Cultural Resources Report
Bald Fire Salvage and Restoration
Hat Creek Ranger District
Lassen National Forest

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Introduction

Cultural resources are defined as the physical remains of past human cultural activities on the landscape. For at least 7,500 years, and possibly even 12,000 years, humans have occupied lands now managed by the Lassen National Forest (LNF). No written records document the vast majority of that time. Instead, prehistoric sites chronicle the daily activities of ancestral Native Americans, showing where they chose to live, how they made their living, and how they made their tools. Traces left behind range from large, complex sites with pit houses or rock rings to scattered stone flakes left by prehistoric toolmakers. Cultural resources within the Bald Fire Salvage and Restoration Project (Bald Project) represent both prehistoric and historic components and indicate a likely seasonal use of the area.

Ethnographic Setting

For thousands of years prior to early 19th century Euro-American contact, Native American populations inhabited northeastern California, including the Bald Project. Prehistoric cultural resources documented near and within the Bald Project area included base camps, temporary camps, and task sites. Prehistoric site locations within the project boundary represent prehistoric Native American settlement patterns, subsistence orientations, cultural chronology, and flaked stone technology. By late prehistoric times, ethnographic data suggests that the Atsugewi, Yana, and Mountain Maidu groups resided within the project area. All three different tribes were seasonally transhumant, that is they followed a yearly movement pattern of winter settlement in protected valleys followed by spring, summer, and fall migrations to seasonally available resources (Garth 1953; Kniffen 1928; Kroeber 1925; Merriam 1926). Archaeology of the Bald Project is indicative of such prehistoric seasonal resource procurement and use.

Prehistoric Setting

Patterns of prehistoric human activity in the Bald Project area are complex since it lies near the intersection of several geographic, ecological, and cultural zones. Archaeological influences from the Sierra Nevada, Great Basin, southern Cascades, and Central Valley may be represented.

The earliest phase of regional occupation of northeastern California is the Early Holocene or the Paleo-Indian Occupation, which dates to before 6500 B.P. (McGuire 2007). Diagnostic artifacts from this period include Clovis-like and wide-stem projectile points; such diagnostic projectile points have been found at Eagle Lake and Hat Creek (Dillon 2002:113). These tools have not been dated directly, but it is assumed that their dates are similar to Clovis points found across North America, at 13500 to 11500 B.P. (McGuire 2007:169). Most Paleo-Indian assemblages do not occur with milling stone equipment. This has led archaeologists to infer that these people were highly mobile and traveled in small groups and anchored themselves to lakes and rivers (McGuire 2007:170).

The post-Mazama period, dating from 7000 to 5000 cal B.P., diagnostic artifacts, and features include large side-notch projectile points (northern side-notched points), antler wedges, mortars, V-shaped bowls, T-shaped drills, tanged blades, flaked stone pendants,

and large subterranean house structures. Northern side-notch points generally appear to postdate the 7000 cal B.P. Mount Mazama ash fall and terminate around the end of this period (McGuire 2007:170). Points that do occur in this period include Gatecliff, Fish Slough, large contracting stemmed, and other Martis-like variants (McGuire 2007:171).

During the post-Mazama period, adaptive strategies began to change with an emerging focus on upland foraging. These people were still highly mobile and had no systematic dependence on storage. Plant resources, however, do become increasingly important. According to McGuire (2007:171), "there is a three-fold increase in the frequency of milling equipment corresponding to the latter period that has been attributed to the rising importance of plant resource exploitation." Archaeologists such as Kowta (1988) have suggested the existence of a Millingstone Horizon similar to the one seen in southern California and dating to roughly the same period.

The Early Archaic period dates to 5000-3500 B.P. This period is highly visible in the archaeological record compared to the previous two periods. On the Modoc Plateau, Elko and Siskiyou side-notched forms replace the Gatecliff split stem points. In the southern section of northeastern California, the Gatecliff series is still present but now Elko points and other large Martis-like dart points are used. The Martis complex or Martis tradition appears primarily along the Sierra Nevada and north of Lake Tahoe. The Martis complex is characterized by the use of basalt in the manufacture of large bifacial tools (McGuire 2007:172).

The Middle Archaic period dates to 3500-1300 cal B.P. This period provides the first evidence of extensive habitation and a semi-sedentary lifestyle. Evidence includes house structures with associated midden deposits, hearths, ovens, burials, and a very diverse assemblage of artifacts and subsistence remains (McGuire 2007:173). Similar sites have been identified across adjacent deserts, as well as middle Pit River, Feather River, Lassen Volcanic National Park, and Eagle Lake. Most of these large elaborate villages and base camps have been documented to this period (McGuire 2007:173). Two projectile points characteristic of this period are the Martis and Elko point types. These projectile point types have similar morphological traits, which have led archaeologists to theorize they represent regional differences of the same projectile point style (McGuire 2007:173). During this period, obsidian source diversity shrinks and the focus shifts to more regularized acquisition of a few key materials gathered during logistical travels between habitation areas. This switch to obsidian procurement has created very distinct uniform obsidian source profiles (McGuire 2007:173). There is also evidence of trade to the west with an increase of marine shell into the Great Basin during the Middle Archaic.

The Late Archaic period dates to 1300-600 cal B.P. Some major changes occurred between the Middle Archaic and the Late Archaic, most likely due to the medieval climatic anomaly (MCA), which occurred between 1100-600 B.P. and is defined as an increase in aridity and hotter weather conditions (McGuire 2007:173). The effects of MCA on northeastern California Indian populations are not yet completely understood. Across California, 1000 cal B.P. marks a time of instability and upheaval. However, other

factors, such as increased population density and environmental degradation, can be attributed to the instability and decline during this period (McGuire 2007:173).

The Late Archaic period had some major shifts in the tool kit used by northeastern California Indians. The introduction of bow and arrow technology ushered in new diagnostic artifacts such as the Rose Spring and Gunther barbed arrow points. Brownware ceramics also occur in the northern section of northeastern California (McGuire 2007:174). Tool stone production shifts from targeting a few key quarry zones to an increased reliance on trade network exchange, scavenging older tools and refuse, and obsidian pebble and cobble material (McGuire 2007:174). This creates a diverse obsidian profile for the period, again reversing the earlier trend. House structures predating 1000 B.P. are clustered rather than isolated and are more formally built with elaborate superstructures, central hearths, caches, storage pits, and perimeter rock. House structures postdating 1000 cal B.P. lack similar complexity to their counterparts in the earlier period. They occur as ephemeral domestic features, rock rings, or living surfaces (McGuire 2007:174). This period has some of the largest villages documented in the western Great Basin during the late Holocene (McGuire 2007:174). These villages appear to have been used for only brief durations. These large Late Archaic villages may have been developed in response to threats of warfare, raiding, and other forms of social conflict that are believed to have occurred during this period (McGuire 2007:174).

Resource intensification expanded during the Late Archaic period. Faunal remains from many sites in the area show a drastic decline in the use of large game species. In much of the region, camas root became a staple survival food. Upland migration became an important strategy during this period and likely developed to exploit the seasonal root, seed, and berry crops in the uplands. According to McGuire (2007:174), “Although some of these root crops may have been exploited to a limited extent in earlier times, their intensive use and storage in the late period reflects a fundamental shift in land-use patterns that may have developed in response to wide-spread population and resource imbalance.” Other intensified resources in the middle Pit River region include freshwater mussels, seeds, and manzanita berries.

Documented rock rings along the western shore of Eagle Lake are evidence for resource intensification and seasonal upland migration. According to Neel (2012:120), “These features were likely developed in conjunction with new hunting and gathering techniques such as the advent of bow and arrow technology, a two-settlement strategy (upland migration), and an economy driven by intensification of lower ranked resources such as geophytes.” This research and other local research concluded that rock ring features were most intensively used in the Late Archaic period (1300-600 B.P.) due to the high frequency Rose Spring projectile points (1500 to 700 B.P.) found (Neel 2012:120). These rock ring features occur across much of the land now managed by the LNF. This suggests a similar adaptive strategy used by the different tribes of the region.

The Terminal Prehistoric period dates from 600 cal B.P. to the point of European contact (Wheeler-Voegelin 1974:6-7). The diagnostic points from this period include the Desert side-notched and Cottonwood types. Both Gunther barbed and Rose Spring projectile

points continue from the Late Archaic into parts of the Terminal Prehistoric. By this time, large seasonal or semi-permanent Late Archaic settlements were abandoned and replaced by smaller settlements of a few independent households (McGuire 2007). Resource procurement shrank from logistical hunting and gathering party forays to daily trips near the encampment. Faunal remains from this period show a rebound in the use of large game species.

In northeastern California, populations changed due to the arrival of the desert-oriented Numic-speaking groups (Northern Paiute) from southeastern California and Nevada around 500 years ago. The inclusion of the Numic groups into northeastern California is believed to have caused conflicts and changes in settlement patterns throughout the region (McGuire 2007:175). Numic groups traveled across the landscape in small family units procuring seasonal resources. Sites dating from this period seem to be more ephemeral; associated artifacts and features include isolated groundstone, hearths, limited debris scatters, and small pockets of stained soil. In the middle Pit River area, the settlement system actually differs significantly from the Numic way of life (McGuire 2007:175).

Habitation areas were anchored to major river margins and adjacent uplands. House features include both single- and multi-family residential camps containing a variety of stone and bone tools, roasting features, hearths, work areas, and storage pits that reflect all aspects of residential activities, including plant and animal processing and tool maintenance and production (McGuire 2007:175). Conflict, warfare, and raiding occurred during this period and could explain why groups lived in the rugged canyons and rim rock country.

Historic Setting

Euro-Americans and Europeans occupied northeastern California relatively late, as compared to other portions of the state. Fur trappers were among the first to venture into the general vicinity of the project area. The first written record discussing the Pit River may be that of Peter Skene Ogden, leader of a Hudson's Bay Company trapping expedition. In 1827, Ogden's group entered an area in which an unidentified river fits the description of the Pit River (Wheeler-Voegelin and Neasham 1974:6-7).

Cattle ranching has been called "the first industry in California" beginning in 1769 when the first division of an overland expedition under Captain Fernando Rivera arrived at San Diego (Burcham 1981:11). Sheep arrived at approximately the same time, possibly during Captain Rivera's second voyage to San Diego in 1770 (Burcham 1981:146). Both cattle and sheep played important roles at the early missions and served as major food sources for the Gold Rush and beyond. Shasta and Lassen counties, in which the project is completely contained, had a population of at least 15,457 cattle by 1850 (Burcham 1981:252). Sheep that year numbered only 725, but quickly overtook cattle in terms of overall numbers.

By the mid-1840s, pioneers were crossing northeastern California to settlement locations in interior California and Oregon. Starting in 1848 with the discovery of gold at Sutter's

Mill, travelers through northeastern California soon included Americans, Europeans, Latin Americans, Australians, and Asians, all of their way southward to the gold fields. Settlers and gold prospectors followed three major historic trails across northeastern California: the Applegate Trail (the southern route of the Oregon Trail established in 1846), the Lassen Emigrant Trail (blazed in 1848, it led south to the California gold fields), and the Nobles Trail (briefly known as the Fort Kearny, South Pass, and Honey Lake Wagon Road, it also led to the gold fields).

According to historical maps and information from local historian Richard Silva, the Lassen Emigrant Trail transverses the project area and into Lassen National Park, where it is well documented. No segments have been recorded by the USFS across the project area. However, many undertaking have been done by Trails West to map the routes in the area. Some of the segments that meander away from modern logging roads will be investigated and recorded if they are a wagon road.

Local sawmill operations were present in the general area, at locations such as Cassel (about fifteen miles northeast of the project area by highway and road) and Old Station (about six miles to the south by highway). Johnson (1978:77-79) notes that Cassel sawmills included those operated by H.H. Baker (1870-1920), Isaac Dugan (1900, apparently with H.H. Baker), and Jim Bidwell (1914). Old Station sawmills included those operated by Wid Hall (1910), Winfred Daily (1940), Hat Creek Lumber (Kirkpatrick, at Old Station and Big Bend, 1940), and Morton & Hannan (1950).

Regulatory Framework

The analysis and consultation discussed in this document is in conformance with applicable legislation including the National Historic Preservation Act of 1966, as amended (80 Stat. 915 et seq.; 16 U.S.C 470 et seq.) and National Environmental Policy Act of 1969 (NEPA), as amended (83 Stat. et seq.; 42 U.S.C 4321-4347). Other relevant legislation guiding the management of cultural resources on federal lands includes the Archaeological and Historical Data Preservation Act of 1974 (88 Stat. 174; 16 U.S.C. 460), and the Archaeological Resources Protection Act of 1979, as amended (ARPA) (93 Stat. 721 et seq.; 16 U.S.C. 470 et seq.).

Section 106 of the National Historic Preservation Act is particularly important for National Environmental Policy Act (NEPA) analysis because it requires federal agencies to take into account the effects of their actions on historic properties. The proposed action complies with Section 106 and other applicable legislation as cited in the *Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest region (RPA 2013).* The RPA sets forth a process for compliance with Section 106 of the National Historic Preservation Act, taking into account pertinent legislation applicable to historic properties.

As noted in the RPA, the Forest's responsibility to identify, evaluate, treat, protect, preserve, and consult regarding potential effects to historic properties is derived from relevant legislation that also addresses the value of archaeological sites and sets forth procedures for tribal consultation and addressing tribal concerns. Legislation pertinent to tribal concerns and the consultation process includes the American Indian Religious Freedom Act of 1978 (92 Stat. 469; 42 U.S.C. 1996); the Native American Graves Protection and Repatriation Act of 1990 (104 Stat. 3048-3058; 25 U.S.C. 3001-30130); and mandates contained in Executive Order 13007, entitled Indian Sacred Sites, and in Executive Order 13175, entitled Consultation and Coordination with Indian Tribal Governments.

The proposed action is also consistent with the Lassen National Forest Land and Resource Management Plan (1992), which outlines standards and guidelines for the management of scientific, historic, and cultural resource values and traditional values of contemporary Native Americans (see pages 3-4 and 4-3).

Affected Environment

Existing Condition

As stated above, Section 106 of the National Historic Preservation Act and its implementing regulations require federal agencies to take into account the effects of their actions on historic properties, meaning historic properties listed on or eligible for listing in the National Register of Historic Places (NRHP). For the purpose of this project, and in compliance with the 2013 RPA, historic properties not yet evaluated will be treated as potentially *eligible* for the NRHP.

A cultural resource analysis was completed for the Bald Project to conform with regulations of the National Historic Preservation Act (1966), the National Environmental Policy Act (1969), and other applicable legislation, and to comply with standards and guidelines in the Forest Plan (1992). The 2013 RPA, including the annexed 2004 Interim Protocol, provides the framework for cultural resource work completed for the project.

The cultural resource analysis of the Bald Project included pre-field research, field surveys, analysis of potential effects, historic property protection measures, and tribal consultation. Pre-field research included a review of: (1) Forest Service files to determine whether known historic properties were present and to review the adequacy of previous survey coverage, (2) historic maps to locate historic features still potentially in existence, and (3) written ethnographic information to determine whether any resources or locations important to tribal members were indicated.

Tribal consultations included presenting the project and giving progress updates at quarterly consultation meeting; a fieldtrip with the district archaeologist, tribal historic preservation officer, and tribal representative to discuss the proposed actions and look at the fire-affected landscape; and providing scoping letters to tribal and band representatives.

Pre-field research revealed that 41 unpublished archaeological reconnaissance surveys were conducted within the project area and were related primarily to timber sale activities. Table 1 lists prior surveys conducted within the project area.

Table 1: Surveys conducted in the Project Area.

Survey Number	Project Name	Survey Number	Project Name
R1978050653055	Beaver Creek Wetland Project	R1995050653203	Duke/Hacksaw Thinning
R1979050653037	Bald Mt Allotment Revegetation	R1993050653213	Wilting TS
R1981050653056	Beaver Creek Fire Salvage	R1993050653174	Driven TS
R1982050653129	Coble TS	R1996050653143	Ladder Butte Brush Crush
R1987050653011	Horse, SOS, Ladder, Baker TS	R1996050653211	Willow Springsw Project Area
R1987050653026	Range Land Waterholes	R1997050653035	Eastside Wetland Development
R1988950653021	South Bald and South Alcohol TS	R1999050653192	Pittville DFPZ
R1988050553214	Wilson TS	R2000050653215	Black Ridge DFPZ
R1989050653138	Ladder TS	R2000050653218	North Coble DFPZ
R1992050653023	Proctor Biomass	R2003050653221	Boothill DFPZ
R1992050653042	92 Waterholes and Wildlife	R2003050653222	Pittville
R1992050653145	Step Ladder TS	R2004050653244	Black Ridge Analysis Area
R1993050653140	Waterholes 1991	R2004050653245	Black Ridge Underburn
R1993050653161	Wooley Control Burn and Sheep Flat	R2004050653246	West Salvage and Windthrow/Eastside Insect and Fires Salvage
R1995050653203	Duke/Hacksaw Thinning	R2004050653247	North Coble T.S.
R1996050653108	Bald Mt. Resevoir Survey	R2006050600029	Pittville Underburn
R1996050653131	Gulch Salvage TS		

Pre-field research indicates that in order to meet current survey standards as defined by the 2013 RPA, an additional 10,662 acres within the project area required survey. During the 2014 field season, 8,295 acres were surveyed using intensive survey coverage (General 0-30 meters). In the 2015 field year, an additional 719 acres were surveyed. All treatment units have intensive survey coverage that meets the guideline set forth by the

2013 RPA. The 2014 and 2015 surveys will be documented under one archaeological reconnaissance a report that differentiates the two field year survey.

A small portion (1,325 acres) of the Bald Project analysis area encompasses the steep slopes of Negro Mountain, which has slopes greater than 30 degrees and a landform surface covered with volcanic boulders and cobbles. The steep slopes and rocky surfaces make intensive surveying dangerous given the potential for serious injuries. In consultation with the state historic preservation officer, the LNF proposes to use less than intensive surveying methods in these areas (Hays 2015).

One hundred and sixty eight historic properties were identified and recorded by prior survey efforts. These historic properties represent both prehistoric and historic activities (see Appendix A: Historic Properties and Treatment Units). Nine new sites (prehistoric and historic) were identified during the Bald Survey efforts. All sites that have the potential of being impacted by the proposed action have been flagged for avoidance.

Three new historic properties were identified as a result of 2014 Bald Fire Salvage and Restoration survey efforts. In 2015, six new sites were located. In total twelve non-formally recorded resources (isolates) were noted. Isolates include both prehistoric and historic artifacts.

The activities associated with the Bald Project may be implemented as planned, provided any specified integrated design features or standard resource protection measures are also adopted for the protection of historic properties. If the area of potential effect (APE) is modified, additional review and approval by the district archaeologist would be required.

Desired Condition

For the purpose of this project, the desire is to maintain protection of historic properties from the potential adverse effects of the proposed activities. Before the decision is signed, all surveys in the Bald Project treatment unit areas will be completed using less than intensive survey and intensive survey protocol. If historic properties are revealed during the course of the project, appropriate protection measures would be applied and the historic properties would be protected/evaluated/mitigated as appropriate.

Environmental Effects

Alternative 1: Proposed Action

Table 2. Proposed treatment categories and estimated acres in the Bald Project

Treatment-Alt 1	Acres	Percentage of Project Area
Roadside Hazard	4,815	15%
Area Salvage	3,632	12%
Area Fuels	5,499	18%
Plant only	417	1%
Sub-Total Treatment	**14,363**	**46%**
Natural Recovery	**16,961**	**54%**
Total project area	**31,324**	**100%**

Direct Effects

Area Salvage Harvesting

Under the proposed action, fire-killed and fire-injured trees would be harvested on approximately 3,632 acres within the perimeter of the Bald Fire. Merchantable trees would be removed as saw logs if operations occur before the wood deteriorates. Non-merchantable trees would be removed as biomass, masticated, felled and lopped, machine piled and burned, or broadcast burned to meet desired fuel conditions. The salvage harvest operations would utilize ground-based, mechanical harvesting to remove fire-killed and fire-injured trees from treatment areas on slopes 35 percent or less. Activity-generated fuels would be masticated, broadcast burned, piled mechanically or by hand, and the piles burned. On slopes greater than 35 percent, hand felling would be used to create openings for artificial regeneration and activity fuels would be hand treated.

Historic properties identified within or near the proposed salvage units have been flagged for avoidance; no ground mechanical harvesting would be allowed within flagged historic property boundaries. Hand piling and pile burning will not occur within historic property boundaries unless specifically approved by Heritage Program managers (HPM) or qualified Heritage Program staff.

Hazard Tree Removal

Hazard trees within approximately 150 feet along maintenance level (ML) 2 or higher roads within the fire-affected[1] area would be felled and removed. Hazardous trees along the Burlington Northern Santa Fe railroad easement would also be felled. Depending on access, these trees would be removed or left in place. Historic properties identified within

[1] In addition to roads and the railway within the fire perimeter; incidental hazards along the perimeter roads would be treated.

or near the hazard tree corridors have been flagged for avoidance. Hazard trees within historic property boundaries are still a hazard to the public and employees. Trees will be permitted to be felled within the historic property boundaries and left in place. If there are artifacts or features (cabins, rock rings, historic debris scatters, glass, ceramics, corrals, faunal) that have the potential of being impacted by falling tree, trees will be directionally felled away from resources.

Area Fuel Treatments

In areas that burned at moderate and high severity and where timber does not meet merchantability standards, hazard abatement, fuels reduction, and site preparation for reforestation would be accomplished by biomass removal, mastication, felling and lopping, machine piling and burning, or broadcast burning. Ground based mechanical harvesting would be used areas on slopes 35 percent or less. On slopes greater than 35 percent, only hand operations would be allowed. In all areas, trees designated for removal would use the same guidelines as discussed above under Area Salvage. Activity-generated fuels would be broadcast burned or piled mechanically or by hand, and piles burned.

Historic properties identified within or near the proposed fuel treatment units have been flagged for avoidance. Mechanical harvesting to remove fire-killed and fire-injured trees would not be approved within flagged site boundaries. Table 3 lists sites approved for hand thinning and piling only.

Table 3. Historic Properties (Hand Thinning Pilling)

Historic Properties (Hand Thinning and Pilling)			
05065300004	05065300385	05065300387	05065300426
05065300437	05065300438	05065300439	05065300440
05065300441	05065300471	05065300473	

Post fire fuel loading within the sites listed in Table 3 have the potential to cause impact to each site if fuels are not reduced. Potential impacts include damage to surface artifact and features from falling trees, subsurface damage from uprooted trees, and future suppression activities as a result of heavy fuels left on the landscape. Utilizing hand treatments will also allow for controlled spread of debris on the surface of the sites; this will provide much needed camouflage and protection from potential of looting. Hand thinning and piling will be permitted within designated historic properties.

Reforestation

Reforestation would occur on approximately 12,200 acres within the project area. This includes the areas proposed for salvage and fuels treatments and an additional 417 acres that will be “reforestation only. In these reforestation units, site preparation would include a variety of treatment methods that include machine or hand cutting and piling followed by pile burning, mastication of fire killed shrub stems, or broadcast burning fire-killed trees. In addition, sprouting shrubs and vegetation may need to be treated

adjacent to planted trees to reduce competition for site resources in order to assure establishment. This may be done through manual or mechanical cutting methods such as grubbing, mastication, or use of brush cutters. Ripping may be done prior to planting. Reforestation would typically need to occur within two years to increase the probability of survival of the planted trees with the competing brush.

According to the 2013 RPA, tree planting is a screened undertaking (IIB-BB): "Tree planting by hand following a wildfire where a low impact method is used (e.g., planting bar; no mechanical auger) and where such activities would not affect the integrity of historic properties if present." No soil preparation, such as mechanized ground disturbing soil ripping, would be conducted within or near historic property boundaries. Historic properties identified within or near the proposed reforestation units have been flagged. Where reforestation units and historic properties overlap, trees will be permitted for planting using methods prescribed by the HPM. Trees will be planted in a manner that no follow-up treatments (manual treatment) will be needed. Mastication, brush cutting, and hand grubbing will not be authorized within historic sites since these mechanized and hand treatments can cause adverse impacts to cultural resources.

Managing Road Infrastructure

Where possible, the existing forest transportation system roads would be used to provide access to proposed treatment areas. Road maintenance, including surface protection and erosion control, would be performed on portions of system roads as needed for project implementation. A dust abatement plan would be included to control wind-caused erosion from road use. National Forest System (NFS) roads and non-paved county roads used for haul routes would receive pre-, during-, and post-haul maintenance.

Approximately 2.2 miles of non-system roads within the project area would be needed for project implementation (salvage, fuel treatments, and reforestation) and long-term future management. These non-system roads would be added to the forest transportation system as ML 2 roads. Temporary roads may be constructed to access proposed treatment areas. Following project implementation, these new temporary roads would be decommissioned.

All water sources proposed for use in this project for dust abatement meet best management practice (BMP) standards. The following water sources would be used for dust abatement:

- Halls Flat (T33N R6E, N ½ sec. 1)
- Bidwell Pond (T34N R4E, S ½ sec. 1)

Historic properties will be flagged for avoidance near existing and proposed addition of non-system roads. The addition of the non-system roads will have no impact on known historic properties because they do not conflict in any of the proposed locations.

Indirect Effects

Alternative 1 would enhance cultural resource values by reducing fuel loads and the potential risk of trees falling and damaging archaeological features, artifacts, and the stratigraphic integrity of the deposit. By reducing the surface fuels, historic properties would be afforded substantial protection and reduce the risk of high-intensity wildfires and subsequent damage from fire suppression activities. These two activities can substantially affect site integrity, destroy historic values, and make site interpretation difficult. Some materials, generally organics such as wood and shell, are relatively susceptible to even low intensity burns; however, other components, such as flaked stone, can remain undamaged by lower intensity fires but are damaged with more intense heat (fallen trees). Implementation of the proposed action would reduce the risk from potential future wildfires and falling fire-killed and fire-injured trees.

Removing fire-killed and fire injured trees around historic properties makes them more visible on the landscape. Post fire ground visibility of these sites has increased the exposure of many surface artifacts. Sites are flagged for protection from project actions. This however acts as a double-edge sword as the flagging that protects the site from damage also increases unwanted attention to it.

Cumulative Effects

Within the project area, known or suspected historic (and recent) activities include logging, recreation use, safety, and travel. Actions in the foreseeable future, include proposed fuel reduction projects. This would reduce the potential risk for future devastating fires. Off-highway vehicle (OHV) and recreational use is expected to continue and may increase due to removal of brush by the fire.

Within the project area, past, ongoing, and reasonable foreseeable activities include logging, recreation use, road maintenance, and travel. Off-highway vehicle (OHV) and recreational use is expected to continue and may increase due to removal of brush by the fire. General recreation use may change because of the Bald Fire, for example, development of new trails or dispersed camping areas in locations formerly covered with brush and debris. The current project could interact with recreational activities by increasing site or artifact visibility, thus making sites more vulnerable to looting.

Alternative 2 - (No Action)

Under the No Action alternative, none of the activities proposed under Alternative 1 would be implemented. The No Action alternative would not preclude activities already approved in this area or activities planned as separate projects. No fuels treatments, site preparation, or reforestation would occur. Current management practices such as road maintenance and fire suppression would continue. To protect public safety, hazard trees could be felled as part of road maintenance. These hazard trees would be felled and left in place.

Direct-Indirect Effects

Falling trees would potentially affect a majority of the 168 sites in the fire boundary under Alternative 2. Tree fall can affect sites by damaging features, compacting and displacing the soil that contains artifacts, and breaking and displacing artifacts. In addition, root balls may bring artifacts to the surface potentially (1) exposing them to looters and (2) mixing archaeological materials from different times and complicating interpretation.

Larger diameter fuels burn longer and hotter than duff and brush. This type of fire behavior can cause harm to both prehistoric and historic properties. Fire can modify or destroy obsidian hydration rinds and create bubbles and cracks. In basalt artifacts, it can cause spalling, pot lidding, crazing, and fracturing. Fire effects on historic artifacts include damage to labels, melting solder on “hole in cap” cans, and melting bottle glass. Cultural resources and features are used in conjunction to examine the nature of human survival, interactions, and way of life. When artifacts and features are destroyed, valuable information is lost, which directly affects interpretations and site management of these resources. Future fire suppression efforts could potentially cause additional damage to surface and subsurface artifacts, destroy the stratigraphy of the site, and alter the significance of historic properties.

Cumulative Effects

The No Action alternative would result in a landscape littered with downed trees and brush fields in 10-30 years. These packed fuel conditions would increase the potential of severe wildfire and suppression damage to historic properties in the future. Implementation of the No Action alternative would set the stage for additional damage to historic properties from future catastrophic wildfires.

Alternative 3 – Road Hazard Only

Under Alternative 3, commercial sized hazard trees would be removed along ML 2 and higher roads. Sub-merchantable hazards would be felled and left in place or piled and burned. No other site preparation or reforestation would occur along these roads. No other management activities (besides those previously authorized) would occur. The total footprint of treatments on national forest lands under the proposed action would be approximately 4,736 acres. Existing roads used under this alternative would be repaired and maintained.

Direct Effects-Indirect

Historic properties identified within or near the areas designated for roadside hazard tree removal have been flagged to denote location for avoidance or treatment. No adverse effects from the project activities would occur to historic properties as a result of implementing Alternative 3 with the integrated design features (IDFs). However, a majority of the historic properties in the project area would still have the potential of

being impacted from falling trees, which can damage surface artifacts and increase the potential for catastrophic wildland fires as discussed under Alternative 2.

Cumulative Effects

If Alternative 3 was implemented, sites within the 150-foot roadside hazard corridor would be protected from commercial timber harvest and area fuel treatments. These actions would not protect most of the 168 sites in the Bald Project boundary from future wildland fires and related fire suppression activities. Road corridors would likely be used as fire lines, thereby increasing the potential impacts to historic resources in these areas. In 10-30 years, the Bald Project area would have a similar fuel loading, identical flame length, and rate of spread as the No Action alternative.

Mitigation Measures (IDFs) - Alternative 1 and 3

Federal laws, regulations, and programmatic agreements between the Forest Service and the Office of Historic Preservation are strictly followed for the protection of cultural resources. Historic properties within the Bald Project APE would be protected during project implementation utilizing the following integrated design features (IDFs)

Cultural Resources

a. Class I (eligible properties) and Class II (potentially eligible properties) historic properties within or adjacent to treatment areas, activity areas (e.g., landings, water sources, etc.), or access roads would have their boundaries flagged and tagged as non-entry zones for all project activities. No project-related activities shall occur within site boundaries unless specifically approved by the historic program managers (HPM) or qualified heritage program staff.
b. Class I and Class II historic properties located within the project area but not in close proximity to identified treatment areas shall be protected from indirect project impacts such as use of sites for staging equipment or vehicles (e.g., timber harvest equipment; water trucks; road construction, reconstruction or maintenance equipment; Forest Service vehicles, etc.) or any other activities. A Forest Service project manager would be apprised of all site locations to insure protection from direct as well as indirect effects; permanent tags shall define the site boundary.
c. Linear sites such as historic roads, ditches, or communication lines may be crossed on a limited basis in previously disturbed areas. All crossings would be made perpendicular to the site, and the site would be returned to its original design at project completion. All crossings would be designated by heritage personnel.
d. Hauling on NFS roads that bisect historic properties would continue. Vehicles and equipment using these roads must stay on the road prism in areas that bisect historic properties. New road construction, reconstruction, decommissioning, or modification of the existing prism within site boundaries would not occur without additional review and/or consultation.
e. Forest system spur roads and non-system roads that bisect archaeological sites shall not be used except under the following circumstances: heritage properties

have been evaluated and determined ineligible for the NRHP, or protective material is placed on roadbed in sufficient quantity to protect surface of site from disturbance.

f. Hand piles will not be constructed or burned within the boundaries of historic properties unless locations (i.e., a previously disturbed area) have been specifically approved by the Historic Program managers (HPM) or qualified Heritage Program staff.

g. Felling and removal of hazard trees within historic properties may occur under the following conditions:
    - Trees may be limbed or topped to prevent soil gouging during felling.
    - Felled trees may be removed using only the following techniques: hand bucking (including use of chain saws) and hand carrying, rubber tired loader, crane/self-loader, helicopter, or other non-disturbing, HPM-approved methods.
    - Equipment operators shall be briefed on the need to reduce ground disturbances (e.g., minimizing turns).
    - No skidding or tracked equipment shall be allowed within historic property boundaries.

h. Tree planting by hand following a wildfire may occur within a historic property when a low impact method is used (e.g., planting bar, no mechanical auger), and where heritage personnel have determined that such activities would not affect the integrity of historic properties.

i. If cultural resources are identified during project implementation (unanticipated discovery), all work would cease immediately in that area until the situation is reviewed and an assessment and mitigation plan instituted to insure protection of the site.

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1992 Step Ladder TS, R1992050653042,
Johnston, J.
1980 Range Land Waterholes, R1987050653026
1989 Ladder Timber Sale, R1989050653138
Kent, C.
1992a Proctor Biomass, R1992050653023
1992b 92 Waterholes and Wildlife, R1992050653042
1992c Duke/Hacksaw Thinging, R1995050653203
1993a Waterholes, R1993050653140
1993b Wooley Control Burn and Sheep Flat, R1993050653161
1993c Wilting TS, R1993050653213
1993d Driven TS, R1993050653174
Levy, R.
1987 Horse, SOS, Ladder, Baker TS, R1987050653011
1988 South Bald and South Alcohol TS, R1988050632021
Mangold, J.
2004a Black Ridge Underburn, R2004050653246
2004b West Salvage and Wind throw/ Eastside, Insect, and Fires Salvage, R2004050653146
2004c North Coble TS, R2004050653247
Neel, A.
2015 Bald Fire Salvage and Restoration, R201505060005
Obrien, C.
2006 Pittsville Underburn. R2006050600029
Onstott, M.
1979 Bald Mountain Allotment Vegetation, R1979050653037
Remillard, M.
1981a Beaver Creek Fire Salvage, R1981050653056
1981b Coble Timber Sale, R1982050653129
Smith, D.
2003a Boothill DFPZ, R2003050653221
2003b Pittville DFPZ, R2003050653222

Sloper, C.
1988 Wilson TS, R1988050653214
Spencer, E.
2004 Blacks Ridge Analysis Area, R2004050653244
Toor, K.
1978 Beaver Creek Wetland Project, R1978050653055
Wise, R.
1995 Duke/Hacksaw Thinning, R1995050653203
1996a Bald Mt. Reservoir Survey, R1996050653108
1996b Gulch Salvage TS, R1996050653131
1996c Ladder Butte Brush Crush, R1996050653143
1996d Willow Springs Project Area, R1996050653211
1997 Eastside Wetland Development, R1997050653035
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2000a Black Ridge DFPZ, R2000050653215
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Table 4 : Historic Properties and Treatment Units (Appendix 1)

Historic Property #	Salvage	Fuels	Plant	Plant Only	Road
5312					1
5373		1	1		
5373					1
5375					1
5377		1	1		1
5382		1	1		
5385					
53105					1
53110					1
53385		1	1		1
53386	1		1		1
53387					1
53388	1		1		1
53389		1	1		
53397					1
53399					1
53427					1
53437		1	1		
53438		1	1		
53439		1	1		
53440		1	1		
53441		1	1		
53442		1	1		
53451		1	1		1
53452		1	1		
53453		1	1		
53456	1	1	1		
53457					1
53461		1	1		1
53462		1	1		
53463	1		1		
53464					1
53466		1	1		
53469					1
53471	1	1	1	1	
53472	1	1	1	1	
53479		1	1		
53480		1	1		1

53492					1
53497					1
53537					1
53538					1
53540		1	1		
53581		1	1		
53593					1
53595		1	1		1
53597	1		1		1
53598	1		1		
53598					1
53618		1	1		
53626		1	1		
53632		1	1		
53642		1	1		1
53668		1	1		
53669	1		1		1
53670	1		1		
53671	1		1		1
53676	1		1		
53907	1		1		1
53912					1
53913					1
53914		1	1	1	1
53947		1	1		
53951		1	1		
53952	1	1	1		
53953					1
53955					1
53956					1
53957		1	1		1
53966		1	1		
531042		1	1		
531049		1	1		
531052	1		1		
531053	1		1		
531054		1	1		
531116	1	1	1		
531200					1
531263					1
531274	1		1		1

531275		1	1		
531283					1
531333		1	1		
531334		1	1		1
531361				1	1
531362				1	
531364				1	1
531365	1		1		1
531366	1		1	1	1
531367		1	1		
531368				1	
531369				1	1
531462	1		1		
531464	1		1		
531469					1
531470	1		1		
531471	1		1		1