EXISTING CONDITION OF HERITAGE RESOURCES

ANALYSIS AREA

The affected environment for heritage resources as it relates to the Basin Creek EIS analysis is that area within the boundaries of the Basin Creek analysis area and adjacent lands for a distance of one-half mile, exclusive of private lands.

The boundaries for the affected environment were determined based on a review of the draft management alternatives and consideration of the maximum probable direct, indirect and cumulative effects that might reasonably be expected from any alternative selected for implementation.

All federal lands within the National Forest boundary are considered "affected environment" also because heritage resources are nonrenewable. The effects of any management action stemming from a decision based on this NEPA analysis are likely to be highly localized and in some cases transient. However, even localized impact that reduces a finite heritage resource database must be considered against the total known heritage resource base spread across the entire National Forest.

INTRODUCTION AND METHODS

Many kinds of past actions on the Beaverhead-Deerlodge National Forest have affected heritage resources, often adversely. These actions include over 100 years of resource extraction including grazing, mining and timber harvest. Additional impacts have occurred from road and trail construction, recreational development and use, unauthorized artifact collecting and outright vandalism.

Not all the development that destroyed or degraded heritage properties can be attributed to intensive development during the latter two thirds of the 20th century. The historic activities that produced some of the sites we value as important heritage properties today caused the destruction or damage of earlier prehistoric aboriginal sites. For example, historic placer mining in drainages across the Forest undoubtedly has led to the destruction of numerous prehistoric sites in riparian areas and adjacent relict terraces. Similarly, grazing on what was to become the Beaverhead-Deerlodge National Forest began at least as early as the 1870's. That legacy of early ranching left us some important and picturesque historic sites. It also very likely destroyed or damaged a host of prehistoric aboriginal sites such as those centered on springs or along stream courses.

Heritage resources (particularly prehistoric sites) that have escaped some level of surface disturbance probably exist only in the remotest locations on the Forest, if they exist at all. There remains high potential for the occurrence of undisturbed subsurface archaeological remains throughout much of the Forest.

Regulatory Framework

The following laws are the major statutes that guide and define the management of prehistoric and historic heritage sites on the National Forest.

A. The National Historic Preservation Act of 1966, as amended: this Act establishes a program for the preservation of prehistoric and historic properties throughout the nation; it makes historic preservation national policy. Section 106 of the Act directs that Federal agencies shall take into account the effects of

their actions on heritage resources. Section 110 of the Act directs federal agencies to take responsibility for the preservation and management of heritage resources that are owned or controlled by the agency.

B. The Archaeological Resources Protection Act of 1979: this Act establishes various legal penalties for the unauthorized removal of antiquities or artifacts from federal property, and /or the damage or destruction of heritage properties on federal lands.

C. The American Indian Religious Freedom Act: directs that American Indians shall have reasonable access to federal lands for the purpose of conducting traditional religious ceremonies and collecting traditional ceremonial and medicinal plants and materials. It also requires federal agencies to consult with American Indian tribes regarding proposed undertakings in areas that may be of cultural or spiritual interest to them.

D. The Native American Graves Protection and Repatriation Act of 1990: the Act defines the rights of lineal descendents and Indian tribes to Indian skeletal remains and items or artifacts of cultural patrimony that may be held by Federal agencies or institutions.

E. The National Environmental Policy Act and The National Forest Management Act: both require the Forest Service to preserve important prehistoric, historic, cultural and natural aspects of our national heritage.

F. The Deerlodge National Forest Land Management Plan (Forest Plan): has as an overall goal the location, preservation and protection of significant heritage resources to maintain their scientific and historical values. It also details objectives (p. II-3) and standards (II-17; III-6) that apply to the implementation of undertakings proposed for the Deerlodge National Forest that may affect heritage properties.

Methods

This analysis was completed using a combination of three standard approaches to heritage resources inventory in a given geographic area. They include Class I, Class II and Class III inventory strategies.

A Class I inventory includes a basic literature review to identify previous archaeological and historic research done in the area, and determine what information previous work may have revealed. A wide array of standard references were reviewed including the National Register of Historic Places, The Montana State Historic Preservation Plan, GLO Plats, Homestead Entry Surveys, Mineral Surveys, land status maps, historic Forest Service maps and professional reports and historic monographs that bear directly on the archaeology and history of the Basin Creek area. Six heritage properties were recorded during eleven previous inventories in or near the analysis area. They included one homestead, one historic water pipeline, one historic refuse pile, one historic mining site and two historic recreational residences.

Archaeological fieldwork completed in the analysis area included a combination of Class II (sample survey) and Class III (intensive survey). The sample fractions selected for field inventory for this analysis were based on the "Site Identification Strategy" (SIS) found in the Region I Programmatic Agreement between the Forest Service and the Montana State Historic Preservation Officer. Approximately 20 percent of the analysis area was inventoried based on the sample design and approximately 10 percent (in areas considered very high probability for the occurrence of heritage resources) was intensively inventoried. Intensive inventory means that pedestrian transects were completed across the inventory area with an

interval of from 3 to 20 meters between each survey transect. Intensive inventory is designed to identify any surface-visible heritage resources in the survey area.

HISTORIC CONTEXT

Prehistoric Heritage Resources

Human groups have occupied southwestern Montana, including the Beaverhead-Deerlodge National Forest, for at least the last 12,000 years. Evidence for this occupation is based on material recovered from archaeological sites and ethnographic sources. A wide variety of stone tools and other cultural remains (especially plant pollen or carbonized plant seeds) which have survived through time provide clues about when, where and how humans adapted to the environmental challenges presented by this area of broad valleys, high mountains and rigorous climatic extremes.

Throughout prehistory human groups adapted to living in southwestern Montana pursued a hunting and gathering way of life. Over time populations grew and social complexity increased, but at no time did aboriginal groups abandon hunting and gathering in favor of other adaptations such as pastoralism or agriculture.

Paleo-Indian Period: 12,000 to 7,500 Years Before Present

The oldest firmly documented human cultural groups in Montana are the hunters of the Paleo-Indian Period. Their subsistence system centered on the hunting of Pleistocene megafauna such as mammoth and giant bison. They likely moved about in small family bands following the seasonal migrations of the herd animals they depended on for food. In southwestern Montana, and other intermountain areas, the Paleo-Indian subsistence pattern was probably somewhat different than those Paleo peoples adapted to a strict plains environment, and highly dependent on hunting. In this area researchers have postulated a "foothill-mountain" subsistence strategy in which Paleo-Indian groups made greater use of gathered plant foods in the foothill and mountain slope environment.

Archaic Period: 7,500 to 1,500 Years Before Present

The term "archaic" as it relates to human cultural groups is usually understood by archaeologists to indicate a shift in cultural patterns from dependence on hunting large Pleistocene megafauna to a more generalized hunting and gathering subsistence base which emphasized the taking of modern forms of bison, deer, elk, and other ungulates. A greater dependence on plant foods in an overall more generalized subsistence pattern is also considered a hallmark of the Archaic Period. The Archaic Period in our area is usually subdivided into Early, Middle and Late Plains Archaic, each with its own set of artifact assemblages. The principle chronological indicators remain projectile point types.

The Archaic Period was a time of important and substantial climatic shifts, particularly during the Early and Middle sub-Periods. Conditions grew more arid and forced human populations to adapt to the more difficult conditions by broadening their subsistence base. Social groups remained small and highly mobile. We can infer, however, that Archaic Period bands probably had some idea of home territories as opposed to the territories of adjacent bands. Hunters and gatherers by necessity need an intimate knowledge of the opportunities present on the landscape to provide them with a living. The necessary level of knowledge

about the availability of plant resources and the habits of game animals is difficult to acquire if groups are constantly moving into unfamiliar territory. Archaic hunters and gatherers tended to return to the same camp localities over time as they pursued their seasonal round of subsistence activities.

Late Prehistoric Period: 1,500 Years Before Present to AD 1700

The Late Prehistoric was a period of increasing technological complexity (e.g. introduction of the bow and arrow, which replaced the spear thrower; ceramic and steatite vessels), which was probably mirrored in increasingly complex social systems. While human groups continued to follow a hunting and gathering lifeway this Period saw the emergence of communal bison hunts. This cooperative hunting technique is manifested in the archaeological record by large and small bison kill sites.

Large communal bison hunts were certainly not the only hunting strategy employed during this Period. Sites interpreted as game drive and ambush sites occur across the Forest. The LaMarche game trap site in the East Pioneers was interpreted as a deer hunting trap, while game drives and traps in the southern Tendoys seem to be aimed at taking Mountain Sheep.

Proto-Historic Period: AD 1700 to Aboriginal Contact With Euro-American People

None of the above chronological periods should be seen as hard and fast points in time. There appears to be considerable overlap in time and space between many of these periods, particularly the Early, Middle and Late Plains Archaic, and between the Archaic Period and the Late Prehistoric Period.

This overlap between archaeological assemblages defining one chronological period from another is nowhere more evident than during the Proto-Historic Period. This Period is defined as a time when elements of Euro-American culture were introduced to indigenous Indian groups, without the actual presence of Euro-American people in the area. The horse, trade beads, metal goods, and later, firearms were introduced through native trade networks into southwestern Montana decades before the actual arrival of the first white people.

Historic Period

On 20 July 1805 Meriweather Lewis ushered in the historic period in southwestern Montana when he noted in his journal that Indians set a prairie fire to warn of his party's approach as they traveled west, up what is now Horse Prairie Creek. These Indians turned out to be a band that later came to be known as the Lemhi Shoshone. After arriving at the main Shoshone Camp on the Lemhi River in Idaho, Lewis noted that members of the expedition were the first white men most of the Indians had seen.

Tribal distributions in what is now southwestern Montana had been significantly different 160 years prior to the arrival of Lewis and Clark. Before about AD 1640 the Salish speaking Flathead Indians had claimed most of southwestern Montana from the Continental Divide to the Three Forks of the Missouri and south almost to Yellowstone Park as their territory. They hunted far to the east along the Yellowstone River, perhaps as far as Powder River. By about AD 1730 several hundred years of Shoshone incursions into southwestern Montana culminated in a rapid northward expansion of the Shoshone (due principally to their acquisition of the horse) almost to the Canadian border. This Shoshone expansion forced the Flathead west across the Continental Divide and left southwestern Montana under Northern Shoshone control. In a

very few years however, the Shoshone themselves were pushed back into the Lemhi River country west of the Continental Divide by nomadic Plains tribes who had recently acquired the horse and firearms. Chief among these were the Blackfeet and to a lesser extent the Crow.

Ethnographic and historic data indicates that the aggressive raiding of the Blackfeet, and other Plains tribes, made southwestern Montana a very risky place to live during a period from about 1790 to at least the early 1860's. During this time some anthropologists have called southwestern Montana "contested territory". Hunting parties of Shoshone, Flathead and Nez Perce traveled through the area on their way to hunt buffalo in eastern Montana. The Flathead continued to use at least the Big Hole Valley, and the Shoshone continued to hunt and gather throughout most of southwestern Montana, but neither tribal group felt completely safe from the Blackfeet until the mid to late 1860's when white settlements at Bannock, Alder Gulch and a host of lesser communities served to reduce native conflicts and stabilize the area.

Historic Heritage Resources

Early Exploration

Early exploration of southwestern Montana by Euro-Americans began with the Lewis and Clark Expedition. This was the only pure effort at scientific exploration and geographic discovery to touch Forest lands unless one includes the efforts of land surveyors and military explorers between the 1870's and the early 1900's. The Expedition passed far south and north of the analysis area and had no direct affect on it.

Fur Trade

The fur trade era in southwestern Montana began a few short years after Lewis and Clark. The efforts of fur trade companies often included important elements of exploration and description, but their primary thrust was the exploitation of the region's fur bearing animals, especially beaver.

Between 1810 and the late 1840's every major fur trading company in the west passed through lands that are now on or adjacent to the Beaverhead-Deerlodge National Forest. Though their journals primarily refer to camps along the major rivers and streams (e.g. Jefferson, Ruby, Beaverhead, Big Hole, Blacktail Deer Creek, Horse Prairie Creek, Silver Bow Creek) they doubtless trapped and hunted on what are now Forest lands also. Many trapper's journals and fur company records mention specific places on or near the Forest including Raynolds Pass, Monida Pass, Bannock Pass, Lemhi Pass, Gibbon's Pass, Blacktail Deer Creek, Horse Prairie Creek, and the "deer's house" in the Deer Lodge Valley.

No fur trade historic era resources are known in the analysis area.

Mining

The first paying quantities of gold in southwestern Montana were discovered on a tributary of the Big Hole River in 1862. The diggings, called "Pioneer," were eclipsed the following year by the discovery of rich placer deposits on Grasshopper Creek by John White and a small party of prospectors from the Lemhi Valley in Idaho. As the rich diggings on Grasshopper Creek were declining other wealthy placer deposits were found in Alder Gulch in the Ruby Valley. Virginia City, on Alder Creek, and Bannock, on Grasshopper

Creek, Deer Lodge City and Silver Bow became centers from which miners spread out over the countryside to prospect virtually every drainage in southwestern Montana.

Placer mining began in the Highland Mountains with the discovery of gold along Fish Creek in 1866. The Highland Mining District was formed shortly after the initial discovery. Prospectors soon discovered gold bearing gravels in the headwaters of Basin Creek, which came to be considered a sub-district of the Highland Mining District. The first rich placer gravels in the Highland District gave way to lode mining by the early 1870's. After some initial success the District fell on hard times with the closure of the Ballarat mine in 1869. Small-scale placer and load miners continued sporadic work, with limited success, through the late 1870's and into the mid-1890's in most parts of the District, including Basin Creek.

Between 1875 and 1885 Roderick Leggat, who arrived in the Highland District shortly after it's initial discovery, had consolidated many of the mining properties along Fish and Basin Creeks under his ownership. In 1895 Leggat sold his Basin Creek interests to the Butte Water Company for $160,000. The Butte Water Company purchased Leggat's Basin Creek mining claims to insure that the Basin Creek source of Butte's municipal water supply stayed clean and devoted to Butte's use. The Butte Water Company's purchase of property in upper Basin Creek (above the present reservoirs) effectively stopped mining and other kinds of development in the upper drainage.

Historic mining resources have been identified in the analysis area. They represent what is likely the most important and numerous heritage site type present.

Ranching

Sheep and cattle ranching have played an important role in southwestern Montana's history beginning almost coincidentally with the gold rush. Early ranching operations, like Beaverhead County's Poindexter and Orr Livestock Company provided meat to the throngs of miners at Bannack and Virginia City.

The ranching pattern in southwestern Montana included home ranches and winter ranges in the valleys, and rider's cabins (sometimes with corrals and roundup grounds associated) on the summer ranges in the adjacent mountains. Consequently, the forest has recorded no large home ranch facilities among our historic ranching sites. We have recorded rider's cabins (some with barns or sheds), corrals and historic water development facilities.

However, no historic ranching sites are known to exist in the Basin Creek analysis area.

Homesteading

Homestead sites seem to be among the least likely site types to occur on the in the analysis area. There was certainly no lack of historic homestead activity in southwestern Montana, but we may lack actual sites for many of the same reasons we lack "home ranch" sites. Homesteads were usually taken up in favored valley locations and successful operations were patented. National Forest lands usually have examples of only the failed homestead efforts on what would be considered marginal and submarginal land for growing crops.

It is possible that some of the extensive historic logging activity that was noted during archaeological survey was the result of domestic use by nearby homesteaders. One homestead site has been recorded north of the current analysis area but it is outside lands proposed for management action.

Logging

In one sense historic logging activity began with the earliest Euro-American settlement in southwestern Montana. Miners were rapacious users of timber for mine studs, mine lagging, building material and cord wood for charcoal, domestic heating, cooking and to fire early industrial boilers. Sawmills operated not only in larger settlements like Bannack, Virginia City, Argenta, and Butte; small operations were established very early in new settlements like in isolated locations in drainages all over southwestern Montana. Most of these operations seem to have been small, often using portable milling equipment. When the local market declined or saw logs became scarce the sawmills were moved to new locations.

The analysis area shows the effects of historic logging activity in many locations. Extensive areas with the stumps of trees felled by axe and crosscut saw are evidence of aggressive timber harvest. Some of the old wagon roads noted in the area likely acted as haul roads to move the timber to sawmills lower in the drainages or to Butte. One newly recorded historic mining site, interpreted as a charcoal burning operation, testify to the importance of the area's timber resources for use in Silver Bow County's mining industry.

EXISTING CONDITION

No prehistoric or proto-historic heritage resources were identified during archaeological survey conducted for this analysis.

Prior to archaeological survey work for this analysis eleven previous archaeological surveys were conducted in or adjacent to the analysis area. Those surveys resulted in the location of six heritage properties: one homestead, one historic water pipeline, one historic can dump, one historic mining site and two historic recreational residences.

Twelve newly recorded heritage properties resulted from survey conducted for the Basin Creek EIS analysis. They included a whiskey still site, an historic mining site with tent pad and adit, an historic site of uncertain function (probably related to mining) with structure foundation, hearth and stone oven, a placer mining ditch, a placer mining site with horizontal log cabin, a placer mining site with nearby adit, a cabin ruin with root cellar, a charcoal burners site with ruined cabin, two charcoal pits, and an old wagon road between the pits, an isolated cord wood pile, and a second charcoal burners site with charcoal pit and possible stone oven. Additionally, surveyors noted isolate prospect pits and other mining cuts impossible to date or assign to individual sites.

Considering the results of all the archaeological survey work done in the analysis area some predictions concerning potential site locations, site densities and site types can be made for planning purposes. Historic resources are most likely to occur in riparian areas along major stream drainages. Upland ridges are dry with generally steep slopes that reduce their attractiveness for habitation sites. Cultural features most likely to occur in these areas are mining works such as adits, shafts and prospect pits. The remnants of historic timber harvest and old roads are also likely. Associated cabins and other features would be along nearby stream courses. Historic mining sites are the most likely site type to occur in the analysis area. Due to their considerable age (pre-1895 in most cases) there are few if any standing structures associated with these mining sites. However, since the analysis area, particularly that part in upper Basin Creek, has seen little or no development since the late 1890's the historic mining sites present are undisturbed by later development. They represent an outstanding opportunity for scientific archaeological research to address questions of importance to the understanding of 19th century mining culture and history.

Prehistoric sites are not common in the analysis area. Or, they are so small and widely dispersed that they do not stand out, even after intensive survey efforts.

ENVIRONMENTAL EFFECTS TO HERITAGE RESOURCES

ALTERNATIVE 1 (NO ACTION)

Alternative 1 proposes no action to reduce fuel loading in the analysis area. Only basic maintenance work would continue on the system roads, the reservoirs and water pipeline facilities. The current vegetation conditions would change over time and increase the fire risk.

Direct and Indirect Effects

Under the no-action alternative only basic facility maintenance would continue in the area. This "no change from current direction" approach is potentially less impactive over the short-term of heritage resources than the Proposed Action simply because no management action of any kind means less possibility of disturbance to heritage resources in the area. However, in the future, if a stand replacing crown fire moved through the analysis area, it would potentially be very impactive to known and unknown heritage resources. A fire of this magnitude and intensity would destroy the surface remnants of recorded heritage sites and may alter the subsurface chemistry and composition of the soil matrix. Extreme heat in the upper levels (c.a. 0-30 cm.) of archaeological sites often destroys biological and physical data important to the scientific interpretation of those sites. A stand replacing wildland fire would be substantially more impactive to heritage resources than the Proposed Action.

Cumulative Effects

With respect to the Basin Creek analysis area specifically, there are no known reasonably foreseeable actions that would reduce the heritage resource database. No recently completed projects adversely impacted heritage resources.

ALTERNAITVE 2

Alternative 2 would buffer the Forest/private land boundary. Treatments would remove hazardous fuels in high and moderate risk stands adjacent to the private lands. Thinning and tree removal would occur with the use of mechanized equipment. Alternative 2 would have eight miles of temporary road construction and 1,104 acres of treatment.

Direct and Indirect Effects

There are no known direct effects to significant heritage resources from this Alternative.

Harvest methods directly affect the potential to adversely impact heritage resources. "Thin from below" and other thinning prescriptions usually have only limited potential to damage heritage properties due to the small size of the trees being harvested.

Temporary roads often have greater potential to adversely affect heritage resources than the actual harvest of timber. Since skid trails and temporary roads were not designated during this analysis the only relevant

measure of potential harm to unknown heritage resources is the total miles proposed for road construction. The greater the amount of temporary road needed for project implementation the greater the potential for damage to heritage properties.

Prescribed fire in sage/grassland environments poses little threat of serious damage to prehistoric resources. Experiments conducted on the Forest in sage/grassland environments that subjected a range of prehistoric and historic artifacts to surface fires of varying intensities indicate that prehistoric artifacts exposed on the ground surface are not adversely effected by a fast moving, low intensity ground fire. These empirical experiments have been duplicated on other Forests in forested environments (Hemry, et. al. 1996).

This alternative is less impactive than the crown fire scenario in Alternative 1 because that event would destroy all surface manifestations of heritage sites and probably alter the subsurface scientific usefulness of those sites.

Cumulative Effects

Management activities of all kinds continue everywhere on the Forest. These activities always have the potential to impact heritage resources. In that sense the effects of past actions and current actions continue to impact the heritage resource base. It is reasonable to assume that future management will continue to reduce the heritage resource base over time. Past, current and reasonably foreseeable management actions all contribute to a downward trend in the heritage resource base given the fact that it is nonrenewable.

With respect to the Basin Creek analysis area specifically, there are no known reasonably foreseeable actions that would reduce the heritage resource database. No recently completed projects adversely impacted heritage resources.

ALTERNATIVE 3 (PROPOSED ACTION)

Alternative 3 will buffer the Forest/private land boundary as in Alternative 2 and, in addition, treat stands in the project area with a crown fire hazard rating of moderate and a crowning index below 19 mph and stands with a risk of future high intensity surface fire on the slope below Roosevelt Drive. Alternative 3 would include 17 miles of temporary road and 2,544 acres of treatment.

Direct and Indirect Effects

The direct and indirect effects are the same as those described under Alternative 2. In addition, Alternative 3 proposes a greater number of treated acres and miles of temporary road construction than Alternative 2, therefore exposing more area to potential damage to heritage resources. It is less impactive than the crown fire scenario in Alternative 1 because that event would destroy all surface manifestations of heritage sites and probably alter the subsurface scientific usefulness of those sites.

Cumulative Effects

With respect to the Basin Creek analysis area specifically, there are no known reasonably foreseeable actions that would reduce the heritage resource database. No recently completed projects adversely impacted heritage resources.

ALTERNATIVE 4

Alternative 4 will buffer the Forest/private boundary the same as Alternative 2. In addition, thinning would be created on some upper slopes and ridgelines for future fire suppression. Treatment is proposed within the roadless area as part of this alternative. Alternative 4 has 17 miles of temporary road, five miles of maintenance trails, and 4,276 acres of treatment.

Direct and Indirect Effects

The direct and indirect effects are as described under Alternative 2. In addition, Alternative 4 proposes a greater number of acres of treatment and miles of road, and proposes five miles of maintenance trails when compared to Alternative 2. It proposes a greater number of acres of treatment and maintenance trails than Alternative 3, the proposed action. The miles of temporary road construction are the same as Alternative 3. It is less impactive than the crown fire scenario in Alternative 1 because that event would destroy all surface manifestations of heritage sites and probably alter the subsurface scientific usefulness of those sites.

ALTERNATIVE 5

Alternative 5 will treat the project area the same as Alternative 4, excluding the inventoried roadless area. Alternative 5 has 17 miles of temporary road and 3,018 acres of treatment.

Direct and Indirect Effects

The direct and indirect effects are as those described under Alternative 2. In addition, Alternative 5 proposes greater number of acres of treatment and miles of temporary road construction that increases the potential for adverse effects on heritage resources. Based on acres of treatment and miles of road construction, Alternative 5 has potential effects on heritage resources that would be greater than Alternative 3, the proposed action, and less than Alternative 4. It is less impactive than the crown fire scenario in Alternative 1 because that event would destroy all surface manifestations of heritage sites and probably alter the subsurface scientific usefulness of those sites.

Cumulative Effects

With respect to the Basin Creek analysis area specifically, there are no known reasonably foreseeable actions that would reduce the heritage resource database. No recently completed projects adversely impacted heritage resources.

MITIGATION

The following mitigation measures will be put in place to protect heritage resources from adverse effects:

- All identified heritage properties will be flagged by an archaeologist to create a 50 meter buffer area surrounding the site to protect them from project impacts. No management action within these buffers will take place unless an archaeologist is on site.
- Fifteen percent of the areas treated by prescribed fire will be surveyed for archaeological material following the burns, and prior to grazing in the areas.
- Timber harvest methods shall insure that all trees taller than 90 feet are felled away from buffered heritage sites.
- Slash piles shall not be placed in or immediately adjacent to the buffered area of heritage resources sites.
- Avoid burning perishable remains on heritage resources sites, and protect heritage resources having exposed flammable materials, through one or more of the following methods (determined by a Forest Service archaeologist): digging or burning fire lines around the site, clearing fuels away from the site, foaming and/or covering wooden structures with a fire shelter, or other actions to ensure fires does not burn within the perimeter of sites with perishable or flammable remains. Exclude burning from sites entirely if protective measures cannot be effectively applied.
- If unknown heritage resource sites are discovered during project activities, or if known sites are damaged during operations, all work will stop in the immediate vicinity of the site and not begin again until authorized by a Forest Service archaeologist.

Some mitigation measures designed to protect other resources from adverse effects also benefit heritage resources. For example, few log landings of limited size, winter logging operations, pre-designated skid trails (that will be surveyed for heritage resources prior to project implementation), some large equipment restricted to designated skid trails, and not ground disturbance in riparian areas (high probability for the occurrence of heritage resources) all serve to reduce the potential for impact to heritage sites.

MONITORING

Known sites in specific treatment or ground disturbance areas will be monitored by a Forest Service archaeologist following project work to insure that mitigation measures have been followed and sites sustained no damage. If sites are found to be damaged the archaeologist will determine the appropriate actions, which may include data recovery, site stabilization and reporting to insure that similar damage does not occur in the future.