3.12 Cultural and Paleontological Resources

Cultural resources are districts, sites, structures, objects, and other evidence of some importance to a culture, a subculture, or a community for scientific, traditional, religious, and other reasons. These resources and relevant environmental data are important for describing and reconstructing past lifeways, for interpreting human behavior, and for predicting future courses of cultural development (McGimsey and Davis 1977:110).

Paleontological resources are the recognizable remains, such as bones, shells, leaves, or other evidence, such as tracks, burrows, or impressions, of past life on Earth (USGS 2004).

REGULATORY FRAMEWORK

The National Historic Preservation Act (NHPA) and Executive Order (EO) 11593 require the protection and enhancement of cultural resources by the Federal government. The Section 106 process of the NHPA requires consultation with the appropriate agencies to develop and evaluate Alternatives or modifications to all of the proposed undertakings for this project in order to avoid, minimize or mitigate adverse effects on all historic properties.

Section 106 Regulations 36 CFR 800.5 and 800.6 detail the process by which agencies determine whether undertakings will adversely affect historic properties and how the agencies consult to avoid, minimize, or mitigate the adverse effects in order to meet Section 106 requirements. The Advisory Council on Historic Preservation's (ACHP) Section 106 Regulations Archeology Guidance document states: "Methods for recovering information from archeological sites, particularly large-scale excavation, are by their nature destructive. The site is destroyed as it is excavated. Therefore management of archaeological sites should be conducted in a spirit of stewardship for future generations, with full recognition of their non-renewable nature and their potential multiple uses and public values...Given the non-renewable nature of archeological sites, it follows that if an archaeological site can be practically preserved in place for future study or other use, it usually should be..." Data recovery in the form of excavation or artifact collection is considered an adverse effect. Therefore, data recovery may not always be considered a viable mitigation possibility to achieve no adverse effects for impacts to eligible cultural resource sites.

Consultation with Native American tribes has been on-going throughout the NEPA process and has been conducted under the approach that Quitchupah Creek and surrounding areas, not just the individual sites, are the important component for Native American concerns. Native American consultation is addressed in **Section 3.13**, Native American Concerns.

AFFECTED ENVIRONMENT

Previous inventories conducted in the Project Area have resulted in the identification and recordation of numerous site types including historic cabins/ranches, historic road segments, historic debris scatters, historic inscriptions, as well as prehistoric villages, campsites, rockshelters, and rock art (petroglyphs and pictographs). The rock art represents the Archaic, Fremont, Ute, and possibly Paiute cultures. The data suggests that the identified sites along the proposed Quitchupah Creek Road were primarily occupied during the Formative Fremont culture. More limited occupations are also suggested for the preceding Archaic period. Little evidence of the Numic period has been found at the sites identified in the Project Area, but may be evident in the rock art present in the canyon.

Cultural resource inventories specific to the proposed build alternatives were conducted. Inventory corridors were wider than the actual proposed construction corridor in order to provide some flexibility to

avoid sites.

Past and present impacts to cultural resources within the Project Area include cattle grazing/trailing, power line construction and maintenance, road maintenance, recreational activities (ATV use), vandalism, collection of artifacts, and erosion. Construction of the existing road and power line has directly damaged, and in one case buried, cultural resource sites.

PREHISTORY

A number of overviews have been written for the region and adjacent regions including Jennings et al. (1974, 1978, 1980, 1986), and Aikens (1970), Madsen (1980), and Aikens and Madsen (1986). Madsen (1982) also presents a model of the prehistory of the region that includes the following: Paleoindian (12,000-9,000 Before Present (B.P.)), Archaic (8,500-1,600 B.P.), Formative Fremont (1,600-650 B.P.), and Numic (700 B.P.-present). Below is a brief summary and overview of the periods represented in the prehistoric sites in the Project Area.

Archaic

The Archaic period (8,500-1,600 B.P.) is well represented in Utah. The Archaic lifeway was highly adaptive, based on hunting and gathering subsistence practices. Archaic subsistence included a wide array of food sources. During the earlier stages of this period, Archaic people resided around pluvial lake margins and riverine environments. Later, in response to the decline of these ecozones, population shifted to upland areas to take advantage of available resources. Cultural remains from this period include items such as metates, baskets, bone implements, and variety of diagnostic projectile points. Common point types include Elko and Humboldt series, Pinto, Sudden Side-notched, and Gypsum. Evidence of the Archaic period is exhibited by recorded surface sites and rockshelters throughout the region. Rockshelters and cave sites have been the primary means for defining what is known about the culture.

Fremont

The Fremont inhabited the region between 1,600-650 B.P. (Jennings et al. 1978). They were horticulturalists with varying dependencies on corn, beans, and squash. The Fremont also hunted small and large game animals and utilized wild plant foods. They built semi-subterranean pit houses, surface jacal and masonry habitation units and coursed adobe granaries. The remains of the structures often appear as low-lying mounds in valleys, and on alluvial fans and ridge tops. Diagnostic artifacts from this period include the Utah type metate, clay figurines and small to medium size corner-notched projectile points. Ceramics consist mostly of graywares, but also include some corrugated, incised, and black-on-white styles.

Numic

Numic speaking groups appear to have replaced the Fremont after about 700 B.P., during the late Prehistoric period. These groups relied on a hunter-gatherer lifestyle, similar to that of the Archaic. They lived in temporary brush wickiups and rockshelters (Steward 1938). These groups depended on a variety of wild plants, and employed seasonal movements; gathering resources produced in various ecological zones. Evidence of the Late Prehistoric period comes from surface sites, containing light artifact remains, and shallow rockshelter deposits. Diagnostic artifacts include non-painted brownware ceramics and the Desert Side-notched point.

Site Summary for the Quitchupah Creek Road (Alternative B)

Six projects were previously completed in the proposed Quitchupah Creek Road corridor (Alternative B), resulting in 24 sites in the Convulsion Canyon/Quitchupah Creek area. James Gunnerson performed the earliest archaeological work along Quitchupah Creek, in the 1950's, during his explorations of central Utah (Gunnerson, 1969). His work recorded some of the more major sites in the canyon. These sites were revisited by Brigham Young University (BYU) crews in 1977 and again by Archaeological

Environmental Research Corporation (AERC) in 1995.

A power line corridor for Utah Power was inventoried in 1977 by BYU. Eight sites were identified during that inventory (Berge, 1977). Many of these sites were revisited and site forms updated by AERC (Hauck, 1995) for SUFCO Mine as part of the Quitchupah Creek Road Project. AERC inventoried a 200 foot wide corridor, expanding to 1,200 feet between the Water Hollow junction and the North Fork junction, along the length of the existing 9.15 mile Quitchupah Creek Road. Another small inventory was completed by Montgomery Archaeological Consultants, Inc. (MOAC) in 2002, south of the rock art area (Raney and Montgomery, 2002). MOAC inventoried an area 1,200 feet by 350 feet wide south of the AERC corridor in order to reroute the proposed road away from rock art. Three new sites were encountered and one previously recorded site was updated within the inventory area. The BLM recorded sites in 1985 that were not associated with a particular project. In 2003, one site within the Quitchupah Creek Road corridor was re-inventoried and re-evaluated by JBR Environmental Consultants, Inc. (Prince-Mahoney, 2003).

In total, 24 sites were recorded as a result of these inventories, 18 prehistoric sites, 5 historic sites, and 1 multi-component historic/prehistoric site. Of the sites encountered, 16 are eligible for the NRHP. The remaining eight sites are ineligible. Generally, the prehistoric sites represent Archaic and Fremont cultures. Six of the 24 sites contain rock art. **Table 3.12-1** presents a summary of the six cultural resource sites in the proposed road construction corridor.

Table 3.12-1 Eligible Cultural Resource Sites within the Quitchupah Creek Road Corridor, Alternative B

Site Type	Affiliation	Land Status
Occupation/Lithic Scatter*	Unknown	BLM
Rockshelter/Occupation*	Unknown	BLM/private
Occupation*	Unknown	SITLA
Ghost Figure Rock Art Site*	Archaic	BLM
Ranch Site*	Euro-American	Private
Pithouses	Fremont	Private

* These sites would also be impacted under Alternative C

In the Quitchupah Creek area there is an abundance of rock art, both petroglyphs and pictographs; these represent the Archaic (Barrier Canyon Style, Glen Canyon Style 5), Fremont, Ute, and possibly Paiute cultures (Sucec, 2002). Three of these prominent sites include the North Fork Rock Art site, the West Point site, and the Ghost Figure site. The presence of several rock art styles indicates that the area was utilized for thousands of years. The styles exhibited and the groups associated illustrate a common attraction and uniqueness to the area.

Rock art can reveal much information about prehistoric use, including who utilized the area and when, movement over time and space of cultures, and possibly interactions between the cultures. As the study of rock art continues, these sites have the potential to provide information such as temporal association, settlement patterns, technology, knowledge of seasons and calendars, cultural interactions or transformations, and possibly visual communication systems.

One study of the rock art in the Quitchupah Creek area discusses the different styles present as including the Barrier Canyon Style, Glen Canyon Style 5, later Basketmaker, figures with a strong Rochester Creek Style flavor, two different periods of Fremont, and Ute (Warner, 1991). The Archaic time period, to

which the Glen Canyon Style 5 and the Barrier Canyon Style are attributed, has a proposed beginning date of about 6,000 years ago (Cole, 1990). The other rock art styles represent time periods of A.D. 450 to 750-800 (later Basketmaker), A.D. 400 to 1500 (Fremont), and A.D. 1600 to 1880 (Ute) (Cole, 1990).

According to the Utah Archaeological Research Institute, this location of the Glen Canyon Style 5 images is one of the most northwestern sites of this style (Manning, 2002). In addition, the combinations of Barrier Canyon Style and Fremont Style suggest interactions of the various cultures (Manning, 2002) or possibly the transformation of a people from hunting and gathering to a more settled lifeway (Sucec, 2002). The variety of images and cultural associations represented make these panels distinctive and valuable for the information they may provide to our knowledge of the prehistory of the area as well as the prehistory of the western United States.

Site Summary for the Alternate Junction And Alternate Design (Alternative C)
The Class I file search found no previously recorded sites located within the Alternate Junction segment (Alternative C) corridor. The previous projects completed in the area include those described for the Quitchupah Creek (Alternative B) corridor. A Class III inventory was completed for Alternative C in July 2001 (Patterson and Montgomery, 2001). In 2003, another Class III field survey was completed by MOAC (Guilfoyle and Montgomery, 2003) for a reroute of Alternative C further to the north. This northern route is now the desired route for Alternative C, in order to avoid a private land parcel.

A total of 15 sites were recorded along this inventory corridor. MOAC (Guilfoyle and Montgomery, 2003) identified a total of 14 newly recorded sites and one previously recorded site. The inventory corridor was 500 feet wide and then slightly expanded at the drainages. Twelve prehistoric and three historic cultural resource sites were encountered; all twelve prehistoric sites are eligible for the NRHP and the three historic sites are ineligible. Four of the prehistoric sites are affiliated with the Fremont culture; the remaining eight are of unknown affiliation. The historic sites include a segment of the *Quitchumpah to Emery Road,* a possible Numic Indian trail, and a historic trash scatter. **Table 3.12-2** identifies the eligible cultural resource sites within the proposed Alternative Junction with SR-10 segment of the Alternative C construction corridor. In addition, five of the six sites (**Table 3.12-1**) impacted under Alternative B would also be impacted by Alternative C where the two alternatives are within the same corridor.

Table 3.12-2 Eligible Cultural Resource Sites within the Alternate Junction with SR-10 Segment of Alternative C

Site Type	Cultural Affiliation	Land Status
Campsite	Fremont	BLM
Lithic and Ceramic Scatter	Fremont	BLM
Lithic and Ceramic Scatter	Fremont	BLM
Campsite	Unknown	Private
Campsite	Unknown	Private

Site Summary for the Water Hollow Alternate Alignment (Alternative D)
The Class I file search identified that four previous inventories were conducted in the vicinity of the Water Hollow Road, Alternative D corridor. These projects included the 1977 powerline inventory, a sampling inventory, a seismic line project inventory, and the 1995 Quitchupah Creek Road inventory. Only one previously recorded site was noted to be within the route corridor. The class III inventory was completed for the Water Hollow route in 2000 by JBR Environmental Consultants, Inc. (Crosland and

Billat, 2001).

The survey corridor for this alignment varied from 500 to 1,000 feet in width so that the proposed road corridor could be routed to avoid all cultural resources. Nineteen sites were identified by JBR during the Class III field inventory conducted in 2000 (Crosland and Billat, 2001) along the Water Hollow Route. Of the 19 sites encountered, 12 are prehistoric, 2 are multi-component prehistoric/historic, and 5 are historic. The prehistoric sites with diagnostic artifacts are associated with the Fremont culture. Ten of the sites are eligible for the NRHP, nine are ineligible. All 19 of these sites would be avoided by Alternative D as they are outside the proposed construction corridor.

Paleontological Resources

A file search performed by the Utah Geological Survey (UGS) indicated that no paleontological localities had been previously recorded along any of the possible project corridors (Hayden, 1999-2000). Formations exposed in the right-of-way include the Blue Gate Shale Member, Emery Sandstone Member, and Masuk Shale Member of the Mancos Shale; the Star Point Sandstone; and the lower part of the Blackhawk Formation. There is a slight possibility of vertebrate fossils and dinosaur tracks in the Blackhawk Formation which is located on the very west end of the project, near Acord Lakes Road. Overall, there is a low potential for significant fossil localities to be found within the Project Area.

A paleontological inventory was performed on Alternative B and Alternative C corridors in July 2002 (Hamblin, 2002a). The inventory resulted in the recordation of several invertebrate marine and plant fossil sites within Emery Sandstone. No significant fossil localities were encountered. Dinosaur tracks were noted in rocks that had rolled down from the Blackhawk Formation (outside project corridor) to their present location. This track site is considered "important" in that it is an indicator that dinosaur tracks can be expected within the Blackhawk Formation, but is not in-situ within the corridor. Alternative D traverses the same geologic formations described above and similar sites could be expected. The paleontological report can be found in the Technical Report Addendum (JBR, 2002).

Potential Impacts To Paleontological And Cultural Resources

The Environmental Consequences of each Alternative, in regard to these resources, are discussed below. First, impacts to paleontological resources and then cultural resources.

POTENTIAL IMPACTS TO PALEONTOLOGICAL RESOURCES

All Alternatives

Unless significant fossil localities are discovered as a result of construction activities, this project would have no direct, indirect, or cumulative impact on significant paleontological resources. No significant in-situ fossil locations have been identified in the Project Area.

POTENTIAL IMPACTS TO CULTURAL RESOURCES

Direct impacts to cultural resources, depending on the Alternative chosen, could include site destruction, loss of integrity, and increased erosion. See **Section 3.3 Soils** for a discussion on erosion within the Project Area. Indirect impacts include possible collection of artifacts and vandalism from increased accessibility and use of the area.

NO ACTION - ALTERNATIVE A

No cultural resources would be impacted by this proposal under the No Action Alternative. Cultural resources in the Project Area have been impacted by power line construction and maintenance, road construction and maintenance, mining activities, farming and grazing activities, recreational uses (hunting, ATVs, etc.), vandalism, and erosion. These impacts would likely continue under the No Action Alternative.

QUITCHUPAH CREEK ROAD ALIGNMENT - ALTERNATIVE B

Of the 24 cultural resources sites within the Alternative B corridor, six NRHP eligible cultural resource sites would be within the construction corridor of the proposed Quitchupah Creek Road (**Table 3.12-1**). The remaining identified 18 sites are either ineligible for the NRHP or are outside the construction corridor.

Direct impacts to eligible cultural resource sites within the Alternative B route would be major and irreversible. A total of six eligible cultural resource sites within the Alternative B corridor could not be avoided and would be destroyed by construction activities. These impacts could be mitigated through excavation and data recovery. Under this Alternative, the land managing agency, in coordination with the State Historic Preservation Office (SHPO) and consulting parties (tribes), would need to design measures to minimize or mitigate impacts to the sites. The loss of the in-situ site is considered an "Adverse Effect". These in-situ cultural resource sites would be irreversibly lost.

The alignment would place the proposed road about 300 feet away and across the creek from the majority of the rock art panels, which are located north of the creek. Though these rock art panels would be avoided, indirect impacts to these resources would be an important issue upon completion of a paved road.

Indirect impacts, such as erosion, unauthorized excavation, collecting, and vandalism, to nearby eligible cultural resource sites would remain similar to existing levels.

Because of the steep and variable topography of the canyon itself, sections of the road alignment would be filled or cut into the canyon bottom. Buried cultural materials could possibly be encountered during these excavation activities. Applicant committed measures would include a monitoring plan to be implemented during project construction for the discovery of unknown buried cultural remains.

The junction of the proposed road with SR-10 would require UDOT right-of-way or acquired right-of-way. This area would need to be inventoried for cultural resources prior to any construction activities; therefore potential impacts for this area are not known at this time.

ALTERNATE JUNCTION AND ALTERNATE DESIGN - ALTERNATIVE C

Direct and indirect impacts to sites along the Alternative C route would be similar to those discussed in Alternative B. Five of the eligible sites along Alternative B (**Table 3.12-1**) and another five eligible sites along Alternative C (**Table 3.12-2**) would be directly impacted if this route were selected. These sites could not be avoided and would be destroyed by construction activities. Under this Alternative, the land managing agency, in coordination with the State Historic Preservation Office (SHPO) and consulting parties (tribes), would need to design measures to minimize or mitigate impacts to the sites. The loss of the in-situ site is considered an "Adverse Effect". These cultural resource sites would be irreversibly lost.

Indirect impacts, such as erosion, unauthorized excavation, collecting, and vandalism, to nearby eligible cultural resource sites would remain similar to existing levels.
The junction of the proposed road with SR-10 would require UDOT right-of-way or acquired right-of-way. This area would need to be inventoried for cultural resources prior to any construction activities; therefore potential impacts for this area are not known at this time.

WATER HOLLOW ALTERNATE ALIGNMENT - ALTERNATIVE D

No eligible cultural resource sites are located within the proposed construction corridor; therefore, there would be no direct impacts to cultural resource sites as a result of Alternative D. Indirect impacts could occur as a result of increased public access and use of the area for recreational purposes. These indirect impacts would be similar to those discussed in Alternatives B and C.

The junction of the proposed road with SR-10 would require UDOT right-of-way or acquired right-of-way. This area would need to be inventoried for cultural resources prior to any construction activities; therefore potential impacts for this area are not known at this time.

MITIGATION AND MONITORING FOR BUILD ALTERNATIVES

Paleontological Sites

Monitoring for paleontological resources would be required on the west end of the proposed road, near Acord Lakes Road, if excavation were to occur in the Blackhawk formation. A qualified paleontologist should be present to look for dinosaur tracks and other vertebrate fossils. There would be a possibility of encountering Pleistocene fossils in the alluvium in the canyon. If fossils were encountered during construction, work in that area would be halted until a qualified paleontologist could evaluate it and make recommendations. Once agency-approved appropriate mitigation were executed and completed, work could resume.

Cultural Resources

For site preservation, avoidance of impacts to eligible and unevaluated cultural resource sites is the preferred method of site preservation. However, when disturbance of NRHP eligible sites is unavoidable, direct and/or indirect impacts could be mitigated through data recovery, site monitoring, and research in accordance with standards and guidelines outlined in NHPA Section 106 (36 CFR 800.5 and 800.6) and the ACHP's Recommended Approach for Consultation on Recovery of Significant Information from Archaeological Sites. Mitigation would need to be agreed upon by the land managing agency (USFS, BLM, SITLA), SHPO, the Native American tribes (consulting parties), and ACHP. However, both direct and indirect impacts would result in permanent loss of site context, and especially in the case of indirectly impacted sites, potential loss of information and artifacts.

Specific cultural mitigation would be dependant on which Alternative were chosen but may include data recovery, additional recordation/mapping, historic research, oral interviews, site enhancement/conservation, and/or public exhibits and education. The mitigation required would compensate, reduce, or eliminate impacts to eligible cultural resources. After the RODs are issued, a Research Design would be required for the sites along the chosen Alternative and approved by the SHPO and administering land agency (BLM, USFS, SITLA). A Memorandum of Agreement between the SHPO, Federal agency(ies), and other consulting parties, such as Native American tribes, would need to be completed. Consultation with the tribes would be on going during this process.

Costs and time involved for mitigation would vary greatly depending on the Alternative chosen. Cultural resource mitigation for Alternatives B and C would likely be more extensive than Alternative D. Alternatives B and C have several NRHP eligible cultural resource sites within the construction corridor, whereas Alternative D has no NRHP eligible sites within the corridor. Alternatives B and C would cause direct impacts to eligible sites; Alternative D would possibly contribute to indirect impacts to sites outside

the corridor. Monitoring for subsurface cultural deposits during construction activities, by a qualified archaeologist, would be required for Alternatives B, C, and D, as stated in the Mitigation and Monitoring Plan.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES AND RESIDUAL ADVERSE IMPACTS

Data recovery and subsequent road construction would result in the permanent loss of the in-situ cultural resource. Loss of cultural resource sites, artifacts, or context would be irretrievable. Filling over cultural resource sites would be an irreversible adverse impact. Residual adverse impacts to cultural resources would include compromised site integrity due to physical damage to the sites during construction or use of the proposed road. The presence of a new road could lead to increased access to site locations resulting in site disturbance, artifact collection, and vandalism.

CUMULATIVE EFFECTS

Past actions concerning cultural resources within the Project Area include cultural resource surveys that have identified prehistoric and historic sites. Construction of the existing dirt road and power line has damaged, and in one case buried, cultural resource sites. Cattle grazing, ATV use, and possibly other recreational activities have also disturbed the cultural resources. Additional adverse impacts are the result of unauthorized excavations, surface collection, and vandalism of cultural resource sites. Present and future impacts will be attributed to these same factors. The direct impacts under the Proposed Action and Alternative C would essentially destroy or compromise the integrity of several eligible sites within the road corridor; these impacts could be mitigated through data recovery. Indirect impacts could compromise the integrity of other nearby sites, including the rock art sites. Cumulative impacts to cultural resources under Alternatives B and C would likely be substantial and significant.

Past actions concerning cultural resources along the Alternative D route include cultural resource surveys that have identified prehistoric and historic sites, some of which are recommended eligible for inclusion on the NRHP. Cattle grazing, chaining and seeding, ATV use, and possibly other recreational activities have disturbed the archaeological resources. Additional adverse impacts are the result of unauthorized excavations, surface collection, and vandalism of archaeological sites. Present and future impacts will be attributed to these same causes. In addition, there could be impacts from future oil and gas exploration (see **Section 3.9** Land Use). There would be no direct impacts from implementation of Alternative D to cultural resources sites to add to cumulative effects. Indirect impacts, such as surface collection and vandalism, could compromise the integrity of nearby sites. Cumulative adverse impacts to cultural resources under Alternative D would likely be minor. Degradation and loss of integrity to cultural resource sites will continue to increase with the development of the area.