

## **ENVIRONMENTAL ASSESSMENT OF THE HAZARDOUS VEGETATIVE FUELS IN DENALI NATIONAL PARK AND PRESERVE**

### **PURPOSE AND NEED**

The National Park Service (NPS) is proposing to adopt a Hazardous Vegetative Fuel Treatment Plan (Fuel Plan) to guide protection of the built environment in Denali National Park and Preserve (Denali) from wildland fires. The Fuel Plan would detail protocols for the removal of vegetation that could carry a wildland fire toward structures and a maintenance plan for retaining competent fire breaks around the facilities.

Denali National Park and Preserve needs a Fuel Plan in order to protect the built environment (including historic structures) as well as the lives of visitors, employees, and firefighters in the event of a wildland fire.

The close proximity of buildings to environments that burn is called the wildland/urban interface. The vegetation near these structures is referred to as hazardous vegetative fuel. In some areas in Denali National Park and Preserve this vegetation is particularly thick and may touch or overhang buildings. While the vegetation may provide privacy and a sense of seclusion, it significantly complicates the ability of fire fighters to control a wildland fire and protect the structures. Many of the buildings in Denali have been built within the forest or close to the forest edge, or the forest has since expanded to the proximity of the structures. Due to the remoteness and difficulty of access, it takes a significant amount of time, effort, and resources to protect cabins and structures during a fire. One subsistence cabin has been lost to wildfire and several others have been seriously threatened in recent years.

The purpose of this plan is to protect the built environment of the park. By implementing the prescription in the plan, a defensible space would be created and maintained around the park structures. This space would allow radiant heat from a wildfire to dissipate, keeping the building from igniting. It would also prevent structural fires from igniting other structures, and it would provide a safe area for suppression crews to work. Creation of this space would reduce the risk of property damage in the event of a wildland fire, improve security for visitors and residents, and reduce the risks for firefighters.

This document presents the alternatives considered and evaluates the consequences of implementing a hazardous vegetative fuel reduction program around the built environment of Denali National Park and Preserve. This Environmental Assessment has been prepared according to the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9).

### **BACKGROUND**

#### Applicable Laws, Director's Orders, and NPS Management Policies

The 1916 Organic Act directed the Secretary of the Interior and the National Park Service to manage national parks and monuments to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C. 1.).

The Organic Act also granted the Secretary the authority to implement "rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments and reservations under the jurisdiction of the National Park Service" (16 U.S.C. 3.).

In 1917, Congress established Mount McKinley National Park "...as a public park for the benefit and enjoyment of the people . . . for recreation purposes by the public and for the preservation of animals, birds, and fish and for the preservation of the natural curiosities and scenic beauties thereof . . . said park shall be, and is hereby established as a game refuge" (39 Statute 938).

Additions to the park were made in 1922 and 1932 to provide increased protection for park values and, in particular, wildlife.

Amendments to the 1916 NPS Organic Act and 1970 NPS General Authorities Act, authorized in 1978, expressly articulated the role of the national park system in ecosystem protection. The amendments further reinforce the primary mandate of preservation by stating:

"The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided for by Congress" (16 U.S.C. 1-a1.).

The Alaska National Interest Lands and Conservation Act of 1980 (ANILCA) added approximately 2,426,000 acres of public land to Mount McKinley National Park and approximately 1,330,000 acres of public land as Denali National Preserve. ANILCA directs the National Park Service to preserve the natural and cultural resources in the park and "preserve for the benefit, use, education and inspiration of present and future generations" (Sec. 101(a)). The Act further directs the National Park Service to manage for the continuation of customary and traditional subsistence uses in the park and preserve additions in accordance with provisions in Title VIII.

Regarding use of cabins and structures in the park and preserve additions for subsistence, Title XIII of ANILCA states that the Secretary may permit the traditional and customary uses of existing cabins and related structures on Federal lands within the unit or area if it is determined that the uses are compatible with the purposes for which the unit was established. The Act also states that the Secretary may permit, under such conditions as he/she may prescribe, the temporary use, occupancy, construction and maintenance of new cabins or other structures if it is determined that the use is necessary to reasonably accommodate subsistence uses or is otherwise authorized by law (ANILCA, P.L. 96-487, Sec. 1303).

The NPS Organic Act and the General Authorities Act prohibit impairment of park resources and values. The 2001 NPS Management Policies (1:3) uses the terms "resources and values" to mean the full spectrum of tangible and intangible attributes for which the park is established and is managed, including the Organic Act's fundamental purpose and any additional purposes as stated in the park's establishing legislation. The primary responsibility of the NPS is to ensure that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

The evaluation of whether impacts of a proposed action would lead to an impairment of park resources and values is included in this environmental assessment. Impairment is more likely when there are potential impacts to a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents (NPS, 2001, section 1.4.5).

NPS Management Policies (NPS, 2001) state:

"Wildland fire may contribute to or hinder the achievement of park management objectives. Therefore, park fire management programs will be designed to meet park resource management objectives while ensuring that firefighter and public safety are not compromised" (Sec. 4.5)

"The NPS will take action to prevent or minimize the impact of wildland, prescribed, and structural fires on cultural resources, including the impact of suppression and rehabilitation activities" (Sec. 5.3.1.2).

"Fire management activities conducted in wilderness areas will conform to the basic purposes of wilderness. . . Actions taken to suppress wildfires will use the minimum requirement concept, and will be conducted in such a way as to protect natural and cultural resources and to minimize the lasting impacts of the suppression actions" (Sec. 6.3.9).

"Each park with vegetation capable of burning will prepare a fire management plan ... The plan will be designed to guide a program that responds to the park's natural and cultural resource objectives; provides for safety considerations for park visitors, employees, neighbors, and developed facilities..." (4.5).

"Suppression activities conducted within wilderness, including the categories of designated, recommended, potential, proposed, and study areas, will be consistent with the 'minimum requirement' concept identified in Director's Order #41: Wilderness Preservation and Management" (4.5).

Director's Order #18 states that "Each park with vegetation capable of burning will prepare a fire management plan to guide a fire management program that is responsive to the park's natural and cultural resource objectives and to safety considerations for park visitors, employees, and developed facilities."

The 1999 Director's Order #41 for Wilderness Preservation and Management provides policy guidance for managing wilderness areas in the national park system. One of the overall purposes is to "guide Servicewide efforts in meeting the letter and spirit of the 1964 Wilderness Act" (NPS, 1999b). Section I states that "wilderness areas are to be given additional protection from that normally afforded other backcountry resources." "The term "wilderness" includes the categories of designated, potential, recommended, proposed, study areas, and suitable. These policies apply regardless of category. In addition to managing these areas for the preservation of their wilderness values, planning for these areas must ensure that the wilderness character is likewise preserved. The National Park Service will take no action that would diminish the wilderness suitability of an area recommended for wilderness study or for wilderness designation until the legislative process has been completed" (NPS, 1999b, Section C1).

### **Applicable NPS Plans**

The Denali National Park and Preserve General Management Plan (GMP) (NPS, 1986) provides comprehensive guidance on all aspects of park management. It continued the backcountry management direction from the 1976 plan, calling for an extension of the backcountry unit system to the 1980 ANILCA additions as necessary. The concept of dispersed use was to be continued for the designated Denali Wilderness that makes up 95% of the former Mount McKinley National Park. The GMP also included the Wilderness Suitability review. Virtually all areas of the park were found to be suitable for wilderness designation other than the entrance area, road corridor, and primary mining areas in the Kantishna District.

Concerning fire management the GMP specifies that:

"In accordance with NPS policy the objective for Denali is to allow natural forest and tundra fires to fulfill their ecological role in vegetational succession. Under the plan, natural fires occurring in Denali will be allowed to burn unless they threaten inholdings, certain identified historic sites, or neighboring lands that are zoned for protection" (NPS, 1986).

The Entrance Area and Road Corridor Development Concept Plan (NPS, 1997) amends the GMP and provides specific direction for development proposals to meet the current and future needs of individuals and commercial groups who visit the park. In the section on Visitor Experience and Resource Protection, it states that the National Park Service will "complete a resource management plan and other action plans to address issues such as revegetation, fish habitat restoration, bear management, wildland fuel reductions around structures, hazardous tree management and administrative uses of resources."

The park's Resource Management Plan (NPS, 1998) includes Project Statement DENA N-520 on Fire Management, which mandates development of a fire program which will "protect human life, property and significant resources while allowing fire to fulfill its role in the ecosystem." It further outlines the need to develop hazard fuels management programs for both the frontcountry and backcountry areas of the park (N-520.002 and N-520.003).

Denali National Park Strategic Plan (NPS 1997)

The park's Strategic Plan presents the mission of Denali National Park and Preserve:

"Denali National Park and Preserve is committed to furthering the basic tenets proclaimed in the National Park Service Organic Act of 1916: to ensure the protection of wildlife, natural and cultural resources, and aesthetic and wilderness resource values along with the use and enjoyment of the park by present and future generations. It is the park's mission that visitors understand and appreciate the significance of natural systems. Recognizing the unique development and character of Alaska, we are also responsible for sustaining subsistence lifestyles and a setting conducive to scientific investigation."

#### Fire Management Planning

Since 1983, guidance for fire management activities within Denali has come from a series of state-wide interagency plans developed cooperatively by the National Park Service, the Bureau of Land Management, the Alaska Department of Natural Resources, the Alaska Department of Fish and Game, the U.S. Forest Service, the U.S. Fish and Wildlife Service, the Bureau of Indian Affairs, and Native Regional and Village Corporations. These interagency plans have included park-specific action plans that direct fire suppression responses, but they have not addressed hazard fuel removal.

#### Subsistence Management Plan:

The Subsistence Management Plan (NPS, 2000) provides clarification and direction on the management of subsistence uses. It addresses major topics such as timber cutting and use, shelters and cabins, trapping and trapline management, eligibility and resident zones, access, acquisition of resource data, and resolution of user conflicts and possible closures. The approved subsistence hunting program of the Denali Subsistence Resource Commission is an important component of the subsistence management plan. The SMP states that:

"Trapping continues to be one of the predominant subsistence activities occurring on park and preserve lands. Winter travel in pursuit of furbearers can be extensive and in the northern and western regions is supported by a network of winter trails, shelters and cabins which are accessed by use of dog teams and snowmachines."

Under the authority of NPS regulations the Superintendent has designated six traditional subsistence use cabins on public lands as shared use cabins for eligible subsistence users. (36 CFR 13.17) There are six other cabins on Native Allotments and private lands that are occasionally used for subsistence purposes. Two requests are pending for reconstruction of traditional subsistence use cabins on public lands due to collapsed roofs. Over the last fifteen years, the park has evaluated and authorized three traditional subsistence user cabins for reconstruction.

#### Cultural Landscape Planning:

The park's cultural landscape program focuses on landscapes listed in or eligible for the National Register of Historic Places. Resources under discussion for development as cultural landscapes related to this project are the park headquarters historic district and the roadside patrol cabins that are part of a larger road corridor historic landscape. Coordination is underway with cultural resources managers so that the hazard fuel management program and the cultural landscape program complement each other.

#### **Issues and Impact Topics**

A brief statement of the environmental concerns in connection with the proposed Fuel Plan is provided here for each issue or topic that is evaluated in the EA in Part IV, the Environmental Consequences of the Alternatives.

#### Vegetation

Vegetation removal could affect local vegetation communities.

#### Wetlands

Removing vegetation could disrupt natural processes in wetlands.

#### Wildlife

Fuel removal could impact raptor nests at specific locations.

#### Air quality

The use of chainsaws and other mechanized equipment could locally affect air quality. Wildfire could compromise air quality.

#### Visitor Experience

Thinning and clearing projects could alter the character of the district for visitors, and noise and visual disturbance that accompany vegetation removal could disrupt the visitor experience. Motorized equipment used to access backcountry sites and remove vegetation at backcountry locations could diminish the wilderness experience of backcountry visitors.

#### Visual Resources/Aesthetics

Vegetation removal could diminish the aesthetic appeal of the landscape around park structures.

#### Wilderness

Wilderness character could be compromised by motorized access and motorized equipment used to reduce hazardous vegetative fuels in backcountry locations.

#### Cultural Resources

Removing a significant amount of vegetation could change the character of the historic landscape, especially in the Headquarters Historic District. Implementing a Fuel Plan could significantly protect historic structures from wildfires.

#### Subsistence

Removing vegetation from around subsistence cabins could affect the cabins' susceptibility to wildfire.

#### Park Management

Removing hazardous vegetative fuel from around park structures could help prevent wildfires from burning the structures and could lessen the need to risk equipment and personnel to fight the fires.

### **Issues Considered but Not Addressed**

No threatened or endangered species would be affected by the proposed action. Aquatic resources, floodplains, wild and scenic rivers, prime farmland, access for persons with disabilities, minority populations or low-income populations, or areas listed on the National Register of Natural Landmarks would not be affected by the proposed action.

### **Actions Considered but Not Addressed**

- Prescribed Fire. Incorporating prescribed fire is a long-term objective. Re-introducing fire to the landscape is a long-range fire suppression goal that is not supported by research at this time.
- Clearcut. Clearing large sections of landscape around the built environment does not coincide with park values so was dismissed from further consideration.

## **DESCRIPTION OF ALTERNATIVES**

### **Alternative 1: No Action**

Under this alternative no coordinated program for clearing or thinning vegetation around structures would occur. Vegetation would continue to grow and accumulate around structures. The park's wildland fire management staff and structural fire brigade would respond to fires in accordance with the Interagency Fire Management Plan. Trees which present a physical hazard to personnel, structures, or equipment would be removed on a case by case basis.

### **Alternative 2: FireWise Landscaping (Proposed Action)**

## General Concept

In support of the FireWise Community Action Program, the National Park Service would remove hazardous vegetative fuel that surrounds structures in the developed and backcountry areas within Denali National Park and Preserve.

## Scope

The proposed area of hazardous vegetative fuel treatment is focused on the Park Development Zone and incorporates approximately 40 acres. The proposal also includes isolated historic and cultural sites located throughout the park, an area of about 10 acres (see Map 2-1: Structure Location Map and Appendix E: List of Structures). To continue the benefits of hazardous vegetative fuel reduction, a maintenance program involving periodic repeated removal of vegetation in these same areas is addressed in this proposal. Similar treatments would also be applied to new structures.

## Treatment Zones

The area around each structure would be divided into three fuel treatment zones.

Zone 1 is a one foot radius immediately adjacent to the structure. Zone 1 would be free of all vegetation (including grass) around the foundation of the structure. This area could be mineral soil or perhaps covered with pea gravel. This zone would apply only to frontcountry structures.

Zone 2 would extend an additional 29 feet from Zone 1. Combustible vegetation would be removed from Zone 2 to create a 30-foot buffer around the structure. This area could be manicured lawns, gardens, flowerbeds, or naturally occurring groundcovers (herbaceous plants, low shrubs, and/or leaf litter).

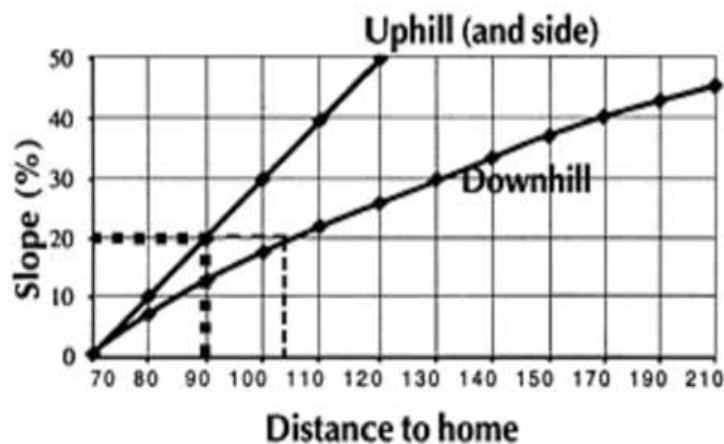
Zone 3 would extend a minimum of an additional 70 feet from Zone 2 for a minimum distance of 100 feet from each structure. In Zone 3 the fuel would be thinned out and limbed up to 6 feet. Crown spacing would be no less than 20 feet. (Crown spacing is measured from the furthest branch of one tree to the nearest branch on the next tree.)

Depending on the availability of natural barriers, the extent of Zone 3 may have to be modified. Modification of Zone 3 on slopes would expand the treatment area. The increase of space on slopes is needed to accommodate the increase intensity in fire behavior on slopes. As heat rises, fuel on slopes preheats and ignites quickly, causing fires to travel faster upslope. Enlarged defensible space around structures on slopes is needed especially on the downhill side. Figure 2-1 indicates the minimum distances that Zone 3 should be extended depending on the percent slope and position of the slope relative to the structure.

Areas around each structure would be individually evaluated to design defensible spaces within the context of that structure's use, location, and cultural significance. It is important to evaluate each structure on its own relative to the proximity of green lawns, driveways, roads

or natural fuel breaks. For example, a spruce tree could be left in Zone 2 if lawn and driveway extended the largely vegetation-free area beyond the 30-foot point. Limited numbers of trees could remain as long as they are not leaning toward the structure or do not have branches that extend over the roof. Efforts would be made to work with residents in identifying trees that could remain around their house. Should a fire occur and approach a particular structure, residents would need to understand that there is a high probability that even those trees that are not removed in advance would have to be removed to protect the structure.

The 30-foot buffers around 28 backcountry structures comprise an area of approximately 1.86 acres. The area of the 100-foot buffers is approximately 18.89 acres. Total approximate acreage affected for frontcountry structures is 17.2 acres for the 30-foot buffers and 68.5 acres for the 100-foot buffers. The acreage for the 100 foot buffer includes the area within the 30 foot buffer. These calculations do not account for slope, aspect, or type of vegetation cover.



**Figure 2-1** Distance Calculations for Zones on Slopes

Criteria Used to Determine Treatment Priority for Structures

Because the protection of every known structure within the park cannot happen at the same time, criteria have been established to provide managers with sound methodology for determining which structures to treat first. The criteria are as follows and may be updated or improved should new information become available.

**Tier 1: Top Priority**

1. Structural resources designated or eligible for inclusion on the National Register of Historic Places.
2. Year-round residences.



## **Tier 2: Second Priority**

1. Structural resources vital to the NPS mission i.e. administrative sites.
2. Structural resources with a high degree of structural integrity which are also representative of historic themes established by the park.
3. Structural resources that have received NPS funds for rehabilitation or restoration.

## **Tier 3: Low Priority**

1. Structural resources considered important to the historical theme of the park but not vital.

## **Tier 4: The following types of structures would not receive treatment under this Fuel Plan:**

1. Trespass structures
2. Abandoned structures that are not eligible for inclusion on the National Register of Historic Places.
3. Structures without roofs. (It is difficult to put a sprinkler system on a structure without a roof.)

## On-site Evaluation

Site reconnaissance would be completed to evaluate planned actions with actual field conditions. For example, trees selected for removal and areas selected for clearing and thinning would be identified and inspected to confirm planned actions. Representatives from Cultural Resources and Fire Management would review all actions in the field and agree on the designations made for each area or building perimeter. The number of trees removed would vary at each location depending on the type and characteristics of the vegetation, slope and aspect, and degree of significance of the structure. Each site, structure, and situation is unique (for example, fire history, roadside screening, roof material, siding material, continuum of fuel, location of road, privacy, aesthetic considerations) so the treatment of the site would be tailored accordingly. Paramount consideration would be for the safety of personnel protecting the structure should a fire occur.

Specific aspects of removal and clearing to be evaluated include, but are not limited to: resulting vegetative edge conditions, integration of root systems, and canopy constraints. Resulting vegetative edge conditions should be reviewed to ascertain potential weakness of remaining plant materials that would be exposed to wind, sunlight and a change in precipitation levels. Roots of a number of trees may in fact share a singular root system and may require careful evaluation before removing single specimens. Consideration of canopy

form and aesthetic appearance of those trees that would remain should be evaluated to determine whether excessive pruning and/or limbing would be required.

NPS staff would devise a site protection plan for each backcountry structure at the initial clearing. This plan would estimate the amount of time and resources needed for maintenance of the site.

### Flagging

Trees to be removed would be flagged using a single designated color of survey ribbon wrapped around the trunk. If possible, the ribbon would be tied at approximately 5 feet above the ground. Ribbon color does not have to be reflective or fluorescent, but would be easily recognized for confirmation by the contractor responsible for removals/clearing. Spray painting would be discouraged because it is unsightly, introduces additional fluorocarbon into the atmosphere, involves less controlled placement and distribution, and is difficult to mask or erase if changes to selections are made.

### Staff/Contractor Pre-removal Meeting

Prior to the mobilization of removal equipment and workers, a meeting would be held on site to review procedures, answer questions and explain expectations by all parties. If drawings, specifications, or any other project information were available, a review of those materials would be included. Authorized individuals would be in attendance and identified so that all parties involved are informed of those responsible for all decisions made during the removal/clearing activity.

### Site Access

Staff and/or contractors involved in the removal/clearing of vegetation would be provided with the locations of all accessible routes into the area. Locations for staging, stockpiling, parking, landing, and administrative functions should also be identified so that activities are restricted from areas that will continue to be used by public/park staff during the removal period or that contain resources that are to remain undisturbed.

The following measures would be taken to mitigate noise intrusion and resource damage by motorized equipment in areas of designated and suitable wilderness:

- Strictly limit work to only necessary sites. The sites where work is proposed constitute the most critical needs. No work is proposed at less important sites.
- Control means of access. For initial clearing, the following sites within the Denali Wilderness would be reasonably reached by hiking during the summer:

Upper Windy Creek Cabin  
Moose Creek Cabin  
Riley Creek Cabin

Thorofare Cabin  
Mouth of Rock Creek Cabin  
Lower Savage Cabin  
Lower Windy Creek Cabin

- Helicopter access would not be permitted for the evaluation and long term maintenance program for any sites within the Denali Wilderness.
- Crews would perform long-term maintenance to some backcountry sites during winter.
- In backcountry areas outside of the Denali Wilderness, use of aircraft for long-term maintenance would be subject to the minimum requirement/ minimum tool. If aircraft are used, such use would be programmed to coincide with other uses of aircraft.
- Where feasible, subsistence permit holders would be encouraged to maintain the defensible space around the cabins they use in the course of their normal activities. This would reduce NPS administrative presence and associated helicopter use.

#### Use of Tools

Motorized tools such as chainsaws and “weed eaters” would be permitted for the initial fuel reduction at both designated and suitable wilderness sites. This exception would allow motorized use and is based on weighing the need to accomplish the work expeditiously in order to avoid catastrophic harm by fire against the desire to reduce the impacts of motorized noise on wilderness users. Factors considered include labor required to accomplish the work by hand, utility of the buildings and infrequency of visitor presence. The use of mechanized and motorized tools to remove hazard fuels would be subject to the minimum requirement/ minimum tool.

Subsequent maintenance work would be accomplished only with non-motorized hand tools at all sites within the designated Denali Wilderness.

Motorized tools would be permitted for subsequent work at sites outside the Denali Wilderness. These tools are commonly used at many of the inholdings and cabin sites by landowners and subsistence users. The projected level of additional use connected with the proposed action would not be significant, and would not diminish the suitability of the portions of the park where these other sites are located from being considered for wilderness designation in the future.

#### Protection of Resources

Removal of vegetation would be completed in a manner that does not damage or disturb vegetation to remain, other natural resources, historic and cultural resources, or Headquarters infrastructure/improvements. If observation by archaeologists, cultural resource specialists, or other park staff is anticipated, proper coordination with contractors or park staff involved with the removal/clearing would be addressed at the pre-removal meeting. Park staff would be responsible for properly identifying any specific resources that are to be protected and to inform the contractor or park staff involved.

Fuel reduction crews would be briefed about cultural resources concerns such as the need to use care when removing vegetation growing on, under, or next to structures; the types of

artifacts that may be encountered when working around historic structures; and the requirement that trees and shrubs be cut off at ground level and not uprooted.

The crews would be instructed to not disturb artifacts and to immediately contact the supervisor if artifacts are found. Sensitive areas would be identified to the crew to minimize foot traffic and dragging of brush over these sites. Tree felling would be accomplished in such a way that trees would be dropped in directions away from identified sites. Vehicles would remain on paved or designated roadways in order to prevent driving over cultural features. This is particularly important at C-Camp where historic tent foundations are present. A cultural monitor would be present if historic properties are discovered or unanticipated effects on historic properties are found.

### Removal Techniques

Beyond routine and accepted techniques per arboricultural standards, removal of trees would be accomplished in a manner that minimizes disturbance of administrative and public activities. Removal operations would only occur during normal business hours. Re-routing traffic and controlling access to removal areas would be the responsibility of the involved contractor/park staff. All necessary safety precautions would be taken to protect the public, staff and contracted workers.

Trees designated for removal would ideally be felled with the stump grubbed below the existing grade. This would facilitate recovery of groundcover and will be consistent with the treatment and appearance of cultural landscape that is to be interpreted. Felling would be accomplished in a manner that does not leave permanent markings or indentations on any surface of the ground. Logs would be bucked up, allowed to dry, and used as firewood at patrol cabins. Larger tree trunks could be saved for renovation of historic structures. Logs from trees at residences could be used as firewood by the residents.

To plan for successional change, selected seedlings and saplings would not be removed from Zones 2 and 3. They would be permitted to grow and develop naturally to replace trees and shrubs that die off.

Park residents would be encouraged to discuss the details of fuel removal with fire management staff to assure that both fire protection and aesthetic concerns are addressed when decisions are made. The Park Superintendent would retain the authority to override decisions where hazard fuel removal conflicts with overall landscaping intentions.

### Root Pruning

If trees designated for removal are within the canopy or visible root system of another tree or trees, root pruning would be strongly recommended. This process involves the cutting of roots for those trees that are to remain after removal of nearby trees. A segregation of root systems is achieved by using extremely sharp saws or blades to cut the roots at or near the perimeter

of the remaining tree canopy. The remaining trees are given quick release fertilizers to spur immediate growth and promote recovery from the shock to its system.

### Limb and Branch Pruning

Those trees that are to remain could require pruning of lower limbs, damaged or imbalanced branches, previously cut knobs, and sucker growth. Clean cuts would be kept close to the trunk or connecting branch. Trees that might be retained within the 30-foot clear zone of a building would be limbed up a minimum of 6 feet from the ground. Limbing of trees between 30 and 100 feet away from a building would be evaluated on an individual basis, but a rule of thumb would be the closer to the building, the higher the limbing. Cut surfaces would be painted with a black asphalt base antiseptic paint, not only as a protective measure, but because it will reduce the visual impact of freshly pruned trees in a historic district. Some snags would remain on the outer edges of Zone 3. Snags would not remain in Zone 2 because they are an ideal source of burning embers that pose too great a threat to park structures.

### Burning

Fire prevention measures would be taken to assure that a wildland fire is not ignited by burning of shrub and branch debris. These would include burning during appropriate weather conditions, adequate clearing around debris piles, limiting the number of piles that are burning at one time, and presence of trained personnel with appropriate fire fighting apparatus.

Where feasible, shrubs and branches would be chipped rather than burned. Shrubs and branches, if burned, would be piled in locations distant from housing areas thus minimizing smoke-related impacts on residents. Shrub and branch piles would be burned between mid-Sept and mid-May, during a time when visitation is the lowest and fire danger is low. Burning would be done in compliance with Alaska Division of Forestry burn regulations.

### Clean Up

All debris consisting of trees, limbs, and branches would be removed from non-paved areas. Additionally, the aforementioned materials plus twigs, leaves, needles, chips, and other organics would be removed from all paved areas, rooftops, and site furnishings. Ruts, depressions, or other impressions to the natural grade would be filled, raked, and, if necessary, mulched or seeded. All refuse generated or brought on site in the form of packaging, equipment parts, or worker supplies would be removed out of the park. No maintenance on equipment engines/motors would be allowed in backcountry areas.

### Periodic Maintenance

Park staff responsible for ongoing landscape maintenance would be instructed on the requirements of the cultural landscape plan and the fire management plan prior to every growing season. In each case, specific criteria for evaluation of vegetation would be adequately outlined so that any staff person, whether permanent or seasonal, can properly

inspect, maintain, care for, and if necessary, repair damage to vegetation.

Sites outside the Headquarters Historic District would be revisited two years following fuel removal. An evaluation of limb, sapling and shrub re-growth would occur and a determination would be made regarding removal cycles. It is generally anticipated that re-treatment would be necessary roughly every two to five years. In the Denali Wilderness, only non-motorized hand tools would be used for follow up treatments. These would include hand saws, scythes, and pruning tools. In non-wilderness backcountry areas power hand tools may be used. Reduction in the height and density of herbaceous plants, grasses, and small shrubs would be done annually via mowing in developed areas.

#### Special Considerations for Headquarters Historic District

The goal for this area is to attain simultaneously the goals for cultural landscape rehabilitation and FireWise landscaping. Treatment for this district would follow prescriptions depicted in Map 2-2 (Proposed Treatment for Headquarters Historic District). The guidelines listed above for On-Site Evaluation, Flagging, Staff/Contractor Pre-removal Meeting, Site Access, Use of Tools, Protection of Resources, Removal Techniques, Root Pruning, Limb and Branch Pruning, Burning, Clean Up, and Periodic Maintenance would be followed.

Annual maintenance would consist of an onsite visual review of the historic district to determine the extent of vegetative management required. Areas designated for cleared overstory and thinned understory may receive regular mowings during the season and would be inspected for watering, re-seeding, and fertilization. Areas designated to contain thinned overstory and understory would be culled of most emerging plants in those categories.

Routine maintenance on overstory and understory vegetation to remain would include, but would not be limited to, fertilization, pruning according to cultural landscape/fire management standards, and removal of damaged limbs or branches.

As determined by the cultural landscape and fire management park staff, periodic maintenance could be required to retain essential landscape elements or landscape treatments in the historic district. For example, areas to contain thinned overstory and understory vegetation could be mowed on a rotational schedule to ensure vigorous yet controlled growth of grasses and low shrubs. Plans for each effort would be updated to reflect changes in National Park Service policies, park planning documents, and current maintenance technologies.

Appendix B describes the process used to develop Map 2-2: Proposed Treatment for Headquarters Historic District. Definitions of overstory, understory, groundstory, and vegetative treatment classifications are located in Appendix D.

#### **Alternative 3: FireWise Landscaping with Holding Lines**

This alternative would include all the aspects of Alternative 2 and additional clearing to create fuel-free holding lines around the developed areas at Headquarters, C-Camp, and Toklat. This approach would not be used at roadside cabin sites or backcountry/wilderness sites. See Maps 2-3a,b: Holding Lines Map for exact locations of holding lines.

Holding lines are designed as a first line of defense to stop a wildfire from entering the developed area. The line would be used by firefighters as a safe starting point from which burnout operations could occur. Burnout operations constitute the intentional setting of vegetation on fire between a holding line and the wildfire. These operations reduce fuel availability to a wildfire as it advances across the landscape thus greatly reducing the intensity of a fire.

This alternative would involve construction of holding lines up to 16 feet wide. Herbaceous plants and short shrubs would remain as groundcover. The lines would be located to capitalize on natural (rock outcroppings, streams) and manmade (roads, trails, utility corridors) fuel breaks. They would also be located close enough to structures that a wildfire that crossed the line would not become unmanageably intense before it reached Zone 2 of the FireWise landscaping.

## **AFFECTED ENVIRONMENT**

### **Natural Resources**

#### Vegetation Communities and Conditions

Facilities located at the park entrance are generally surrounded by white spruce (*Picea glauca*) stands. Within that white spruce forest, fuels immediately adjacent to the houses in the permanent housing area, and park headquarters complex are a mix of hardwoods and white spruce. Manicured lawns and shrub thickets (alders [*Alnus crispa*] and willows [*Salix* spp.]) are also interspersed among the buildings. Vegetation adjacent to C-Camp structures is white and black spruce (*Picea mariana*). In many cases, vegetation is touching or within inches of buildings.

Maintained trails, roads, parking lots, and social trails are all present in the area. In some instances these serve to break up fuel continuity but in many cases they would not be effective in curtailing fire spread.

The Toklat road camp is situated along the Toklat River. The vegetation surrounding and upslope from the housing area is continuous white spruce. The vegetation between the buildings is also white spruce. Shrubs and grasses have grown up to the structures. A limited number of roads and a few social trails between buildings have created small breaks insufficient for fire protection.

Shrubs and individual trees or very small stands of trees (white spruce and balsam poplar [*Populus balsamifera*]) surround the Wonder Lake Ranger Station and associated buildings. Narrow footpaths are present between buildings.

Vegetative conditions around backcountry cabins and other structures are highly variable but

similar to the headquarters, Toklat and Wonder Lake areas. In several instances, vegetation removal has occurred around these structures in past years but has subsequently re-grown.

### Fire Frequency and Burning Conditions

The fire frequency for the frontcountry area covered in this proposal is approximately 60 years (Vierick 1983). Mann (1997) suggests every 40 to 60 years based on his study of tree scars in the Riley Creek campground. Mann (1997) suggests fires came through the area in 1770, 1820, 1872 and 1924. There is no information on the fire frequency for the area around the Toklat road camp, the Wonder Lake Ranger Station, or for areas around backcountry structures. Most fires in Denali have occurred in the northwestern quarter of the park. No analysis of these fires has occurred to determine frequency of fire return to a given area nor has any proximity to structures analysis been completed. Available research from elsewhere in Alaska suggests large variances in fire frequency from every 60 to 300 years. Long fire cycles such as these are usually associated with stand-replacing fires, which burn at high intensities.

Very limited documentation is available on the 1924 fire, which is the last known large fire in the park entrance area/headquarters area. The fire was human caused and burned approximately 12,000 acres in July 1924. It is believed to have started in the Carlo Creek area and stopped in the Riley Creek drainage area.

### Fire Behavior

Fire has been an inextricable component of the ecosystems of the Denali area for thousands of years, with periodic fires having served throughout the centuries to select plants and animals that are adapted to fire-caused change. Both the black and white spruce, for example, depend on intense ground fire to clear organic layers and to thereby expose fertile seed bed. Alaskan fire management personnel believe that the fire ecology of the roadless portion of Denali may be relatively unchanged from its condition prior to the arrival of non-Natives and the subsequent development of organized suppression efforts.

The vegetation mosaic present at the headquarters and hotel complexes does not fit into any of the standard fire behavior fuel models making fire spread predictions difficult.

In general, white spruce does not burn with the same intensities as black spruce. Stands of white spruce take a long time to dry and during some summers never dry to the point of supporting continuous free burning fire. Ground fuel will, however, carry a fire through white spruce forests and some ignition of individual trees or groups of trees will occur. This will lead to spotting, a key element of fire spread in spruce forests. When these areas do dry, fire behavior can be extreme and erratic. Extreme fire behavior can develop rapidly once the stand is predisposed and the right combination of fuel, temperature, relative humidity and wind speed develops.

Hardwood stands of aspen (*Populus tremuloides*), balsam poplar, and paper birch (*Betula papyrifera*) are found in numerous areas and are often interspersed with spruce. These stands of hardwoods are generally a minor consideration in fire behavior responding largely to surrounding spruce stands.

The mid-slope location of the headquarters and C-Camp complexes result in additional fire behavior complications. Fire running up slope pre-heats and dries the fuels ahead of it making ignition easier and fire spread faster. Fire running up slopes can spread several times faster than on level ground.

### Historic Structures and Archeological Resources



The National Park Service determined the Area of Potential Effect (APE) on historic properties for this proposed action and evaluated their significance. The following known properties fall within the APE:

Mount McKinley National Park Headquarters Historic District, listed on the National Register of Historic Places in 1987, is comprised of 14 contributing buildings erected between 1926 and 1941. The district is significant as the representation of the presence and early growth of the National Park Service in Alaska. During construction, an effort was made to minimize the impact of built features on most of the landscape of the headquarters area. Buildings were separated by considerable distances and surrounded by undisturbed stands of trees. Only native plant materials bordered buildings and walkways.

The Patrol Cabins, Mt. McKinley National Park Historic theme, listed in 1987, is comprised of 14 patrol cabins constructed between 1924 and 1935. The cabins are significant for the development of a transportation system in a remote area of interior Alaska and the early efforts of the National Park Service to practice wildlife conservation in the first national park in Alaska. Six of the cabins are located on the 90-mile park road at intervals of 10-15 miles apart. Eight cabins, constructed on the remote boundaries of the park, are used for winter park ranger dogsled patrols.

Kantishna/Old Eureka Historic Mining District, determined eligible in 1993, is comprised of six buildings, 3 sites, and 2 structures constructed between 1904 and 1942. The district is significant for its representation of exploration and settlement patterns in the Denali region based on prospecting and mining. Building sites and landscape features are important interpretive elements tracing the history of settlement and mining technology.

The List of Classified Structures, which identifies and evaluates park structures, is complete. Therefore, there is no expectation of unknown structures in the APE.

### **Cultural Landscapes**

From its establishment in 1917, Denali National Park and Preserve has been shaped by the dynamic history of Interior Alaska. Prehistoric sites within and just beyond the present day park boundaries combined with Native place names research indicate a long period of human use of the region. In 1905 gold discoveries in the Kantishna Hills to the west of the park brought large numbers of prospectors and miners to the area; settlements such as Diamond, Glacier City, and Kantishna (Eureka) developed in support of the mining activities. As the population of Interior Alaska grew, use of areas in and around the park increased. Communities developed near both the east and west boundaries of the original park.

Throughout the park there are more than 180 known cultural sites and complexes representing Denali's rich cultural history. Known resources include archeological and historic sites associated with Athabaskan Native culture, early exploration, mining activity, subsistence use, transportation and park administration. Only one prominent prehistoric site has been identified in the park to date. The Teklanika Archeological District was listed on the National Register of Historic Places in 1976.

The Mount McKinley National Park Headquarters Historic District structures and 14 patrol cabins are all being adaptively used today as housing or for various administrative purposes.

Numerous historic mining sites reflect mining activity dating back to the early 1900s in both the Kantishna Hills and the Dunkle Hills areas of the park. Those in Kantishna were determined eligible for the National Register by the Alaska State Historic Preservation Officer (SHPO) in 1993.

### **Subsistence Resources**

There are a number of cabins located throughout the park, most of which are associated with

early trapping ventures and vary in condition from ruins to good. There are also a few privately owned cabins that are used for subsistence purposes.

The historical and current subsistence use context of these structures has been a key factor in determining the degree of fire protection extended to these sites. In virtually all cases, full protection is designated for these buildings in the Interagency Fire Management Plan.

Cabins and other structures have been and continue to be traditionally used for subsistence purposes in the north additions of Denali National Park and Preserve.

Approximately eleven subsistence use cabins are currently being utilized in the north additions to the park and preserve and twice as many subsistence cabins are in an unusable condition. Most cabins are located on public lands, several are on Native allotments and one is on other private land. These cabins are primarily associated with trapping uses and are spread out over a very large geographic area throughout the north park and preserve additions. They are exclusively located within the interior boreal-forested regions of the park and preserve along rivers or lakeshores.

### **Building Construction**

Construction materials used in park buildings vary a great deal but many of them are log or frame and many have shake roofs. Wooden shake roofs are notorious for catching on fire during wildfires. The wooden shakes are exposed to the elements and go through the same drying and curing processes as dead vegetation. In dry periods, the shingles dry out and crack. The cracks form a receptive base for firebrands to land, smolder, and ignite the roof. Wooden frame structures with chipping or cracked paint pose the same dangers.

### **Utility and Road Corridors**

Utility and road corridors are present throughout the entrance area and headquarters complexes, in C Camp and Toklat. These corridors provide breaks in fuels and are therefore useful in controlling wildfires.

## **ENVIRONMENTAL CONSEQUENCES**

In addition to evaluating the impact of the alternatives on specific impact topics, this EA also evaluates the potential for impairment of park resources and values per NPS policies derived from the Organic Act. Impacts to subsistence are described in Appendix A: ANILCA Section 810(a) Summary of Evaluations and Findings. Definitions of impact levels are located in Appendix D.

### **Alternative 1: No Action**

#### **Vegetation**

The immediate consequences of taking no action to reduce hazardous vegetative fuels would have the least impact upon vegetation resources in the short term since vegetation would not be removed. However, in the event of a fire the aggressive actions that would be required near structures not previously protected would likely have greater negative impacts to

vegetation than those identified in action alternatives. Fuel build up would be relatively slow but steady in this scenario. As trees grow, crown spacing becomes more dense creating aerial fuels more conducive to crown fires. Crown fires spread faster and are more unpredictable and difficult to control. Larger and closer spaced crowns create higher flame lengths and more intense burning. In an emergency situation there is generally no time to carefully plan clearing activity; the imperative to protect life and property would likely necessitate more aggressive clearing actions than are envisioned in the proposed action. No action would contribute to more intense fires, which would result in more aggressive vegetation treatments during a response to fire. While aggressive treatment would result in removing more vegetation than would occur in the action alternatives, only a small portion of the park would be affected, so impacts would be moderate.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to vegetation.

**Conclusion:** Impacts to vegetation would be negligible in the short term and moderate in the long term. This alternative would not result in impairment to the vegetation of the park.

#### Wetlands

If a wildfire occurred that threatened structures, it can be anticipated that "heavy-handed" fire suppression techniques would be used to protect those buildings, particularly in road-accessible areas. Bringing in heavy equipment and clearing vegetation to create fire breaks around structures that are located near wetlands would impact wetlands. Impacts to wetlands could range from localized trampling to long-term disruption of wetland functions; however, only about a dozen cabins are located near wetlands.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to wetlands.

**Conclusion:** Because of the localized damage to wetlands resulting from fire-suppression techniques, impacts to wetlands would be minor. This alternative would not result in impairment to the wetlands of the park.

#### Wildlife

Vegetation removal during the response to a wildland fire would adversely impact wildlife whose habitat is removed. Vegetation removal would not likely affect a large enough area to warrant serious concerns for the viability of most populations; however, response to fire could affect small mammal population size and composition in the immediate area of vegetation removal. These particular species (voles, lemmings, and hares) are capable of abandoning the area and would probably do so once activity begins. Losses of individuals are expected to be absolutely minimal. Where they may occur, the population status is believed to be so large and in such flux that losses would be inconsequential.

The project should not have an impact on raptor populations; however, it could have potential impacts on small numbers of individuals or nesting pairs in the form of loss of habitat and disruption of nesting.

**Cumulative Impacts:** Recreational use in areas subjected to fire suppression activities would further stress wildlife in those areas; however, due to low levels of use near backcountry cabins and a small affected area, impacts to wildlife would still be negligible.

**Conclusion:** The no action alternative would have negligible impacts on wildlife. This alternative would not result in impairment to the wildlife purposes and values of the park.

#### Air Quality

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to air quality.

**Conclusion:** The no action alternative would not impact air quality because no actions would be taken that would positively or negatively affect air quality. This alternative would not result in impairment to the air quality of the park.

#### Cultural Resources

Without action, vegetation would continue to grow around cultural sites and structures increasing the fuel loading which in turn increases the area's flammability. Natural fire occurring in the fuels could destroy or severely damage sites. Also, fire lines hastily placed to protect sites could destroy sites in the process. The National Park Service applied the criteria of adverse effect and determined this alternative would adversely effect historic properties.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to cultural resources.

**Conclusion:** Under this alternative, fire suppression activities would have moderate to major impacts to cultural sites because cultural sites and/or artifacts could be irretrievably lost. This alternative would not result in impairment to the cultural resources of the park.

#### Wilderness

Park staff would be in a reactionary mode when responding to fire. There would be less opportunity to specify non-motorized access and tools in an emergency situation. There would be less opportunity to pre-plan helicopter use and thereby increase efficiency and lower noise levels. Helicopter and power tool use would be more likely to occur at all sites and in higher levels in this reactionary mode under this alternative. These instruments create noise and visual intrusions that temporarily degrade the wilderness character of the area.

Vegetation clearing would impact wilderness values because it would be less controlled and

might occur at a greater distance from the structure than in a planned pre-suppression mode. Large tracts of cleared vegetation do not look natural and therefore impact wilderness character and the experience of visitors in those areas.

**Cumulative Impacts:** Increases in types and levels of recreation throughout the backcountry would contribute to degraded wilderness values since more people make more noise and reduce opportunities for solitude and natural sounds. For the foreseeable future, impacts to wilderness would be minor.

**Conclusion:** In the event of a fire, this alternative would cause minor impacts to wilderness values and visitor experience because fire protection clearing would become a reactionary defense with little time for planning. This alternative would not impair designated wilderness or the wilderness recreational purposes and values of the park.

#### Visitor Experience

Park staff would be in a reactionary mode when responding to fire. There would be less opportunity to specify non-motorized access and tools in an emergency situation. There would be less opportunity to pre-plan helicopter use and thereby increase efficiency and lower noise levels. Helicopter and power tool use would be more likely to occur at all sites and in higher levels in this reactionary mode under this alternative. These instruments create noise and visual intrusions that temporarily degrade the wilderness character of the area. Visitors in these areas would be annoyed by noise and visual intrusions.

Vegetation clearing would impact wilderness character because it would be less controlled and might occur at a greater distance from the structure than in a planned pre-suppression mode. Large tracts of cleared vegetation do not look natural and therefore impact wilderness character and the experience of visitors in those areas.

**Cumulative Impacts:** Increases in types and levels of recreation throughout the backcountry would contribute to degraded wilderness values since more people make more noise and reduce opportunities for solitude and natural sounds. This would make the visitor experience in the backcountry less outstanding.

**Conclusion:** In the event of a fire, this alternative would cause minor impacts to wilderness values and visitor experience because fire protection clearing would become a reactionary defense with little time for planning. This alternative would not result in impairment of the public purposes and values of the park.

#### Visual Resources

Buildings would remain screened from public view and greater privacy would be available to residents. Fewer buildings would be seen from the air.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute

to impacts to visual resources.

**Conclusion:** There would be minor positive impacts to visual resources under this alternative because vegetation would remain and continue to grow around structures. Impacts would be minor because few structures are visible as it is. This alternative would not result in impairment of the scenery and wilderness forms of recreation in the park.

#### Park Management

No-action would not affect park management in the short-term because it would require no staff time or resources to take no action; however, in the event of a fire, this alternative would affect the safety and lives of firefighters working to suppress fires in the area. Under this alternative, the park would take a reactionary approach. Such an approach could result in less informed decisions which would jeopardize the safety of park staff.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to park management.

**Conclusion:** In the long term, there would be moderate to major adverse impacts to park management.

#### **Alternative 2: FireWise Landscaping (Proposed Action)**

##### Vegetation

Impacts to vegetation would be localized and would constitute removal of trees, tree limbs, and shrubs. In addition, there would be changes in the light and moisture conditions at the ground surface due to tree canopy removal. This may result in eventual change in species composition of herbaceous plants and short shrubs.

Potential indirect consequences of the action include an increase in social trail formation due to reduced local barriers to foot travel thus stimulating further vegetative disturbance. Soil disturbance may also occur inadvertently thus leading to a potential increase in habitat for exotic plant species. These potential impacts would be mitigated by careful planning of the clearing to reduce the likelihood of shortcut routes, and by a concerted effort not to disturb the existing organic layer or underlying soils in the affected areas.

**Cumulative Impacts:** Increases in levels of use in the backcountry would lead to more use on the aforementioned social trails. Still, only a few small portions of the park would be affected.

**Conclusion:** These impacts are expected to be minor due to the small area that would be directly affected. This alternative would not result in impairment to the vegetation of the park.

## Wetlands

This action would likely involve vegetation removal and ground trampling which would have localized impacts on wetland communities. Impacts to wetlands could range from localized trampling to long-term disruption of wetland functions; however, only a small area would be affected. Indirect consequences as outlined for vegetation could also occur in wetlands.

**Cumulative Impacts:** Increases in levels of use in the backcountry would lead to more use on the aforementioned social trails. Still, only a few small portions of the park would be affected.

**Conclusion:** Because impacts would occur over a small area, impacts to wetlands would be minor. This alternative would not result in impairment to the wetlands of the park.

## Wildlife

The proposal could affect small mammal population size and composition in the immediate area of vegetation removal. These particular species (voles, lemmings, and hares) are capable of abandoning the area and would probably do so once activity begins. Losses of individuals are expected to be absolutely minimal. Where they may occur, the population status is believed to be so large and in such flux that losses would be inconsequential. Approximately 50 acres of small mammal habitat would be altered.

The project should not have an impact on raptor populations; however, it could have potential impacts on small numbers of individuals or nesting pairs in the form of loss of habitat and disruption of nesting. The project would not have a significant impact on raptor populations on a parkwide scale due to the small size of the project area.

**Cumulative Impacts:** Recreational use in areas subjected to fire suppression activities would further stress wildlife in those areas; however, due to low levels of use near backcountry cabins and a small affected area, impacts to wildlife would still be negligible.

**Conclusion:** This alternative would have negligible impacts on wildlife. This alternative would not result in impairment to the wildlife of the park.

## Air Quality

Debris in the form of trees, shrubs, and tree limbs would be burned resulting in smoke generation.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to air quality.

**Conclusion:** Because effects on air quality would be short-term and occur only in localized areas, impacts under this alternative would be negligible. This alternative would not result in impairment to the air quality of the park.

#### Cultural Resources

Reducing hazardous vegetative fuel to protect cultural sites from fire would have moderate positive impacts on cultural resources because these actions would protect sites from fire. The National Park Service applied the criteria of adverse effect to Alternative 2 and determined that no historic properties would be adversely affected.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to cultural resources.

**Conclusion:** Improved fire protection would have minor to moderate positive impacts on cultural resources. This alternative would not result in impairment to the cultural resources of the park.

#### Wilderness

The use of motorized equipment such as helicopters and power tools to remove hazardous vegetative fuel would generate noise at treatment sites; however, the total acreage of impact is small and the sites are closely associated with pre-existing impacts in the form of structures and older partial clearings of vegetation. A minimum requirement finding (Appendix C) would be prepared to address the use of motorized equipment in designated wilderness.

Clearing areas around structures may encourage the development of informal trails and paths. These would result in further vegetation removal, soil compaction, and would diminish the character of the area.

**Cumulative Impacts:** Increases in types and levels of recreation throughout the backcountry would contribute to degraded wilderness values since more people make more noise and reduce opportunities for solitude and natural sounds. For the foreseeable future, impacts to wilderness would be minor.

**Conclusion:** Because impacts to wilderness would be short-term and local, impacts would be minor. This alternative would not impair designated wilderness or the wilderness recreational purposes and values of the park.

#### Visitor Experience

The use of motorized equipment such as helicopters and power tools to remove hazardous vegetative fuel would generate noise at treatment sites; however, the total acreage of impact is small and the sites are closely associated with pre-existing impacts in the form of structures and older partial clearings of vegetation. A minimum requirement finding (Appendix C) would



be prepared to address the use of motorized equipment in designated wilderness. Still, visitors in those areas would be annoyed by noise and visual intrusions.

Frontcountry impacts include temporary road closures and noise in otherwise fairly quiet areas. These disturbances may degrade the visitor experience; however, there is already some expectation of low levels of noise in frontcountry areas.

Vegetation removal may also impact bird nesting and roosting areas that are familiar to park and area residents. In some circumstances removal may enhance interpretive opportunities, particularly around historic structures. FireWise landscaping itself may present an ideal interpretive theme that would be useful to visitors who reside in wildland/urban interfaces.

**Cumulative Impacts:** Increases in types and levels of recreation throughout the backcountry would contribute to degraded wilderness values since more people make more noise and reduce opportunities for solitude and natural sounds. This would make the visitor experience in the backcountry less outstanding.

**Conclusion:** Actions under this alternative would cause disturbances that would have short-term, minor negative impacts on the visitor experience. Expanded interpretive opportunities would have a minor positive impact on the visitor experience. This alternative would not result in impairment of the public purposes and values of the park.

#### Visual Resources

As a result of removing vegetation around structures, many park structures that are currently hidden from view would become more visible from the ground and from the air. Screening between residences would be reduced. Some people would perceive this in a positive light; increasing awareness of the presence of people in the park and perhaps enhancing public awareness of the park's history. Others would perceive this negatively, as they may prefer screening between residences and may not care to see structures in the backcountry.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to visual resources.

**Conclusion:** Impacts to visual resources would be minor because a change in the visibility of structures would occur only in a few locations. This alternative would not result in impairment of the scenery and wilderness forms of recreation in the park.

#### Park Management

Initial clearing and subsequent maintenance of areas around the structures would periodically disrupt local activities. Impacts would include risks associated with tree felling and brush burning, as well as additional commitment of staff and other resources to remove vegetation and perform annual maintenance. The majority of work would occur in one season and would

likely be contracted out.

To address concerns about vandalism to cultural resources, additional staff time would be needed to make more frequent patrols (3 additional patrols per year) to structures that would be more visible as a result of removing vegetation.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to park management.

**Conclusion:** Impacts to park management would be minor since the majority of the work would occur over one season.

### **Alternative 3: FireWise Landscaping and Holding Line Construction**

Impacts in the categories of Vegetation, Wetlands, Air Quality, Wildlife, Wilderness, Visitor Experience, and Visual Resources would be identical to those identified under Alternative 2 except the affected area would be approximately 30 acres larger. While impacts would span a slightly larger area in this alternative, the affected area is still so small that the level of impact would remain the same. Or, in the case of Wilderness, no additional impacts would occur in Alternative 3 because holding lines would not be constructed around backcountry structures or outside of wilderness exclusion nodes along the park road corridor.

#### Cultural Resources

Holding lines would improve protection for structures in the case of fire. Protecting structures is a positive impact on cultural resources in the areas where holding lines would be constructed (Headquarters, C-camp, and Toklat).

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to cultural resources.

**Conclusion:** This alternative would have moderate positive impacts on structures located in the Headquarters, C-Camp, and Toklat areas. This alternative would not result in impairment to the cultural resources of the park.

#### Park Management

Constructing holding lines would require a substantial commitment of park resources, time, and funding, much more so than would be required by the FireWise landscaping. Treatment would occur in more than one season and would require an additional crew to create holding lines around Headquarters, C-Camp, and Toklat.

While the presence of the break reduces the chances of fire damaging structures, it is impossible to guarantee that fire would not cross the break. Fires in white and black spruce

spread by spotting. During a fire, firefighters would need to patrol the line to put out the fires that spot over the line. This would require additional personnel.

**Cumulative Impacts:** No other actions in the reasonably foreseeable future would contribute to impacts to park management.

**Conclusion:** Due to the time commitment and effort involved in constructing and monitoring holding lines, this alternative would have moderate impacts on park management.

## CONSULTATION AND COORDINATION

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Section 106 of the National Historic Preservation Act of 1966

In compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, the National Park Service determined the actions under all three alternatives had the potential to impact cultural resources and therefore initiated consultation with the Alaska State Historic Preservation Office. The NPS applied the criteria of adverse effect to Alternatives 2 and 3 and determined that no historic properties would be adversely affected. In accordance with the

1995 Programmatic Agreement among the NPS, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, part IV, Project Review— Nationwide Programmatic Exclusions, the NPS applies Exclusion B10, health and safety activities, to this undertaking. Therefore, no further review by the SHPO or Council is required.

#### **LIST OF PREPARERS**

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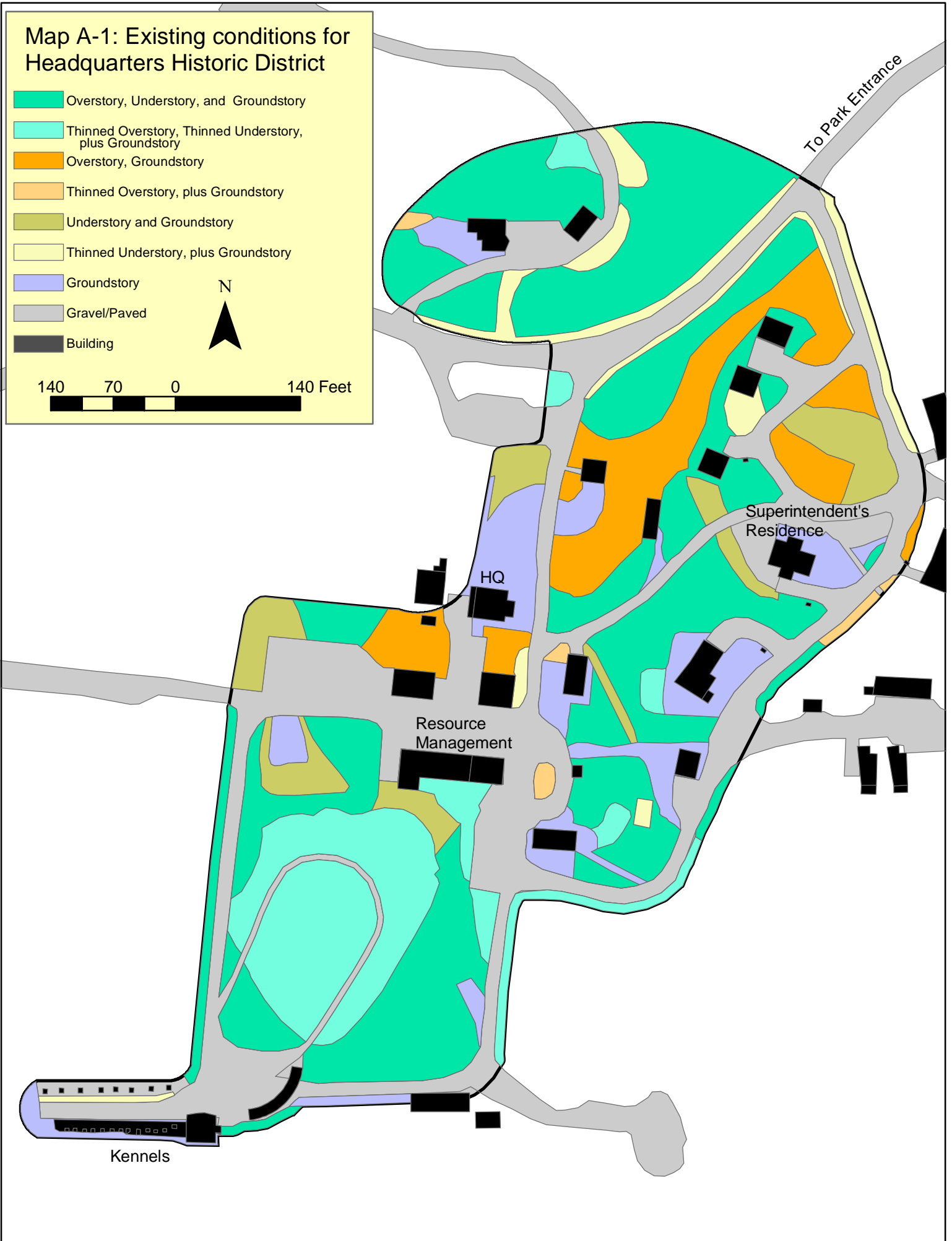
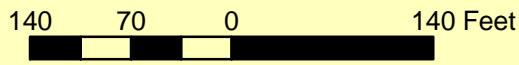
Adrienne Hall, Planning Assistant  
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Jan Passek, former Fire Management Officer

#### **PUBLIC REVIEW**

This document will be released for a 30-day public review. A notice of availability will be published in local newspapers. Following public review, comments will be analyzed to determine if any important new issues, reasonable alternatives, or mitigating measures have been suggested.

# Map A-1: Existing conditions for Headquarters Historic District

- Overstory, Understory, and Groundstory
- Thinned Overstory, Thinned Understory, plus Groundstory
- Overstory, Groundstory
- Thinned Overstory, plus Groundstory
- Understory and Groundstory
- Thinned Understory, plus Groundstory
- Groundstory
- Gravel/Paved
- Building



# Map A-2: Historic Conditions for Headquarters Historic District

- Overstory, Understory, and Groundstory
- Thinned Overstory, Thinned Understory, plus Groundstory
- Overstory, Groundstory
- Thinned Overstory, plus Groundstory
- Understory and Groundstory
- Thinned Understory, plus Groundstory
- Groundstory
- Gravel/Paved
- Building



140 70 0 140 Feet



Kennels

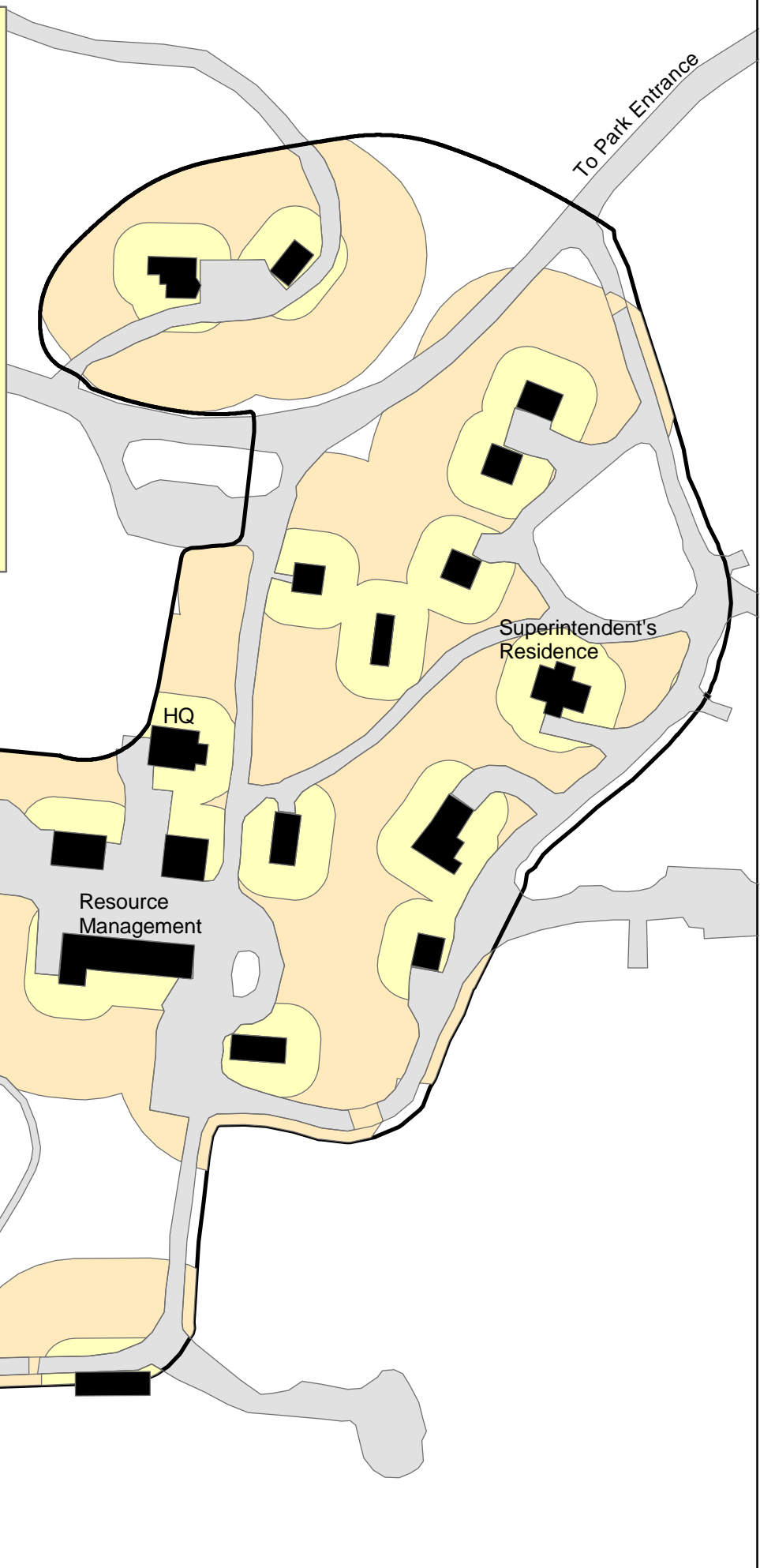
# Map A-3: Proposed Treatment

## Legend

- Historic District
- 30 Foot Buffer  
clear overstory and thin understory
- 100 Foot Buffer  
thin overstory and thin understory
- Gravel/Paved



0 37.5 75 150 225 300 Feet



# APPENDIX A: ANILCA SECTION 810(A) SUMMARY OF EVALUATIONS AND FINDINGS

## I. Introduction

This evaluation and finding was prepared to comply with Title VIII, Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA). It evaluates the potential restrictions to subsistence activities which could result from implementation of the Hazardous Vegetative Fuel Reduction Plan for Denali National Park and Preserve.

## II. The Evaluation Process

Section 810(a) of ANILCA states:

"In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands . . . the head of the Federal agency . . . over such lands . . . shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency:

1. gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to Section 805;
2. gives notice of, and holds, a hearing in the vicinity of the area involved; and
3. determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands, (B) the proposed activity would involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and (C) reasonable steps would be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions."

ANILCA created new units and additions to existing units of the national park system in Alaska. Denali National Park and Preserve additions were created by ANILCA Section 202(3)(a) for the purposes of:

"The park additions and preserve shall be managed for the following purposes, among others: To protect and interpret the entire mountain massif, and additional scenic mountain peaks and formations; and to protect habitat for, and populations of fish and wildlife, including but not limited to, brown/grizzly bears, moose, caribou, Dall sheep, wolves, swans and other waterfowl; and to provide continued opportunities including reasonable access, for mountain



climbing, mountaineering, and other wilderness recreational activities."

Subsistence is an allowed use in the ANILCA additions to Denali National Park and Preserve (Sec. 202(3)(a)).

The potential for significant restriction must be evaluated for the proposed action's effect upon

" . . . subsistence uses and needs, the availability of other lands for the purposes sought to be achieved and other alternatives which would reduce or eliminate the use." (Sec. 810(a))

### **III. Proposed Action on Federal Lands**

#### Alternative 1 (No-Action)

Under this alternative no coordinated program for clearing or thinning vegetation around structures would occur. Vegetation would continue to grow and accumulate around structures. The park's wildland fire management staff and structural fire brigade would respond to fires in accordance with the Interagency Fire Management Plan.

#### Alternative 2 (Proposed Action)

In support of the FireWise Community Action Program, the National Park Service would remove hazardous vegetative fuel that surrounds structures in the developed and backcountry areas within Denali National Park and Preserve.

#### Alternative 3: Holding Line Alternative

This alternative would include all the aspects of Alternative 2 and additional clearing to create fuel-free holding lines around the developed areas at Headquarters, C-Camp, and Toklat. This approach would not be used at roadside cabin sites or backcountry/wilderness sites.

### **IV. Affected Environment**

#### Introduction

The proposed area of hazardous vegetative fuel treatment is focused on the Park Development Zone and incorporates approximately 40 acres. The proposal also includes isolated historic and cultural sites located throughout the park, an area of about 10 acres.

Facilities located at the park entrance are generally surrounded by white spruce (*Picea glauca*) stands. Within that white spruce forest, fuels immediately adjacent to the houses in the permanent housing area, the park headquarters complex, and the park hotel complex are a mix of hardwoods and white spruce. Manicured lawns and shrub thickets (alders [*Alnus crispa*])

and willows [*Salix* spp.]) are also interspersed amongst the buildings. Vegetation adjacent to C-Camp structures is white and black spruce (*Picea mariana*). In many cases, vegetation is touching or within inches of buildings. Maintained trails, roads, parking lots, and social trails are all present in the area. In some instances these serve to break up fuel continuity but in many cases they would not be effective in curtailing fire spread.

#### Historic Structures and Archeological Resources

The National Park Service determined the Area of Potential Effect (APE) on historic properties for this proposed action and evaluated their significance. The following known properties fall within the APE: Mount McKinley National Park Headquarters Historic District, the Patrol Cabins, and Kantishna/Old Eureka Historic Mining District.

#### Cultural Landscapes

From its establishment in 1917, Denali National Park and Preserve has been shaped by the dynamic history of Interior Alaska. Prehistoric sites within and just beyond the present day park boundaries combined with Native place names research indicate a long period of human use of the region. In 1905 gold discoveries in the Kantishna Hills to the west of the park brought large numbers of prospectors and miners to the area; settlements such as Diamond, Glacier City, and Kantishna (Eureka) developed in support of the mining activities. As the population of Interior Alaska grew, use of areas in and around the park increased. Communities developed near both the east and west boundaries of the original park.

Throughout the park there are more than 180 known cultural sites and complexes representing Denali's rich cultural history. Known resources include archeological and historic sites associated with Athabaskan Native culture, early exploration, mining activity, subsistence use, transportation and park administration. Only one prominent prehistoric site has been identified in the park to date. The Teklanika Archeological District was listed on the National Register of Historic Places in 1976.

The Mount McKinley National Park Headquarters Historic District structures and 14 patrol cabins are all being adaptively used today as housing or for various administrative purposes.

Numerous historic mining sites reflect mining activity dating back to the early 1900s in both the Kantishna Hills and the Dunkle Hills areas of the park. Those in Kantishna were determined eligible for the National Register by the Alaska State Historic Preservation Officer (SHPO) in 1993.

#### Subsistence Resources

Approximately eleven subsistence use cabins are currently being utilized in the north additions to the park and preserve and twice as many subsistence cabins are in an unusable condition. Most cabins are located on public lands, several are on Native allotments and one is on other private land. These cabins are primarily associated with trapping uses and are spread out over

a very large geographic area throughout the north park and preserve additions. They are exclusively located within the interior boreal-forested regions of the park and preserve along rivers or lakeshores.

## **V. Subsistence Uses and Needs Evaluation**

### Background Information

The 1980 additions to Denali National Park and Preserve are open to subsistence uses in accordance with Section 202 (3)(a) of ANILCA. Lands within the former Mount McKinley National Park are closed to subsistence activities.

Denali National Park and Preserve has a total of about 320 eligible local rural residents who qualify for subsistence use of park and preserve resources. Denali's subsistence users primarily reside in the communities of Cantwell, Minchumina, Nikolai, and Telida. Other local rural residents who do not live in these designated resident zone communities, but who have customarily and traditionally engaged in subsistence activities within the park, may continue to do so pursuant to a subsistence permit issued by the park superintendent. Individuals from McKinley Village, Nenana, Healy, and Tanana have received subsistence use permits.

Areas receiving the most extensive subsistence use activities are the northern park and preserve region near Lake Minchumina, and the southeastern park region near Cantwell. Primary subsistence resources harvested for the southeastern region are moose, caribou, bear and fish, with a limited number of households engaging in trapping of furbearers. Cantwell area subsistence users primarily use park lands in the Windy Creek, lower Cantwell Creek, and Bull River drainages. In the northern region, moose, fish, and furbearers are the major resources harvested, with trapping being a significant subsistence use activity. In the northern region, traplines extend throughout the ANILCA park and preserve additions up to the boundaries of the former Mt. McKinley National Park.

Overall, Denali's main subsistence species are moose, caribou, ptarmigan, spruce grouse, hare, and few species of freshwater fish. Large mammals account for 70% of the resources used and fish account for 21%. Marten, mink, red fox, wolf, lynx, weasel, wolverine, land otter, beaver, muskrat, and coyote are important fur animal resources.

The National Park Service recognizes that patterns of subsistence use vary from time to time and from place to place depending on the availability of wildlife and other renewable natural resources. A subsistence harvest in a given year may vary considerably from previous years because of such factors as weather, surface snow conditions for traveling, wildlife migration patterns, natural population cycles, and wildlife conservation practices of leaving a trapline fallow periodically.

### Potential Impacts to Subsistence Users

Subsistence cabins could be lost due to wildfire. Vegetation could continue to grow around cabins increasing the fuel loading which in turn increases the area's flammability. Natural fire occurring in the fuels could destroy or severely damage sites. Fire lines hastily placed to protect cabins could destroy cabins in the process.

Hazardous vegetative fuel removal around cabins used for subsistence purposes could have several positive impacts. Cabins would become more visible from the air. Subsistence users could perceive occupancy of the cabins as being more comfortable. Vegetation removal around the cabins would allow better air circulation and therefore possibly reduce mosquito numbers and allow more opportunities to dry out clothing and equipment. Vegetation removal could also increase sight distances and awareness of approaching people and wildlife. Limited supplies of firewood could be made available to cabin users.

### Evaluation Criteria

To determine the potential impacts of the proposed action on existing subsistence activities, three evaluation criteria were analyzed relative to existing subsistence resources:

- The potential to reduce important subsistence fish and wildlife populations by (a) reductions in number, (b) redistribution of subsistence resources, or (c) habitat losses;
- What effect the action might have on subsistence fisher or hunter access;
- The potential for the action to increase fisher or hunter competition for subsistence resources.

#### **1. The potential to reduce populations**

(a) Reduction in Numbers:

Actions in all alternatives are not expected to reduce wildlife populations.

(b) Redistribution of Resources:

Redistribution of wildlife populations is not expected under any alternatives.

(c) Habitat Loss:

None of the alternatives would result in significant habitat loss.

#### **2. Restriction of Access:**

##### Alternative 1 (No-Action)

Under the no action alternative, subsistence cabins would be at greater risk of being lost due to wildfire. Without action, vegetation would continue to grow around cabins and structures increasing the fuel loading which in turn increases the area's flammability. Natural fire occurring in the fuels would destroy or severely damage sites. Fire lines hastily placed to protect sites could destroy sites in the process.

Under this alternative, fire suppression activities would have moderate negative impacts to subsistence cabins.

#### Alternative 2(Proposed Action)

Hazardous vegetative fuel removal around cabins used for subsistence purposes would have several positive impacts. Reducing hazardous vegetative fuel would protect cabins from wildfire. Vegetation removal around the cabins would allow better air circulation and therefore possibly reduce mosquito numbers and allow more opportunities to dry out clothing and equipment. Vegetation removal would also increase sight distances and awareness of approaching people and wildlife. Limited supplies of firewood from trees felled during treatment would be made available to cabin users.

#### Alternative 3

Impacts would be identical to those in Alternative 2. No additional impacts would occur because holding lines would only affect frontcountry sites.

### **3. Increase in Competition:**

None of the proposals in these alternatives are expected to result in increased competition for subsistence resources.

## **VI. Availability of Other Lands and Alternatives to the Proposed Action**

Hazardous vegetative fuel treatment would be applied to structures located within Denali National Park and Preserve. No other lands can be substituted in the proposed action.

## **VII. Alternatives Considered**

The Hazardous Vegetative Fuel EA includes two action alternatives in addition to a no-action alternative. Find detailed descriptions of these alternatives in the "Alternatives" section of the EA.

## **VIII. Findings**

The above evaluations demonstrate that there would be no significant restriction of subsistence uses reasonably foreseeable from all alternatives. For subsistence purposes, Alternatives 2 or 3 are recommended as preferred management options because they would have the greatest positive impacts to subsistence resources and subsistence users.

## **APPENDIX B: HEADQUARTERS HISTORIC DISTRICT TREATMENT PLAN**

The Denali National Park and Preserve (DNA) Historic Headquarters District is currently being evaluated for its significance as a cultural landscape. The approximate 12-acre designation is to be rehabilitated so that historic significance of the District's landscape character is retained and potentially enhanced. Landscape character will consist of, but is not necessarily limited to, natural and artificial landform, vegetation, circulation patterns, architectural massing, site furnishings, utility systems, and small-scale landscape features. The rehabilitation will include physical and programmatic changes to a multi-faceted cultural landscape.

Concurrently, a national initiative to improve fire management in all national parks is underway. This effort requires an evaluation of existing vegetative conditions and current landscape maintenance procedures. This evaluation will result in parkwide recommendations to adjust these conditions and procedures for improved protection of people, buildings, equipment, and in some cases, significant natural and cultural resources from wildfire.

Map 2-2 (Proposed Treatment for Headquarters Historic District) integrates an applied treatment of fire management to a cultural landscape setting to meet requirements for both initiatives simultaneously.

Existing conditions in the Headquarters Historic District (Map A-1) were inventoried through actual field investigation, using a methodology that described the landscape zones in the following way:

- Overstory, Understory, and Groundstory
- Thinned Overstory, Thinned Understory, plus Groundstory
- Overstory and Groundstory
- Thinned Overstory, plus Groundstory
- Understory and Groundstory
- Thinned Understory, plus Groundstory
- Groundstory

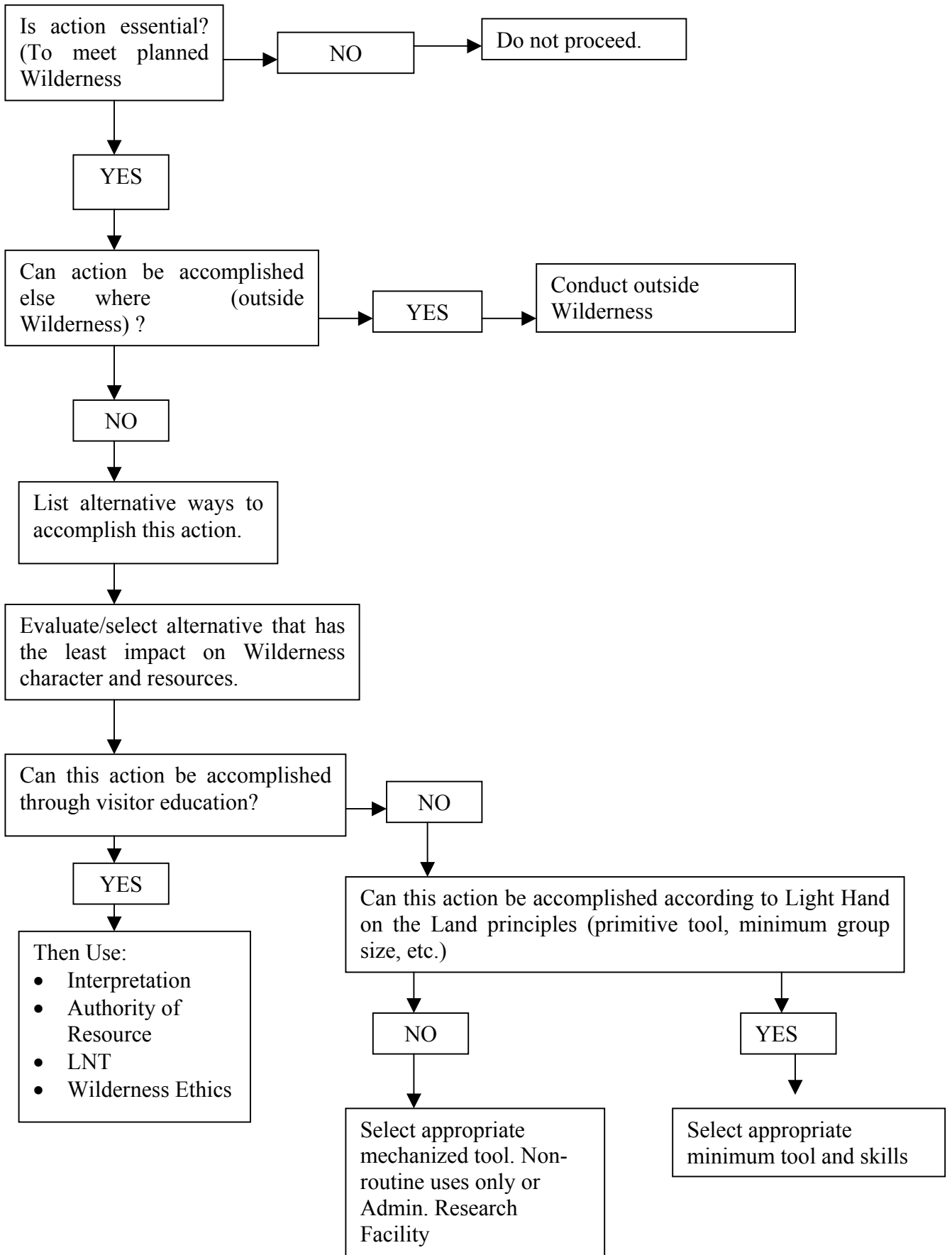
Landscape zones found during the period of significance (1926-1941) were interpreted from historic oblique and ground-level photographs from that period and later to about 1950. Landscape zones were described with the terminology used for Existing Conditions and appear in Map A-2: Historic Conditions for Headquarters Historic District.

Presently, vegetative cover consists of relatively large tracts of overstory/understory/groundstory with less dense, shorter cover predominant around most buildings.

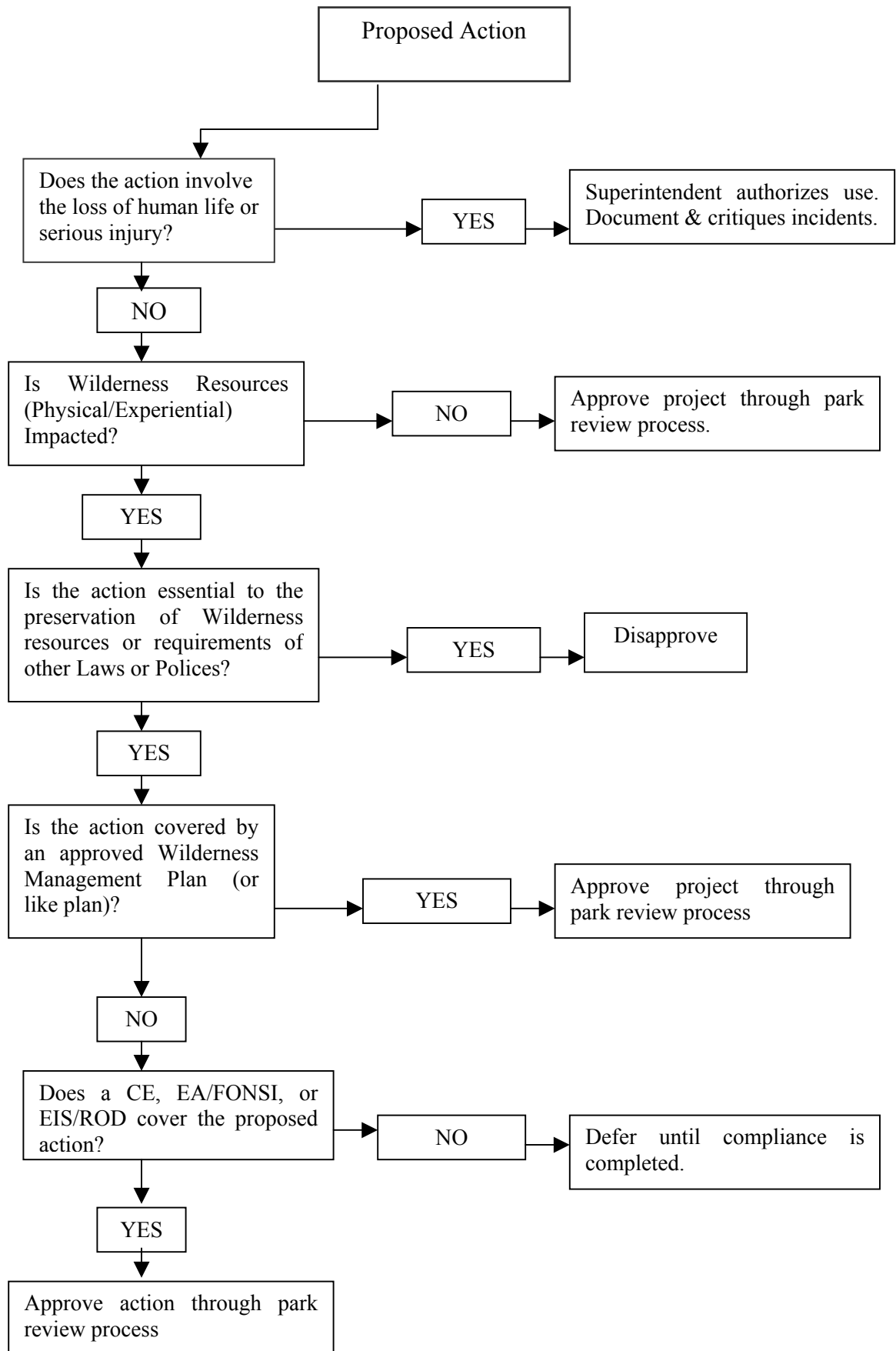
The historic landscape map shows relatively large tracts of overstory/understory/groundstory with large areas around structures that consist mostly of groundstory.

The treatment includes aspects of cultural resources rehabilitation and applies the principles of FireWise management to the Historic District. In this way, both cultural and FireWise initiatives are met.

**Appendix C: Minimum Requirement Procedure**







## APPENDIX D: DEFINITIONS

### Landscape descriptors

- *Overstory* vegetation is any plant material that 10 feet or higher (approximately taller than a single story building). Mature birch, cottonwood, spruce, and willow are examples of overstory vegetation prevalent in the historic district.
- *Understory* vegetation is any plant material that is taller than 3 feet (approximately waist high) and shorter than 10 feet. Young trees and mature alder, willow, and various berry –producing shrubs fit this description.
- *Groundstory* vegetation is any plant material that is shorter than 3 feet, such as low growing shrubs, grasses, and manicured lawns.

### Vegetative treatment classifications

- *Clear Overstory and Thin Understory*. This treatment would result in a dramatic change to the landscape with the clearing of most trees over the height of ten feet and selective thinning of vegetation under 10 feet. Selective thinning of groundcover may also occur. Areas now covered in dense vegetation of all heights would be open, which would change the physical and aesthetic setting.
- *Thin Overstory and Thin Understory*. This treatment would require selective thinning and pruning of all vegetation taller than 3 feet. Although this treatment would change lighting and aesthetic qualities, it should not significantly change the existing transparency of the landscape. screening with shrubs would be retained.

### Impact Levels

- Negligible: Little or no change from current condition.
- Minor: Short-term or local change from current condition.
- Moderate: Short-term, widespread change from current condition.
- Major: Long-term change from current condition.

# Appendix E: List of Structures

Location

Backcountry Cabins

Asset ID	Cabin Number	Cat X.	Description
1	DENA 005	yes	New Thorofare River Patrol Cabin
4	DENA 202	yes	Pearson Cabin
7	DENA 101	yes	Upper Windy Cabin
8	DENA 122	yes	Lower Savage Cabin
9	DENA 127	yes	Lower East Fork Cabin
15	DENA 100	yes	Lower Windy Cabin
17	DENA 126	yes	Sushana Cabin
18	DENA 081	yes	Lower Toklat Cabin
19	DENA 009	yes	Moose Creek Cabin
20	DENA 110	yes	Riley Creek Cabin
24	DENA 203	yes	Toklat Cabin, Upper
25	DENA 207	no	Igloo Patrol Cabin
29	DENA 205	yes	East Fork Cabin, Upper
30	DENA 209	no	Upper Savage Cabin
31	DENA 208	yes	Sanctuary Cabin
42	DENA 231	yes	Quigley Cabin
45	DENA 244	no	Red Top Cabin
46	DENA 239	no	Poly Wonder Cabin (Red top A-Frame)
196	DENA 204	yes	East Fork Cabin
229	DENA 208	yes	Pit Toilet, Sancturary Cabin
230	DENA 127	yes	Pit Toilet, Lower East Fork
1002	DENA 003	no	Herning Cabin
1003	DENA 018	no	Slippery Creek Mine Cabin
1004	DENA 040	no	Parker's Cabin
1005	DENA 041	no	Weilers (Glen Creek Cabin)
1006	DENA 045	yes	Upper Caribou Creek Cabin
1007	DENA 046	no	Last Chance Creek Cabin
1008	DENA 052	yes	Caribou Creek (Taylor Cabin)
1009	DENA 055	no	Townsite of Glacier
1010	DENA 056	no	Dragline Bunkhouse/Shed
1011	DENA 058	no	1968 Glacier Creek (Mc Jauhola)
1012	DENA 059	no	Glacier Creek/18 Gulch
1013	DENA 067	no	Moose Creek Lower Canyon Cabin 1
1014	DENA 068	no	Moose Creek Lower Canyon Cabin 2
1015	DENA 069	yes	Neversweat Mine Cabin
1016	DENA 074	yes	Collins (12 Mile Slough)
1017	DENA 076	yes	Collins Slippery Creek Cabin
1018	DENA 077	yes	Carlson's Slippery Cabin
1019	DENA 079	no	Lonestar Roadhouse
1020	DENA 082	no	Crooked Creek Mine Camp #3
1021	DENA 084	yes	Stampede Creek
1022	DENA 087	yes	Roosevelt

1023	DENA 093	no	Carlson Lake Cabin
1024	DENA 095	yes	Collins Birch Creek Cabin
1025	DENA 099	no	Colorado Creek\West Fork Chulitna
1026	DENA 102	no	Foggy Pass Limestone Claim Cabin
1027	DENA 105	no	Rock Creek Mouth Cabin
1028	DENA 137	yes	Fourth of July Creek Cabin
1029	DENA 149	yes	Stampede Mine Complex
1030	DENA 151	yes	Peter Nelson Cabin
1031	DENA 152	yes	Quigley Ridge Cabin
1032	DENA 154	yes	Alpha Ridge Mine Cabin
1033	DENA 158	yes	Upper Crooked Creek Cabin
1034	DENA 165	yes	Jauhola 1,2,3 (Moose Creek)
1035	DENA 176	no	Yanert Mouth Cabin
1036	DENA 181	no	Black Bear Cabin
1037	DENA 235	yes	Little Annie
1038	DENA 236	yes	Gallop Cabin
1040	DENA 241	yes	Collins New Birch Creek Cabin
1041	DENA 307	no	Slate Creek Mine
1042	None	no	Stampede Airstrip Structure West
1043	None	no	Lonestar Creek Site

Location

C Camp

Asset ID	Cabin Number	Cat X.	Description
104		no	Paint Storage, B&U, Auto Shop
117		no	Oil Shed, Auto Shop
119		no	R&RP Storage, C-Camp
121		no	Recreation Hall, C-Camp
144		no	Electrical Storage, Auto Shop
149		no	Cabin, C-Camp
150		no	Cabin, C-Camp
151		no	Cabin, C-Camp
152		no	Cabin, C-Camp
153		no	Cabin, C-Camp
154		no	Cabin, C-Camp
155		no	Cabin, C-Camp
156		no	Cabin, C-Camp
157		no	Cabin, C-Camp
158		no	Cabin, C-Camp
159		no	Cabin, C-Camp
160		no	Cabin, C-Camp
161		no	Cabin, C-Camp
162		no	Cabin, C-Camp
163		no	Showerhouse, C-Camp
164		no	Auto Shop, C-Camp
165		no	Storage, Auto Shop
172		no	Sign Storage, R&T, Auto Shop
176		no	Cabin, C-Camp

177	no	Cabin, C-Camp
178	no	Cabin, C-Camp
179	no	Cabin, C-Camp
180	no	Cabin, C-Camp
181	no	Cabin, C-Camp
182	no	Cabin, C-Camp
183	no	Cabin, C-Camp
184	no	Cabin, C-Camp
185	no	Cabin, C-Camp
201	no	Cabin, C-Camp
202	no	Cabin, C-Camp
203	no	Log Cabin, C-Camp
380	no	Butler Building
606	no	ATCO Resources, C-Camp (Meatlocker)
727	no	ATCO 2, C-Camp (Wildlife Offices)
1044	no	Waste/Storage Shed
2003	no	Gas Pumps
22391	no	Resource Trailer, C-Camp
82236	no	Bonneville Trailer, C-Camp
82237	no	Bonneville Trailer, C-Camp

**Location**

Asset ID	Cabin Number	Cat X.	Description
12		no	Apartments, HQ
13		no	Apartments, HQ
21		no	Headquarters
22		no	Residence, HQ
23		no	Residence, HQ
26		no	Residence, HQ
27		no	Residence, HQ
28		no	Residence, HQ
34		no	Residence, HQ
50		no	B&U Tool Shed, HQ
51		no	Apartment, 6-Plex, HQ
53		no	6-Plex garage and computer
54		no	Boiler Plant, HQ
94		no	LP Gas Storage, HQ
96		no	Lumber Storage, HQ
99		no	Exercise Building, HQ
101		no	Interpretation and Museum
102		no	Carpenter Shop, HQ
103		no	Ranger Office, HQ
105		no	Kennels
106		no	Sign Shop (Barn), HQ
107		no	Plumbing Shop, HQ
110		no	Chief Resources Office
111		no	Residence, HQ

112	no	Concessions Office
118	no	Resources Office, HQ
123	no	Administration Office, HQ
127	no	Pumphous, HQ
141	no	Dispatch and Library
169	no	MESS Office, HQ
170	no	Residence, HQ
171	no	Residence, HQ
217	no	3-Plex Garage, HQ
251	no	Residence, HQ
252	no	Duplex, HQ
350	no	Water Storage, HQ
1045	no	Storage Shed
2002	no	Air Quality Shed

Location

Asset ID	Cabin Number	Cat X.	Description
198	DENA 251	no	Visitor Center, Eielson
245		no	Rest Stop, Teklanika
372		no	Generator Building, Eielson

Location

Asset ID	Cabin Number	Cat X.	Description
55		no	A-Frame, Toklat
56		no	A-Frame, Toklat
57		no	A-Frame, Toklat
58		no	A-Frame, Toklat
59		no	A-Frame, Toklat
92		no	Generator Building, Toklat
120		no	Generator Building, Toklat
148		no	A-Frame, Toklat
186		no	Tool Shed, Toklat
189		no	Maintenance Shed, Toklat RS
190		no	Auto Shop, Toklat
227		no	Showerhouse, Toklat
231		no	Toklat Office
233		no	Carpenter Shop, Toklat
234		no	4-Plex C, Toklat
235		no	Duplex A, Toklat
236		no	4-Plex B, Toklat
237		no	Recreation Hall, Toklat
240		no	LP Gas Station, Toklat
241		no	Showerhouse, Toklat
242		no	Duplex E, Toklat
243		no	Duplex F, Toklat
244		no	Duplex D, Toklat
370		no	Pumphouse, New, Toklat

**Location** Visitor Center Vicinity

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<b>Asset ID</b>	<b>Cabin Number</b>	<b>Cat X.</b>	<b>Description</b>
91		no	Visitor Center, VAC
2001		no	Mercantile

**Location** Wonder Lake and Vicinity

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<b>Asset ID</b>	<b>Cabin Number</b>	<b>Cat X.</b>	<b>Description</b>
14	DENA 242	no	Wonder Lake Ranger Station
207		no	Bunkhouse, Wonder Lake RS
208		no	Cabin, Wonder Lake RS
209		no	Cabin, Wonder Lake RS
212		no	Generator Building, Wonderlake RS
213		no	Cabin, Wonder Lake RS
373		no	Pumphouse, Wonder Lake RS
374		no	Oil Storage, Wonderlake RS
1001		no	Wonder Lake Fueling Station

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### REFERENCES

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