon logs squared on three sides, with rag chinking. The gable roof is covered with corrugated metal, with board and batten under the gables. It has one door, two windows, stone foundation on the downslope side, and a wood floor. The cabin was stabilized and rehabilitated in 2010. Mechanical fuels treatments were conducted to clear brush and thin trees around the cabin in 2010 and 2012. This was intended to create a defensible space and protect the cabin from wildfire as well as provide protection during the current project. The Hunter Cabin lies approximately 0.5 miles south of the burn perimeter.

CA-INY-5045/H includes a structure constructed out of lumber, unfinished wooden poles, and corrugated tin. The "tin shack" is reportedly located on land homesteaded by Beveridge Hunter's wife (Unrau 1997). The site lies approximately 180 meters east of the fire perimeter.

Both CA-INY-5044/H and CA-INY-5045/H are unevaluated but will be considered eligible for listing in the National Register for the purposes of this analysis.

Ethnographic Resources

The Timbisha Shoshone have a long history of association with Hunter Mountain, and still use this area today for pine nut gathering. Hunter Mountain is included within the Timbisha Shoshone Natural and Cultural Preservation Area per the Timbisha Shoshone Homeland Act (PL 106-423) and is recognized as a special use area under Section 5(e)(5)(B). This recognition allows for traditional uses such as camping and pine nut gathering under a cooperative management plan developed with Death Valley National Park. The Timbisha Historic Preservation Advisory Committee (Esteves et al 1999) identified Hunter Mountain as a place of traditional and cultural importance as one of three significant pine nut harvesting areas.

Visitor Use and Experience

Death Valley National Park does not maintain visitation numbers for its backcountry and wilderness areas. However, an informal and voluntary visitor log book maintained at William Lyle Hunter Cabin demonstrates that there is consistent visitation and interest in this structure during summer months when the weather permits travel on the high-elevation Hunter Mountain Road. Average visitation represents three to five groups per week, with group sizes ranging from single individuals to groups of approximately fifteen. Groups larger than fifteen would have difficulty maneuvering vehicles and finding sufficient parking in the small turnout area near the cabin. Camping is permitted both in the vicinity of the cabin and inside the cabin itself, although campfires are prohibited. The visitor log book reveals that camping is a seasonally popular activity among those visiting the William Lyle Hunter Cabin. The Hunter Mountain area offers visitors a stark contrast from many of Death Valley's sub-sea level attractions, as Hunter Mountain's high elevations and rugged roads create a cooler, forested, and less traveled area for the type of park visitors who come to the park seeking summertime opportunities for self-directed exploration. The William Lyle Hunter Cabin is an attractive destination for those interested in the park's ranching history, and the only roadway access to this site lies within the proposed project area.

Health and Safety

The proposed project area is located within a remote area of Death Valley National Park, and is accessed by a series of rugged backcountry roads. A primary health and safety concern in the area was addressed in 2012 with the removal of unlawful marijuana cultivation operations in the Hunter Mountain locality. The proposed project was delayed a year in order to address the visitor and resource protection challenges of law enforcement intervention to halt the illegal cultivation.

Existing concerns regarding public health and safety are directly related to the remote nature of Hunter Mountain and the condition of the roads. These concerns include potential vehicle breakdowns and flat tires, extreme exposure on narrow dirt roads near the south pass of Saline Valley Road and on the grade between Hunter Cabin Road and Hidden Valley, and the potential for visitors without accurate maps to become lost or run out of fuel. These safety concerns are compounded by the fact that there is no cell phone reception in the area. In

summer months, temperatures are mostly mild, with cool evenings, while in winter the roadways can become impassible due to snow. Informal visitor campsites are located at the William Lyle Hunter Cabin itself and at a turnout on the Hunter Mountain Road approximately half a mile south of the proposed project area.

Death Valley National Park currently mitigates the risks in the Hunter Mountain area by maintaining ranger backcountry patrols, posting a morning report on a daily basis, updating the public about road conditions and the vehicle requirements necessary to traverse the roads. In addition, maps are available online and at park visitor centers showing road conditions and distances. Supplemental information including safety warnings about carrying adequate water and food, notifying a third party about travel itinerary, and vehicle requirements for backcountry roads are also posted prominently online and are available at the park's visitor centers.

Chapter 4: Environmental Consequences

INTRODUCTION

This section describes the potential environmental consequences associated with the no-action and preferred alternatives. The methodologies and assumptions for assessing environmental consequences are discussed, including consideration of context, intensity, and duration of impacts; cumulative impacts; and measures to mitigate impacts. Subsequent sections under the “Environmental Consequences” section are organized by impact topic, first for the no-action alternative, and then for the NPS preferred alternative.

The National Park Service evaluates all potential impacts by considering 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. The context or extent of the impact is described as localized or parkwide. The duration of impacts is described as short term (up to two months following initiation of project activities), or long term (generally after proposed prescribed fire and extending up to five years or longer). The long-term impact would last more than one year and could be permanent in nature, such as the loss of soil due to erosion.

The intensity and type of impact is described as negligible, minor, moderate, or major, and as beneficial or adverse. The identification of “major” effects would 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.

METHODOLOGY

Overall, the National Park Service based these impact analyses and conclusions on the review of existing literature and park studies, information provided by experts at the park and other agencies, professional judgments, and park staff insights.

CONTEXT, DURATION AND INTENSITY, AND TYPE OF IMPACT

The following definitions were used to evaluate the context, intensity, duration, and cumulative nature of impacts associated with project alternatives.

Context

Context is the setting within which an impact is analyzed such as local, parkwide, or regional. The Council on Environmental Quality requires that impact analyses include discussions of context. For this environmental assessment, local impacts would occur within the general vicinity of the roadway, while parkwide impacts would affect a greater portion of the park; regional impacts would extend outside the boundary of the park.

Duration

The duration of an impact is the time period for which the impacts are evident and are expressed in the short term or in the long term. A short-term impact would be temporary in duration. Impact duration for each resource is unique to that resource. Impact duration for each resource is presented in association with impact intensity thresholds, below.

Intensity

Impact intensity is the degree to which a resource would be beneficially or adversely affected. The criteria used to rate the intensity of the impacts for each resource topic are presented later in this section under each topic heading.

Type of Impact

Impacts can be beneficial or adverse. Beneficial impacts would improve resource conditions, while adverse impacts would deplete or negatively alter resources.

IMPACT INTENSITY THRESHOLDS

Soils

All available information on soils to potentially receive impacts was compiled from agency databases, previous studies, and current site review. Predictions concerning short- and long-term site impacts were based on previous projects in desert environments with similar exposures and soils/fill materials. The thresholds of change for the intensity of an impact to soils are defined as follows:

Impact Intensity	Intensity Definition
Negligible	Geologic processes related to soils development and soil health would not be affected or the effects would be below or at the lower levels of detection based on standard scientific methodologies for geologic features and processes and soil formation. Any effects to geologic exposures and soils would be slight.
Minor	The effects to geologic processes related to soils development and soil health would be detectable upon monitoring. Loss or change of features or shallow developed soils and would be small and localized with minimal loss of contextual information. Mitigation may be needed to offset adverse effects and would be relatively simple to implement and likely be successful.
Moderate	The effect on geologic processes related to soils development and soil health would be apparent and result in a change over a relatively wide area. Upon monitoring, some soil health and contextual information would be lost and disruption to key geologic processes would be short

	term. Mitigation measures would be necessary to offset adverse effects and would likely be successful.
Major	The effect on geologic processes related to soils development and soil health would be readily apparent and substantially change the character of the geology and soils over a large area. Upon monitoring, many geologic features and contextual information would be lost and disruption to key geologic processes would be permanent. Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed.

Soil impacts would be considered short term if the soils recover in less than three years and long term if the recovery takes longer than three years.

Water Resources

A water quality standard defines the water quality goals of a water body by designating uses to be made of the water, by setting minimum criteria to protect the uses, and by preventing degradation of water quality through antidegradation provisions. The antidegradation policy is only one portion of a water quality standard. Part of this policy (40 CFR 131.12[a] [2]) strives to maintain water quality at existing levels if it is already better than the minimum criteria. Antidegradation should not be interpreted to mean that “no degradation” can or would occur as even in the most pristine waters, degradation may be allowed as long as it is temporary and short term.

Other considerations in assessing the magnitude of water resources impacts include the effect on biotic species dependent on a certain quality or condition of water. Sensitive aquatic organisms, aquatic vegetation, and riparian areas are affected by changes in water quality from direct and indirect sources. In order to assess the magnitude of water resources impacts under the two alternatives, state water quality standards governing the waters of the park were examined and compared to baseline water quality data. Given the above water quality issues, methodology, and assumptions, the following impact thresholds were established in order to describe the relative changes in water quality:

Impact Intensity	Intensity Definition
Negligible	Chemical or physical changes to water quality would not be detectable, would continue to conform to state water quality standards or criteria, and would be within historical water quality conditions.
Minor	Chemical or physical changes to water quality would be detectable, but would be well within state water quality standards or criteria and within historical water quality conditions.

Impact Intensity	Intensity Definition
Moderate	Chemical or physical changes to water quality would be detectable, but would be at or below state water quality standards or criteria. Water quality would be altered on a short-term basis and/or localized compared to historical baseline water quality conditions.
Major	Chemical or physical changes to water quality would be detectable and would be frequently altered from the historical baseline water quality conditions; and/or chemical, physical, or biological water quality standards or criteria would be regional, localized to sitewide, and exceeded on a short- and long-term basis.

The effects to water quality are considered short term if, following the proposed prescribed fire, the recovery would take less than one year. Impacts would be long term if, following the proposed prescribed fire, the water quality requires more than one year to recover.

Air Quality

All available information on air quality resources potentially impacted in the park was compiled from physical sciences staff, previous site-specific studies, and current site reviews. Predictions about short- and long-term site impacts were based on previous projects, recent studies, and professional judgment. The thresholds of change for the intensity of an impact to air quality resources are defined as follows:

Impact Intensity	Intensity Definition
Negligible	An action that could affect local air quality, but the change would be so small that it would not be of any measurable or perceptible consequence. Mitigation is rarely required.
Minor	An action that could affect local or a larger part of the park's air quality, but the change would be slight and short-term in duration, with few measurable consequences. Mitigation may be needed to offset adverse effects and would be relatively simple to implement and likely be successful.
Moderate	An action that would result in readily apparent changes to air quality throughout the park with measurable consequences. Mitigation would be needed to offset adverse effects, and its success would require monitoring and management prescriptions.

Impact Intensity	Intensity Definition
Major	A severely adverse or exceptionally beneficial effect to air quality would result, and effects could be region-wide. Mitigation measures to offset adverse effects would be needed, extensive, and success could not be guaranteed; monitoring would be required to inform management direction.

Air quality impacts would be considered short term if monitoring of air quality shows no impact two weeks after the beginning of implementation, and long term if the recovery requires longer than two weeks.

Vegetation

All available information on vegetation and plant communities potentially impacted in the Hunter Mountain area was compiled from previous NPS studies, reports, and current site review. Where possible, map locations of sensitive vegetation species, populations, and communities were identified. Predictions about short- and long-term site impacts were based on previous projects with similar vegetation and recent studies. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species population size, integrity, or continuity. The effects would be on a small scale.
Minor	The alternative would affect some individual native plants and would also affect a relatively limited portion of the plant community, but the viability of the plant community would not be affected and would recover naturally. Mitigation to offset adverse effects could be required and would be effective.
Moderate	The alternative would affect some individual native plants and would also cause a localized change in the plant community (e.g., abundance, distribution, quantity, or quality) over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful.
Major	The alternative would have a considerable permanent and noticeable effect on native plant populations, the plant community, and affect a relatively large area of the park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

Duration of vegetation impacts is considered short term if the vegetation recovers in less than three years and long term if the vegetation takes longer than three years to recover.

Wildlife

The National Park Service Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities. According to NPS *Management Policies 2006*, the restoration of native species is a high priority (sec. 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals. Information on Death Valley National Park wildlife was acquired from park documents, records, site-specific studies, and current site review. The thresholds of change for the intensity of an impact to wildlife are defined as follows:

Impact Intensity	Intensity Definition
Negligible	There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be of short duration and well within natural fluctuations.
Minor	Impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not have any long-term effects on native species, habitats, or natural processes. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
Moderate	Breeding animals are present; animals are present or adjacent to project activities during particularly vulnerable life-stages such as migration or juvenile stages; mortality or interference with activities necessary for survival could occur on an occasional basis, but is not expected to threaten the continued existence of the species or the overall health of communities in the national park system unit. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability short term. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and long term to permanently outside the natural range of variability. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

The duration of wildlife impacts is considered short term if the recovery is less than one year and long term if the recovery is longer than one year.

Special Status Species

It is the policy of the National Park Service to manage critical habitat of sensitive species and to perpetuate the natural distribution and abundance of these species and the ecosystems on which they depend. The U.S. Fish and Wildlife Service (USFWS) was contacted for a list of special status species and designated critical habitats that may be within the proposed project area or affected by any of the alternatives; they responded that no federally listed species were present. The NPS also consulted the California Department of Fish and Game's Natural Diversity Database. Information on additional possible species of special concern was gathered from published sources. Information from prior research at Death Valley National Park was incorporated; known impacts caused by development and human use were also considered. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The action could result in a change to a population or individuals of a species or habitat, but the change would be so small that it would not be of any measurable or perceptible consequence and would be well within natural variability.
Minor	The action could result in a beneficial or adverse change to a population or individuals of a species, habitat, or natural processes, but the impact would not be observable and within the range of natural fluctuations. The change would be measurable, but small and localized and of little consequence. Mitigation measures, if needed to offset the adverse effects, would be simple and successful.
Moderate	Beneficial or adverse impacts on special status species, habitats, or sustaining natural processes would be detectable and could be outside the natural range of variability. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
Major	The action would result in a noticeable beneficial or adverse effect to viability of a population or individuals of a species, habitat, natural processes, or resource or designated critical habitat. Impacts on a special status species, critical habitat, or the natural processes sustaining them would be detectable within the park. Loss of habitat might affect the viability of at least some special status species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

Special status species impacts are considered short term if the species recovers in less than one year and long term if it takes longer than one year for the species to recover.

Wilderness

The National Park Service has by law and policy the mandate to administer wilderness in a way that will leave wilderness “unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character...” (16 USC 1131). For purposes of this analysis, the five different attributes of wilderness character include: (1) untrammeled; (2) natural; (3) undeveloped; (4) opportunities for solitude or primitive or unconfined recreation; and (5) unique (Landres et. al 2008). The unique quality of Death Valley Wilderness includes the diverse cultural resources preserved within the wilderness areas. The thresholds for the intensity of impacts to wilderness are defined as follows:

Impact Intensity	Intensity Definition
Negligible	Wilderness character would not be affected, or changes in qualities of wilderness character would be below or at the level of detection. For adverse impacts, mitigation, if needed, would be simple and effective.
Minor	Changes in wilderness character and qualities would be detectable, although the changes would be slight. For adverse impacts, mitigation would be needed but relatively simple to implement and likely effective.
Moderate	Changes in wilderness character would be apparent to most visitors. For adverse impacts, mitigation would be necessary and would entail more complex measures, which would likely be effective.
Major	Changes in wilderness character would be readily apparent to all visitors, and would be severely adverse or exceptionally beneficial. For adverse impacts, mitigation would be complex and challenging to implement, with only a chance of success.

The effects to wilderness are considered short term if they persist less than three years. Impacts would be long term if wilderness character is still impacted in three years.

Cultural Resources / Section 106 of the National Historic Preservation Act

In this environmental assessment, 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 that implement NEPA. These impact analyses are intended, however, to comply with the requirements of both NEPA and reflect the determinations made in compliance with section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation regulations implementing section 106 of the NHPA (36 CFR 800, *Protection of Historic Properties*), impacts to cultural resources were identified

and evaluated by: (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected NRHP-eligible or -listed cultural resources; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

A separate section 106 compliance document was submitted to the California SHPO requesting concurrence with the APE, determination of eligibility for properties within the APE, and assessment of effects to the properties by the proposed project. Consultation was also conducted with the Timbisha Shoshone Tribe.

Under Advisory Council on Historic Preservation regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected NRHP-listed or -eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance) of its location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects of the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish the characteristics of the cultural resource that qualify it for inclusion in the national register.

Council on Environmental Quality regulations and NPS *Conservation Planning, Environmental Impact Analysis, and Decision-making* (Director's Order 12) also require a discussion of mitigation, and an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g., from major to moderate. Any resultant reduction in the intensity of an 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. Cultural resources are nonrenewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an adverse effect under section 106 may be mitigated, the effect remains adverse.

A section 106 summary is included in the applicable impact analysis sections. This summary is an assessment of the effect of the undertaking (implementation of the alternative) on NRHP-eligible or listed cultural resources only, based on the criteria of effect and criteria of adverse effect found in Advisory Council regulations.

Archeological Resources

Archeological resources are the physical evidences of past human activity, including evidences of the effects of that activity on the environment. What makes archeological resources significant are their identity, age, location, and context in conjunction with their capacity to reveal information through the investigatory research designs, methods, and techniques used by archeologists. The thresholds for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The effect would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The section 106 determination would be no adverse effect.
Minor	<p>Minor adverse effect- the effect is measurable or perceptible, but it is slight and affects a limited area of a site or group of sites. Slight alteration(s) to any of the characteristics that qualify the site(s) for inclusion in the National Register may diminish the integrity of the site(s). For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Minor Beneficial Effect – the action would result in preservation of small areas of the site or group of sites.</p>
Moderate	<p>Moderate adverse effect- the effect is measurable and perceptible. The effect changes one or more of the characteristics that qualify the site(s) for inclusion in the National Register and diminishes the integrity of the site(s), but does not jeopardize the National Register eligibility of the site(s). For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Moderate Beneficial Effect – the action would noticeably enhance the preservation and protection of the site(s)</p>
Major	<p>Major Adverse Effect – the effect on the archeological site or group of sites is substantial, noticeable, and permanent. The action severely changes one or more characteristics that qualify the site(s) for inclusion in the National Register, diminishing the integrity of the site(s) to such an extent that it is no longer eligible for listing in the National Register. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Major Beneficial Effect – the action would substantially enhance the protection and preservation of the site(s).</p>

Any change in the physical characteristics of an archeological resource is irreparable and considered of permanent duration.

Cultural Landscapes

A cultural landscape is a geographic area, including both cultural and natural resources, that can be associated with a historic event, activity, person, or exhibiting other cultural or aesthetic values. A key feature of a cultural landscape is the patterning of the resources into a coherent whole. Therefore, assessing the impact intensity on cultural landscapes requires the use of

impact intensity definitions for archeological resources, ethnographic resources (for ethnographic landscapes), and historic or prehistoric structures, in conjunction with the definitions below, which focus on the cultural landscape as a whole, which is greater than the sum of its parts. For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The effect would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The section 106 determination would be no adverse effect.
Minor	<p>Minor Adverse Effect – the effect is measurable or perceptible, but it is slight and affects a limited area of the landscape or few of its patterns or features. Slight alteration(s) to any of the characteristics that qualify the landscape for inclusion in the National Register may diminish the integrity of the landscape. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Minor Beneficial Effect – the action would result in preservation of small areas of the cultural landscape.</p>
Moderate	<p>Moderate Adverse Effect – the effect on the patterns and features of the landscape is measurable and perceptible. The effect changes one or more of the characteristics that qualify the landscape for inclusion in the National Register and diminishes the integrity of the landscape, but does not jeopardize the landscape’s National Register eligibility. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Moderate Beneficial Effect – the action would noticeably enhance the preservation and protection of the landscape as a cohesive entity.</p>
Major	<p>Major Adverse Effect – the effect on the cultural landscape, its patterns and features, is substantial, noticeable, and permanent. The action severely changes one or more characteristics that qualify the landscape for inclusion in the National Register, diminishing the landscape’s integrity to such an extent that it is no longer eligible for listing in the national Register. For purposes of Section 106, the determination of effect would be adverse effect.</p> <p>Major Beneficial Effect – the action would substantially enhance the protection and preservation of the landscape.</p>

Changes in the physical characteristics of a cultural landscape, including changes to archeological resources, ethnographic resources (for ethnographic landscapes), and historic or prehistoric structures, are irreparable and considered of permanent duration.

Historic Structures

A historic structure is "a constructed work . . . consciously created to serve some human activity." Historic structures are usually immovable, although some have been relocated and others are mobile by design. 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, and outdoor sculpture.

In order for a structure to be listed in the national register, it must be associated with a historic event, activity, person, or exhibit other cultural or aesthetic values. The structure must also have integrity of the features necessary to convey its significance, i.e., location, design, setting, workmanship, materials, feeling, and association. For purposes of analyzing potential impacts to historic structures, the thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The effect would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The section 106 determination would be no adverse effect.
Minor	<p>Minor Adverse Effect – the effect is measurable or perceptible, but it is slight and affects a limited area of a structure or group of structures. Slight alteration(s) to any of the characteristics that qualify the structure(s) for inclusion in the National Register may diminish the integrity of the structure(s). For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Minor Beneficial Effect – the action would result in preservation of small areas of the structure or group of structures.</p>
Moderate	<p>Moderate Adverse Effect – the effect is measurable and perceptible. The effect changes one or more of the characteristics that qualify the structure(s) for inclusion in the National Register and diminishes the integrity of the structure(s), but does not jeopardize the National Register eligibility of the structure(s). For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Moderate Beneficial Effect – the action would noticeably enhance the preservation and protection of the structure(s).</p>

Impact Intensity	Intensity Definition
Major	<p>Major Adverse Effect – the effect on the structure or group of structures is substantial, noticeable, and permanent. The action severely changes one or more characteristics that qualify the structure(s) for inclusion in the National Register, diminishing the integrity of the structure(s) to such an extent that it is no longer eligible for listing in the national Register. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Major Beneficial Effect – the action would substantially enhance the protection and preservation of the structure(s).</p>

Changes in the physical characteristics of a historic structure are irreparable and considered of permanent duration.

Ethnographic Resources

Ethnographic resources are sites, structures, objects, landscapes, and/or natural resource features assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with them. Ethnographic resources that are eligible for listing in the National Register are termed traditional cultural properties or traditional cultural places because of their association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community (see National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties). The key feature of an ethnographic resource is the cultural value assigned to it by the group associated with it. Therefore, like cultural landscapes, assessing the impact intensity on ethnographic resources requires the use of impact intensity definitions for archeological resources, cultural landscapes, historic or prehistoric structures, and natural resources in conjunction with the definitions below, which focus on the nature of the cultural association with the particular physical resource.

For purposes of analyzing potential impacts to ethnographic resources, the thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The effect would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The section 106 determination would be no adverse effect.
Minor	Minor Adverse Effect – the effect is slight but noticeable, and it may

Impact Intensity	Intensity Definition
	<p>result in limited changes in traditional resource access or use, or the relationship between the resource and the affiliated group's body of beliefs or practices. Slight alteration(s) to any of the characteristics that qualify the resource for inclusion in the National Register may diminish the integrity of the site. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Minor Beneficial Effect – the action would allow traditional access and use, and/or accommodate a group's traditional practices or beliefs.</p>
Moderate	<p>Moderate Adverse Effect – the effect is readily apparent and would interfere with traditional resource access or use, or the relationship between the resource and the affiliated group's beliefs and practices, even though the group's beliefs and practices would survive. The effect changes one or more of the characteristics that qualify the resource for inclusion in the National Register and diminishes the resource's integrity, but does not jeopardize the resource's National Register eligibility. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Moderate Beneficial Effect – the action would noticeably enhance the group's traditional resource access or use, or its relationship between the affiliated group's body of beliefs and practices.</p>
Major	<p>Major Adverse Effect – the effect is substantial, noticeable, and permanent, and results in significant changes in traditional resource access or use, or in the relationship between the resource and the affiliated group's beliefs and practices, to such a degree that the survival of the group's beliefs and practices is jeopardized. The action severely changes one or more characteristics that qualify the resource for inclusion in the National Register, diminishing the resource's integrity to such an extent that it is no longer eligible for listing in the National Register. For purposes of section 106, the determination of effect would be adverse effect.</p> <p>Major Beneficial Effect – the action would substantially enhance traditional resource access and use, and the relationship between the resource and the affiliated group's beliefs and practices.</p>

Changes in the physical characteristics of an ethnographic resource, including changes to archeological resources, cultural landscapes, historic or prehistoric structures, are irreparable and considered of permanent duration. Changes to natural resource aspects of an ethnographic resource are considered short term if the resources are expected recover to pre-project conditions.

Visitor Use and Experience

National Park Service *Management Policies 2006* state that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the National Park Service is committed to providing appropriate, high-quality opportunities for people to enjoy the parks.

Part of the purpose of Death Valley National Park is to offer opportunities for recreation, education, inspiration, and enjoyment. Consequently, one of the park's management goals is to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities.

Public scoping input and observation of visitation patterns, combined with an assessment of what is available to visitors under current management, were used to estimate the effects of the actions in the various alternatives of this document. The impact on the ability of the visitor to experience a full range of Death Valley National Park resources was analyzed by examining resources and objectives presented in the park significance statement. The potential for change in visitor use and experience proposed by the alternatives was evaluated by identifying the potential impacts of closing an area temporarily, the aesthetic experience of an area after treatment, and determining how these projected changes would affect the desired visitor experience, and to what degree and for how long. The thresholds of change for the intensity of an impact to visitor use and experience are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The visitor would not be affected or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.
Minor	Changes in visitor use and/or experience would be detectable, although the changes would be slight. Some of the visitors would be aware of the effects associated with the alternative, but the effects would be slight and not noticeable by most visitors.
Moderate	Changes in visitor use and/or experience would be readily apparent to most visitors. Visitors would be aware of the effects associated with the alternative and might express an opinion about the changes.

Impact Intensity	Intensity Definition
Major	Changes in visitor use and/or experience would be readily apparent to all visitors, severely adverse or exceptionally beneficial. Visitors would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Impacts to visitor use and experience are considered short term if the effects last only as long as the period of proposed prescribed fire. Impacts are considered long term if the effects last longer than the period of proposed prescribed fire.

Health and Safety

The impact assessment for health and safety focused on the number of potential individuals impacted and the severity of the impact. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	Health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on visitors or employee health and safety.
Minor	The effect would be detectable, but would not have an appreciable effect on health and safety. If mitigation were needed, it would be relatively simple and would likely be successful.
Moderate	The effects would be readily apparent and would result in substantial, noticeable effects to health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.
Major	The effects would be readily apparent and would result in substantial, noticeable effects to health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed.

The effects to safety are considered short term if the effects last for the period of construction and long term if the effects last beyond the period of construction.

DIRECT AND INDIRECT IMPACTS

The following definitions of direct and indirect impacts are considered:

Direct – an effect that is caused by an action and occurs at the same time and in the same place.

Indirect – an effect that is caused by an action that is later in time or farther removed in distance, but is still reasonably foreseeable.

CUMULATIVE IMPACTS

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

Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic discussion analysis.

To determine potential cumulative impacts, projects and activities within the Hunter Mountain area and surrounding park were identified. Potential projects identified as cumulative actions included any planning or development activity that was completed, that is currently being implemented, or that would be implemented in the reasonably foreseeable future.

These cumulative actions are evaluated in the cumulative impact analysis, in conjunction with the impacts of each alternative, to determine if they would have any additive effects on a particular natural resource, cultural resource, public health and safety, or visitor use and experience. Because some of these cumulative actions are in the early planning stages, the evaluation of cumulative effects was based on a general description of the project.

The projects and activities contributing to cumulative impact analysis are listed below.

- Grazing Activities in the Hunter Mountain Grazing Allotment (ongoing)
- Wilderness and Backcountry Stewardship Plan (environmental assessment released for public comment in August 2012)
- Restoration of the William Lyle Hunter Cabin (completed in 2010)
- Mechanical Fuel Reduction in the Hunter Cabin area (completed in 2010)
- Cattle Enclosure Fence Repair around the Hunter Mountain Meadow, to protect habitat of the Hunter Mountain Copper Butterfly (completed in 2011)
- Exotic Plant Management Plan (public scoping commenced in November 2012)

ENVIRONMENTAL CONSEQUENCES—ALTERNATIVE A: NO ACTION

Soils

Under the no action alternative, vegetative litter would continue to accumulate at a rate that exceeds the rate of decomposition. The soils at the site have a low susceptibility to erosion, and this cover further reduces the erosion potential. However, the litter accumulation increases fire intensity potential. Higher intensity fires are more likely to result in the formation of a low permeability soil crust, which increases the potential for overland flow and soil erosion.

Cumulative Impacts. Past, present, and reasonably foreseeable future activities with the potential to affect soils include grazing activities in the Hunter Mountain Allotment. Trampling by cattle increases the vulnerability of the soil to erosion and damages soil-stabilizing vegetation. These impacts have been mitigated in the past by fencing; however, breaches in the fence continue to allow cattle in the proposed project area. Taking no action would continue to contribute to cumulative adverse impacts on soils.

Conclusion. There would be minor long-term adverse impacts to soils from the no action alternative when combined with the impacts of past, present, and reasonably foreseeable future projects. Taking no action has the potential of generating a high intensity fire, resulting in the formation of a low permeability soil crust and increased potential for soil erosion.

Water Resources

Under the no action alternative there would be continued accumulation of fuels which would increase the likelihood of an intense fire. Intense fires may result in the formation of a low-permeability soil crust which is more erodible, and thereby presents an increased potential for elevated sediment loads in runoff.

Cumulative Impacts. Hunter Mountain Allotment cattle grazing has resulted in moderate adverse impacts to water quantity (diversions from springs) and water quality (trampling and defecating in surface waters). Installing a cattle exclosure fence, particularly around the Hunter Mountain Meadow, has mitigated some of these impacts near the proposed project site, and it is reasonably foreseeable that the NPS would continue to maintain this fence under its existing categorical exclusion and minimum requirements analysis documentation. Taking no additional action would contribute toward cumulative minor adverse impacts to water resources in or near the proposed project area.

Conclusion. The no action alternative would not result in any appreciable impact on water resources beyond the cumulative impacts associated with grazing on Hunter Mountain. The continued accumulation of fuels would increase the potential for a high intensity fire, and such a fire may result in a reduced permeability and more erodible soils. This may increase the potential for higher sediment loads in runoff, but any effects will be temporary and negligible. Impacts of the no action alternative would be negligible to minor, long-term, and adverse.

Air Quality

Under the no action alternative, there would be no additional short term impacts to air quality. As fuel loads continue to change with precipitation patterns and damage to pinyon trees from insect predators, the potential for a catastrophic fire would increase and major smoke impacts to the local area, and potentially the larger region, would be more likely with the passage of time and the increase in fuel load.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect air quality include future prescribed fire activities identified in the park's Fire Management Plan, with a cumulative 700 acres identified for prescribed fire in the Hunter Mountain area. In addition, the exhaust from vehicle traffic could contribute to cumulative impacts in the Hunter Mountain locality. These activities present a long-term adverse impact to air quality; however, the impacts would be greatly dispersed in time. The cumulative impacts would be negligible.

Conclusion. Air pollution thresholds established by the Clean Air Act, as amended (42 USC 7401 et seq.) would not be reached under the no action alternative. There would be negligible impacts from other actions in combination with the no action alternative.

Vegetation

Under the no action alternative, shrubs would continue to encroach on the herbaceous wet meadow and pinyon forest would continue to encroach on shrubland, likely resulting in a monotypic stand of mature singleleaf pinyon. Vegetative communities supporting butterfly habitat, specifically the California dock, would likely be crowded out and replaced with shrubs and trees. No action could also lead to a large, stand replacing fire that could severely impact vegetation communities. If all meadows were to burn simultaneously and at high temperature, the California dock population could be severely reduced, and catastrophic fire could result in a type conversion of pinyon forest to invasive grassland.

Cumulative Impacts. Hunter Mountain Allotment cattle grazing has resulted in several cumulative adverse impacts to the vegetation community: physical damage to native plants through grazing, the introduction of non-native plant species, and continued disturbance facilitating non-native species spread. Selective browsing of herbaceous plants would facilitate continued succession of meadow habitat; however, the continued maintenance of the Hunter Meadow fence is a reasonably foreseeable mitigation and would likely prevent complete loss of all meadow habitat and California dock habitat for the Hunter Mountain copper butterfly. The park's upcoming Exotic Plant Management Plan would likely provide clarification of management priorities and strategies for addressing exotic plant invasions in the Hunter Mountain area, contributing to beneficial cumulative impacts to vegetation communities. However, hand pulling non-native invasive grasses is likely to be just as unfeasible with a plan as under current conditions.

Conclusion. Under the no action alternative, there is the potential for a large stand replacing fire from which the vegetation may be replaced with non-native annual grasses. In this circumstance, the impacts would be adverse, and would range in intensity depending on the size of the fire. The no action alternative, combined with cumulative impacts from grazing activities, would be long-term, minor to moderate, and adverse.

Wildlife

Under the no action alternative there would be a gradual increase in uniformity of wildlife habitat and subsequent slight decrease in diversity of wildlife species as the forest converts to a late seral stage pinyon pine forest. The risk of stand-replacement fire would be greater under the no action alternative. Increased fire intensity over a larger acreage and broader range of habitats would reasonably be expected to lead to a higher incidence of wildlife mortality and damage to associated habitats.

Cumulative Impacts. Hunter Mountain Allotment cattle grazing and the associated impact on natural spring sources of water has resulted in adverse impacts to wildlife in the area. These impacts are mitigated to some degree by the fact that the provisioning of water for cattle also makes water available to native wildlife species. However, trampling of burrows and selective grazing by cattle has degraded wildlife habitat and would likely continue under the no action alternative. Exclosure fencing has mitigated these adverse impacts in certain areas, and likely would continue to do so in the Hunter Meadow for the foreseeable future.

Conclusion. The no action alternative would have minor, long-term adverse impacts to wildlife species and their habitats. Taking no action could lead to larger, more intense fires, with increased wildlife mortality as a result.

Special Status Species

Under the no action alternative, there would likely be continued conversion to a uniform mature pinyon pine forest, with potential for a stand-replacement fire. Either situation reduces diversity of habitat—limiting available resources for Inyo towhee. The Hunter Mountain copper butterfly would also be adversely impacted by either the scenario of encroachment or increased fire intensity. Vegetative communities supporting butterfly habitat, specifically the California dock, would likely be crowded out over time and replaced with shrubs and trees. If all meadows were to burn simultaneously in a high-intensity fire, the California dock population could be severely or permanently reduced, with associated impacts on the butterfly species. Under the no action alternative, fire vehicle traffic would not be traveling through Mohave ground squirrel range.

Cumulative Impacts. Cattle grazing—in particular selective browsing by cattle in meadow habitat—has likely resulted in long-term adverse impacts to the Hunter Mountain copper butterfly population. However, the installation and repair of the Hunter Meadow fence has mitigated these impacts, and appreciable amounts of California dock have returned to the meadow, indicating a habitat that can support this endemic invertebrate species.

Conclusion. Taking no action would result in local, long-term, negligible to minor adverse impacts to the Inyo towhee and Hunter Mountain copper butterfly. There would be no impact to Mohave ground squirrel.

Wilderness

Under the no action alternative, the natural quality of wilderness character would be gradually and adversely affected, as the ecosystem would continue to progress toward an exclusively late seral stage forest in the absence of fire. Fire would continue to be managed for suppression, removing fire as a natural ecosystem process. There would be an increased accumulation of fuels which would increase the potential for a high intensity fire, and such a fire would likely trigger fire suppression efforts. Fire suppression efforts could result in a trammeling of the wilderness, and a catastrophic fire could have adverse impacts on the unique quality of Death Valley Wilderness associated with ranching history and prehistoric cultural resources.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect wilderness include grazing activities in the Hunter Mountain Allotment, the Wilderness and Backcountry Stewardship Plan, mechanical fuel reduction in the Hunter Cabin area, and cattle exclosure fence repair around the Hunter Mountain Meadow. The Wilderness and Backcountry Stewardship Plan includes specific actions such as wilderness character restoration, including in the Hunter Mountain area, which would contribute beneficial cumulative effects to all qualities of wilderness character. Grazing activities have and will continue to contribute adverse cumulative effects to the untrammelled and natural qualities of wilderness character, until such time as the Hunter Grazing Allotment is retired. As long as grazing continues, the natural quality of wilderness character is enhanced by the mitigating circumstance of exclosure fencing, while the existence of those fences represents an adverse impact to the natural quality of wilderness character. Collectively, the impacts—both beneficial and adverse—would not exceed minor.

Conclusion. Taking no action would continue to degrade the natural quality of wilderness character, leading to a long-term minor adverse impact. Continuing fire suppression activities to prevent catastrophic fire, combined with the cumulative effects of grazing, would degrade the natural quality of wilderness character by removing fire as an ecosystem process and facilitating the spread of non-native grasses. The possibility of a catastrophic fire would increase as the forest ages, increasing the potential impacts to the untrammelled character from actions to contain wildfires and to the unique quality of wilderness associated with the area's cultural resources.

Archeological Resources

Under the no action alternative, conditions would remain the same and there would be no immediate impact to archeological resources either adverse or beneficial. There would however be a continued accumulation of fuels which would increase the likelihood of an uncontrolled wildfire. Fires of high intensity may damage prehistoric and historic artifacts such as stone

tools, cans, and glass. Fire suppression activities such as line construction may also impact archeological resources.

Cumulative Impacts.

Past, present, and reasonably foreseeable future projects with the potential to affect archeological resources include grazing activities in the Hunter Mountain Allotment, restoration of the William Lyle Hunter Cabin, mechanical fuel reduction in the Hunter Cabin area, cattle exclosure fence repair around the Hunter Meadow, and the proposed Exotic Plant Management Plan. All of these actions present the potential for negligible to minor adverse impacts on archeological resources and collectively the impact would not exceed minor.

Conclusion. Under the no action alternative, there would be no direct impacts to archeological resources. However there would be an increased likelihood of uncontrolled wildfire. Fires of high intensity may damage prehistoric and historic artifacts such as stone tools, cans, and glass. Fire suppression activities such as line construction may also impact archeological resources.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under the no action alternative, there would be no section 106 undertaking. Routine monitoring and resource management actions under the no-action alternative would be the same as have been conducted in the past and compliance with section 106 would be conducted on an as-needed basis and would be action specific. Therefore, under 36 CFR 800, the no action alternative would result in “no effect to historic properties” for archeological resources.

Cultural Landscapes

Under the no action alternative, conditions would remain the same and there would be no impact to cultural landscapes. However there would be an increased likelihood of uncontrolled wildfire which could lead to a loss of contributing features such as historic structures.

Cumulative Impacts.

Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include grazing activities in the Hunter Mountain Allotment, restoration of the William Lyle Hunter Cabin, mechanical fuel reduction in the Hunter Cabin area, and the cattle exclosure fence repair around the Hunter Mountain Meadow. All of these actions, with the exception of the cattle exclosure fence repair, present the potential for negligible to minor beneficial impacts on the Hunter Mountain Ranch Historic Rural Landscape as they help to maintain the physical and cultural aspects of the ranching landscape. The exclosure fence is in keeping with the historic practice of using fences to control cattle movement but represents a non-historic addition to the landscape resulting in a negligible impact.

Conclusion. Under the no action alternative, there would be no impacts to cultural landscapes. However there would be an increased likelihood of uncontrolled wildfire which could lead to a loss of contributing features such as historic structures.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under the no action alternative, there would be no section 106 undertaking. Routine monitoring and resource management actions under the no action alternative would be the same as have been conducted in the past and compliance with section 106 would be conducted on an as-needed basis and would be action specific. Therefore, under 36 CFR 800, the no action alternative would result in “no effect to historic properties” for cultural landscapes.

Historic Structures

Under the no action alternative, conditions would remain the same and there would be no direct, immediate impacts to historic structures. However there would be an increased likelihood of uncontrolled wildfire which could lead to a loss of these structures.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect historic structures include restoration of the William Lyle Hunter Cabin and Mechanical Fuel Reduction in the Hunter Cabin area. Both projects resulted in minor to moderate beneficial impacts.

Conclusion. Under no action alternative, there would be no impacts to historic structures. However there would be an increased likelihood of uncontrolled wildfire which could lead to a loss of these structures.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under the no action alternative, there would be no section 106 undertaking. Routine monitoring and resource management actions under the no-action alternative would be the same as have been conducted in the past and compliance with section 106 would be conducted on an as-needed basis and would be action specific. Therefore, under 36 CFR 800, the no action alternative would result in “no effect to historic properties” for historic structures.

Ethnographic Resources

The Timbisha Shoshone have identified Hunter Mountain as a place of traditional and cultural importance for pinyon nut harvesting as well as for the presence of other culturally important plants. Under the no action alternative, conditions would remain the same and there would be no immediate impacts to ethnographic resources.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include grazing activities in the Hunter Mountain Allotment and the Exotic Plant Management Plan. Grazing activities present the potential for negligible to minor impacts to ethnographic resources through the introduction of non-native species and the trampling of native species of cultural importance. The Exotic Plant Management Plan would have the potential for negligible to minor beneficial impacts by reducing the presence of invasive species and fostering the health of native and culturally important species.

Conclusion. Under the no action alternative, there would be no impacts to ethnographic resources. However there would be an increased likelihood of uncontrolled wildfire which could result in the loss of mature pinyon trees and a replacement of the pinyon by invasive grasses.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under the no action alternative, there would be no section 106 undertaking. Routine monitoring and resource management actions under the no action alternative would be the same as have been conducted in the past and compliance with section 106 would be conducted on an as-needed basis and would be action specific. Therefore, under 36 CFR 800, the no action alternative would result in “no effect to historic properties” for ethnographic resources.

Visitor Use and Experience

Under the no action alternative, visitation patterns in the Hunter Mountain area would continue in conformity with current use patterns of small groups accessing the William Lyle Hunter Cabin for camping, off-trail hiking, and opportunities to learn about the park’s ranching history. There would be no impact to visitors seeking solitude or opportunities for self-directed exploration and discovery.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect visitor experience include the Wilderness and Backcountry Stewardship Plan. In the preferred alternative, a mandatory visitor permit system is proposed. If adopted, this permit system could impact the experience of visitors in both a beneficial and an adverse way. A benefit of the permit system would be to provide valuable information to visitors prior to their visit to Hunter Mountain, including distances, road conditions, and type of vehicle

required for navigating backcountry roads. However, a permit system could adversely impact a visitor seeking an unconfined experience in the backcountry and wilderness areas of the park, by making that visitor register in advance. Because the permit would be free, and because it would be available online and require a small time commitment to meet this regulatory requirement, the overall impact to visitors seeking a unique experience in the Hunter Mountain area would be negligible.

Conclusion. Under the no action alternative, there would be negligible impacts to visitor experience. Visitors would continue to access the area on a seasonal basis for diverse forms of recreation, and would have ample opportunities for self-directed exploration.

Health and Safety

Under the no action alternative, there would be no changes to the current health and safety conditions specific to the Hunter Mountain area. Visitors would continue to be exposed to risks directly related to the remote nature of the area and the rugged roads that must be navigated to reach Hunter Mountain. These risks would include potential vehicle breakdowns and flat tires, extreme exposure on narrow dirt roads near the south pass of Saline Valley Road and on the grade between Hunter Cabin Road and Hidden Valley, and the possibility that visitors without accurate maps could become lost or run out of fuel. The park would continue to mitigate these risks

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect health and safety include the Wilderness and Backcountry Stewardship Plan. In the preferred alternative, a mandatory visitor permit system is proposed. If adopted, this permit system could benefit visitors by providing a mechanism for delivering information that could enhance visitor safety. The permit system could deliver messages to visitors prior to their visit to Hunter Mountain, including distances, road conditions, and type of vehicle required for navigating backcountry roads.

Conclusion. Under the no action alternative, the impact to public health and visitor safety would be negligible, beneficial, and long term. Visitors would continue to be exposed to some risks, which would be mitigated by the park's mechanisms of delivering safety information to visitors to Hunter Mountain.

ENVIRONMENTAL CONSEQUENCES—ALTERNATIVE B: PREFERRED ALTERNATIVE

Soils

Under the preferred alternative, vegetative litter would be reduced by the prescribed burn. The soils at the site have a low susceptibility to erosion, and the reduction of this cover may increase the erosion potential. However, because of the gentle slopes and well-drained soils, the preferred alternative would likely result in negligible (if any) increase in erosion. Soils would be more vulnerable to erosion following the proposed burn, but the erosional

susceptibility would remain low. Soils should stabilize within one year to withstand heavy rainfall events, and should return to pre-burn stability after two years. Over the longer term the reduction of fuels will decrease the likelihood of a high intensity fire which may result in the formation of a low permeability soil crust. Lowered soil permeability would increase the potential for overland flow and soil erosion. A prescribed burn may also promote soil nutrient absorption which would have a beneficial impact.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect soils include grazing activities in the Hunter Mountain Allotment, the Wilderness and Backcountry Stewardship Plan, mechanical fuel reduction in the Hunter Cabin area, cattle exclosure fence repair around the Hunter Mountain Meadow, and the proposed Exotic Plant Management Plan. All of these actions present the potential for negligible to minor impacts on soil, and collectively the impact will not exceed minor effects. However, the combined effects of the mechanical fuel reduction in the Hunter Cabin area with the effects of prescribed fire may have an appreciable benefit on the area soils by reducing the likelihood of a high intensity fire. High intensity fires can create a low permeability crust which can reduce water infiltration rates and nutrient absorption in the soil.

Conclusion. Alternative B is the environmentally preferred alternative with regard to soils. Compared to the no action alternative, a prescribed fire presents the potential for a temporary increase in soil erodibility. However the soil would still have low erosion susceptibility because of the gentle slopes and good soil drainage, and therefore alternative B is not expected to produce any appreciable increases in erosion. The prescribed burn would reduce the likelihood of a high intensity fire, which could create a low permeability soil crust that is more vulnerable to overland flow and erosion. Therefore, in the longer term, alternative B is likely to decrease soil erodibility compared to the no action alternative. Also, alternative B is expected to benefit the soils by increasing their nutrient absorption potential.

Water Resources

The preferred alternative presents the potential for temporary and minor impacts on water resources. These impacts may include elevated sediment loads in ephemeral runoff from the burn area. However, because of the gentle slopes and well drained soils, the potential for overland flow from the area would remain low, and the potential for increased sediment loads will quickly diminish as vegetation returns to the burn area. There would be a short-term potential for ash from the prescribed burn becoming a component of the sediment load in ephemeral runoff events. This is not expected to negatively affect water quality, and the nutrients provided by the ash may be ecologically beneficial. The potential for increased sediment loads should be negligible a year after the proposed burn, and should return to the pre-burn potential after two years. In the longer term, alternative B may decrease soil erodibility by reducing the likelihood of high intensity fires which can result in the development of a lowered permeability and more erodible soil.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect water resources include grazing activities in the Hunter Mountain Allotment, Wilderness and Backcountry Stewardship Plan, mechanical fuel reduction in the Hunter Cabin

area, cattle enclosure fence repair around the Hunter Mountain Meadow, and the proposed Exotic Plant Management Plan. All of these actions present the potential for negligible to minor impacts on watershed processes, and collectively the watershed impacts would not exceed minor. The one exception is Hunter Mountain Allotment cattle grazing, which has resulted in moderate adverse impacts to water quantity (diversions from springs) and water quality (trampling and defecating in surface waters). Alternative B would not present an appreciable addition to the cumulative impacts on watershed functions and water resources.

Conclusion. Alternative B is the environmentally preferred alternative with regard to watershed processes and water resources. Alternative B would present the potential for a short term increase in sediment loads during infrequent runoff events. In the longer term, this proposed prescribed fire may result in a decrease in runoff sediment loads, by reducing the likelihood of an intense fire that may lead to lowered permeability and more erodible soil. Impacts to water resources would be negligible to minor, short-term adverse and long-term beneficial.

Air Quality

Under alternative B, prescribed fires are only ignited under specific conditions. These conditions are chosen to minimize any negative long term impacts to air quality. Air quality would return to good or excellent a few days after the burn is extinguished.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect air quality include prescribed fire treatments adjacent to the currently planned project area that would be completed at a future date under a separate compliance document. Short term minor impacts would be realized locally, adjacent to the fire perimeter, depending on wind direction and speed and humidity conditions.

Conclusion. Alternative B would present minimal, short term impacts to air quality in the local area adjacent to the burn. Alternative B would also present a longer term benefit to the local and regional air quality because of the reduction of fuels that would not be available for consumption if a large scale catastrophic fire occurred in the area.

Vegetation

Under alternative B prescribed fire would only be ignited under controlled circumstances when the size and intensity of the fire could be kept to a minimum. Cheat grass would be burned while seeds remain on vegetation above ground where they will be destroyed by fire. Only a single meadow containing the California dock would be burned which would allow Hunter Mountain copper butterflies to find refuge in unburned meadows. The amount of meadow vegetation community may see long-term expansion after the prescribed fire. Implementation of a fire effects study on the affected vegetation community could provide valuable information for the long-term management of plant communities on Hunter Mountain.

Cumulative Impacts. Hunter Mountain Allotment cattle grazing has resulted in several cumulative adverse impacts to the vegetation community: physical damage to native plants through grazing, the introduction of non-native plant species, and continued disturbance

facilitating non-native species spread. Selective browsing of herbaceous plants would facilitate continued succession of meadow habitat; however, the continued maintenance of the Hunter Meadow fence is a reasonably foreseeable mitigation and would likely prevent complete loss of all meadow habitat and California dock habitat for the Hunter Mountain copper butterfly. The park's upcoming Exotic Plant Management Plan would likely provide clarification of management priorities and strategies for addressing exotic plant invasions in the Hunter Mountain area, contributing to beneficial cumulative impacts to vegetation communities. However, hand pulling non-native invasive grasses is likely to be just as unfeasible with a plan as under current conditions.

Conclusion. Alternative B would present short term minor to moderate adverse impacts to vegetation in the burned area. Recovery would be rapid and meadow habitat would be expected to recover within one year, potentially with a measurable increase in the amount of meadow relative to current conditions. The post-fire vegetation study would contribute important data toward future vegetation management activities in the Hunter Mountain area. Long term impacts from the preferred alternative would be minor and beneficial.

Wildlife

Invertebrates that are able to escape (fly, pupate in ground, burrow into the ground) may survive (Smith, 2000). Those not able to escape may have local populations affected (Pilliod, 2006).

For reptiles, prescribed fire may be beneficial in the long term, creating a more open environment; however, it may initially lead to short-term declines (Pilliod, 2006). Low to moderate fire intensity that creates a patchy burn may provide refuge sites to escape the fire (Smith, 2000).

Small mammals would likely be reduced in abundance for a period of a few months to a few years in the 50-acre area proposed for the prescribed fire, due to changes in food resources and cover. Small mammals may hide under cover or in ground where ability to survive is partly dependent on adequate ventilation; large mammals must leave the area during the burn period (Smith, 2000). Mammals may leave a burned area if resources are not available to them within the burn, and may not return until sufficient food and shelter are available (Smith, 2000). Forage would likely increase for sheep and deer (Pilliod, 2006). Carnivores may be reduced in the area immediately following the burn, due to reduced food resources present. Conversely, with reduced cover, prey may be more visible and more easily obtained.

Adult birds would be able to flee any fire or smoke. If fire occurred when eggs, nestlings and juveniles were present there would be mortality. Fire may be beneficial to raptors by reducing cover for prey species (Smith, 2000). Some bird species may increase in the project area post-fire, while others may decrease due to reduced resource availability. The patchiness of the site may be beneficial as a mosaic of habitat types provides diversity and is attractive to a variety of species.

Cumulative Impacts. Hunter Mountain Allotment cattle grazing and the associated impact on natural spring sources of water has resulted in adverse impacts to wildlife in the area. These

impacts are mitigated to some degree by the fact that the provisioning of water for cattle also makes water available to native wildlife species. However, trampling of burrows and selective grazing by cattle has degraded wildlife habitat and would likely continue under the no action alternative. Exclosure fencing has mitigated these adverse impacts in certain areas, and likely would continue to do so in the Hunter Meadow for the foreseeable future.

Conclusion. There would be localized, short-term minor adverse impacts to wildlife species and habitats from the direct effects of fire in 50 acres. The long-term impact from the anticipated creation of diverse forest and meadow mosaic habitats is expected to be minor and beneficial to wildlife species.

Special Status Species

Hunter Mountain copper butterfly may lose a small amount of host vegetation during the fire but it is expected the vegetation would recover and the butterfly would return to the site. The area the host plant is found in is less than 1/3 acre in size and is a small portion of the entire habitat for the butterfly. In the long term, a prescribed fire may increase the amount of meadow habitat available for the butterfly.

Mohave ground squirrel would potentially be impacted by an increased amount of traffic and increase in heavy vehicle traffic on roads through habitat during the burn operation. The timeframe of this traffic would be limited to a few days during the operational period and a few days over the next twenty years while the vegetation plots are monitored. Direct mortality due to traffic should be reduced through observing the speed limit and watching for animals on the roadway.

The Inyo towhee may be directly affected and forced to leave the burn area during period of operation. If the burn occurs during nesting or rearing of young, the young may be lost. Survey for nests in advance of the proposed fire would prevent these impacts. In the long term, the burn may provide patchiness of habitat that is beneficial for Inyo towhee (Benedict, 2011).

Cumulative Impacts. Cattle grazing—in particular selective browsing by cattle in meadow habitat—has likely resulted in long-term adverse impacts to the Hunter Mountain copper butterfly population. However, the installation and repair of the Hunter Meadow fence has mitigated these impacts, and appreciable amounts of California dock have returned to the meadow, indicating a habitat that can support this endemic invertebrate species.

Conclusion.

Effects on the Hunter Mountain copper butterfly would be local, and negligible in the short-term. The potential for expanding the amount of available meadow habitat for the butterfly through prescribed fire would provide a long-term beneficial impact. Depending on the effectiveness of prescribed fire as a management tool, these beneficial impacts could range from negligible to minor.

Mohave ground squirrel would experience local, short-term, negligible, direct adverse effects from increased traffic during operations.

Impacts on the Inyo towhee would be local, short and long-term, negligible, direct and indirect and beneficial. The determination of effect for the Inyo towhee under this alternative would be *no effect*.

Wilderness

Under alternative B the natural quality of the wilderness would be improved, as fire would be restored to the area as a natural ecosystem process, with the potential to control the spread of non-native grasses through the timed application of fire and the associated ecosystem study. The unique quality of Death Valley Wilderness associated with ranching history and prehistoric cultural resources would see a long-term benefit from the reduction in risk of a catastrophic fire that could damage these resources and thus the unique character of wilderness. However the construction of a fence surrounding the study plot and the potential use of chain saws would degrade the area's undeveloped quality. The fence would contribute long-term minor impacts, and the chain saws would result in short-term minor impacts. The prescribed burn would be a trammeling. The short term closure would adversely affect visitors' opportunities for unconfined recreation for less than a week of proposed operations. A minimum requirements analysis was completed for the proposed prescribed fire, and is included in this document as part of Appendix B. The analysis found that prescribed fire and the associated actions, including the ecosystem study, is the minimum tool necessary for the administration of the wilderness area.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect wilderness include grazing activities in the Hunter Mountain Allotment, the Wilderness and Backcountry Stewardship Plan, mechanical fuel reduction in the Hunter Cabin area, and cattle exclosure fence repair around the Hunter Mountain Meadow. The Wilderness and Backcountry Stewardship Plan includes specific actions such as wilderness character restoration, including in the Hunter Mountain area, which would contribute beneficial cumulative effects to all qualities of wilderness character. Grazing activities have and will continue to contribute adverse cumulative effects to the untrammelled and natural qualities of wilderness character, until such time as the Hunter Grazing Allotment is retired. As long as grazing continues, the natural quality of wilderness character is enhanced by the mitigating circumstance of exclosure fencing, while the existence of those fences represents an adverse impact to the natural quality of wilderness character. Collectively, the impacts—both beneficial and adverse—would not exceed minor.

Conclusion. The prescribed fire has been determined the minimum tool necessary for the administration of the wilderness area, in order to protect and restore the natural quality of wilderness character. The study plot fence would have a long term, minor adverse impact to the area's undeveloped quality. Use of chain saws would have a short term adverse impact to the undeveloped quality. The temporary closure to the public would have a short term adverse impact on opportunities for unconfined recreation. Impact levels to all qualities of wilderness character would be minor in intensity.

Archeological Resources

One factor which determines the effect of fire on archeological resources is whether heavy equipment is used to construct lines or fire breaks. The proposed project would not involve the use of heavy equipment. Hand tools would be used to construct two-foot wide scratch lines around the perimeter of the fire. An archeologist or archeological technician would guide line construction to minimize or avoid impacts to CA-INY-1875/H. Fire engines and other vehicles would remain on existing roads. Site 11-092-02 would be flagged for avoidance and all vehicle and foot traffic would be excluded.

Fire intensity, duration, and depth of penetration into the soil are all factors which influence the effects of fire on cultural resources. Groundstone may fracture and bedrock outcrops may experience spalling. Fire may result in the fracturing of lithic debitage and alteration of obsidian hydration bands. Ceramics are not likely to be significantly affected by low to moderate temperatures as they are fired at high temperatures, but glazes on historic ceramics may be damaged. Historic artifacts such as glass and the solder in cans may melt. The low-to-moderate temperatures generally associated with prescribed fires are less likely to result in adverse impacts to cultural resources. The appearance of lithic artifacts within CA-INY-1875/H indicates that these artifacts have been affected by fire in the past.

In general, burnable resources such as historic structures and wooden features are at the greatest risk for damage from fire. The culturally-modified (axe-cut) trees within CA-INY-1875/H would be protected by a combination of clearing duff and brush away from beneath them and applying water as needed.

Under alternative B there would be negligible impacts to CA-INY-1875/H from line construction and implementation of the burn. The potential for uncontrolled, high intensity, wildfire would be reduced. Fires of high intensity may damage prehistoric and historic artifacts such as stone tools, cans, and glass. Fire suppression activities such as line construction may also impact archeological resources.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect archeological resources include Grazing Activities in the Hunter Mountain Allotment, Restoration of the William Lyle Hunter Cabin, Mechanical Fuel Reduction in the Hunter Cabin area, Cattle Enclosure Fence Repair around the Hunter Mountain Meadow, and Exotic Vegetation Management Plan. All of these actions present the potential for negligible to minor adverse impacts on archeological resources and collectively the impact would not exceed minor.

Conclusion. Under Alternative B, there would be long-term negligible impacts to archeological resources. The potential for impacts from uncontrolled wildfire would be reduced.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under alternative B, with mitigation measures in place, there would be no adverse effects to archeological resources eligible for or listed in the national register.

Cultural Landscapes

Under alternative B, there would be no impacts to cultural landscapes. However there would be a decreased likelihood of uncontrolled wildfire which could lead to a loss of contributing features such as historic structures.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include Grazing Activities in the Hunter Mountain Allotment, Restoration of the William Lyle Hunter Cabin, Mechanical Fuel Reduction in the Hunter Cabin area, and Cattle Exclosure Fence Repair around the Hunter Mountain Meadow. All of these actions, with the exception of the Cattle Exclosure Fence Repair, present the potential for negligible to minor beneficial impacts on the Hunter Mountain Ranch Historic Rural Landscape as they help to maintain the physical and cultural aspects of the ranching landscape. The exclosure fence is in keeping with the historic practice of using fences to control cattle movement but represents a non-historic addition to the landscape resulting in a negligible impact.

Conclusion. Under Alternative B, there would be no impacts to cultural landscapes. However there would be a decreased likelihood of uncontrolled wildfire which could lead to a loss of contributing features such as historic structures.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under alternative B, there would be no adverse effects to cultural landscape features eligible for or listed in the national register.

Historic Structures

Under alternative B, there would be no impacts to historic structures. The Hunter Cabin (CA-INY-5044/H) and tin shack (CA-INY-5045/H) are located outside of the area of potential effects for the prescribed burn. Past mechanical fuels reduction projects have created a defensible space around the Hunter Cabin and it would be further protected by an engine during the proposed burn. A hose lay would be placed between the fire perimeter and CA-INY-5045/H.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect historic structures include restoration of the William Lyle Hunter Cabin and Mechanical Fuel Reduction in the Hunter Cabin area. Both projects resulted in minor to moderate beneficial impacts.

Conclusion. Under Alternative B, there would be no impacts to historic structures and a decreased likelihood of uncontrolled wildfire which could lead to their loss.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under alternative B, there would be no adverse effects to historic structures eligible for or listed in the national register.

Ethnographic Resources

The proposed project is consistent with past Timbisha land management practices. Fowler et al (1995:122) notes that the Timbisha used fire as a management tool and areas on Hunter Mountain were burned to encourage the growth of tobacco plants. Clearing of invasive species and removal of undergrowth would contribute to the health of pinyon pines on the site.

Under alternative B, there would be a minor beneficial impact to ethnographic resources by removal of invasive species and fostering the health of the pinyon forest.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include Grazing Activities in the Hunter Mountain Allotment and the Exotic Vegetation Management Plan. Grazing activities present the potential for negligible to minor impacts to ethnographic resources through the introduction of non-native species and the trampling of native species of cultural importance. The Exotic Vegetation Management Plan would have the potential for negligible to minor beneficial impacts by reducing the presence of invasive species and fostering the health of native and culturally important species.

Conclusion. Under alternative B, there would be negligible to minor beneficial impacts to ethnographic resources. There would also be a decreased likelihood of uncontrolled wildfire which could result in the loss of mature pinyon trees and a replacement of pinyon by invasive grasses.

Section 106. Under 36 CFR 800, *Protection of Historic Properties*, an adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance or ability to provide information) of its location, design, setting, materials, workmanship, feeling, or association.

Under alternative B, there would be no adverse effects to ethnographic resources eligible for or listed in the national register.

Visitor Use and Experience

Under alternative B, there would be a period of approximately one week when visitors would not be able to access the Hunter Mountain area. The area targeted for closure to park visitors would be between the intersection of the Hunter Mountain Road and the Saline Valley Road in the south, and at the northern extreme, the Hunter Mountain Road 1.8 miles north of the intersection with the Hunter Cabin road. Park protection staff would sweep the area within and adjacent to the area targeted for closure in advance of operations and provide direct outreach to any park visitors. This direct outreach would include notification about the proposed action and associated closure, the duration of the proposed action, and alternative places in the park to recreate.

Visitors seeking to access Hunter Mountain during the one-week window of the closure would be directly and adversely impacted, as park staff would be enforcing a hard closure in order to ensure public safety during operations. While Death Valley National Park is approximately 3.4 million acres, not all of its areas are realistic for visitation and recreation during the summer, as a result of extreme temperatures reaching more than 120 degrees on the valley floor. However, the adverse impacts of a one-week closure of the Hunter Mountain area would be partially mitigated by the potential for recreation in adjacent high-mountain areas in Death Valley, including the Panamint Mountains. The Wildrose, Thorndike, and Mahogany Flats campgrounds would be open and would continue to be free of charge, providing high-altitude alternatives to camping at Hunter Mountain. For those seeking a cabin experience, there are more than 20 additional backcountry cabins in the park, most of which are at high elevations that would allow for summertime exploration and camping in or near.

Park staff and park would attempt to mitigate the impacts to visitors from the short-term closure by posting website announcements, hard copy bulletins, and a press release about the proposed action at least a week in advance of the ignition. Notifications would be provided at the Interagency Visitor Center in Lone Pine, California, and in the park at the Panamint Springs Resort, the Furnace Creek Visitor Center, the Furnace Creek Ranch and Inn, and the Stovepipe Wells Resort. Park protection staff would post road signs prior to the proposed ignition notifying visitors of the scheduled prescribed fire and associated closure of the Hunter Mountain area for the duration of operations. Signs would be placed in four key locations to inform visitors en route. Rangers at the visitor centers and in the field would attempt to mitigate the adverse impact to visitors by providing alternatives for recreation within the park.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect visitor experience include the Wilderness and Backcountry Stewardship Plan, currently under development by the park. In certain alternatives, a mandatory visitor permit system is proposed. If adopted, this permit system could impact the experience of visitors in both a beneficial and an adverse way. A benefit of the permit system would be to provide necessary information to visitors prior to their visit to Hunter Mountain, including distances, road conditions, and type of vehicle required for navigating backcountry roads. However, a permit system could adversely impact a visitor seeking an unconfined experience in the backcountry and wilderness areas of the park, by making that visitor register in advance. Because the permit would be free, and because it would be available online and require a small

time commitment to meet this requirement, the overall cumulative impact to visitors seeking a unique experience in the Hunter Mountain area would be negligible.

Conclusion. Under alternative B, there would be short-term, localized, minor to moderate adverse impacts to visitors of Death Valley National Park. The duration would be approximately one week, but during that week, anyone seeking to access the Hunter Mountain area would be directly and adversely impacted by the closure of the area. The impacts would be mitigated to some degree by outreach to visitors and by providing alternatives to recreate elsewhere in the park, but the impact would still be unavoidably adverse.

Health and Safety

Under alternative B, there would be a potential adverse impact to public health and safety from the proposed action. While the primary air quality effects are discussed under the impact topic of air quality, smoke generated from the prescribed fire could adversely impact the health of those hiking in nearby areas of the park, depending on wind speed and direction. Park interpretive staff would attempt to mitigate this impact by providing direct and indirect outreach to park visitors regarding health risks. This outreach would include posting website announcements, hard copy bulletins, and a press release about the proposed action at least a week in advance of the ignition. Notifications would be provided at the Interagency Visitor Center in Lone Pine, California, and in the park at the Panamint Springs Resort, the Furnace Creek Visitor Center, the Furnace Creek Ranch and Inn, and the Stovepipe Wells Resort.

The risk of the fire directly impacting public health and safety would be mitigated to negligible levels by the proposed action's plan to enforce a closure of the project area and a buffer of several miles during burn operations. The area targeted for closure to park visitors would be between the intersection of the Hunter Mountain Road and the Saline Valley Road in the south, and at the northern extreme, the Hunter Mountain Road 1.8 miles north of the intersection with the Hunter Cabin road. Park protection staff would sweep the area within and adjacent to the area targeted for closure in advance of operations in order to ensure that visitors would no longer be in the vicinity of the proposed prescribed fire. Park protection staff would confirm a successful closure with the burn boss assigned to the proposed project before any ignition activities.

Cumulative Impacts. Past, present, and reasonably foreseeable future projects with the potential to affect health and safety include the Wilderness and Backcountry Stewardship Plan. In the preferred alternative, a mandatory visitor permit system is proposed. If adopted, this permit system could benefit visitors by providing a mechanism for delivering information that could enhance visitor safety. The permit system could deliver messages to visitors prior to their visit to Hunter Mountain, including distances, road conditions, and type of vehicle required for navigating backcountry roads.

Conclusion. Under alternative B, there would be negligible to minor public health and safety impacts from the proposed prescribed fire. Impacts from smoke could cause health concerns, and the park would mitigate these impacts through outreach. The proposed action's plan to enforce a closure of the area during burn operations would reduce the fire's public health and safety impacts to negligible to minor levels.

Chapter 5: Consultation and Coordination

SCOPING

Scoping for this project included consultation with the State Historic Preservation Office, the Timbisha Shoshone Tribe, and the U.S. Fish and Wildlife Service.

The park superintendent met with the Timbisha Shoshone Tribal Chairman, Vice-Chairman, and Tribal Administrator on January 13, 2012 to discuss the prescribed fire and ecosystem study. At that time, the Tribe did not express any concerns, but expressed an interest in wanting to visit the site of the proposed prescribed fire. The park followed up with a formal scoping letter to the Timbisha Shoshone Tribe and an invitation to members of the Tribal Council to tour the site with the Chief of Resources Management; the invitation was accepted. The Timbisha Shoshone Tribe has sent the park a letter stating that the Timbisha traditionally used fire to manage ecosystems, and that the Tribe is satisfied with the work plan for the prescribed fire and the management practice of returning fire to ecosystems. The letter also requested that the park continue to keep the Tribe informed, so that a tribal monitor could be on site during the prescribed fire. This letter is included in Appendix A.

Agency scoping letters were sent to the State Historic Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service (USFWS) on February 14, 2012. The SHPO's office had no comments at the time. The USFWS response stated that there are no federally listed, proposed, or candidate species, nor their critical habitats, known to exist in the project area. All agency letters and responses are included in Appendix A to this document.

A press release initiating public scoping and describing the proposed action was issued on March 12, 2012, and public comments were solicited via the park's mailing list and the NPS Planning, Environment and Public Comment website during a public scoping period that ended April 13, 2012. Two comments were received. One comment helped identify cultural resources in the area and asked that the project ensure the protection of these resources. The other comment was received from the California Department of Fish and Game (CDFG). This comment (included in its entirety in Appendix A) requested that the EA include a complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis on identifying special status species and locally unique species or communities. To this end the CDFG recommended that the park consult the California Natural Diversity Data Base for areas with project activities. In addition, the CDFG recommended that the EA include a clearly defined purpose and need, a reasonable range of alternatives, and thorough mitigation to offset any impacts to plant or animal species. Finally, the CDFG requested that the park make its approved Fire Management Plan available for reference. The park has since published the Fire Management Plan on its website, available for download here: <http://www.nps.gov/deva/parkmgmt/planning.htm>

The public and agencies will have an opportunity to review and comment on this environmental assessment. As described throughout this document, consultation has been ongoing with the State Historic Preservation Office and the Timbisha Shoshone Tribe.

LIST OF PREPARERS

This environmental assessment was prepared by the National Park Service at Death Valley National Park, with assistance from the Lake Mead National Recreation Area Fuels Crew and the Pacific West Regional Office of the NPS.

The preparers of this document are:

Death Valley National Park

Mike Cipra	NPS/DEVA Environmental Protection Specialist
Kelly Fuhrmann	NPS/DEVA Chief of Resources Management
Blair Davenport	NPS/DEVA Cultural Resources Manager
Wanda Raschkow	NPS/DEVA Archeologist
Jane Cipra	NPS/DEVA Botanist
Richard Friese	NPS/DEVA Hydrologist/Geologist
Charlie Callagan	NPS/DEVA Wilderness Coordinator
Linda Manning	NPS/DEVA Wildlife Biologist
John Stark	NPS/DEVA Engineering Technician

Lake Mead National Recreation Area and NPS Pacific West Region

Tom Foley	NPS/LAKE Fuels Crew Team Leader
Alan Schmierer	NPS/Pacific West Regional Environmental Coordinator

DISTRIBUTION LIST

Agencies

Bureau of Land Management
California Department of Fish and Game
California Dept. of Transportation

California State Clearing House
California State Historic Preservation Office
Inyo County Board of Supervisors

Inyo County Planning Department
National Park Service
State Water Resources Control Board
U.S. Fish and Wildlife Service

Tribes

Timbisha Shoshone Tribe

Libraries

Amargosa Valley Library
Bishop Branch Library
Independence Central Library
Lone Pine Branch Library
Pahrump Community Library
Ridgecrest Branch Library

Organizations/Businesses

Amargosa Conservancy
Beatty Chamber of Commerce
Beatty Town Advisory Board
California Desert Protection League
California Native Plant Society
Center for Biological Diversity
Death Valley 49ers, Inc.
Death Valley Chamber of Commerce
Death Valley Conservancy
Death Valley Natural History Association
Desert Protective Council
Desert Research Institute
Furnace Creek Inn & Ranch Resort
High Desert Multiple Use Coalition
Lone Pine Chamber of Commerce
National Parks Conservation Association
Native American Rights Fund
Panamint Springs Resort
Sierra Club

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Appendix A: Agency Correspondence



United States Department of the Interior

NATIONAL PARK SERVICE

Death Valley National Park
PO Box 579
Death Valley, California 92328



IN REPLY REFER TO:
RM A.2.

February 14, 2012

George Gholson
Chairman
Timbisha Shoshone Tribe
621 W. Line St.
Suite 190
Bishop, CA 93514

Subject: Hunter Mountain Prescribed Fire; PEPC Project No. 39476; CR Project No. 11-092

Dear Chairman Gholson:

The National Park Service (NPS) proposes to implement a pinyon pine fire treatment study, which would involve a prescribed fire of approximately 40 acres on Hunter Mountain in Death Valley National Park, California. The exact location for the prescribed fire would be the intersection of the Hunter Mountain Road and the Hunter Mountain Cabin Road. The purpose of this letter is to solicit your comments on the proposed action and to initiate consultation under Section 106 of the National Historic Preservation Act. We have also initiated consultation with the State Historic Preservation Officer.

The area around Hunter Mountain Cabin was identified in Death Valley National Park's Fire Management Plan of 2009 as a high priority for implementing a prescribed fire, due to the buildup of debris around the historic cabin and the significant fuel load. The Fire Management Plan identified a prescribed fire area of approximately 700 acres around the cabin. NPS would like to proceed thoughtfully toward this management goal by implementing a fire treatment study that combines a small-acreage prescribed fire with established study plots in a pinyon pine ecosystem to better understand the effects of fire in the sky island of Hunter Mountain.

Enclosed for your review is a map of the project area showing the approximate location of cultural resources within and adjacent to the project area. Mechanical treatments to reduce fuel loads have been completed around the Hunter Mountain Cabin (CA-INY-05044/H) and along the cabin access road. CA-INY-1875, within the project area, includes lithics, ceramics, and historic ax cut trees. The Park will work to minimize impacts to cultural resources to the greatest extent possible and consultation will continue once the burn plan has been formalized. At that time the Park will submit the survey report, site records, Determination of Eligibility, and Assessment of Effect form.

If you have questions please contact Wanda Raschkow, park Archeologist, at 760-786-3232 or Blair Davenport, Cultural Resources Manager at 760-786-3287.

We look forward to your input on the proposed project.

Sincerely,



Sarah Craighead
Superintendent

Enclosure: project map

cc w/ enclosure: Timbisha Historic Preservation Committee
c/o Barbara Durham
PO Box 358
Death Valley, CA 92328

cc w/out enclosure: Wanda Raschkow, DEVA
Blair Davenport, DEVA
Mike Cipra, DEVA



IN REPLY REFER TO:
RM A.2.

United States Department of the Interior

NATIONAL PARK SERVICE

Death Valley National Park
PO Box 579
Death Valley, California 92328



February 14, 2012

Milford Wayne Donaldson
State Historic Preservation Officer
California Office of Historic Preservation
PO Box 942896
Sacramento, CA 94296

Attn: Mark Beason, State Historian II

Subject: Hunter Mountain Prescribed Fire; PEPC Project No. 39476; CR Project No. 11-092

Dear Mr. Donaldson:

The National Park Service (NPS) proposes to implement a pinyon pine fire treatment study, which would involve a prescribed fire of approximately 40 acres on Hunter Mountain in Death Valley National Park, California. The exact location for the prescribed fire would be the intersection of the Hunter Mountain Road and the Hunter Mountain Cabin Road. The purpose of this letter is to solicit your comments on the proposed action and to initiate consultation under Section 106 of the National Historic Preservation Act. We have also initiated consultation with the Timbisha Shoshone Tribe.

The area around Hunter Mountain Cabin was identified in Death Valley National Park's Fire Management Plan of 2009 as a high priority for implementing a prescribed fire, due to the buildup of debris around the historic cabin and the significant fuel load. The Fire Management Plan identified a prescribed fire area of approximately 700 acres around the cabin. NPS would like to proceed thoughtfully toward this management goal by implementing a fire treatment study that combines a small-acreage prescribed fire with established study plots in a pinyon pine ecosystem to better understand the effects of fire in the sky island of Hunter Mountain.

Enclosed for your review is a map of the project area showing the approximate location of cultural resources within and adjacent to the project area. Mechanical treatments to reduce fuel loads have been completed around the Hunter Mountain Cabin (CA-INY-05044/H) and along the cabin access road. CA-INY-1875, within the project area, includes lithics, ceramics, and historic ax cut trees. The Park will work to minimize impacts to cultural resources to the greatest extent possible and consultation will continue once the burn plan has been formalized. At that time the Park will submit the survey report, site records, Determination of Eligibility, and Assessment of Effect form.

If you have questions please contact Wanda Raschkow, park Archeologist, at 760-786-3232 or Blair Davenport, Cultural Resources Manager at 760-786-3287.

We look forward to your input on the proposed project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sarah Craighead".

Sarah Craighead
Superintendent

Enclosure: Project Map

cc w/out enclosure: central files
 Wanda Raschkow
 Blair Davenport
 Mike Cipra



United States Department of the Interior

NATIONAL PARK SERVICE
Death Valley National Park
PO Box 579
Death Valley, California 92328



IN REPLY REFER TO:
Y1421 xRM A.2.

February 14, 2012

Carl Benz
Section 7 Program Coordinator
US Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura, CA 93003

Dear Mr. Benz:

The National Park Service (NPS) proposes to implement a pinyon pine fire treatment study, which would involve a prescribed fire of approximately 40 acres on Hunter Mountain in Death Valley National Park, California. The exact location for the prescribed fire would be the intersection of the Hunter Mountain Road and the Hunter Mountain Cabin Road. The purpose of this letter is to: 1) solicit comments on the proposed action, 2) inform you that concurrent with the National Environmental Policy Act (NEPA) process we intend to meet our obligations under Section 7 of the Endangered Species Act, and 3) request information on whether any species, or their critical habitats, which are listed, proposed to be listed, candidates to be listed, or otherwise listed may be present in the project area. The NPS will use this information to determine potential effects of the proposed action on those identified species and habitats, and this will help shape our analysis and management action.

The area around Hunter Mountain Cabin was identified in Death Valley National Park's Fire Management Plan of 2009 as a high priority for implementing a prescribed fire, due to the buildup of debris around the historic cabin and the significant fuel load. The Fire Management Plan identified a prescribed fire area of approximately 700 acres around the cabin. The NPS would like to proceed thoughtfully toward this management goal by implementing a fire treatment study that combines a small-acreage prescribed fire with established study plots in a pinyon pine ecosystem to better understand the effects of fire in the sky island of Hunter Mountain.

The NPS at Death Valley National Park would work with the Lake Mead National Recreation Area Fire Crew and the Bureau of Land Management Ridgecrest Field Office Wildland Fire Management Officer to plan and implement the proposed prescribed fire, with the need for an approved burn plan, thorough NEPA analysis, and multi-agency coordination before implementation of any prescribed fire. The NPS has preliminarily identified two species of concern in planning this management action: the subspecies Hunter Mountain Copper Butterfly (*Lycaena xanthoides obsolescens*), which is rare and endemic to the

Hunter Mountain area, and the Inyo towhee. A 2010 bird survey of Hunter Mountain meadow and adjacent upland area detected California towhee, which we presume to be the Inyo subspecies (*Pipilo crissalis eremophilus*), and is a new federally-listed species for Death Valley National Park. We hope that the species list provided by the Service will help guide us as to what, if any, other species may be present in the project area.

Enclosed for your review is a map of the project area showing the location of the proposed prescribed fire and ecosystem study. If you have any questions, please contact the Park's Wildlife Biologist Linda Manning at 760-786-3252 or the Park's Chief of Resources Management Kelly Fuhrmann at 760-786-3253. We look forward to your input on the project.

Sincerely,



Sarah Craighead
Superintendent

cc: Linda Manning, Wildlife Biologist, Death Valley National Park
Kelly Fuhrmann, Chief of Resources Management, Death Valley National Park
Mike Cipra, Environmental Protection Specialist, Death Valley National Park



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
08EVEN00-2012-SL-0197

March 15, 2012

Memorandum

To: Superintendent, Death Valley National Park, National Park Service, Death Valley, California

From: Assistant Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California

Subject: Hunter Mountain Prescribed Fire, Death Valley, Inyo County, California

This letter is in response to your request dated February 14, 2012, and received by our office on February 21, 2012, for information on federally listed, proposed, and candidate species, and designated critical habitat that may occur in the vicinity of the Hunter Mountain prescribed fire area. Death Valley National Park is proposing to implement a pinyon pine fire treatment study, which would involve a prescribed fire of approximately 40 acres on Hunter Mountain at the intersection of the Hunter Mountain Road and the Hunter Mountain Cabin Road. Your request and our response are made pursuant under section 7 of the Endangered Species Act of 1973, as amended (Act).

Based upon review of our records, no federally listed, proposed, or candidate species nor their critical habitats are known to occur in the proposed project area.

The National Park Service, as the lead Federal agency for the project, has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a construction project which may require an environmental impact statement¹, the National Park Service has the responsibility to prepare a biological assessment to make a determination of the effects of the action on listed species and critical habitat. If the National Park Service determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species and their critical habitat prior to a written request for formal consultation. During this review process, the National Park Service may engage in

¹ "Construction project" means "any major Federal action which significantly affects the quality of the human environment designed primarily to result in the building of structures such as dams, buildings, roads, pipelines, and channels. This includes Federal actions such as permits, grants, licenses, or other forms of Federal authorizations or approvals which may result in construction."

Superintendent

2

planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

In addition, prescribed burn activities have both direct and indirect effects on migratory birds including direct mortality from burn activities and collisions with project vehicles, and the loss or fragmentation of habitat that supports local bird populations. Migratory birds are a Federal trust resource managed and protected by the Service under the Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.). The Migratory Bird Treaty Act prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. The Migratory Bird Treaty Act has no provision for allowing take of migratory birds except under specific circumstances, such as threat to human health. We recognize that some birds may be killed during burn activities even if all reasonable measures to avoid it are implemented. The Service carries out its mission to protect migratory birds not only through investigations and enforcement, but also through fostering relationships with entities that proactively seek to eliminate their impacts on migratory birds. Although the Migratory Bird Treaty Act does not allow us to absolve entities from liability, if they follow recommended guidelines, the Service and Department of Justice have used enforcement and prosecutorial discretion in the past regarding entities that have made good faith efforts to avoid the take of migratory birds.

Only federally listed species receive protection under the Act; however, species listed by the State of California or otherwise considered to be sensitive should be considered in the planning process in the event that they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Database. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

If you have any questions regarding this letter, please contact Amy Torres of the Ventura Fish and Wildlife Office at (909) 382-2654.



March 18, 2013

George Gholson,
Chairman

Bill Eddy,
Vice Chairman

Margaret Cortez,
Secretary/Treasurer

Clyde Nichols,
Council Member

Earl Frank,
Council Member

Superintendent
Death Valley National Park
Attn: Hunter Mountain Ecosystem Prescribed Fire Study
PO Box 579
Death Valley, Ca. 92328

Re: Hunter Mountain Pinyon Pine Ecosystem Fire Treatment and Study

Dear Superintendent,

On behalf of the Timbisha Shoshone Tribe of Death Valley, California, I am submitting comments on the Hunter Mountain Pinon Pine Ecosystem Fire Treatment and Study. As referenced in the Timbisha Homeland Act (P.L. 106-423) of 2000 the Timbisha Shoshone Natural and Cultural Preservation Area was established for co-management of traditional lands with the Park.

The Hunter Mountain area is used traditionally today for seasonal gathering of pinyon nuts and plants for medicinal purposes and basketry. The area also has sheep and deer herds that inhabit and lamb on Hunter Mountain that our people did traditionally hunt seasonally.

Tribal leaders have visited the project site with Park personnel and consultation has taken place. We are satisfied with the work plan for the prescribed fire and to return fire to ecosystems through management practices. The Timbisha traditionally used fire when clearing spring sites and when over-growth was a problem.

Please keep us informed when the burn will take place, so we can have a tribal monitor on site.

Sincerely,

George Gholson
Chairman

Cc: Timbisha Shoshone Tribal Council
Mr. Mervin Hess, Tribal Administrator
Ms. Barbara Durham, Tribal Historic Preservation Officer

Timbisha Shoshone Tribe – Bishop Office – P.O. Box 1779 – 621 West Line St., Suite
109 - Bishop CA, 93515
Phone: 760-872-3614 Fax: 760-872-3670

Appendix B: Minimum Requirements Analysis

1. Introduction

The Minimum Requirements Analysis helps determine whether any administrative action affecting the wilderness is truly necessary, and if so, what is the activity with the least impact to wilderness character. In the past, this was referred to as the “minimum tool”, but is now generally referred to as the “minimum activity”, because factors other than what type of tools are used are also considered important when deciding on how best to preserve wilderness character (e.g. mode of transport, seasonality).

The Minimum Requirements Analysis should not be done by one person, but should be a thoughtful process implemented by an interdisciplinary team so that the action is considered from all viewpoints. It should be performed before the administrative action in question takes place, and not afterward as a justification. A range of feasible alternatives should be considered, including the possibility that the most appropriate administrative response may be no action at all.

When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given more significance, than economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable (2006 NPS Management Policies 6.3.5). The Minimum Requirements Decision Guide (MRDG) can be a useful tool by facilitating constructive conversations, ensuring compliance with law and policy, and by helping managers make responsible wilderness stewardship decisions.

2. Relevant Law, Policies, and Guidance

2.1 The Wilderness Act

The concept of “minimum requirements” stems from section 4(c) of the Wilderness Act of 1964, stating “...except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act... there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure of installation within any such area.” These are referred to as the 4(c) prohibited uses or prohibitions.

2.2 NPS Management Policies

National Park Service Management Policies 2006 (Sections 6.3.1 and 6.3.5) require the application of the concept of “minimum requirement” for potential actions involving section 4(c) prohibited uses within the wilderness area, regardless of wilderness category (designated, recommended, proposed, eligible for study, and potential). The analysis should also be applied to any potential action or management decision that may affect the wilderness. Section 6.3.5 states, “When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given considerably more weight than, economic efficiency and convenience.”

2.3 Death Valley National Park General Management Plan

The 2002 General Management Plan reaffirms the preservation of wilderness character and the use of the minimum requirements analysis process, stating that “Potential disruption of wilderness character and resources and applicable safety concerns will be considered before, and given significantly more weight than, economic efficiency. If some activities must occur in wilderness, only those actions that will have acceptable impacts will be acceptable” (Death Valley GMP 2002).

3. Minimum Requirements Analysis Process

3.1. Identify an Interdisciplinary Team

The project proponent should discuss the issue and potential need for action with the park’s Wilderness Coordinator, who will initiate the minimum requirements analysis and vet it through an interdisciplinary team. The interdisciplinary team should consist of the Wilderness Coordinator, Environmental Protection Specialist, and a representative from Resource Management, Visitor Protection, and any other relevant division. For larger projects and research proposals that may have a greater impact on wilderness character, the interdisciplinary team should formally meet to discuss the impacts to wilderness character and alternatives. Each team member should be familiar with the Wilderness Act and the Minimum Requirements Decision Guide (MRDG). This team will use the latest version of the MRDG form that is available at www.wilderness.net/MRDG/ and on the park’s O: drive.

The minimum requirements concept will be applied as a two-step process:

- *Step 1:* determines whether the proposed management action is necessary for administration of the area as wilderness and does not cause a significant impact to wilderness resources and character, in accordance with the Wilderness Act; and
- *Step 2:* determines the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized.

3.2. Describe the situation that may prompt action and why it is an issue

This should not be a description of a possible method or tool, but rather of the situation that prompts the possible need for action. It is incorrect to say “We need to use a helicopter to fix the radio repeater.” Instead, say, “Radio repeater is malfunctioning which poses a threat to staff and visitor safety.” The team will then determine if action is necessary, and if so, what the minimum activity will be.

3.3 Determine whether action is necessary

Step 1 is for determining whether the action is necessary; it does not discuss specific impacts to wilderness character associated with different action alternatives, as this discussion is explored in Step 2. In some cases, not all of the qualities of wilderness character may be applicable to a proposed action because there would be no change as a result of taking action.

Moving on to Step 2 can only occur if the action is determined to be necessary. This decision must consider if the action supports one or more of the qualities of wilderness character. The decision must document the reasoning behind whether there is sufficient rationale to proceed to Step 2 or not.

3.4 Determine the minimum activity

Develop a range of alternatives that describe what specific methods and techniques will be used, when and where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character. For example, the park may consider conducting activities during seasons and in areas of low visitor use to minimize impacts to visitor solitude. If the use of primitive tools is determined to be a safety liability, then the park may consider additional training to mitigate risks.

Brainstorm a full range of feasible alternatives, including a no action alternative. The interdisciplinary team should also consider alternatives that employ no section 4(c) alternatives, or minimal use of prohibited uses (i.e. a combination of motorized and non-motorized transport methods or tools). After alternatives have been developed, the team may still decide that doing nothing is the best way to preserve wilderness character and the proposed action should not be carried out. Alternatives that the team has considered and dismissed should be explained to document the rationale for rejection.

Analyze the potential effects of each alternative on the wilderness by considering the impact on each quality of wilderness character. The guide allows the park to consider criteria such as maintaining traditional skills, special provisions, and economics/convenience, yet these considerations must be secondary to wilderness character. From a legal standpoint, the Wilderness Act mandates that wilderness character be preserved, not that a park may select the less expensive, more convenient option. Consider the effect of each stage of the activity, including design, construction, management, removal, or restoration as necessary. Examples, case studies, and worksheets are located on www.wilderness.net/mrdg.

3.5 Sign and scan the MRDG

After completing the MRDG, have members of the interdisciplinary team and the superintendent sign the form. Scan the form and save it to the Minimum Requirements Analysis folder on the O: (Resources) drive.

3.6 File the MRDG in the Administrative Record

The MRDG should form part of the administrative record alongside any research permit or NEPA document, including categorical exclusions for management actions taken at Death Valley National Park. To complete the administrative record file, an electronic copy of the signed and scanned MRDG should be included in the appropriate project folder contained within the Completed NEPA Documents folder on the O: (Resources) drive. The original signed copy of the MRDG will be kept on file in the Wilderness Coordinator's office.

4. Roles and Responsibilities

Wilderness Coordinator: The Wilderness Coordinator serves as the primary point of contact for the project proponent as this individual navigates the Minimum Requirements Analysis process. The Wilderness Coordinator convenes the Interdisciplinary Team and provides guidance to help shape the Minimum Action. The Wilderness Coordinator circulates the MRDG for signature, scans the document after it has been signed, and files the hard and electronic copies.

NEPA Coordinator: The NEPA Coordinator and Research Permit Coordinator are responsible for initially identifying which new proposed projects occur in wilderness and may involve Section 4(c) prohibitions of the Wilderness Act. Both of these coordinators then contact the Wilderness Coordinator and the project proponent, connecting them and providing guidance during the Minimum Requirements Analysis process. The NEPA coordinator is responsible for making sure that a scanned MRDG is part of the administrative record file for any NEPA processes.

Project Proponent: The project proponent is responsible for consulting with the Wilderness Coordinator if his or her proposed project occurs in wilderness and this person has been directed by the NEPA Coordinator or Research Permit Coordinator to initiate a dialogue about the project and its need for a Minimum Requirements Analysis. The project proponent is also responsible for providing input and alternatives to determine the Minimum Action. Finally, the project proponent is responsible for knowing and implementing the Minimum Action.

Park Superintendent: The Superintendent is responsible for making the final decision regarding the Minimum Requirement Analysis, informed by the input of the Interdisciplinary Team.



ARTHUR CARHART NATIONAL WILDERNESS TRAINING CENTER

MINIMUM REQUIREMENTS DECISION GUIDE

“ . . . except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act...”

– the Wilderness Act, 1964

Project Title: **Hunter Mountain Prescribed Fire**

Step 1: Determine if any administrative action is necessary.

Description: Briefly describe the situation that may prompt action.

The pinyon pine forest and associated scattered sagebrush habitat on Hunter Mountain is almost exclusively a late seral stage forest structure, characterized by old growth trees and minimal recruitment of young trees. It has been grazed for over a hundred years resulting in the spread of non-native grasses. Adverse impacts to the natural quality of wilderness character have accrued. The suppression of fires, the spread of non-native grasses, and build-up of natural fuels could ultimately result in a catastrophic fire. The Hunter Mountain cabin and Tin Shack cabin, two of the oldest structures in the park, are surrounded by a thick late stage pinyon pine forest located within a mile of the proposed fire perimeter.

A prescribed fire would restore fire as a natural process in the pinyon pine forest, provide important fire effects information from fire effects study plots within the burn perimeter, reduce the ability of exotic plants to invade natural or previously treated areas, increase forest health by creating a mosaic of native vegetation age classes, promote conditions that would allow for recruitment of native grasses and forbs, and diminish the potential of a catastrophic fire. These actions would improve the natural quality of the wilderness and help protect sensitive cultural features considered a unique quality of the Death Valley Wilderness.

Several hundred acres near the cabin was outlined within the 2010 Fire Management Plan's 5-year fuels treatment plan, both to protect two historic structures and to address the health of native plant communities. The proposed 50-acre fire and associated study would enable the Park to proceed in an informed way toward its goal of using prescribed fire to return fire to ecosystems through management practices

To determine if administrative action is necessary, answer the questions listed in A - F on the following pages by answering Yes, No, or Not Applicable and providing an explanation.

A. Describe Options Outside of Wilderness

Is action necessary within wilderness?

Yes: ☒ No: ☐

Explain: The boundaries of the proposed prescribed fire, as identified in the park's 5-year fuels treatment plan, locate the project within wilderness.

B. Describe Valid Existing Rights or Special Provisions of Wilderness Legislation

Is action necessary to satisfy valid existing rights or a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows or requires consideration of the Section 4(c) prohibited uses? Cite law and section.

Yes: ☒ No: ☐ Not Applicable: ☐

Explain: About five acres or 0.04% of the Hunter Mountain grazing allotment is within the boundary of the prescribed burn while the rest of the allotment lies north and west of the proposed fire.

C. Describe Requirements of Other Legislation

Is action necessary to meet the requirements of other laws?

Yes: ☒ No: ☐ Not Applicable: ☐

Explain: The California Desert Protection Act of 1994 :

Section 2 FINDING AND POLICY

(a) The Congress finds and declares that---

(1) appropriate lands in the California desert shall be included within the National Park System and the National Wilderness Preservation System, in order to—

(e) retain and enhance the opportunities for scientific research in undisturbed ecosystems.

D. Describe Other Guidance

Is action necessary to conform to direction contained in agency policy, unit and wilderness management plans, species recovery plans, or agreements with tribal, state and local governments or other federal agencies?

Yes: ☒ No: ☐ Not Applicable: ☐

Explain:

The Park's Fire Management Plan, 2010 stated the following regarding prescribed fire around the Hunter Cabin: "Later, prescribed fire will also be used to mitigate the heavy fuel load caused by shrub encroachment and restore the native grasslands and wetlands in this area. It is estimated that the burn would include about 700 acres, primarily in light fuels and shrubs.additional information is needed regarding the dynamics of grasslands and woody vegetation invasion in the Hunter Mountain area. There is also concern for a newly described butterfly subspecies, the Hunter Mountain Copper Butterfly (*Lycaena xanthoides obsolescens*) that is rare and apparently endemic to the Hunter Mountain area."

DEVA FMP 2010

The park's Wilderness and Backcountry Stewardship Plan (NPS 2012, section 2.6.7) also

supports the actions to restore natural conditions to wilderness resources, as outlined in the park's approved Fire Management Plan.

E. Wilderness Character

Is action necessary to preserve one or more of the qualities of wilderness character including: Untrammeled, Undeveloped, Natural, Outstanding opportunities for solitude or a primitive and unconfined type of recreation, or other unique components that reflect the character of this wilderness area?

Untrammeled: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain: Action is necessary to preserve the Untrammeled quality. The prescribed fire may prevent a subsequent catastrophic fire and associated fire suppression efforts which would result in a significant trammeling of the wilderness.

Undeveloped: **Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

Explain: Action is not necessary to preserve the Undeveloped quality.

Natural: **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

Explain: Action is necessary to preserve the Natural quality. The prescribed fire would begin the restoration of a natural fire regime to the ecosystem, possibly prevent a catastrophic fire, limit the spread of non-native grasses, and protect a rare species of endemic butterfly. Fire is a natural ecosystem process within this wilderness area, and restoration of this process is necessary to preserve the natural quality of wilderness character.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation:

Yes: ☐ **No:** ☒ **Not Applicable:** ☐

Explain: Action is not necessary to preserve Outstanding opportunities for solitude or a primitive type of recreation.

Other unique components that reflect the character of this wilderness:

Yes: ☒ **No:** ☐ **Not Applicable:** ☐

Explain: Action is necessary to preserve both the prehistoric and the historic cultural landscapes and protect the historic William Lyle Hunter Cabin and the historic Tin Shack cabin, which are both surrounded by a heavy fuel load. In addition, pre-historic sites in the wilderness area would be better protected by a controlled, low-intensity prescribed fire. These important cultural resources comprise part of the unique quality of Death Valley's wilderness character, and prescribed fire is necessary to protect them.

F. Describe Effects to the Public Purposes of Wilderness

Is action necessary to be consistent with one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?

Recreation: Yes: ☐ No: ☒ Not Applicable: ☐

Explain: Action is not necessary to be consistent with the Recreational purpose of wilderness.

Scenic: Yes: ☐ No: ☒ Not Applicable: ☐

Explain: Action is not necessary to be consistent with the Scenic purpose of wilderness.

Scientific: Yes: ☒ No: ☐ Not Applicable: ☐

Explain: Action is necessary to be consistent with the Scientific purpose of wilderness. The prescribed fire and associated ecosystem study would allow the park to proceed in an informed way toward its goal of using prescribed fire to return fire to the ecosystem.

Education: Yes: ☐ No: ☒ Not Applicable: ☐

Explain: Action is not necessary to be consistent with the Educational purpose of wilderness.

Conservation: Yes: ☐ No: ☒ Not Applicable: ☐

Explain: Action is not necessary to be consistent with the Conservation purpose of wilderness.

Historical use: Yes: ☒ No: ☐ Not Applicable: ☐

Explain: Action is necessary to be consistent with the Historical use purpose of wilderness by protecting the Timbisha Shoshone Tribe's ability to continue traditional practices of gathering pine nuts by lessening the threat of a catastrophic fire destroying the pinyon pine forest on Hunter Mountain. The Timbisha Shoshone Tribe has indicated to the park that they used fire as a tool in their traditional, sustainable ecosystem management when over-growth was a problem.

Step 1 Decision: Is any administrative action <u>necessary</u> in wilderness?
--

Yes: ☒ No: ☐ More information needed: ☐

Explain: The National Park Service (NPS) proposes a prescribed fire and associated ecosystem study for 50 acres of pinyon pine forest with scattered sagebrush at the intersection of the Hunter Mountain Road and the Hunter Cabin Road in the Cottonwood Mountains of Death Valley National Park (Park). A prescribed fire would restore fire as a natural process in the pinyon pine forest, provide important fire effects information from fire effects study plots within the burn perimeter, reduce the ability of exotic plants to invade natural or previously treated areas, increase forest health by creating a mosaic of native vegetation age classes, promote conditions that would allow for recruitment of native grasses and forbs, and diminish the potential of a catastrophic fire. Several hundred acres near the cabin was outlined within the 2009 Fire Management Plan 5-year fuels treatment plan, both to protect a historic structure and to address the health of native plant communities. The proposed 50-acre fire and associated study would enable the Park to proceed in an informed way toward its goal of using prescribed fire to return fire to ecosystems through management practices.

The prescribed fire is necessary for administration of the wilderness to improve the natural quality of wilderness, to preserve unique cultural features such as the Hunter Mountain and Tin Shack cabins considered a unique quality of the wilderness, and to preserve the traditional

and historic use of the wilderness by the Timbisha Shoshone Tribe's gathering of pinyon pine nuts.

If action is necessary, proceed to Step 2 to determine the minimum activity.

Step 2: Determine the minimum activity.

Description of Alternatives

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

ALTERNATIVE A: NO ACTION ALTERNATIVE

Description: The no-action alternative entails the continuation of existing conditions for the Hunter Mountain pinyon pine ecosystem. The prescribed fire outlined and recommended in the park's Fire Management Plan would not be undertaken. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with the Hunter Mountain area without major actions or changes in the present course of management. The current conditions of the ecosystem would prevail. Community structure would continue to be defined by the past land use and history, including grazing, invasive species spread, and fire suppression. In addition to the primary pinyon pine forest type, a large amount of grasses can be found underneath the drip line of the pinyon pine trees in the Hunter Mountain locality. These grasses are predominately composed of cheat grass (*Bromus tectorum*), a non-native, invasive species. Native bunch grasses are also present. The park would continue to monitor the ecosystem on an ad hoc basis to determine if cheat grass is spreading, but there would be no identified management action to address the spread of the invasive grass species, if such an invasion were determined to be occurring. The park does not currently pull cheat grass because of the infeasibility of hand removal on such a broad scale, nor does the park have a management policy of using herbicide for this species.

The mechanical fuel removal accomplished in 2010 under a categorical exclusion would continue to define the extent of defensible space around the William Lyle Hunter Cabin, until such time as regrowth occurred to replace the mechanically removed fuels..

Effects:

Wilderness Character

"Untrammeled"; Not returning fire to the ecosystem may result in a catastrophic fire and associated firefighting suppression efforts which would result in a significant trammeling.

"Undeveloped" : No effect

"Natural": The natural quality would continue to be subject to a long-term negative effects from grazing, the spread of exotic grasses, fire suppression, and the threat of a potential catastrophic fire.

"Outstanding opportunities for solitude or a primitive and unconfined type of recreation"
No effect.

Other unique components that reflect the character of this wilderness: The threat of catastrophic fire and potential loss of the Hunter Mountain and Tin Shack cabins would continue to increase, along with the potential damage to prehistoric cultural resources in the proposed project area.

Heritage and Cultural Resources: A catastrophic fire would severely diminish the Timbisha Shoshone Tribe's ability to continue their traditional practices of gather pinyon pine nuts on Hunter Mountain. Timbisha Shoshone traditional cultural practices included using fire as a sustainable ecosystem management tool when over-growth was a problem.

Special Provisions: None identified

Economics and Timing Constraints: None identified

Additional Wilderness-specific Comparison Criteria: None Identified

Safety of Visitors, Personnel, and Contractors: No effect

ALTERNATIVE B: 50 ACRE PRESCRIBED FIRE WITH NO STUDY

Description: There would be a 50-acre prescribed fire, but no associated ecosystem study. The park would implement a prescribed fire in 50 acres of pinyon pine (*Pinus monophylla*) forest with scattered sagebrush at the intersection of Hunter Mountain/Hidden Valley Road and the Hunter Cabin access road between 6,750 and 6,800 feet in elevation on a 0-10% slope.

Firefighters would use chainsaws on a limited basis to limb trees, and have the chainsaws available to prevent the spread of the fire from the prescribed fire perimeter.

Effects:

Wilderness Character

"Untrammeled": The prescribed fire would be a one-time trammeling of the wilderness having a short term negative effect, but potentially preventing a much larger catastrophic fire and associated firefighting suppression efforts which would be a significant trammeling.

"Undeveloped" : The use of chain saws would have a short term negative effect on the Undeveloped quality.

"Natural": The prescribed fire has the potential for a long term positive effect on the ecosystem limiting the spread of exotic species, protecting rare endemic species providing for long term improvement in the natural quality of wilderness but any improvement would be difficult to quantify without an ecosystem study.

"Outstanding opportunities for solitude or a primitive and unconfined type of recreation"
The area around the fire is lightly used so the closure of the area would have a short term negative impact on the public's opportunities for solitude and unconfined recreation while the use of chainsaws would be a short term negative effect.

Other unique components that reflect the character of this wilderness: A prescribed fire and return of a more natural fire regime may help protect the historic structures in the area from a catastrophic fire.

Heritage and Cultural Resources: The prescribed fire may prevent a catastrophic fire which would protect the Timbisha Shoshone Tribe's ability to continue traditional practices of gathering pine nuts by lessening the threat of a catastrophic fire destroying the pinyon pine forest on Hunter Mountain

Special Provisions: None identified

Economics and Timing Constraints: Ignition of the project area would require 1 day. An additional two to three days would be required for complete combustion of heavy fuels and targeted suppression and thorough inspection activities on the remainder of the fire to insure the prescribed fire is contained within the designated perimeter and extinguished.

Additional Wilderness-specific Comparison Criteria: None identified

Safety of Visitors, Personnel, and Contractors: : The area will be closed during the prescribed fire so the risk to the public is negligible. Park staff and firefighters will follow safety protocols.

ALTERNATIVE C: 50 ACRE FIRE WITH ECOSYSTEM STUDY

Description: Alternative C defines the rationale for the action in terms of ecosystem management, resource protection, visitor use and experience, and public safety. This alternative meets the park planning objective of managing a healthy ecosystem, while protecting natural and cultural resources and providing for public health and safety.

The park would implement a prescribed fire in 50 acres of pinyon pine (*Pinus monophylla*) forest with scattered sagebrush at the intersection of Hunter Mountain/Hidden Valley Road and the Hunter Cabin access road between 6,750 and 6,800 feet in elevation on a 0-10% slope. The prescribed fire would be followed by an ecosystem study to determine the effects of low-intensity, seasonally timed fire on native and non-native plant species regeneration and distribution.

The objectives for this prescribed fire and ecosystem study would include: improvement in the natural quality of the wilderness by reducing the potential for accelerated soil erosion, creating a mosaic of vegetation age classes with an increase in native plant diversity, and promoting conditions that allow for recruitment of native grasses and forbs (Severson and Rinne 1990). The proposed action would also protect the two nearby historic cabins considered a unique quality of the wilderness by reducing hazardous fuels in the area to create defensible space for the Hunter and Tin Shack cabins, temporarily reduce pinyon pine and sage brush quantities to allow for plant community regeneration, and provide a baseline of data regarding prescribed fire effects in the Hunter Mountain pinyon pine ecosystem.

An ecosystem study would be a component of the preferred alternative, with plots established before prescribed fire implementation, and a cattle exclusion fence installed post-fire to understand the fire effects both with and without the influence of grazing. The fence and all monitoring plots would be a temporary installation to last 20 years; at the conclusion of that time, the fence and any other installations associated with the ecosystem study would be

removed from the area to restore wilderness character.

Firefighters would use chainsaws on a limited basis to limb trees, and have the chainsaws available to prevent the spread of the fire from the prescribed fire perimeter.

Effects:

Wilderness Character

“Untrammeled”: The prescribed fire would be a one-time trammeling of the wilderness having a short term negative effect, but potentially preventing a much larger catastrophic fire and associated firefighting suppression efforts which would be a significant trammeling.

“Undeveloped”: The use of chainsaws would have a short term negative effect on the Undeveloped quality. The fence and study plot would have a long term negative effect on the Undeveloped character of a very small portion of the wilderness.

“Natural”: The prescribed fire would begin the restoration of a natural fire regime to the ecosystem, possibly prevent a catastrophic fire, limit the spread of non-native grasses, and protect a rare species of endemic butterfly providing for a long term improvement in the natural quality of wilderness.

“Outstanding opportunities for solitude or a primitive and unconfined type of recreation”

The wilderness in the vicinity of the fire is lightly used so the closure of the area or use of chainsaws would have a short term negative impact on the public’s opportunities for solitude and unconfined recreation while the fence and study plot would have a long-term moderately negative effect on their ability to enjoy a primitive and unconfined type of recreation.

Other unique components that reflect the character of this wilderness: The prescribed fire and return of a more natural fire regime may help protect the historic structures in the area from a catastrophic fire.

Heritage and Cultural Resources: The prescribed fire would help protect the Timbisha Shoshone Tribe’s continuing ability to practice their traditional gathering of pinyon nuts on Hunter Mountain.

Special Provisions: None identified

Economics and Timing Constraints: Ignition of the project area would require 1 day. An additional

two to three days would be required for complete combustion of heavy fuels and targeted suppression and thorough inspection activities on the remainder of the fire to insure the prescribed fire is contained within the designated perimeter and extinguished. This ecosystem study is scheduled to last for twenty years.

Additional Wilderness-specific Comparison Criteria: None identified

Safety of Visitors, Personnel, and Contractors: The area will be closed during the prescribed fire so the risk to the public is negligible. Park staff and firefighters will follow safety protocols.

Comparison of Alternatives

It may be useful to compare each alternative's benefits and adverse effects to each of the criteria in tabular form, keeping in mind the law's mandate to "preserve wilderness character."

	Alternative B Fire with no study	Alternative C Fire with study	No Action
Untrammelled	-	-	--
Undeveloped	ne	- -	ne
Natural	+	++	-
Solitude or Primitive Recreation	-	-	ne
Unique components	+	+	-
WILDERNESS CHARACTER	- - - / + +	- - - - / + + +	- - - -

	Alternative B	Alternative C	No Action
Heritage & Cultural Resources	+	+	-
Maintaining Traditional Skills	-	-	Na
Special Provisions	na	Na	Na
Economics & Timing <ul style="list-style-type: none"> Costs Duration Timing Restraints 	na - na	Na - Na	Na + Na
Additional Wilderness Criteria	na	Na	Na
OTHER CRITERIA SUMMARY	+ / - -	+ / - -	+ / -

	Alternative B	Alternative C	No Action
SAFETY (PUBLIC AND WORKERS)	+	+	-

Safety Criterion: The area will be closed to the public during the duration of the prescribed fire. Ignition of a prescribed fire would not be conducted on a no-burn day as determined by Inyo County Department of Air Quality Management or without National or Regional approval during Preparedness Levels 4 and 5 restrictions on new prescribed fires. Fuel moisture would be tested prior to ignition, with the prescribed limits of 8-12% fuel moisture for the 100-hour measurement, 7-11% for the 10-hour measurement, and 6-10% for the 1-hour measurement. Any measurement outside of these limits would not allow the prescribed fire to proceed. The prescribed fire would not be ignited if wind speed, or forecast wind speed, was greater than 8 mph. Onsite line preparation would include the use of hand tools to create a scratch line (an area of exposed bare mineral soil to prevent fire spread on the ground) two feet wide extending from the Hunter Mountain Road to the Hunter cabin access road (see Fig. 2, project map).

Preparation work would also include limbing of trees adjacent to the unit perimeter to reduce chance of torching and installation of a fire hose layout (1.5 inch trunk with lateral hose every

200 ft or less) along the scratch line to support holding operations. The operation would also place a portable water tank for refilling fire engines assigned to the fire in a previously disturbed area on Hunter Mountain Road within .5 miles of the fire perimeter, as depicted in the project map. A water tender would be placed in a previously disturbed, non-habitat footprint at the junction of California Highway 190 and the Saline Valley Road. This resource would be used by smaller fire engines to refill water resources assigned to the fire. The southern portion of Saline Valley Road and the Hunter Mountain Road would serve as the operational access roads to the proposed prescribed fire site.

Step 2 Decision: What is the Minimum Activity?

Selected alternative: Alternative C is selected because it defines the rationale for the action in terms of ecosystem management, resource protection, visitor use and experience, and public safety. The preferred alternative meets the park planning objective of managing a healthy ecosystem, while protecting natural and cultural resources and providing for public health and safety.

An ecosystem study would include plots established before prescribed fire implementation, and a cattle exclusion fence installed post-fire to understand the fire effects both with and without the influence of grazing. The fence and all monitoring plots would be a temporary installation to last 20 years; at the conclusion of that time, the fence and any other installations associated with the ecosystem study would be removed from the area to restore wilderness character.

Firefighters would use chainsaws on a limited basis to limb trees, and have the chainsaws available to prevent the spread of the fire from the prescribed fire perimeter.

Rationale for selecting this alternative (including safety criterion, if appropriate):

The No Action alternative was not chosen as it would do nothing to return natural fire to the ecosystem or prevent a future catastrophic fire.

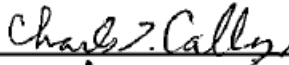

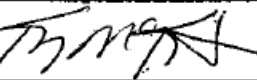
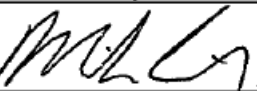
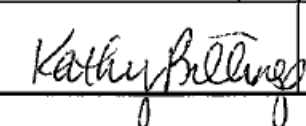
Alternative B was not chosen as it does not allow for the associated ecosystem study which is essential to understanding the effects of the fire.

Monitoring and reporting requirements: The Park's wilderness coordinator will monitor the installation of the fence and study plot and insure that all installations are removed by December 31, 2023 unless extended another ten years by a memo to file.

Check any Wilderness Act Section 4(c) uses approved in this alternative:

- | | |
|---|--|
| <input type="checkbox"/> mechanical transport | <input type="checkbox"/> landing of aircraft |
| <input checked="" type="checkbox"/> motorized equipment (chainsaws) | <input type="checkbox"/> temporary road |
| <input type="checkbox"/> motor vehicles | <input checked="" type="checkbox"/> structure or installation
(fence and study plots) |
| <input type="checkbox"/> motorboats | |

Record and report any authorizations of Wilderness Act Section 4(c) uses according to agency procedures.

Approvals	Signature	Name	Position	Date
Prepared by:		Charlie Callagan	Wilderness Coordinator	5/7/13
Recommended:		Kelly Fuhrmann	Chief of Resources Management	5/7/13
Recommended:		Karen McKinlay-Jones	Chief Ranger	5/7/13
Recommended:		Mike Cipra	Environmental Specialist	5/7/13
Approved:		Kathy Billings	Superintendent	5/8/13

The signatures above only affirm the park's minimum requirement analysis for wilderness, and do not signify the approval of any alternative, as only a decision document signed by the Pacific West Regional Director of the National Park Service can approve agency action, subsequent to public review of this environmental assessment.



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



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Death Valley National Park
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