Heritage Resources

Introduction

Heritage resources are both the physical remains of, and knowledge about, past human activity on the Wasatch-Cache National Forest. They include archaeological sites, artifact and historic document collections, rock art, Forest administrative buildings, traditional plant gathering and ceremonial places, and human-altered landscapes (including tie hacking and mining districts). Heritage resources are managed within the context of overall Forest management for the long-term benefit of all Americans. This benefit can be realized through such things as scientific study of past human activities and past environments, traditional use by American Indians, and development of interpretive sites where people can see, and appreciate, the diversity of past Forest use. Most fundamentally, public benefit comes through maintenance of the sites themselves. Absent any land management conflicts, preserving important sites in place, in good condition, is the overall goal of heritage resource management. This can be achieved by protecting them from adverse management activities (or mitigating adverse effects, to the greatest public benefit), vandalism, weathering, alteration of their settings, and other processes that cause them to deteriorate to the point of losing their value. In this way, they stand as a legacy for the future.

People have been using the Wasatch-Cache National Forest and adjacent valley areas for over 8,000 years. The story of this use is important for many reasons. American Indian sites are valued for both their ability to teach us about how these past peoples lived, and to help Indian peoples today connect with their ancestors and to maintain cultural and religious traditions. Historic sites (which date to about the last 150 years) constitute the most visible connection to past peoples on the Forest, and are valued both for their ability to enrich local family and community history, and for their contribution to our understanding of environmental change since European-American settlement. For example, past activities, such as water diversion, exclusion of fire, logging, and over-grazing around the turn of the century, have caused changes to Forest biotic communities that continue today. Knowing when and how these changes occurred helps to create more effective management actions today.

Heritage resources may be affected by activities that adversely affect (either directly or indirectly) the character-defining features of significant (National Register Eligible) sites. (These features can include its soil matrix (containing artifacts and features such as hearths, trash deposits, etc.), standing structures, surface artifact scatters, etc. In general, this means the greater the extent of ground disturbing management activities, the greater the potential for adverse effects. However, other activities on the Forest, such as illegal off-road vehicle use, can adversely affect sites as well.) The potential for ground disturbing activities varies some by alternative and will be addressed in this analysis.

Management activities may also be conducted which benefit the long-term preservation and appropriate use of heritage sites. (These activites include locating, documenting, and evaluating the importance of sites (most commonly through determination of their eligibility for the National Register of Historic Places). We cannot effectively manage sites unless we know where, and what, they are. They also include actions such as stabilizing log structures, moving

trails or roads that run across sites, and appropriately using sites. These uses include enhancing visitor's understandings of the past (through research or interpretation), saving sites as protected features for the future, or ensuring that American Indians can continue traditional uses of sites.) This section addresses the potential of alternatives to benefit our use and understanding of heritage resources.

Laws, Policy and Direction

- The National Historic Preservation Act of 1966 (as amended) is the primary law that guides management activities (36 CFR 800). It requires Agencies to take into account the affect of other management activities on heritage resources (Section 106). It also requires development of long-term management plans that locate and protect heritage sites, and then integrate sites and information into overall agency programs and goals (Section 110). The implementing regulations for Section 106 were amended in 1999 (and revised in 2000), and require higher levels of consultation with Tribes, the State Historic Preservation Office, and communities.

- The American Indian Religious Freedom Act of 1978 protects the rights of American Indians to access and use religious sites, and directs federal agencies to consult with Tribes on ways to ensure this use.

- The Archeological Resources Protection Act of 1979 imposes civil penalties for unauthorized excavation, removal, damage, or defacement of archaeological resources (36 CFR 296).

- Native American Graves Protection and Repatriation Act, passed in 1990, requires an inventory of existing artifact collections, return of human remains, sacred objects, and objects of cultural patrimony to appropriate Tribes. It also calls for consultation with tribes to develop procedures for use in the event that human remains are discovered either by intentional excavation or inadvertent discovery.

Affected Environment

The affected environment includes both known sites, and those that will be located in the decades to come as more of the Forest is surveyed. By the end of September 2000, less than 4% of the Forest (44,058 acres) had been surveyed for archaeological and historical sites and 318 sites documented. Most of these surveys (and site documentations) have been done in order to evaluate the affect of other projects (such as timber or recreation) on heritage resources. In addition, some areas of the Forest have higher site densities (based on their history as mining, tie hacking, or logging districts; topography, vegetation, and/or access to water) and we can make some predictions about the effects of alternatives on these areas and the sites they contain.

Thirty-eight percent (122) of the previously recorded sites date to the era of American Indian settlement that pre-dates European settlement (c. 8,000 B.C. to the mid-1800's). Most of these sites are relatively short-term campsites and/or places where people processed plants, butchered animals, created rock art, or carried out other activities as part of their cycle of life. These sites probably represent upland activities by people who were otherwise based in nearby valleys.

Several of these sites are outstanding for their ability to teach us about the specific role that upland areas played in people's lives. We know that many more American Indian sites exist on the Forest, and will continue to locate and document them. One type of site that we have yet to identify is a traditional cultural property, but we know that they probably exist on the Forest. To date, none have been brought to our attention by local tribes. Their identification and long-term protection depends primarily on consultation with Goshute, Northwestern Shoshone, and Ute traditional practitioners.

Sixty-two percent of the sites documented on the Forest (196 sites) date from the historic European-American settlement era (after the 1840's), and include such sites as mines, tie hacker's camps and dams, logging camps, water control features, livestock grazer's camps, and Forest management facilities. The North Slope of the Uinta Mountains was the scene of intensive railroad tie cutting (or, hacking) and logging from 1869 through the 1940's. Only a small percentage of the cabins, dams, roads, fences and other features created by this effort have been documented (46 sites). The Kamas District also experienced intensive logging in the late 1800's, when numerous mine props, construction lumber, and railroad ties were cut. Only a few of the logging sites from this era have been documented. The Big and Little Cottonwood Canyon area was part of intensive mining from 1870 through the turn of the century, but many of the mines in this area are on patented (privately owned) mining claims. Only 19 mines and quarries have been documented across the Forest generally.

Other important historic sites on the Wasatch-Cache include two small pieces of the Donner-Reed/Mormon Pioneer Trail, the High Lakes Dams above Kamas, various CCC-constructed bridges and campgrounds, and the Temple Quarry area at the mouth of Little Cottonwood Canyon. All of these are significant for their role in the development of local communities. Both Tony Grove Guard Station (in Logan Canyon) and the Howe Flume Historic District (built by tie hackers and loggers on the North Slope) are on the National Register of Historic Places, as well as the Wasatch Mountain Club, which exists under a special use permit at Brighton. Many more European-American sites will be documented in the decades to come. For example, most of the known mining, logging, and tie hacking districts are only partly documented.

Environmental Consequences

Management Activities that Affect the Condition of Heritage Resources

Management actions that can adversely affect heritage sites include anything that might significantly change the important features of a heritage site, and include any kinds of ground disturbing activities, historic building maintenance, and so on. Under all alternatives, there is a potential for management actions to lead to adverse effects to heritage sites. This would be identified on a project-by-project basis, as part of the process of meeting the requirements of Section 106 of the National Historic Preservation Act and National Environmental Policy Act, and would be done under all alternatives, as well. When effects are analyzed as part of project planning, there is also the opportunity to redesign the project to avoid those sites or those adverse effects, or if necessary, mitigate them.

Non-project specific effects (such as illegal use of off-road vehicles, or wildfire) have the greatest potential to adversely affect heritage resources in the long run because they are not as easy to anticipate and/or mitigate. There is also the potential for management decisions to positively affect heritage sites, through such things as interpretation, reduced access to sensitive sites, and general watershed health.

Resource Protection Measures

Applicable laws, policy, and direction provide protection for heritage resources. These require evaluating the effects of projects on heritage resources in partnership with the State Historic Preservation Office and Tribes; resolving any adverse effects; actively locating, documenting, and protecting sites; and producing long-term management plans that will maintain significant sites into the future.

The specific ways in which the laws and regulations can be carried out include a broad range of tools, which cover a wide range of site types and their differing preservation needs, and a wide range of management prescriptions. Traditionally, compliance with Section 106 of the National Historic Preservation Act has been the main way that heritage goals have been accomplished. Other tools for locating and then protecting sites include conducting education programs that encourage site protection by Forest visitors (such as site stewardship programs), and programs that involve Forest visitors directly in research (such as **Passport in Time**). Sites can also be protected through signs that describe proper site visitation etiquette, moving or closing roads or trails that bring too many visitors near sites, stabilizing site features (such as cabins), hardening site surfaces, active law enforcement, site monitoring (to detect sources of damage to sites), etc.

Direct and Indirect Effects

Direct effects to heritage resources include actions that would immediately affect the condition of the site. These actions include outright destruction during a ground-disturbing activity, severe soil erosion, wildfire (for sites that have features susceptible to fire, such as a cabin), transfer of a site out of federal management (as during a land exchange), and so on. Many of these kinds of effects can be avoided through project designs that avoid impacts to the sites themselves. For example, a timber sale can be designed to avoid cutting on or near an archaeological site, or prescribed fire can reduce fuel loading around a site and thus reduce the threat of wildfire. If they cannot be avoided, these direct effects can potentially be mitigated by actions that save as much information as possible about a site (through documentation or excavation), and then make that information available to Forest visitors (through publication of reports, interpretive signs, etc.). Direct effects to some types of heritage sites (such as sacred sites) are very difficult to adequately mitigate, and some Forest users would consider their loss irretrievable.

Indirect effects to heritage resources include a variety of activities that may result from other actions, but later in time. Many of these are the result of easier access to sites (either by road or trail), and/or higher concentrations of recreational activities in a particular area containing sites. A common indirect effect on the Wasatch-Cache National Forest is destruction of site surfaces by off-road vehicles and livestock (and/or wildlife) concentrations. This leads to soil erosion, which includes the soils that also make up archaeological sites, and destruction of site features

(such as building foundations). Soil erosion can also occur after a wildfire, when soils are vulnerable to runoff erosion.

Examples of other indirect effects include burning historic buildings for firewood, collecting weathered wood, and collecting surface artifacts from both ancient American Indian and historic sites. Some of these indirect effects have resulted from management decisions made before the 1970's (when the Forest began implementing the National Historic Preservation Act), when some roads, trails, and livestock features were placed near important archaeological sites. Others are the result of general increases in recreational use on the Forest, or specific recreational activities (such as climbing in areas that also contain archaeological features).

Effects on Heritage Resources from Watershed/Soils Management

Generally speaking, a stable watershed is necessary to the long-term maintenance of archaeological sites, since many of these consist of a soil matrix containing accumulated layers of artifacts and features. Specific projects intended to improve watershed conditions through ground disturbing means (such as planting seeds with heavy equipment or chaining juniper and pinyon) can adversely affect any archaeological sites by damaging the upper layers of the sites (see also the Vegetation Management section below). Past projects have shown that these adverse effects can be avoided through project design (such as seeding areas on or near sites by hand or through aerial distribution).

The best way to maintain or improve soil stability on archaeological sites is through management that maintains or improves the amount of vegetation on those sites (such as following grazing Standards and Guidelines). These benefiting actions would occur less under Alternative 1, and would be most active under Alternatives 2, 3, 6, *and 7*. Sites within the areas of the Forest with more erosive soils are already suffering from erosion, so any management actions that might help stabilize them (without adversely affecting them) are a positive move toward maintaining those sites into the future.

Minerals management that seeks to remove or bury tailings and other mining features that are adversely affecting water quality can adversely affect historic mining sites, since the tailings themselves can be a character-defining feature of the sites. In these cases, adverse effects can be mitigated, but contribute to a general eroding of the historic mining landscape. On the Wasatch-Cache National Forest, tailings piles, concrete foundations, and other features that can adversely affect water quality are also the most visible remains of the mining history that produced them.

Effects on Heritage Resources from Vegetation Management

As with watersheds, a healthy vegetative cover is advantageous to archaeological sites by providing soil stability. Tree roots and trunks can adversely affect structures, but these threats can often be eliminated through removal of a particular tree, if there are no other vegetative issues or concerns. Specific vegetative treatment projects, whether they employ burning, cutting, or seeding, are all analyzed for their effects to heritage resources, and any potential adverse effects can generally be avoided through project design, or if necessary, mitigated. Healthy and diverse vegetation also stands to provide American Indian traditional practitioners with the range

of plants that they need. Alternative 2 has the most vegetation management activities and Alternatives 3, 4, 6, and 7 have about half the vegetation management activities as Alternative 2. Alternative 5 has the least amount of vegetation management activities besides Alternative 1, which has none.

Effects on Heritage Resources from Wildlife and Fish Management

On-the-ground features (such as guzzlers) have the potential to directly or indirectly affect heritage sites, but in most cases, direct impacts can be avoided by placing the features away from sites. Other direct effects can come from vegetation treatment projects (see the Vegetation Management section below). Indirect effects include concentrated herbivore (mainly elk) trampling, which can damage the surface and upper soil layers of sites. Ground squirrel and badger burrowing can also extensively churn subsurface archaeological deposits, but these effects are very difficult to manage.

Many fish management activities take place within active floodplains, which rarely contain significant archaeological sites because of constant sediment movement. One exception is historic bridges, but fish management projects generally avoid these features. Generally, most wildlife and fish projects can be designed to avoid heritage resources, or adverse effects mitigated. This would be done for any new projects under all alternatives.

Effects on Heritage Resources from Recreation Management

Developed recreation has the potential to adversely affect heritage sites through construction of campgrounds, parking areas, and other features. However, these effects can generally be avoided through project design, site interpretation etc. Indirect effects include trampling of sites outside developed recreation sites, but many of these can also be dealt with as part of overall project planning, by anticipating potential indirect effects. All alternatives continue existing developed recreation sites, and allow opportunities to resolve any indirect effects. All alternatives except Alternative 1 allow for some new developed recreation sites, and the affect of any new sites on heritage resources would be analyzed, avoided, or mitigated if necessary.

Undeveloped recreation also has the potential to directly impact heritage sites through construction of trails, hardening of undeveloped camping sites, and other ground disturbing activities. Some direct effects also occur from the use of old roads and trails that happen to run over archaeological sites. Many of these direct effects can be anticipated, and managed through road and trail placement (or mitigated, if necessary). However, undeveloped recreation has more of a potential to create indirect effects to heritage sites. These include such things as modern campers and hunters modifying historic tie camper's cabins to meet their own camping needs, vandalism of rock art, undeveloped camping on archaeological sites, and illegal artifact collection. Illegal off-road vehicle use tends to occur in areas that are open and relatively level; these same areas contain higher concentrations of archaeological sites. As a result, this activity has the potential to adversely affect large numbers of sites. Winter recreation has less potential to adversely affect sites, so varying levels of snowmobile use proposed in the different alternatives do not stand to significantly affect heritage sites. The affects of ski area

management on heritage sites is analyzed each time a new operating permit is issued, and this would continue under all alternatives.
Many indirect effects can be resolved through management actions that monitor sites, restrict certain kinds of activities in caves (such as digging fire pits), and motorized trail designs that encourage users not to stray from them illegally. This could continue under all alternatives, but those alternatives that involve greater amounts of recreation in general, and summer motorized recreation in particular, create more opportunities for both direct and indirect adverse effects to heritage sites. Alternative 4 has the highest potential to affect heritage sites while Alternatives 1 and 2 have the lowest potential.

Effects on Heritage Resources from Roads and Trails Management

There are both direct and indirect effects to heritage resources from the current system of roads and trails. Direct effects include compaction and/or churning of archaeological deposits from old roads and trails that were placed over sites long before the National Historic Preservation Act required that these effects be identified and avoided or mitigated. There are a number of sites on the Forest that have these kinds of native soil roads or trails on top of them. Indirect effects include the ease of access that roads and trails provide to archaeological sites. As with many forms of vandalism, there is a strong correlation between road and trail access and illegal artifact collection.

Another indirect effect to sites comes from illegal use of off-road vehicles away from designated roads and trails. This creates new disturbances on archaeological sites by damaging their surfaces and upper layers. This can also lead to destruction of site features (such as hearths and trash scatters). These illegal roads and trails are far more difficult to manage than the designated road and trail systems. We cannot predict, nor as easily control, all of the places along the system where people might choose to leave the designated travelways and impact archaeological sites. This is already occurring on the North Slope and Stansbury Mountains, where there are sites susceptible to this kind of illegal off-road vehicle use. Alternative 5 could potentially increase the number of trails (including motorized summer trails).

New road construction creates potential direct effects from new ground disturbance through archaeological sites. It can also create the kinds of indirect effects that the existing road system creates. Both kinds of effects from any new roads and trails will be analyzed under all alternatives that allow for these activities, and adverse effects avoided through final placement of the roads or trails, or if necessary, mitigated. Indirect effects are more difficult to manage, but can be reduced through actions such as signage, putting roads/trails in areas with lower numbers of sites that can be accessed directly from the new features, designing roads/trails in such a way that leaving them illegally is more difficult, etc. All alternatives except 1 allow for new road construction, but Alternatives 3, 4 and particularly 5 could increase road construction levels, and thereby increase the need for management of indirect effects.

Effects on Heritage Resources from Wilderness Management

Many of the issues related to recreation in general apply to Wildernesses on the Wasatch-Cache National Forest. Reduced road access means that outright vandalism to sites might be less in the

Wildernesses, but because of fewer other management activities within Wilderness, our knowledge about sites in these areas is limited. Visitor use tends to be concentrated in a few areas (along trails and in clearings), and any sites in these areas could be adversely affected by trampling and illegal artifact collection. Wilderness management encourages minimization of human features, and does not encourage (or in some cases allow) maintenance of historic features. There are few known archaeological sites in the areas proposed for Wilderness. Designation of additional Wilderness, under Alternatives 1, 2, 3, 6 and 7 has the potential to restrict maintenance activities on both known and undocumented sites, to the point of potentially eliminating those sites as interpretive features. This could be mitigated through special language in the legislation that designates potential Wilderness, which acknowledges historic sites as an appropriate part of that Wilderness, or through mitigation of site loss generally through site documentation and other research. This could be particularly beneficial in the Lakes, Stansbury, and High Uintas Inventoried Roadless Areas. Wilderness designations are therefore sometimes a two-edged sword for archaeological and historic sites. They can mean more isolation, and therefore protection, for some sites, but they also mean reduced management options for important sites that would otherwise be maintained as part of the heritage legacy to the future.

Effects on Heritage Resources from Special Areas Management

Several Wild and Scenic Rivers on the Wasatch-Cache National Forest has outstanding heritage values, and these will be protected from adverse direct and indirect effects through design of any trails, parking areas, or other features that might be constructed for use by visitors. Some significant heritage sites exist in the Red Butte Research Natural Area, and because of the high levels of recreation that occur in that area, these sites are experiencing some indirect impacts which can be addressed as part of long-term management of this area. These actions can occur under all Alternatives.

Effects on Heritage Resources from Roadless Area Management

Since heritage sites can be directly affected by road construction, and indirectly affected by the access to them that roads provide, Roadless areas can potentially benefit the overall condition of heritage sites. On the other hand, Roadless protection also means that maintenance, monitoring, and/or other management actions are more expensive to carry out. In addition, trails (particularly motorized trails) lead to the same direct and indirect effects to sites as roads, and these could continue to exist in Roadless areas. The overall level of Forest management activity would be reduced in Roadless areas, and under the current budget structure (wherein heritage surveys are done mainly to provides NEPA input to other projects), this would mean that very few new archaeological sites would be found in these areas. Very little heritage site inventory work has been done in any of the proposed Roadless areas on the Wasatch-Cache.

Roadless management is another arena in which there are both potential positive and negative affects to sites. The positive affect is that the condition of some sites might remain the same with Roadless protection; the negative affect is that few sites would probably continue to be found in these areas, adverse impacts associated with trails could continue, and management

actions (such as site stabilization) which might otherwise benefit the sites would be expensive to carry out. This would occur under Alternatives 1, 2, 6 and 7.

Effects on Heritage Resources from Timber Management

Timber harvesting activities can adversely affect heritage resources through road construction or heavy machinery movement, skidding, tree felling, new or renewed road access into an area (even if only temporary), burning, and/or alteration of the current setting of a site through tree removal. However, under all alternatives most of these adverse effects can be avoided through project design, or if necessary, mitigated. There is still a chance that these adverse effects cannot be avoided, so in general more logging means a potentially greater chance for the loss of heritage sites. As such, Alternatives 1, 2, and 6 provide less of a chance for adverse effects to heritage sites and landscapes than alternatives 3, 4, and 5 through lower levels of timber harvest.

Effects on Heritage Resources from Livestock Grazing

Livestock grazing can produce adverse effects to heritage sites through both direct and indirect means. Construction of troughs, access roads, fences, pipelines, and corrals can directly impact sites, as can weed and other range treatments that disturb the ground. Any new livestock features are inventoried for sites, and the projects re-designed if significant sites are present. Livestock behaviors, such as trailing, congregating, and rubbing against structures can lead to the indirect effects of erosion, altering the distribution of surface artifacts, or outright destruction of features. Some of the Forest's sites that have been most heavily impacted by illegal surface collection occur in areas that are routinely stirred up by livestock (which exposes the artifacts). The same effects can be made by wild herbivores, but these animals tend to concentrate in the same areas as domestic animals (near water sources). Some important Forest sites are near old livestock features (such as troughs built before the 1970's), and are experiencing these kinds of impacts from trampling, etc.

All alternatives allow for livestock grazing, but differ in the degree to which management actions might be taken to remedy any existing livestock impacts to sites. Alternative 1 might see fewer new structures, which would not benefit these sites. Alternatives 2, 4, 6, and 7 would provide some opportunities to resolve resource damage with more livestock structures, while Alternative 3 would more aggressively use structures to restore riparian areas (which is where many of these sites occur). Overall livestock grazing impacts could be greatest under Alternative 5, which would probably lead to increasing indirect effects to heritage sites, and increase the chances of direct effects (which could be mitigated, if necessary). All in all, Alternatives 3, 6, and 7 have the lowest potential adverse affects by livestock grazing on heritage sites.

Effects on Heritage Resources from Minerals and Oil and Gas Management

Mining has the potential to adversely affect archaeological sites, in part due to the fact that many mining claims have the remains of previous mining activities on them. They can also affect sites through construction of roads, machinery housings and other features, and through final site clean up and rehabilitation measures. The use of valid claims would continue under all alternatives, and the affects of any new operating plans would be analyzed and adverse effects, if

any, mitigated. New claims would also be analyzed, although not many of these are anticipated in the next 10 years because of the depressed metals market.

Oil and gas management can also produce adverse effects to heritage resources through road and pad construction, etc., but adverse effects from these kinds of activities can be avoided through project design. Currently, most energy development occurs on the North Slope of the Uinta Mountains in areas that contain an extensive historic logging and tie hacking landscape. Oil and gas exploration has provided more access to specific areas. The Historic Preservation Act will be applied to all lands and are included in the standard lease stipulations. If objects of historical or cultural value are encountered during construction, all work affecting the resource will stop and land management agency will be contacted. Surface-disturbing operations that would destroy or harm these resources are prohibited. These stipulations apply to all alternatives.

Effects on Heritage Resources from Fire Management

Sites that are susceptible to fire include sites with flammable elements (such as cabins) and/or rock features that are subject to rock spalling (such as rock art). The effects of both prescribed and wildland fire on susceptible sites within proposed burn areas will be analyzed as part of fire planning. Any adverse effects from prescribed fire can be avoided through the design of those projects; in wildland fire use situations heritage sites could almost always be protected, but some more risk is present than during prescribed fires. Susceptible sites on the Forest are always in danger of being lost during wildfires, particularly in areas where there is heavy fuel loading. In these cases, there is a reduced chance of being able to protect the sites during fire suppression. As a result, active fire management can benefit many heritage sites in the long run, by reducing the chances of losing sites during wildfires by reducing the chance of wildfire itself. All Alternatives except 4 allow the use of wildland fire, and all Alternatives include fire as an appropriate tool for vegetation management.

Effects on Heritage Resources from Lands Management

Transfer of National Register Eligible heritage resources from federal management is an adverse effect, since those sites would loose their protection under federal law. No state laws in Utah offer protection to sites on private land except the Burial Desecration Law, which only applies to human remains. Covenants protecting transferred sites have been attempted on some Federal land exchanges, with very mixed results. Under all alternatives, each proposed land exchange will be evaluated for its potential to affect sites, and if necessary, adverse effects to sites mitigated before they leave Federal management. Transfer of sites into Federal management is potentially a positive effect, since those sites would then receive protection under federal law. Trespass onto Forest Service system lands can adversely affect heritage sites, if sites are present in the trespass areas, and could constitute an Archaeological Resources Protection Act violation. Any adverse impacts would be mitigated as part of resolution of the trespass case.

Effects on Heritage Resources from Facilities Management

Tony Grove Guard Station is already on the National Register of Historic Places. Twenty other Guard Station complexes on the Forest are potentially eligible for the National Register.

Facilities management that follows the Secretary of the Interior's Standards for Rehabilitation would have a very positive effect on these buildings, and maintain them long into the future. However, facilities management that does not follow the standards, and that makes decisions that would remove these buildings, would create adverse effects. These could be mitigated through site documentation, but since these facilities are such a visible symbol of Forest Service administration, the loss very many buildings could be considered irretrievable by some Forest users. All alternatives provide the opportunity to use the Secretary's Standards, and to continue to maintain the existing facilities, either as Forest administrative sites, or as facilities used in partnership with other organizations.

Cumulative Effects

The potential area of impact for heritage resources is defined both geographically, and culturally, and includes the mountains and adjacent mountain valleys and lowlands for the ten counties of northern Utah and southwestern Wyoming that include National Forest system lands. It includes the mix of upland and valley areas that were used by past peoples to procure all of the resources needed for successful lives.
Adverse cumulative effects to heritage resources on and around the National Forest result from the advances of time (such as weathering), inadequate or inappropriate maintenance, outright destruction, and the steady loss of sites through repeated mitigation of adverse effects that leaves very few of that particular type of site in existence. As a result, the research value of heritage resources can disappear. Sites themselves can become so invisible that they no longer have potential as interpretive sites, and in general cease to be a source of enrichment for present and future generations.

Indirect effects can lead to significant cumulative alterations to individual sites, or all of the sites that represent a particular type of Forest use. For example, illegal surface collection of time-sensitive artifacts from most of the Native American sites on the Forest has compromised our abilities to date many of these sites without expensive excavation techniques. Extensive surface collection, illegal digging, and vandalism can lead to complete destruction of a site.

The Wasatch-Cache National Forest manages a significant portion of the total upland ecosystems that border the Wasatch Front north of Point of the Mountain, to the Idaho border, and the northern and western Uinta Mountains. It also manages large portions of the mountains around Cache, Bear River, Ogden, and Kamas Valleys, and west of Tooele Valley. As a result, the Forest manages the majority of the archaeological and historical record of upland American Indian use, and Euro-american logging, grazing, and water diversion in Northern Utah. One exception is that many mines in the Big and Little Cottonwood area are on private land, where historic preservation laws do not apply. This increases the public value of those mining sites that are on public land.

Many of the upland areas adjacent to National Forest system lands are privately owned, and subject to the steady urbanization that has destroyed many of the archaeological sites that occur in Northern Utah valley bottoms. A significant number of sites in northern Utah generally have been lost to development, and this will continue at an increasing pace. The relatively

undisturbed, and legally protected sites on National Forest land will be of increasing value to our visitors.

Other reasonably foreseeable actions that might affect heritage resources include population growth and increasing numbers of visitors to the Forest. This could create additional direct and indirect effect from recreationists. As the number of visitors increase, so will the agency's need to inform and involve people in Forest management. Forest history itself may provide a useful context for expanding that dialogue. Another foreseeable action will be heritage budgets that may not significantly increase, or instead decrease. This will create a need for further partnerships with local and national organizations and individuals to care for heritage resources. This will be particularly the case with historic Forest Service facilities, such as Guard Stations. Ultimately, as public land management becomes increasingly complex, conflicts over resource values will increase.

The cumulative effect to heritage resources of Alternative 4, which is management under the existing Forest Plan, could potentially be little change. The existing Forest Plan identified a goal of completing a full survey of all areas on the Forest with moderate to high site potential, nominating additional sites on the Forest to the National Register of Historic Places, and completing an overall plan to interpret, protect, and maintain significant sites. Complete survey of National Forests was a common goal in many Forest Plans from this era, and the Agency would continue to lack the resources to complete this massive task. Tony Grove Guard Station has been placed on the National Register, and other sites could continue to be added to the National Register. A Heritage Management Plan has not yet been completed, but despite this, progress has been made in the last two decades in heritage site interpretation and protection. The current Forest Plan also makes specific site preservation and treatment recommendations for some Management Areas, some of which have not been undertaken. These may not now be the highest priorities, since more is known each year about sites in these areas. In addition, the existing plan also does not acknowledge Tribes and local communities as participants in heritage program development.

An overall Heritage Management Strategy (Heritage Objective) would be an important tool for verifying or updating these priorities, developing partnerships with Tribes and other interested parties, and for identifying and achieving even more long-term heritage program goals. It could also help anticipate, and resolve, at least some of the challenges of potential increases in resource conflicts. This Strategy could be implemented under any alternative, but its particular activities would be tailored to reflect overall Forest management priorities. For example, under Alternative 1, little proactive maintenance and long-term protection of sites might occur, and the natural erosion of sites deemed acceptable. On the other hand, Alternatives 2 and 3 would involve more active program support for vegetation treatment and other restoration activities. Alternative 5 might lead to a heritage program whose main emphasis is in dealing with the direct and indirect effects of increased levels of commodity and recreation activities on the Forest. Alternatives 6 *and 7* might create a more balanced heritage program that would also need to potentially address more indirect effects from undeveloped recreation.

The Roadless Area Conservation Rule will apply under Alternatives 1, 2, and 6, and may have a positive effect on the long-term protection of heritage resources because of the link between road

access to sites, and such indirect affects as illegal surface artifact collecting. However, other types of public access to sites, such as motorized trail use, can produce the same types of indirect affects as road access. These can continue with the Roadless Area Conservation Rule. The rule does reduce the possibility of direct effects to heritage sites from road construction, but generally these types of effects can be avoided through project design. As a result, Roadless Area Conservation does provide some additional protection for sites, but does not alone resolve indirect resource impacts possible from the access that motorized and non-motorized trail use produces in Roadless Areas.

In conclusion, Alternative 5 has the greatest chance of creating more direct and indirect adverse effects to heritage sites, through potential increases in road and trail access to sites, greater numbers of ground disturbing activities, and general increase in recreation activities. Alternatives 2, 6, *and 7* would create the least potential adverse effects (both direct and indirect) from ground disturbing activities. Alternative 2 might produce the healthiest vegetation communities, which would benefit American Indian traditional practitioners in their acquisition of plant materials.

None of the alternatives differ substantially for their potential to facilitate active management of sites. On the other hand, it is possible under all alternatives to develop a heritage management strategy that works to minimize adverse effects, and to protect and preserve sites into the future. Perhaps the biggest cumulative effect, either positive or negative, to heritage resources on the Forest will come from how well the heritage resource management strategy is integrated into overall Forest goals, and then implemented. This includes how well adverse effects from specific projects on heritage resources are resolved, to either avoid those sites, or mitigate their loss through products that benefit Forest users. This will be resolved through site-specific decision-making. In this way, positive treatment of heritage resources is possible under all alternatives.