

Tribally Approved
American Indian Ethnographic Analysis of the Proposed Milford Flats
South Solar Energy Zone

Ethnography and Ethnographic Synthesis
For
Solar Programmatic Environmental Impact Statement and Solar Energy Study Areas in Portions
of Arizona, California, Nevada, and Utah

Participating Tribes

Confederated Tribes of the Goshute Reservation, Ibabah, Utah
Paiute Indian Tribe of Utah, Cedar City, Utah

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MILFORD FLATS SOUTH

The proposed Milford Flats South solar energy zone (SEZ) is located in the southwestern portion of Beaver County, Utah (Figure 1). This SEZ sits in the Utah Basin and Range province within the Escalante Valley. The closest surrounding towns are Milford, Utah, which lies about twelve miles north and Minersville, Utah, which lies about five miles east.

The larger SEZ American Indian study area extends beyond the boundaries of the SEZ because cultural resources extend into the surrounding landscape. Southern Paiute and Goshute tribal representatives maintain that, in order to understand Numic-speaking peoples' connections to the SEZ, it must be placed in context with neighboring places including the Escalante Valley and Wah Wah Valley SEZs and their associated cultural resources found in the larger SEZ American Indian study area. The SEZ American Indian study area includes plant communities, geological features, water sources, and trail systems located in and around the SEZ boundaries. The trail systems pass through the SEZ American Indian study area and were used by people from neighboring or distant communities to reach nearby medicinal and ceremonial areas (see Map 1). Native American representatives maintain that, in order to understand their connections to the SEZ American Indian study area, it must be placed in a broader context with neighboring places and their associated cultural resources.

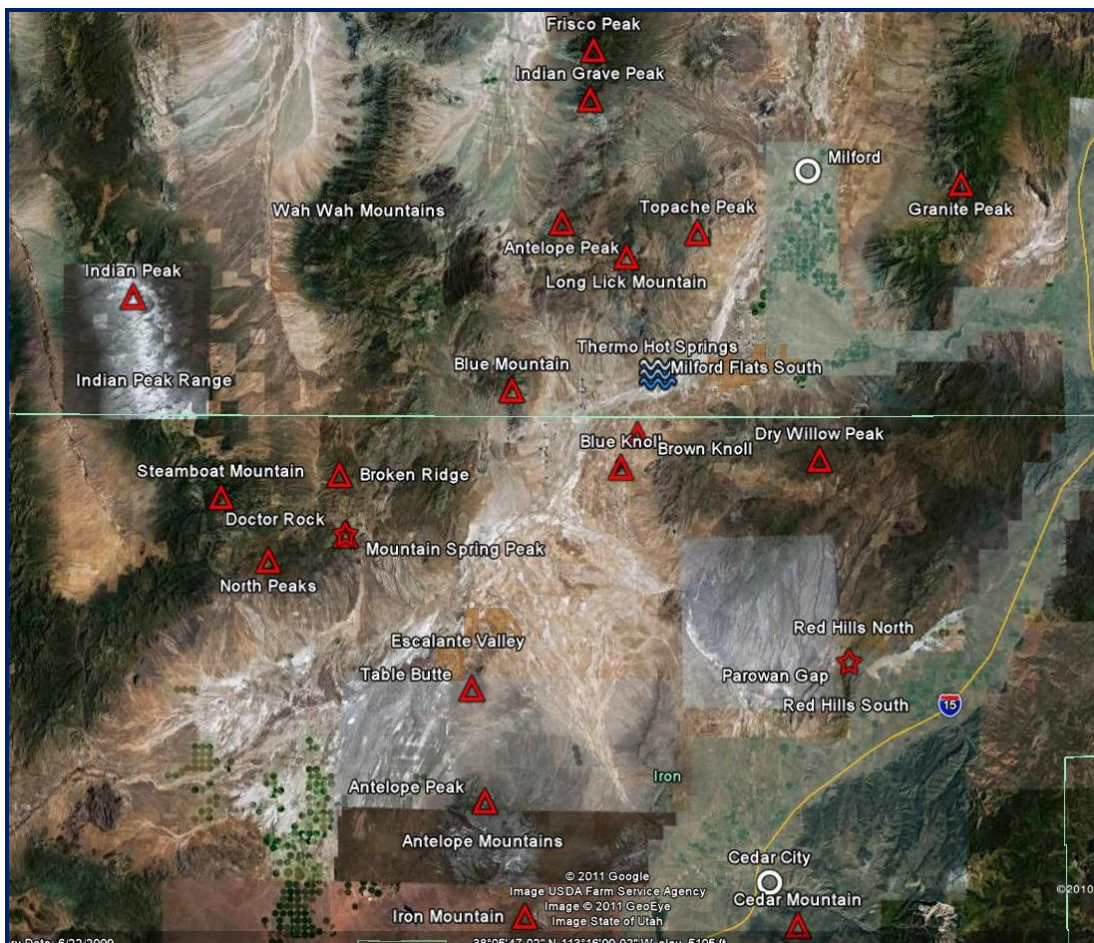


Figure 1 Google Earth Image of Escalante Valley and Surrounding Mountains

Summary of Study Area Significance

The Milford Flats South SEZ American Indian study area was traditionally occupied, used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. The Paiute Indian Tribe of Utah (PITU) and the Confederated Tribes of the Goshute Reservation (CTGR) Solar Programmatic Environmental Impact Statement (PEIS) field consultations represent the cultural interests of the Southern Paiute and Goshute peoples. Numic-speaking peoples have gone on record in past projects and stipulate here again that they are the American Indian people responsible for the cultural resources (natural and manmade) in this study area. Their ancestors were placed here by the Creator and they have subsequently lived in these lands, maintaining and protecting these places, plants, animals, water sources, and other cultural signs of their occupation. Numic-speaking peoples have a deeply rooted spiritual connection to the land that weaves stories and songs into the landscape, connecting all elements of the universe.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene (a period of approximately 15,000 years), they deeply understand dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices continued unchanged. These traditional ecological understandings are carried from generation to generation through the recounting of origin stories occurring in Mythic Times and by strict cultural and natural resource conservation rules. The involved American Indian tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

The Late Pleistocene ecology of the Great Basin region was rich in fauna and flora. Central to this supportive habitat were wet forested uplands, full grasslands, and long wetlands located along a complex network of streams feeding into medium and large lakes (Grayson 1993). American Indian people hunted, gathered, made trails, and built communities throughout this area. They engaged with this topographically interesting landscape through ceremonial activities. Large mammals, like mastodons, ranged throughout these habitats from the lowest wetlands up to 8,990 feet where the Huntington mammoth remains were found—a subalpine environment in the Late Pleistocene (Grayson 1993:165). While contemporary scholars often focus their studies on charismatic species like the mastodons, dozens of medium sized mammals have also been found, including camels, horses, ground sloths, skunks, bears, Saber-tooth cats, American lions, flat headed peccaries, muskoxen, mountain goats, pronghorn antelope and American cheetahs (Grayson 1993:159). Smaller mammals were also present. Avian species were abundant and occurred in many sizes that ranged from the largest, the Incredible Teratorn with a wingspan of 17 feet and the Merriam's Teratorn with a wingspan of 12 feet (both related to the condors and vultures), to the smallest, humming birds (Grayson 1993:168). Other birds included flamingos, storks, shelducks, condors, vultures, hawks, eagles, caracaras, lapwings, thick-knees, jays, cowbirds, and blackbirds (Grayson 1993:167). The biodiversity of the land and air was matched by the fish species and numbers in the streams and lakes. There were at least twenty species of fish including whitefish, cisco, trout, chum, dace, shiner, sucker, and sculpin (Grayson 1993:187). The fish species traveled widely across the Great Basin through a variety of

interconnected lakes and streams. The massive Late Pleistocene Lake Bonneville was but a central portion of this hydrological network supporting fish species and by implications, great biodiversity in flora and fauna.

Grayson concluded his analysis with an ecological assessment of the Late Pleistocene natural conditions in the Great Basin region. “The large number of species of vultures, condors, and teratorns in the Late Pleistocene Great Basin raises a number of interesting ecological questions [...] the fact that there were so many species of these birds here suggests that the mammal fauna of the time was not only rich in species, but also rich in number of individual animals” (Grayson 1993:169). Naturally, the American Indian populations were also well supported by this bounty of nature.

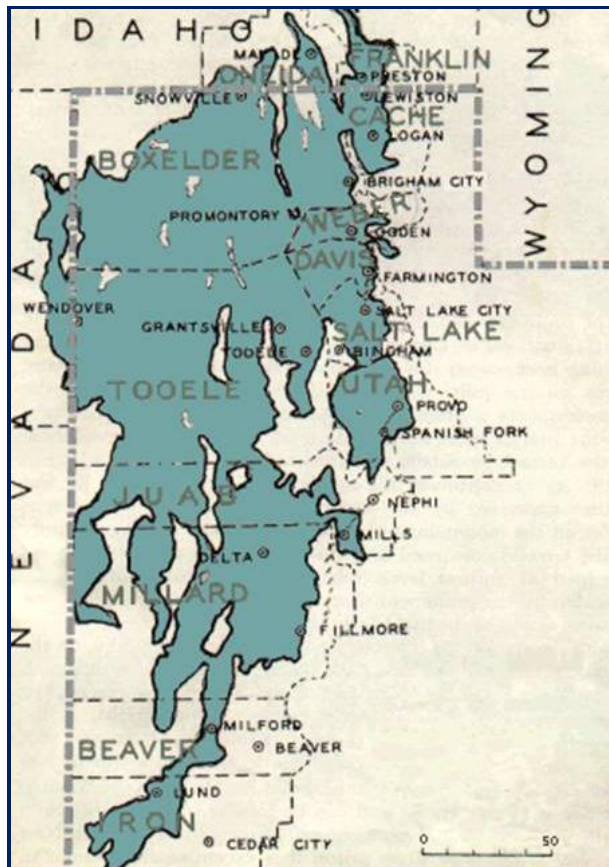
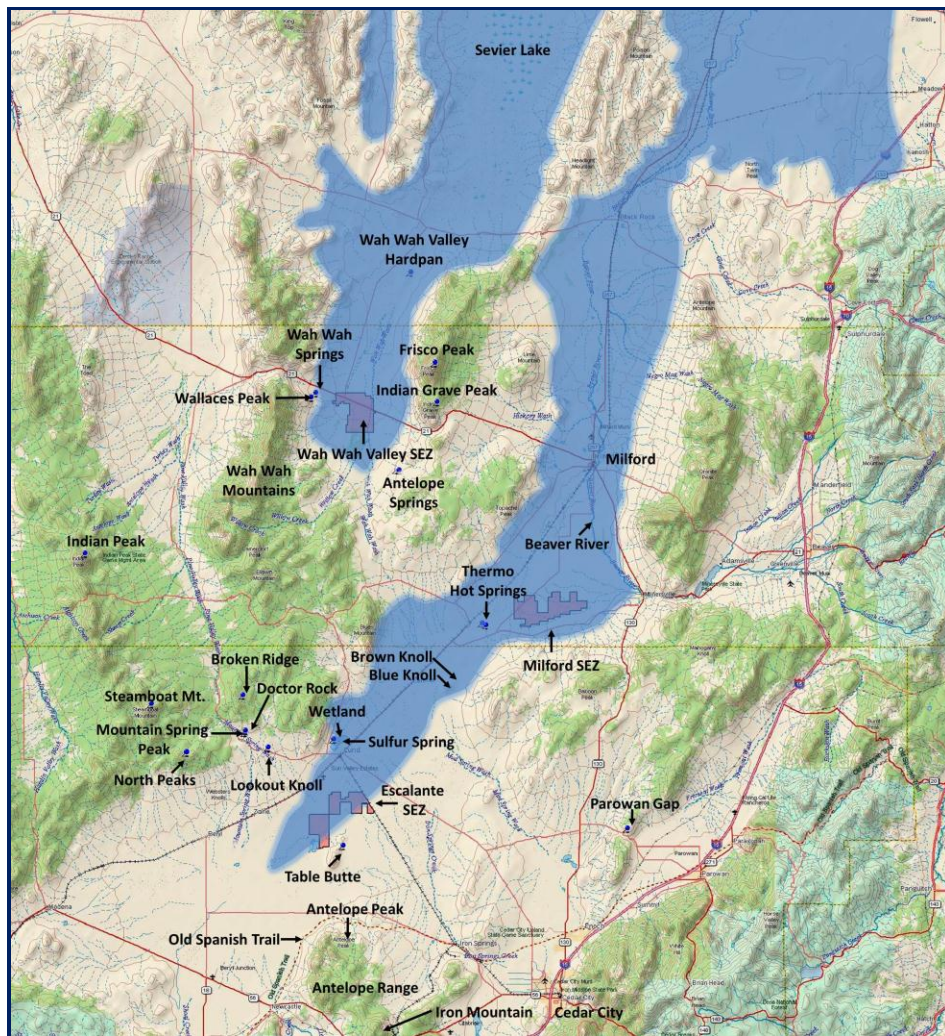


Figure 2 Lake Bonneville

Lake Bonneville (see Figure 2) represents the predominant Pleistocene water feature in the eastern Great Basin. At its highest, Lake Bonneville spanned across seven intermontane subbasins through parts of Utah, Nevada, and Idaho. While Lake Bonneville’s contemporary remainder, the Great Salt Lake, has levels of salinity too high to support fish, Pleistocene Lake Bonneville differed; by 26.5 thousand years ago, the lake had risen sufficiently to move past the salinity threshold and support aquatic life such as ostracodes (*Limnocythere staplini*) (Oviatt et al. 1992). Skeletal remains of whitefish (*Prosopium* spp.) and sculpin (*Cottus* spp.), which do not tolerate saline waters, also highlight the suitability of the aquatic environment (Grayson 2011). From approximately 22,000 to 12,000 years ago, during which the water level reached its peak,

coniferous forests surrounded the lake. At this time, Lake Bonneville covered 19,800 square miles with a maximum depth of about 1,220 feet. From approximately 12,000 to 8,000 years ago, the pollen record indicates the transition from large populations of conifers to the xeric desert scrub seen today, such as greasewood (*Sarcobatus* spp.) and shadscale (*Atriplex confertifolia*) (Madsen 2000). Deposits around the lake also demonstrate the most common presence of mountain sheep (*Ovis Canadensis*), musk ox (*Bootherium/Symbos* spp.), and mastodon (*Mammut* sp.). Camels (*Camelops* sp.) horses (*Equus* sp.) and American bison (*Bison* sp.) were found in more limited quantities and Peccary (*Platygonus compressus*) and ground sloth (*Megalonyx jeffersonii*) were only found to have one specimen each in the area. (Madsen 2000). Pollen sequences and macrofossil records suggest that before 8,000 years ago, the conditions surrounding Lake Bonneville were cooler and wetter than today. At this time, areas now covered with pinyon (*Pinus monophylla*) – juniper (*Juniperus osteosperma*) woodlands were more open and covered with brush. By 7,000 years ago, shadscale and sagebrush (*Artemisia tridentate*) communities began to dominate lower elevations, similar to the vegetative communities that exist today.



Map 1 Pleistocene Lake Bonneville in the Milford Flats South SEZ American Indian Study Area (SEZs are Outlined in Red)

Adapted from http://geology.utah.gov/online_html/pi/pi-39/pi39pg01.htm

The Pleistocene map was developed by superimposing images of the Pleistocene Lake Bonneville boundaries onto topographical maps of the Milford Flats South SEZ American Indian study area, using image-manipulation software (see Map 1). It is important to note that this map is does not present definitive boundaries of this Pleistocene hydrological system. This map is designed to contextualize geographically the Lake Bonneville hydrological system and its role in the Milford Flats South study area.

As Lake Bonneville receded over geological time, the edges of the lake remained important as riparian and wetland ecosystems, which supported diverse ecological communities of plants and animals, both terrestrial and aquatic. Much of this diversity persisted into the historic period as remnants of the lake’s water finally receded into the boundary of Lake Sevier. The Domínguez and Escalante expedition observed this ecology as they passed through the area in 1776.

Although the environmental setting of the Milford Flats South SEZ American Indian study area has changed dramatically over the geologic timescales of traditional use and inhabitation, the native people have thrived and continue to do so. Countless shifts in the plant and animal communities have been met with constant coadaptation and traditional ecological knowledge is continually developed and maintained in harmony with the natural setting. Ultimately, the sustainability of the landscape is ensured through the implementation of thoughtful, active management as a part of sacred Numic ecology.



Figure 3 Looking North from Top of Thermo Springs at the Milford Flats South SEZ American Indian Study Area

Special Features

Southern Paiute and Goshute people have used the Milford Flats South SEZ American Indian study area (Figure 3) for thousands of years. They believe that the Creator gave these lands to them and they have a responsibility to maintain cultural connections to the land and resources. During the ethnographic field sessions, tribal representatives identified the Milford

Flats South SEZ American Indian study area as part of a large ceremonial landscape that contains many traditional use features like hot springs, volcanic places, and important plants and animals (see Table 1).



Figure 4 Looking Over Top of Alkali Hill at Thermo Springs (left) and Figure 5 Thermo Hot Springs on the Northern End of Alkali Hill (right)

According to interviews with Indian tribal representatives, the outstanding feature of the Milford Flats South SEZ American Indian study area is the Thermo Hot Springs (see Figures 4, 5, and 6). These springs have been the center of activities in the immediate area since time immemorial. The hot springs are unique because they are located in the center of a valley instead of lying in a more typical location along the fault at the base of an uplifted mountain range. Thus, the Thermo Hot Springs have a commanding view of the surrounding region—a 360 degree viewscape that is even further facilitated by the fact that the springs are perched above the surrounding ground by an estimated fifty feet. The views from this location include the Cricket Mountains to the north, the Mineral Mountains to the east, the Black Mountains to the south, and the San Francisco Mountains to the west. To the north is Sevier Lake and to the south is the southern expanse of the Escalante Valley. For millennia, Indian people have traveled to these special hot springs to engage in a variety of ceremonial activities. These activities include the curing of individuals using both the sulfuric muds and the mineralized hot waters. Other Indian people came to the hot spring to purify themselves before going to distant destinations where special activities such as vision quests or ceremonial balancing activities would occur. The hot springs were also visited by *Puha'gants* (shamans) to acquire songs and *Puha* (power) needed to help their communities.

Trails from many directions came to the hot springs; northwest through Parowan Gap, east through the Wah Wah Valley, and north and south through the Escalante Valley (see Map 2). This complicated and extensive network of trails would bring people from great distances on pilgrimages between the hot springs and other powerful locations, such as the Eagle Rock doctor rock and Wallace's Peak. Offerings would have been made to the hot springs and on the trails while the pilgrims were traveling. The trail system was so well developed that it led the first European travelers (those on the Domínguez and Escalante expedition in 1776) to this special destination.

The Indian people interviewed at this location noted that this SEZ American Indian study area was culturally important because of the water, plants, animals, related rock peckings,

geology, and associated Indian history (see Table 1 below). The SEZ American Indian study area was once part of Pleistocene Lake Bonneville. Water does not exist on surface as it did 10,000 years ago; however, there are areas where the subsurface water flows above ground. One of those places is at Thermo Hot Springs (Figure 6). At the Thermo Hot Springs, obsidian lithics (Figure 7) and the horn of a bighorn sheep (Figure 8) were left as offerings.



Figure 6 Bubbling Spring on Eastside of Alkali Hill at Thermo Hot Springs (left) and Figure 7 Obsidian Lithic Offering Left at Thermo Hot Springs (right)

Traditional trails in the SEZ American Indian study area connect ceremonial areas like Parowan Gap and Thermo Hot Springs. Parowan Gap is the ceremonial entrance and exit into the Escalante Valley. It is associated with a Southern Paiute Creation story that explains the existence of the gap in the middle of the volcanic ridge and the presence of thousands of rock peckings and paintings (called *tumpituxwinap* in Southern Paiute, meaning storied rocks). This area has a clear viewscape of the Escalante Valley.

The viewscape at the Thermo Hot Springs provides a clear panorama of neighboring volcanic hills and the surrounding mountain ranges. Numic-speaking peoples believe that viewscales are critical components of ceremonial activity because it allows a person to send prayers to important cultural landmarks.

The Milford Flats South SEZ American Indian study area is in an active geothermal and volcanic area. Places that contain the presence of volcanic activity are considered sacred and powerful locations. Numic-speaking peoples believe that volcanic events are moments when Puha deep inside the Earth is brought to the surface as a way for the land to renew itself or be reborn. Volcanism is a way for Puha to be distributed across a landscape.

During the field visits, tribal representatives identified nineteen traditional use plants and twenty-eight traditional use animals within this SEZ American Indian study area. Identified plants include those used for ceremonial, medicinal, food, and utilitarian functions. The presence of animals in an area contributes to the overall cultural importance to Indian people. In Numic tradition, animals factor significantly in songs, stories, and ceremonies. Animals are also important food sources and their fur, bones, and feathers are used in the construction of various cultural items and tools. One animal that has specially meaning for this place is mountain sheep. Mountain sheep are believed to be spiritual animals and are spirit helpers to Puha'gants.

The Milford Flats South SEZ American Indian study area is historically special to the Southern Paiute and Goshute peoples who occupied these lands since Creation. The SEZ American Indian study area remained under Paiute and Goshute control, use, and management during much of the historic period, but their control over these lands greatly diminished due to a number of forces, including explorers, diseases, foreign settlers, construction and operation of national transportation systems, and mining. In brief, the major periods divided by factors of encroachment are: (1) the 1776 Domínguez and Escalante expedition, (2) the 1829 – 1849 travelers along the Old Spanish Trail, (3) the mid-1800s expansion of the Mormon’s state of Deseret, (4) the California Gold Rush and encroachment of the Forty-niners, (5) establishment of the area as a Region of Refuge from the late 1800s until 1873, (6) the late 1800s to early 1900s establishment of mining and ranching, and (7) the 1899 railroad and development of regional wagon haul roads.

Feature Type	Specific Feature
Source for Water	➤ Thermo Hot Springs, Lake Bonneville, Beaver River
Source for Plants	➤ Ceremonial plants, medicinal plants, food plants, utilitarian plants. Indian tea, banana yucca, and wolfberry are used for medicine and ceremonies.
Source for Animals	➤ Birds of prey, game birds, migratory birds, predatory mammals, game mammals, small mammals, lizards, snakes, spiritual animals. Big horn sheep, rabbits, horses, snakes, and lizards are all connected to this area.
Evidence of Previous Indian Use	➤ Obsidian, Mountain Sheep Horn, Parowan Gap Rock Peckings, Burials at Indian Graves Peak
Geological Features	➤ Viewscape and volcanism
Indian History	➤ The 1776 Domínguez and Escalante expedition, travelers along the Old Spanish Trail 1829-1849, Forty-niners and the California Gold Rush, the mid-1800s expansion of the Mormon’s state of Deseret, the Region of Refuge, the late 1800s to early 1900s establishment of mining and ranching, and the 1899 railroad

Table 1 Special Features Identified at Milford Flats South SEZ American Indian study area

Water

Tribal representatives identified water as a key feature of the Milford Flats South SEZ American Indian study area. The study area was once part of the southern end of the large Pleistocene Lake Bonneville. Water does not exist on surface as it did 10,000 years ago; however there are areas where the subsurface water flows above ground. One of those places is at Thermo Hot Springs. These hot springs are located approximately four miles away from the Milford Flats South SEZ boundary. Numic-speaking peoples have stated in numerous ethnographic studies that hot springs are important places for ceremony and healing. They were used during pilgrimages by religious leaders for ritualistic cleansing and by all members of society to heal physical and spiritual ailments. The hot springs are important for understanding the traditional use of the SEZ

American Indian study area and understanding how potential solar development could impact this area.

Ecology – Plants and Animals

The Milford Flats South SEZ American Indian study area lies within the Central Basin and Range Level III ecoregion, defined generally by its internal drainage and mix of xeric basins, mountains, and salt flats. The elevation range of the study area, from 5,050 feet (1530 m) to 5,176 feet (1,578 m), lies in the low range for the ecoregion and supports primarily shrub and grass communities. Within the Central Basin and Range, the western side of the SEZ is described more specifically as Shadescap-dominant Saline Basins Level IV ecoregion. The low precipitation, high salinity, and high pH of the soils in this area relate to the predominant saltbush-greasewood shrub community. Perennial grasses are also present alongside shrubs. The eastern side is described as Sagebrush Basins and Slopes Level IV ecoregion. Big sagebrush and perennial bunchgrasses codominate communities in this area. More specifically, Inter-Mountain Basins Mixed Salt Desert Scrub, Inter-Mountain Basins Big Sagebrush Shrubland, and Inter-Mountain Basins Semi-Desert Shrub Steppe constitute the three predominant classifications of ground cover. Inter-Mountain Basins Semi-Desert Steppe stands out from the two other shrubby designations due to its greater proportion of perennial grasses.

During multiple field visits, Native American representatives identified nineteen traditional use plants within the proposed project boundary. The following table (Table 2) provides readers with the common, scientific, and Southern Paiute and Goshute Indian names for each plant identified.

Common Name	Indian Name	Scientific Name
Alkaligrass		<i>Puccinellia</i> sp.
Big sagebrush	Sangwav (sp) Po'-ho-bi (g)	<i>Artemisia tridentata</i>
Bud sagebrush	kuh- <u>eeb</u> tah- <u>cun</u> -oh-guah, kuh- <u>wepit</u> -tuh- <u>cun</u> -o-guah (sp)	<i>Picrothamnus desertorum</i>
Desert prince's plume, Indian spinach	tuhuara, tu'mara, woy- <u>boh</u> -numb (sp)	<i>Stanleya pinnata</i>
Fourwing saltbush	skump, tono (sp) dzi'-cûp (g)	<i>Atriplex canescens</i>
Greasewood	tah- <u>uh</u> -be, <u>toh</u> -no-be, yah-tamp', tone- <u>oh</u> -bee (sp)	<i>Sarcobatus vermiculatus</i>
Indian ricegrass	wa'iv (sp)	<i>Achnatherum hymenoides</i>
Indian tea	Yatup (sp)	<i>Ephedra viridis</i>
Juniper	wa'ap (sp) wa'-pi, wap (g)	<i>Juniperus osteosperma</i>
Nettle	quee- <u>bah</u> -noop, quee-quawn-oop (sp) tu'-i (g)	<i>Urtica</i> sp.

Orange lichen		<i>Caloplaca trachyphylla</i>
Rough cocklebur	Kwĩ'-tcēm-bo-gop (g)	<i>Xanthium strumarium</i>
Rubber rabbitbrush	Sikomp (sp)	<i>Ericameria nauseosa</i>
Shadscale	oavi, kakumb (sp) suñ, su'-no, ? ka'-nûm-pi (g)	<i>Atriplex confertifolia</i>
Singleleaf pinyon	tuvap, tuvwap (sp) ti'-ba-wa-ra (g)	<i>Pinus monophylla</i>
Spikerush	Wan'-dzi-baip (g)	<i>Eleocharis sp.</i>
Three leaf sumac	suv, shuvi (sp) ai'-tcīb, i'-tcīb, u'-i-tcīb (g)	<i>Rhus trilobata</i>
Western wheatgrass	Paxankua (sp)	<i>Pascopyrum smithii</i>
Winterfat	boo-see-ah-wah-be, she-shu-bah (sp)	<i>Krascheninnikovia lanata</i>

Table 2 Traditional Use Plants Identified in the Milford Flats SEZ American Indian Study Area
[sp = Southern Paiute, g = Goshute (Chamberlin 1911)]

The presence of animals in an area contributes to the overall cultural importance of an area to Indian people. In Numic culture, animals factor significantly in songs, stories, and ceremonies. Animals were also important food sources and their fur, bones, and feathers were used in the construction of various cultural items and tools. Animals identified in the following table (Table 3) may physically and spiritually live in the Milford Flats South SEZ American Indian study area. The common, scientific, and Southern Paiute and Goshute Indian names for each animal identified are provided in Table 3.

Common Name	Indian Name	Scientific Name
Mammals		
American badger	ʘnampʘtsi, Hoon, To-chi-e (sp) U'na (g)	<i>Taxidea taxus</i>
American Black Bear	Wu'da, Tu'wu da (g)	<i>Ursus americanus</i>
Black-tailed jack rabbit	Kaam, Kaamʘ, Kamuntsi (sp) Kũm (g)	<i>Lepus californicus</i>
Chipmunk	Hoi (g)	<i>Tamias spp.</i>
Cottontail	Tavuts (sp) Ta'bo, Ta'bo kũm, I'wa ta bo (g)	<i>Silvilagus audubonii</i>
Woodrat	Kaatsi , Kahts, Kaats, Kah' (sp) Ka (g)	<i>Neotoma sp.</i>
Mountain Lion	Tukumumutsi, Piaruku, Too-koo-puts, To-ko-mo-muts,	<i>Puma concolor</i>

	Too-koo-mo-munch (sp)	
Coyote	Yoxovwits, Yoxovætsi, Sænanawavi, Tærasænav, Tærasinav, Sin-nav, Shin-nah-ab, Tærasæna'av, Turahsunav (sp) I'jũ pa (g)	<i>Canis latrans</i>
Elk	Pa'rra hi (g)	<i>Cervis canadensis</i>
Great Basin pocket mouse	Po'nai, To'imp (g)	<i>Perognathus parvus</i>
Mule deer	Tæxia, Tuuyi, Tuhi, Tuhuya (sp) So'ko rri (g)	<i>Odocoileus hemionus</i>
Pronghorn Antelope	Wahn-ze, Wongs, Waknch, Waantsi (sp) Kwa'ri, Pi'ũ wants (g)	<i>Antilocapra americana</i>
White-tailed antelope squirrel	Tava'atsi, Ta-va-run-quits, Ta-bats, Ta-vats (sp)	<i>Ammospermophilus leucurus</i>
Birds		
American kestrel	Kærin'ang kats, Te-ze-nah- kahts, Kwan-an-tsits (sp)	<i>Falco sparverius</i>
Common raven	Atapæts, Atakots, Ha-ta-puits, Ah-tah-pah-ki'p, Tah-kwahts, Ah-tah-pwits (sp)	<i>Corvus corax</i>
Golden eagle	Mung, Kwanants Gwi'na, Pi'a gwi na (g)	<i>Aquila chrysaetos</i>
Horned lark	Tæranwitsi'tsi, Næva witsi'ts, Te-we-wit-se, Te-rah we-cha-its, Ne-vow-we-tsits (sp)	<i>Eremophila alpestris</i>
Loggerhead shrike	Tah-cho-noint, Tun-dun-nois (sp)	<i>Lanius ludovicianus</i>
Mourning Dove	Iyov, Ayov (sp) Ai'wi (g)	<i>Zenaida macroura</i>
Red-Tailed Hawk	Ta-ah kwah-nahts (sp)	<i>Grus canadensis</i>
Roadrunner	Ko cha bo'ki, Oo'ts (sp)	<i>Geococcyx sp.</i>
Rock wren	Too-ching-ing, Tæmpikixots (sp)	<i>Salpinctes obsoletus</i>
Turkey Vulture	Wikumpætsi, We-koo-puts, Week (sp)	<i>Cathartes aura</i>
Western kingbird	Chæxæ'uvi, Wahts-koo-its, Too-pe-wats (sp)	<i>Tyrannus verticalis</i>
Reptiles		

Desert horned lizard		<i>Phrynosoma platyrhinos</i>
Lizards	Pompotsatsi, Moxwia, Suxuputsi, Tsahng-ahv (sp) Po'ka ji, Sa'bi yats, Wu'kwi ta (g)	Various species
Long-nosed leopard lizard	Too-ar-rah, Neu-mah-zing-ahts (sp)	<i>Gambelia wislizenii</i>
Rattlesnake	Toxoavi, Tanakitsi, To-ko-ahv, To-go-av-ve (sp) Ko'go, Go'go a, To'go a (g)	<i>Crotalus</i> sp.

Table 3 Traditional Use Animals in Milford Flats
[sp = Southern Paiute, g = Goshute (Chamberlin 1908)]

The mountain sheep is an important animal for the Milford Flats South SEZ American Indian study area. A mountain sheep horn (Figure 7) was found at the springs and described by tribal representatives as an offering. Mountain sheep are believed to be spiritual animals and are spirit helpers to shamans (Stoffle, Toupal, and Zedeño 2002). A Paiute man described to ethnographers in the late-1990s the importance of mountain sheep, particularly big horn sheep, to shamans:

Mountain sheep often bring songs and knowledge. When visiting spirit caves, medicine men would become possessed by the spirit of a mountain sheep and would travel places and receive songs and healing knowledge (Stoffle et al. 1998:81).

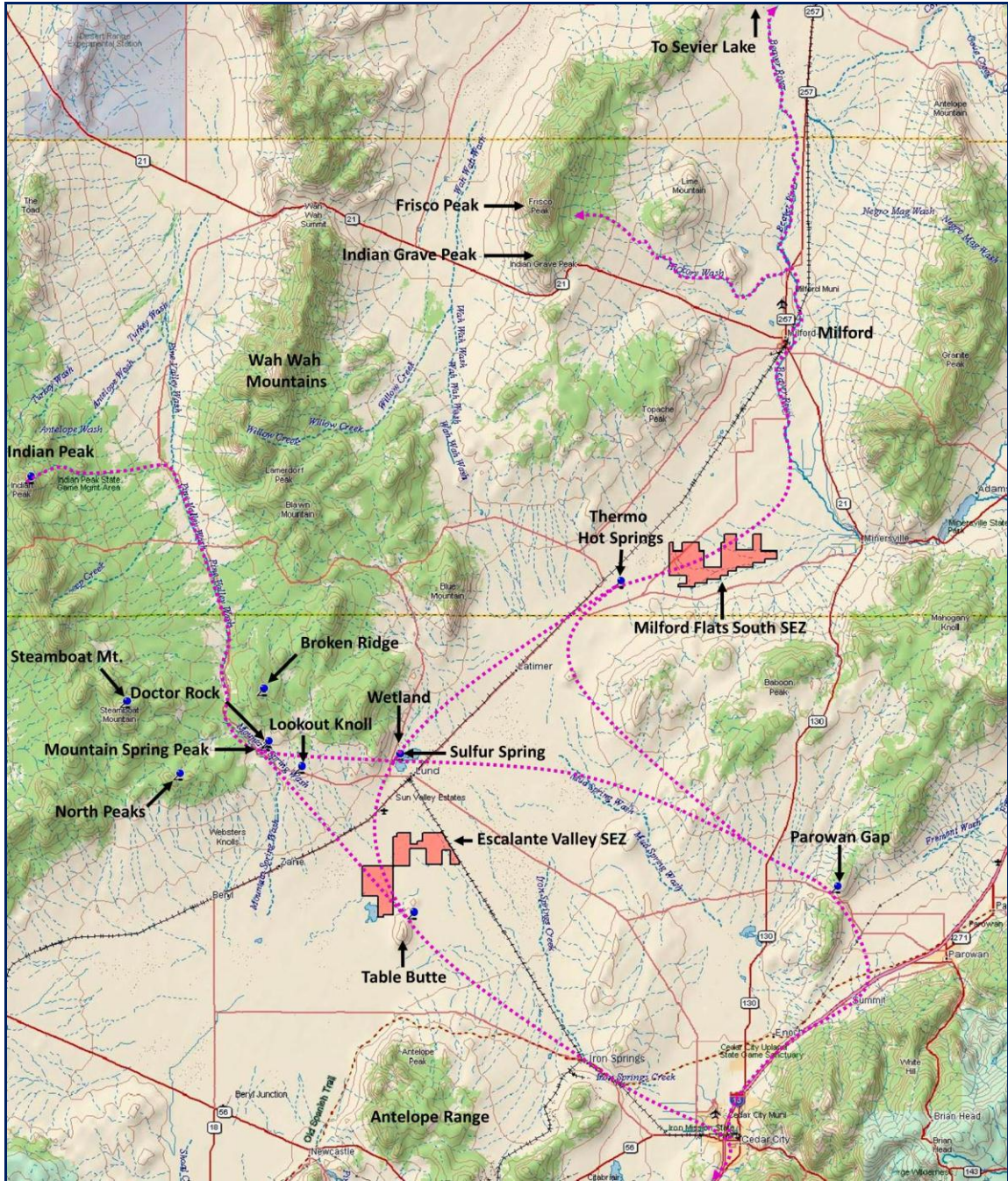


Figure 8 Bighorn Sheep Horn Found at Thermo Springs

Evidence of Previous Use

During the Indian tribal representatives' visits to the Milford Flats South SEZ American Indian study area, multiple ceremonial use places were identified. Traditional

trails in the SEZ American Indian study area connect ceremonial areas like Thermo Hot Springs, Indian Graves Peak, and Parowan Gap (see Map 2). The geology, archaeological materials, and shared stories help connect contemporary Indian people with their ancestors and help explain and highlight the persistence of Indian lifeways in this SEZ American Indian study area.



Map 2 Important Cultural Places and Trail Networks in the Milford Flats South SEZ American Indian Study Area

Thermo Hot Springs

At the Thermo Hot Springs, obsidian lithics were found along the base of the alkali hill near a thermal water outlet. At the top of this hill, the horn of a Big Horn Sheep was found near another thermal spring. Both were offerings left by Indian people at the hot springs. Tribal representatives discussed a historical memory of the Thermo Hot Springs and stated that Indian people traveled to these hot springs to use their healing waters. The representatives also believed that the rock peckings at Parowan Gap are connected to ceremonial areas in the Escalante Valley watershed like the Thermo Hot Springs and the Doctor Rock near Lund. The peckings at Parowan Gap are evidence that ceremonial activities occurred at the gap itself and in the surrounding areas. While visiting this Milford Flats South SEZ American Indian study area feature, University of Arizona (UofA) ethnographers and tribal representatives documented hundreds of peckings including medicine men's knotted strings (markers of ceremony and time keeping) and red and yellow paint in a small cave located on the southeast side of Parowan Gap.

Indian Graves Peak

Eighteen miles northwest of the Milford Flats South SEZ American Indian study area, just south of Frisco Peak, is Indian Grave Peak. This peak was so named because several Indian graves were found along the slopes of the mountain.

Parowan Gap

Parowan Gap is one of the ceremonial places identified in the Milford Flats South SEZ American Indian study area by tribal representatives. Parowan Gap is the ceremonial and spiritual corridor into the Escalante Valley. Pilgrims would stop at this powerful corridor as they were traveling to and returning from the Escalante Valley. This place is associated with a Southern Paiute Creation story that explains the existence of a gap in the middle of the volcanic ridge and the presence of thousands of rock peckings and rock paintings (tumpituxwinap). Places with tumpituxwinap are areas used by religious specialists during ceremonial activities because these rock paintings are believed to be derived from supernatural authorship. According to Numic epistemology, the rocks were once people. The people became rocks for the benefit of humanity. The writings on them related to this transformation and are part of the living universe. Numic peoples hold strong beliefs that the rocks are alive, have Puha, and spiritual value.

A trail to Parowan Gap follows the natural waterways and passes through the narrow and constricted opening in the Red Hills. Narrow spaces contribute to the overall cultural meaning of physical and spiritual trails, especially to the travelers moving along them to reach a destination place. It is in these constrictions that Puha concentrates as a result of geological barriers. .

Parowan Gap was a major stopping and gathering point for Indian people traveling through the Milford Flats South SEZ American Indian study area. Indian people gathering here would participate in cultural activities such as prayer. A PITU tribal representative explains how Parowan Gap functioned for travelers:

Yeah, this is a gathering place, coming through, this is a main travel route. As a destination they used to stop here; this is where they used to have the houses, right through here and on top. They used to have different places where the medicine men would pray. It's a long climb up there. When I was here when I was growing up, I heard that some old fellas a long time ago found some gold up there inside one of the hills up there. Apparently way in there someplace. They found the gold up there and they took it out and took it home, then came back to get some more and couldn't find it. It disappeared. Someone had put the gold there [as an offering]. Yeah, in a little sack or something.

Another aspect of the cultural importance of Parowan Gap comes from its role as a place to monitor solar movements and keep time. This importance is highlighted by the rock peckings, which denote Parowan Gap's use as a solar calendar. A PITU tribal representative elaborates on this value of Parowan Gap:

It's the Parowan Gap. At certain points on the earth, the Parowan Gap by itself comes to this certain time of year and you can see the sun going down between this. Up there on the panel, it goes down like this and you've got this thing inside here. [So was it used for watching the sun and the moon?] Yeah, you go way back there and watch the sun as it's going down perfect, right in the center. It just goes down straight, at a certain time of the month. The whole thing is a calendar.

Geology

Limestone and dolomite outcroppings frame the outer area of the Milford Flats South SEZ American Indian study area. Unconsolidated alluvium deposits of limestone, sandstone, and shale form the margins of the area. The central area of the Milford Flats South SEZ American Indian study area is composed of lacustrine deposits from the Late Pleistocene Lake Bonneville. These lake remnants sit on the surface and are comprised of clay, silt, sand, and gravel. Other surface sediment is the product of alluvial fan deposits that have moved down from the surrounding mountains. Volcanic and seismic activity has added to the geological complexity of the area, leading to fault zones and fissures in the flat area. There is a great deal of quartzite in the surrounding area. Lead, silver, zinc, manganese, and copper have all been mined from the surrounding hills (Abou-Zied and Wheian 1973). Geothermal activity is also present in Milford Flats South SEZ American Indian study area. Thermo Hot Springs has built up alkali based hills around the area where the springs surface.

The topography of any place, area, or region speaks to its purpose, according to the beliefs of Numic-speaking peoples. The Milford Flats South SEZ and SEZ American Indian study area has culturally valuable geological and topographic features that contribute to the meaning and understating of the study area. Milford Flats South SEZ is in an active geothermal and volcanic area. Places that contain the presence of volcanic activity are considered sacred and powerful locations. Numic-speaking peoples believe that volcanic events are moments when Puha deep inside the Earth is brought to the surface as a way for the land to renew itself or to be reborn. Volcanism is a way for Puha to be distributed across a landscape. Geothermal locations

also hold considerable Puha and spirituality for Numic-speaking peoples, as discussed in the above water section.

The viewscape in this area is another important geological feature of the Milford Flats South SEZ American Indian study area. For example, from Thermo Hot Springs, a person can see the neighboring volcanic hills and the surrounding mountain ranges such as the southern end of the Wah Wah Mountains to the northwest and the Black Mountains to the east. When standing at the west side of Parowan Gap, a person has clear views of the Escalante Valley and the mountains along the desert's western boundary. Numic-speaking peoples believe that viewscales are critical components of ceremonial activity in that, by seeing the surrounding landscape, a person can interact with and send prayers to important cultural landmarks.

Indian History

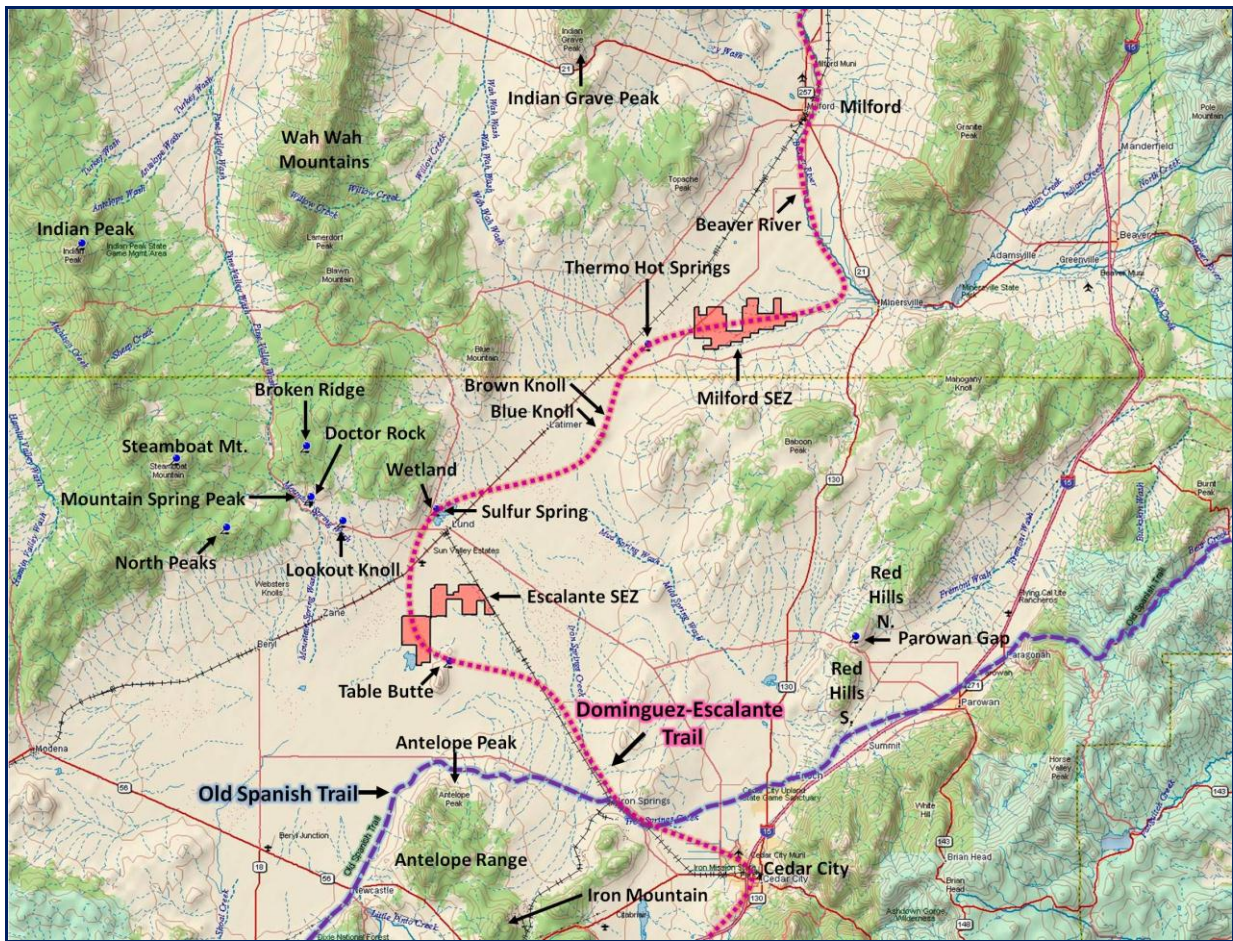
The Milford Flats South SEZ American Indian study area is historically special to the Numic-speaking peoples who occupied these lands since Creation. These people believe that the Creator placed special features in these lands to support, heal, and protect all humans. The SEZ American Indian study area remained under Paiute and Goshute control, use, and management during much of the historic period, but their control over these lands would greatly diminish due to a number of forces, including explorers, diseases, foreign settlers, construction and operation of national transportation systems, and mining. A more complete discussion of these factors is provided in the Ethnographic Comments later in this analysis. In brief, the major periods divided by factors of encroachment are: (1) the 1776 Domínguez and Escalante expedition, (2) the 1829 – 1849 travelers along the Old Spanish Trail, (3) Forty-niner and California gold rush (4) the mid-1800s expansion of the Mormon's state of Deseret, (5) establishment in the late 1800 until 1873 of the area as a Region of Refuge, (6) the late 1800s to early 1900s establishment of mining and ranching, and (7) the 1899 development of railroads and regional wagon haul roads.

Southern Paiute and Goshute people lived in and socially and culturally adapted to the various natural resources of the Milford Flats South SEZ American Indian study area over thousands of years. During this time, they recognized the special features of the landscape and built these into their lifeways. They used their acquired knowledge of these natural resources to protect the ecology of the area.

When European people and animals arrived, they increasingly changed the biocomplexity and biodiversity of the Milford Flats South SEZ American Indian study area ecosystem. Local ecology in the Cedar City area was fundamentally altered within a decade after Europeans began grazing domestic cattle, horses, and sheep on these lands.

Diseases played a key role in the reduction of Indian populations in the area. When Europeans first arrived in the region, they were outnumbered by the Indian people who occupied and were capable of defending the best agricultural areas. Diseases quickly shifted the balance of power from the early stage of encroachment, termed resource competition, to a stage of resource domination (Stoffle and Evans 1976).

The 1776 meeting with the Spanish Domínguez and Escalante expedition (see Map 3) was the first physical contact between Europeans and the Numic-speaking peoples of this area, and was thus of great historic importance. In the early 1830s when the Mexican traders wove together a series of Indian trails (creating what is known as the Old Spanish Trail) enabling caravans to pass through the Milford Flats South SEZ American Indian study area, more direct impacts to Indian peoples and their lands occurred (see Map 3). Traveling both directions twice annually from Abiquiu, New Mexico, to San Gabriel Mission, California, the massive caravans were self-sufficient and thus wanted little or nothing from the Indian people along the way. Accustomed to trading with strange and distant peoples, the Numic people were surprised by this rejection and insulted at being run off when approaching the Mexican caravans. Eventually, the caravans were perceived as a threat to local native people, ecology, and farms, making the caravans subject to legitimate raids. The Ute people, who restricted Spanish movements and trading along the Ute trails in Colorado and New Mexico also began to raid along the Old Spanish Trail. They raided Mexican traders and kidnapped Southern Paiutes, selling them at trading posts. As European horses escaped along the Old Spanish Trail, they became an asset for the now mounted ex-gardening Utes and a liability to the farming Paiutes.



Map 3 Old Spanish Trail and the Domínguez and Escalante Trail through the SEZ American Indian Study Area

Eventually Paiute and Goshute people would lose access to all major water sources, eliminating traditional farming and laying the foundation for a ranching adaptation based on horse riding. Even though the Milford Flats South SEZ American Indian study area remained a place largely controlled by Paiute and Goshute people until the early 1870s, the opening of area mines would bring people, settler encroachment, trains, and wagon haul roads.

By the later few decades of the 19th century, Numic people had lost control over their traditional lands and economy. After this time, they largely lived in segregated labor camps near sources of wage labor—mines, ranches, towns, etc. Eventually the occupants of such camps became a federally recognized tribe and the camp lands became the reservation.

Native American Comments

The Milford Flats South SEZ American Indian study area was visited twice by tribal representatives from PITU and once by CTGR during the Solar PEIS ethnographic study. During another ethnographic study for the Intermountain Power Project (IPP), this study area was visited twice by Southern Paiute representatives in 1982 and 1983. The IPP study visits occurred with elders from PITU and the Kaibab Band of Paiute Indians. The Solar PEIS study visits occurred in November 2010, February 2011, and August 2011 with PITU and CTGR, respectively. During the Solar PEIS field visits, sixteen interviews were conducted. This total includes two Ethnoarchaeology Rock Art forms, two Native American Cultural Landscape forms, and twelve personal statements from the involved tribal representatives. Also included in this section is Native American interview information from previous IPP ethnographic studies, which were conducted by members of the current UofA research team.

Intermountain Power Project Interviews – 1982

Elders representing two Southern Paiute tribes (PITU and the Kaibab Paiute tribe) were interviewed about the area including the Sevier Desert, the Sevier Lake and the Milford Flats South SEZ. Those interviews are summarized as follows:

Sevier Desert Area

According to the Kanosh people, they used the land all the way from the mountains in the east to the Sevier Dry Lake. The area immediately next to the [proposed IPP] right-of-way as it passes through the Sevier Desert is currently used to hunt rabbits. Traditionally, Indian people used that area in the winter to hunt rabbits, in the summer to gather seeds and berries such as *ku'u* (*Mentzelia* spp.) *lyceum*, and *iis* (the fruit of the sumac).

In the fall, Indian people went to the San Francisco Mountains, west of the proposed [IPP] right-of-way to gather pine nuts. The Kanosh people say that the seeds and berries are no longer present because of sheep grazing. There are, however, lots of camping places in the San Francisco Mountains and there might be burials inasmuch as “they buried them anywhere a person died – wherever they were camping” (Stoffle and Dobyns 1982:174).

Milford Area

The site of the current town of Milford is called *Marupaats* in Paiute. It is mentioned as one of the many places where the “old people” used to live before the white people came. In addition, one Paiute elder mentioned that his uncle used to “hang around” Milford town. As there were mines and ranches in the area, it seemed probable that this town had a local Indian labor gang at one time but confirming data has not been located. The area is now noted by Indian people for its large number of eagles. Some Paiutes still go there looking for eagle feathers and eagle fluffs. There are also ceremonial obsidian depositions in the Milford area which would have been camping sites. West of the Milford area are the San Francisco Mountains which would have been a location for intertribal ceremonies, held when the Pahvants and the Southern Paiutes would meet to share the area’s abundant resources (Stoffle and Dobyns 1982:174).

Intermountain Power Project Interviews – 1983

The Escalante Valley is linked ecologically and by a system of Indian trails to the Milford area and Sevier Lake in the north. Especially important is the Thermal Hot Springs (see Map 1) (Stoffle, Dobyns, and Evans 1983:105-108). The Thermo Hot Springs area is of high significance to the Southern Paiute people as represented by elders appointed to this study by PITU and the Kaibab Paiute Tribe (Stoffle, Dobyns, and Evans 1983:166).

Paiute Indian Tribe of Utah Solar PEIS Interviews

The Milford Flats South SEZ American Indian study area was visited in November 2010 and February 2011 by PITU representatives (Figure 9). The following comments are interpretations that were made during these field visits and reflect the cultural significance of resources associated with this SEZ American Indian study area.



Figure 9 PITU Representatives Examining Thermo Hot Springs

General Comments

The following statements are observations and personal statements made by PITU tribal representatives.

- *We were able to visit a hot spring. There were metal poles inserted into the hot springs to transfer heat to a nearby solar plant. There was a road built over the hot springs. The white man had made a mess of the spring and it really hurt my heart to see the condition. The hot spring was a healing place for Native people and Native travelers—a place where people went to be healed. Black mud was put on the body where it hurts. It will heal broken bones. Heat from the mud heals. There was a pretty good sized pool with clear water bubbling up. Everyone touched the water and it was warm. Around the hot springs there was Brigham tea.*
- *Diary of Escalante documents them at thermal hot springs on 1776 October 10th; gathered soil sulfur mixed with salt; then traveled forty leagues about a hundred miles. The springs are still hot but not used anymore; there were Paiute offerings at this hot springs; sheep horn. Nine mile knoll is also close, to the east (two miles).*
- *There is a lot of alkali on ground as we got closer to thermal hot springs. We had found some obsidian chips flakes in the area of the springs, possible for offerings or making arrowheads. It is obvious that this is a very important place in the study area that the Indian people have used this area. The hot springs were used for healing purposes and cleansing. It was a place of gathering for many people to use and take care of for people to use. The obsidian was possibly from the north end of Milford, where there is a lot of obsidian. Lund used to be a stage coach stop.*



Figure 10 Parowan Gap

Parowan Gap – Native American Cultural Resources Interviews

The following comments were recorded during interviews with PITU tribal representatives using the Native American Cultural Resources form. These interviews were conducted at Parowan Gap (see Figures 10, 11, and 12) and discuss the surrounding landscape of the Milford Flats South SEZ American Indian study area.

When asked if they knew that this site was here, the Native American Representatives replied:

- *Yes we did.*
- *Yes.*

When asked if, in their opinion, these panels were made by Numic people, the Native American Representatives replied:

- *Yes they were.*

When asked if Numic people traditionally visited or used these panels or panels like this, the Native American Representatives replied:

- *Yes they did. The panels were used for visions and hunting ceremonies, communicating with other Indian people, teaching other Indian people, marking territory, paying respects, and being used as a map.*
- *Yes, the panels were used for ceremony, seeking knowledge/power, communicating with other Indian people, communicating with spiritual beings, paying respects, and other things.*

When asked what kind of name they would give to this panel, the Native American Representatives replied:

- *Tracking of people's travels and location. This is a very spiritual and powerful place.*
- *Traditional seasonal marker for planting season.*

When asked which gender visited or used these panels or panels like these most often, the Native American Representatives replied:

- *Both men and women used them.*

When asked if Numic people currently visit or use these panels or panels like these, the Native American Representatives replied:

- *Yes they do. These panels are used for ceremony, seeking knowledge/power, communicating with other Indian people, teaching other Indian people, marking territory, paying respects, and being used as a map.*
- *Yes, these panels are visited and used like a seasonal thing/keeping track of season.*

When asked which gender visits or uses these panels or panels like these most often, the Native American Representatives replied:

- *Both – this was a place that the Indian people stopped at or passed through.*
- *Both men and women used them.*

When asked about stories and legends associated with these panels or similar panels, the Native American Representatives replied:

- *I don't know.*
- *Yes, the celestial star calendar. I don't know if it can be told to outsiders.*

When asked if these panels or similar panels were connected in any way with panels elsewhere, the Native American Representatives replied:

- *Yes they are.*
- *Yes, they are all connected with time/seasons.*

When asked if archaeology sites are connected with these panels, the Native American Representatives replied:

- *I don't know.*
- *Yes, a study place where the ancient ones lived and used and ate.*

When asked if plants are connected with these panels, the Native American Representatives replied:

- *Yes – plants that were used by the Indian peoples. They knew where they were located, how they were used, and what they were used for.*
- *Yes, studying their food source.*



Figure 11 Peckings at Parowan Gap Located Near the East Entrance

When asked if animals are connected with these panels, the Native American Representatives replied:

- *Yes they are. The trails that were made by the animals are trails that the Indian people used. There are the deer and rabbit that were hunted and used for food and clothing and are still in the area.*
- *Yes, animals are used – talking/travel.*

When asked if minerals are connected with these panels, the Native American Representatives replied:

- *Yes they are.*

When asked if water is connected with these panels, the Native American Representatives replied:

- *Yes, on the petroglyph panel here it does talk about the trail to the river.*
- *Yes, water is spiritual and it is used for sacred things.*



Figure 12 Pecking Panel at Parowan Gap

When asked if the surrounding land and topography are connected with these panels, the Native American Representatives replied:

- *Yes, they are locators that the Indian people were able to identify where they were.*
- *Yes, the mountains are all connected to this rock panel.*

When asked if Indian people who are not Paiute used these panels, the Native American Representatives replied:

- *Yes they did. All Indian people from different tribes used similar way of the petroglyph writing, even in Hawaii.*
- *I don't know.*

When asked if Indian people who are not Paiute used these panels before, after, or at the same time as the Paiutes, the Native American Representatives replied:

- *I am sure it has been around. This was their way of communication with others.*
- *I don't know.*

When asked if there is a special time of year during which these panels or similar panels are used or were used in the past, the Native American Representatives replied:

- *No.*

When asked if there is a special time of day/night during which these panels or similar panels are used or were used in the past, the Native American Representatives replied:

- *No.*
- *Yes, at a certain time of day, certain panels show up better than others.*

When asked if any specific peckings or paintings needed to be discussed, the Native American Representatives replied:

- *The main panel has the Medicine Man for rain. The main panel also has the travels and the stars along the way.*
- *Yes, it is located on the back side of the solar panel. It is a snake rain dance, called "Toho-uv-uwun" or snake rain. It is for rain.*

When asked what Indian activities or events occurred at this site, based on the rock art seen at the site and on the ground, the Native American Representatives replied:

- *Gatherings and ceremonies occurred at this site.*
- *Talking about the weather occurred at the site.*

When asked if this site has a personal meaning to them, the Native American Representatives replied:

- *Yes – I and my family have been coming here for years. We would gather the plants, climb on the hill and crawl into the caves, watch the eagles, and look and photograph the panels.*
- *Yes, it tells of seasons and the snake dance for rain.*

When asked to evaluate the overall importance of the site to them, the Native American Representatives replied:

- *The importance of the site to me is high.*

When asked if the style of the peckings/paintings influence the cultural significance of this rock art, the Native American Representatives replied:

- *No.*
- *Yes, it took a long time for a person with knowledge to peck all this material. How long, I don't know.*

When asked to evaluate the current condition of the site, the Native American Representatives replied:

- *The condition of the site is good.*
- *The site's condition is excellent/good.*

When asked if there are human activities affecting the condition of the site, the Native American Representatives replied:

- *Yes, people stop by and write their names and cars drive by too fast.*
- *Yes, new initials are there/evidence of going over the fence.*

When asked for their recommendations for protecting the panels from human activities, the Native American Representatives replied:

- *Possibly some signage would protect these panels from human activities.*
- *Make the fence higher or solar panel the [electric] fence.*

When asked if there are natural elements (wind, rain, erosion) affecting the condition of the panels, the Native American Representatives replied:

- *Yes, weathering is occurring, but it's all natural.*
- *Yes, water and sun.*

When asked for their recommendation for protecting these panels from natural elements, the Native American Representatives replied:

- *There are none.*
- *Make a big, tall shade to cover the whole panels.*

When asked to share anything else about the importance of these panels or similar panels that hasn't been mentioned, the Native American Representatives replied:

- *These are stories and history of our people, of their lives that need to be protected and preserved for all our future generations.*
- *We haven't talked about the plants/uses.*
- *Even with Powell right, he saw a few here and there and how scraggly – in his writings he says, “I saw a few Indians standing down there and they didn't look too healthy, or whatever. How did they survive on these lizards?” and blah, blah, blah, you know how his writings went. I've read a few of his things and I couldn't stomach it. And see, that's what we were taught to believe: that there aren't very many of us, we were migratory, no farming. And then yet, we have lost a lot of old people. There are only 55 seniors that the senior cooks know of. All of the elders before that, I like working with elders or young people, little tiny guys from three to five. Well I always like the stories that the elders told me and my neighbor used to tell me, “We used to farm a lot in our days and we traded and we were so open and friendly and loving and respectful,” she said, “I don't know what's wrong with this generation now.” So I knew our ancestors were part of the people that did a lot of farming, because it was still with them, it's still a part of their life. They don't anymore.*

Parowan Gap – Landscape Interviews

The following comments were recorded during interviews with PITU tribal representatives using the Native American Cultural Landscape form. These interviews were conducted at Parowan Gap and discuss the surrounding landscape of the Milford Flats South SEZ American Indian study area.

When asked if there were Native American Villages in relation to the SEZ American Indian study area, the Native American Representatives replied:

- *Yes.*

When asked if these villages were connected to villages elsewhere, and if so how, the Native American Representatives replied:

- *People passed through this area to go to Southern Nevada, California, and Arizona to trade and travel to the Colorado River.*
- *Yes, all Indians lived near springs and plant food sources for the seasons.*

When asked if there were seasonal Indian camps in relation to this SEZ American Indian study area, the Native American Representatives replied:

- *Yes. These camps were connected to camps elsewhere in Southern Nevada, California, Utah, and Arizona. They had family and did their trades and hunts.*
- *Yes. They were for seasonal picking of pine nuts and other plant sources.*

When asked what Native Americans would have done in this SEZ American Indian study area, the Native American Representatives replied:

- *They farmed, gathered plants, and held ceremonies in this area.*
- *They gathered plants, held ceremonies, and stopped in this place for other things.*

When asked if there were any songs associated with the SEZ American Indian study area, the Native American Representatives replied:

- *I don't know.*
- *I'm not sure.*

When asked if there were any ceremonies associated with the SEZ American Indian study area, the Native American Representatives replied:

- *Yes, there were prayers for families and vision quests of seeking answers.*
- *I don't know at the moment.*

When asked if this SEZ American Indian study area was at or near a Creation place for their people, the Native American Representatives replied:

- *Yes.*

When asked if this they knew of any other Creation places of their people and if yes, where, the Native American Representatives replied:

- *I know of a place, but I'm unsure of the area.*
- *The Grand Canyon, Arizona and Mount Charleston, Nevada. Also Sinuv Kaiv'a (Coyote's House) in Washington County, Utah.*

When asked if there were any historical events associated with the SEZ American Indian study area, the Native American Representatives replied:

- *Yes. I had heard that there was a small fight (war) with the Paiute on top of the hill near Rush Lake.*

- *Paiutes were killed in the Enoch, summit area. I don't know the date.*

When asked if there were any connections between the SEZ and the nearby mountains, the Native American Representatives replied:

- *Yes. The area is connected to Indian Peaks, the Beaver Mountains, and the Cedar Mountains.*
- *Yes, this place was used as a solar reading place to tell what month and place was used as a gathering place.*

When asked if there were any connections between the SEZ and the surrounding rivers, creeks, springs and washes, the Native American Representatives replied:

- *Yes, this place is conned to Cold Creek and Quitchupah Lake. Everything is connected because Indian people used the area and land all around. Everything was taken care of so that, when they returned to the different areas, they could stay and hunt.*
- *Yes, Pahvuts' Spring, spring south of this area.*

When asked if there were any Indian trails connected to SEZ American Indian study area, the Native American Representatives replied:

- *Yes. A lot of trail went to Cedar City and Kanosh, Utah and Nevada. They went to the mountains to get food (hunt), have dances, and for gatherings.*
- *There is a trail that goes over towards Lund that was used to travel from one spring to another. The trail was special.*

When asked if this area was connected to any other place or event that had not been previously discussed, the Native American Representatives replied:

- *Yes, the Little Salt Lake is nearby. Also, there are dinosaur tracks hear here as well as the name Parowan, which in Paiute means Evil Water. Along time ago, this area had a lot of water, which farmers used to farm their fields.*

Confederated Tribes of the Goshute Reservation Solar PEIS Interviews

The Milford Flats South SEZ American Indian study area was visited in August 2011 by representatives of the CTGR (see Figure 13). The following comments are interpretations that were made during these field visits and reflect the cultural significance of resources associated with this SEZ American Indian study area.

General Comments

The following statements are observations and personal statements made by CTGR tribal representatives at the Milford Flats South SEZ American Indian study area.

- *Yeah, probably Goshutes were here at the mine. There were Goshutes in this area.*
- *[This place] was a home to people. Like here and there, something attracted people to certain places where they could find medicine or food or things like that. That's what all these mountains and flats produced for those people. The times have changed things. Even if it's invisible, it changed. And the people start to change their ways without realizing or some of the times, they were forced to change. And the dances, like I said, ask for blessings for more wildlife and plants. They still have those dances [to keep the world in order]. Yeah they had round dances and certain times, like early in the morning, they'd have a sunrise ceremony. That's when they thank the Mother Earth, when the sun is coming up. They'd get a bucket of water and drink a little while they're praying. They do that with an eagle feather usually. So a lot of Indian people are still very serious about doing those ceremonies, preserving our relationship with the earth.*



Figure 13 Goshute Tribal Representatives and UofA Ethnographer at Thermo Hot Springs

- *That's the way I feel. I like to get close to the Mother Earth and seems like you're not gonna get to be good enough. There's still something missing sounds like. Every day [I'm learning]! Every day when I'm out like this. If you watch things, [place] bring (knowledge) to you and you realize it's there. That's how they done it a long time ago, I guess they'd take a reading from plants and Mother Earth tells you what's coming next, good or bad. If you live there it will tell you something about itself. Like I said, we were coming through there and they were telling me there was some sort of water source.*

- *All I know is those old Indians say you gotta use your eyes so they can tell you what's there. That's how the old Indians got along with the Mother Earth. A lot of people come out here and die because they don't know how to get along with this kind of environment. There must have been more than one Indian trial that came down this way here. The Indian people are...feels like they're drifting away from the Mother Earth because they just go to the grocery store and buy. They don't come out here and take what's here. That's how they are out of balance. That was natural to them a long time ago. Probably [they could come here to get back in balance].*

Thermo Hot Springs Comments

The following statements are observations and personal statements made by CTGR tribal representatives concerning the Thermo Hot Springs in the Milford Flats South SEZ American Indian study area.

- *I know there was a sulphur spring here. The Indian people used to soak themselves in there. I don't know for how long, but it's good for the bones. Something in the water, some sort of minerals, healing power. Some people talk to the spring about what they want, what they're ailments are, and they thank the springs before they leave them. Mother Earth is supposed to take care of your ailments. That's how they used this land a long time ago. They didn't have anything else, just the Mother Earth to take care of us, medicine and things like that, hot springs. We couldn't go to the drug store and buy it.*
- *They used [the Thermo Hot Springs] for whatever ailments they have. We'd tell them, talk to the hot spring, "I'm hurting here" and they gotta soak themselves in there. When they leave, they got to thank the hot spring and that they appreciate the things Mother Earth have for them there. That's how they used these hot springs. It was always clean because somebody cleans it up. You never have any growth in there.*
- *I was just looking at the plants. There's ricegrass on this side and the plants are different on this side. When I saw those plants, I knew we were coming to a water source. Those plants told me there was a water source around here. I wonder if there were any lakes around here a long time ago.*

Solar Recommendations

The following statements were made by CTGR tribal representatives in regards to perceived impacts of solar energy development in Milford Flats South SEZ American Indian study area. Their comments reflect cultural concerns for traditional resources found in the SEZ American Indian study area and the long term impacts of the project.

- *[The Shoshone Veterans Union could come out here and camp and spend time at this place], I think so. That's probable [that people would gather here in the future]. Yeah, I think that's 'cause the way they're trying to talk of the old times and they gather, show how they do things like weaving baskets and things like that, to pick pine nuts. Try to show younger generations how it's done. Try to teach them. That's what their gathering*

is all about. Singing, circle dancing, sunrise ceremony every morning. People are starting to realize they're drifting away from Mother Earth... [If the solar panels were put here] it wouldn't be the same. It would be different with that solar energy zone there

Ethnographic Comments

Throughout traditional Goshute and Southern Paiute territory, there are thousands of places connected through songs, oral history, human relations, ceremony, and trails (physical and spiritual). These connections create synergistic relationships between people and place. In the Milford Flats South SEZ American Indian study area, places used for medicinal purposes, vision questing, and power acquisition contribute to the overall cultural significance of the study area. These culturally significant places are linked to other places of meaning through interconnected trail networks that cross through the SEZ American Indian study area.

Thermo Hot Springs

One area that holds particular cultural significance is the Thermo Hot Springs (see Figures 14 and 15). In previous studies (Carroll et al. 2006; Stoffle et al. 2009; Stoffle et al. 2000b; Stoffle et al. 2000c; Stoffle et al. 1996), Numic-speaking people discussed the traditional use and meaning of hot springs.



Figure 14 Thermo Hot Springs

Numic-speaking peoples view hot springs as powerful and sacred places, used to heal and purify. According to Numic epistemology, the Puha that emerges from a place can be used to heal individuals and small groups. The power of the place is often supplemented by the presence of medicinal and ceremonial plants, minerals, winds, and viewscapes. These elements and artifacts are made more powerful by their proximity to powerful places.

Water from the hot springs is used in healing ceremonies both at the springs and at other locations. Patients would come to hot springs at the instruction of or accompanied by a Puha'gant. Before entering a hot spring, Indian people would speak to the spirit of the spring, introducing themselves, and tell the spirit what type of healing was needed. Indian people have traditionally carried water from hot springs back to individuals who were unable to leave home due to age or illness (Stoffle et al. 1995).

Healing places occur at the locations that doctors took patients in order to conduct healing ceremonies or that doctors go to in order to gain insight about how to heal. Hot springs are recognized as strong sources of healing-Puha that derives from their form and characteristics, such as thermal heat or the location of the hot spring. A Puha'gant is required to facilitate the healing. Powerful minerals like paint and obsidian (Figure 16) are used in the ceremony to assist in the healing.

Hot springs are places of mixed power. Hot springs, like all water, were created for expressed and varying purposes. They can be embedded in powerful rivers, like the Pumpkin Springs in the lower Grand Canyon, canyons, like those in the Gold Strike Canyon, and small rivers, like those along the Virgin River near Hurricane, Utah (Stoffle et al. 1995). Numic elders have stated that hot springs were also used by shamans for ritual purification prior to visiting sacred caves, valleys, or other spiritual locations, such as Parowan Gap. Such purification was necessary in order to prepare the mind and body for a safe and proper interaction with spiritual beings.



Figure 15 PITU Tribal Representative at Thermo Hot Springs (left) and Figure 16 A Piece of Worked Obsidian at Thermo Hot Springs (right)

In a previous Southern Paiute ethnographic study, Paiute elders discussed the cultural importance of hot springs. One of places they visited was Pah Tempe Hot Springs in southwestern Utah, near the town of Hurricane. Pah Tempe Hot Springs provides an example of a sacred hot spring used by Indian people for many centuries. Interviews with Southern Paiute

elders indicated that these springs were visited regularly by Indian people from as far as Moapa Valley. Indian people used these springs well into this century for relieving various ailments and conducting healing and purification ceremonies (Stoffle et al. 1995).

Pah Tempe Hot Springs is now privately owned and serves as a commercial resort for natural healing and relaxation. Extensive modification has removed the majority of native plant species. Paiute elders, however, have provided information that these springs were once an important location for gathering medicinal plants. The geological, aquatic, and floral aspects of this location combine to form what is still an important sacred location for Indian people (Stoffle et al. 1995).

Hot springs are believed to be connected to each other. This connection was documented by Fowler (1992) for the Northern Paiutes, and is reflected in the Owens Valley Paiute origin story for all the hot springs in the region. According to an Owens Valley Paiute elder, during Creation “the sun fell...and it fell into the hot springs, the water over there [Coso Hot Springs], and made all the different hot springs all over” (Clark 1999:52). The splash that resulted from the sun falling in the hot springs spread toward the north, east, and south. All of the hot springs in this region, including Tecopa Hot Springs, Coso Hot Springs, Warm Springs, Tonopah Hot Springs, Oasis Valley Hot Springs, Goldstrike Canyon Hot Springs, and Thermo Hot Springs, are connected through simultaneous creation and underground waterways.

Evidence of Previous Indian Use

Beaver River Farming

The Beaver River constitutes a major waterway through the southern Sevier Desert and the northern Escalante Valley. This river was a source of water and irrigated agriculture for Indian people in the area. Trackers and explorers passing through the region during the 1800s recorded beavers present in the waterway and along its tributaries (Brooks 1977). Beavers were critical partners in successful Numic farming. Beavers act as ecosystem engineers by modifying their environment. Their dams slowed the flow of water and created large pools of water. These pools created moist upland habitats which became ideal for fish, many species of birds, mammals, amphibians, and reptiles. The ponds filtered sediment out of the stream water, improving the quality of water downstream for Numic farms and communities. The water seeped into the soil, allowing aquifers to renew. Over time, the ponds would fill with sediment and become shallower. Eventually they brake and the ponds turn into marshes and meadows. By this point, the beavers had moved to other parts of the stream or watershed to begin the process again. The meadows formed by beavers have nutrient-rich soils and more light penetration, higher soil moisture, increased nitrogen, and different vegetation than the adjacent riparian forest (Johnson et al. 2002).

Numic-speaking peoples were able to farm along the Beaver River for thousands of years, during which time the land remained largely in balance, in part to the beavers modifying the environment. The close association of Indian farms and beaver dams suggests that the presence of beaver dams was an intentional part of Numic water management strategy.

Because of fertile lands surrounding the river and availability of a steady water supply, the Beaver River was a major destination for non-native explores and settlers in the study area. In 1776, the Domínguez and Escalante expedition followed the Beaver River south into the Escalante Valley because of the fertile pasture lands that surrounded its banks. Tracker and trader Jedediah Smith noted a number smoke signals (acting as alarms) along the river, indicating a good number of families there in 1826. His tracking party followed the river south for its source of water and the lush meadows that surrounded it (Brooks 1977).

In 1849, a Forty-niner by the name of Addison Pratt noted the wealth of fish and small game in the area, estimating that the river and its surrounding valley would support a population of some thousands (Pratt 1998:74). One Forty-niner in the Jefferson Hunt party referred to the river as Pot River because of the immense amount of lithics and pottery shards found on the banks of the Beaver (Hafen and Hafen 1998). On the springs and river directly north and south of the Beaver River, prehistoric agriculture is apparent. Besides the evidence of communities and longtime use along the Beaver River, Pratt also noted the presence of a stone dam; further evidence that Indian people were actively managing water flow along the river for agricultural practices.

Artifacts

Early settlers traveling through the Milford Flats South SEZ American Indian study area noted numerous pottery shards and other lithics scattered about in great number (Hafen and Hafen 1998). Over the centuries, pot hunters and recreational collectors of Indian artifacts have greatly diminished the archaeological evidence of previous Indian use in the area. Despite this, numerous pieces of work obsidian (Figures 16 and 17) and a big horn mountain sheep horn were found at the Thermo Hot Springs. These items were left as offerings to the springs. A greater survey of the area would undoubtedly yield more of both historic and prehistoric artifacts.



Figure 17 Large Piece of Worked Obsidian Found at Thermo Hot Springs

Additional evidence of previous and continuous use by Numic-speaking peoples are the extensive peckings at Parowan Gap. These peckings are directly related to the Escalante Valley and show centuries of prehistoric use in the area.

Indian History

Indian people have a history like all peoples. Indian history can be considered to begin as soon as the impacts of Europeans were felt in Indian Country. For the people of Utah, this began with Virgin Soil Epidemics (Stoffle, Jones and Dobyns 1995), which probably first occurred by the 1600s. Indian history however, has largely been carried down through time via oral accounts. This is so because those who controlled writing and publication for much of this time dominated the narration of events.

Numic-speaking peoples in the Milford Flat South SEZ American Indian study area were subjected to encroachment pressures beginning with the start of the historic period. The first European documents recording the presence of Indian people in the Great Basin region and western Colorado Plateau was in 1776 as a consequence of the Domínguez and Escalante expedition. Indian history continues to be produced today as events of cultural importance occur to Indian lands, resources, and the people themselves (Stoffle et al. 2008).

As a result of the intrusion of Europeans, significant spiritual impacts occurred. Numic epistemology holds that Puha has gradually diminished since Creation in quality, quantity, and availability. This change has occurred because humans have, at various times, treated Puha improperly and have failed in upholding their responsibilities in the relationship they have with this interdependent system. Indian people believe that a very rapid loss of Puha occurred after the European encroachment (Stoffle et al. 2008).

Disease Impacts 1600s – 1900s

One of the most socially and culturally disruptive events in American Indian history was the arrival of pandemics caused by diseases exotic to North America (Denevan 1992; Dobyns 1966; Thorton 1990). In general terms, initial pandemics spread for thousands of miles (thus being larger in scale than epidemics) and through hundreds of American Indian ethnic groups. In general, these pandemic events emanated from a source European population but spread from Indian group to Indian group through their own contact. Such pandemics are called Virgin Soil Epidemics because they were neither observed nor recorded by Europeans (Crosby 1976). Later in the historic period, Europeans were present along most traditional American Indian trade routes and could see the implications of diseases. They provided a record of the social and cultural impacts of the pandemics. Often Virgin Soil Epidemics resulted in the death of up to 90% of all directly impacted Indian peoples.

One the best documented pandemics, and in many ways a model of what happened to the Southern Paiutes and Goshutes of southern Utah, was the spread of smallpox around 1780 to the Hopi. Around 1780, the Hopi people faced unimaginable strife—an extensive three year long drought (1777-1779) combined with a smallpox pandemic jointly killed most of the population by 1780 (Upham 1986). In the Hopi Dictionary (Hopi Dictionary Project 1998:378) the word for smallpox, *paayawu*, has two more entries “*Hisat Oravve ~y akw wiukoso 'a*” (Long ago in Oraibi many people died from smallpox) and “*Hópiituy amumi pitu*” (This smallpox afflicted the Hopi people). So many Hopi people died at this time that the living could not properly bury the dead, who were simply thrown off the edge of the mesas.

This episode is well documented by the visit of the Domínguez and Escalante expedition in November of 1776, who conducted a census (family count) before the events. They estimated a population of 7,494 people in 1,249 families, with an estimate of six people in each family. After the smallpox and drought, Hopi was visited by the Spanish Governor Juan Bautista de Anza who came to document their condition in September of 1779. Anza officially estimated a population of 798 people living in 133 families, using an unrealistic estimate of six people in each family. The Hopi village of Oraibi, for example, had 800 families in 1776 and barely forty families in September of 1779; a loss of 95%. Seven Hopi villages had dwindled to five families with no more than forty families left in any village. By most calculations the Hopi lost at least 90% of their population by 1780 (John 1975:600).

Some Hopi did move away as part of a traditional pattern of relocating to ethnically different neighbors living in wetter ecosystems, like at Havasupai and other pueblos along the Rio Grande. The former was achieved safely by the refugees, but many Hopi refugees who tried to move to the Rio Grande were killed or captured by the Navajos and never returned (John 1975:593, 597). Many Hopi simply chose to die in place—options were really limited. The Zuni were experiencing a similar fate as the Hopi and had largely died or left that pueblo. The Rio Grande pueblo people did have river water, but they were already dying from smallpox (John 1975:598). So, a lower number of deaths than 90% may have occurred because some Hopi did leave to live with neighboring ethnic groups, but the prognosis was poor for everyone and Hopi society was in extreme jeopardy in 1780.

The Hopi population partially recovered but it never again reached the pre-1780 size. Hopi census figures from 1890 indicated a total population of 1,996 persons, the census of 1900 records only 1,852 persons and the 1910 census documents 2,009 persons. The census thus documents a Hopi population that is less than a quarter of what it was in 1775 (Johansson and Preston 1978). Still the Hopi people in the early 20th century appeared to be living a traditional lifeway, conducting balancing and rain ceremonies, and experiencing a daily round of life much like that observed by Escalante in 1775. The most robust explanation for how they were able to restore and reconstitute their society is that people from distant communities who similarly lost much of their population were unable to sustain a traditional way of life and subsequently moved to Hopi and joined this increasingly multi-ethnic community as new clans. Joining Hopi however, involved accepting strict protocols where the newcomers recognized the primacy of the Hopi language, culture, and political leadership model. Newcomers were permitted unique roles in Hopi society. They were able to continue to practice specialized religious ceremonies in private kivas and speak their own language away from others. Each clan and religious society

was welcome to become a part of a village on the assurance that they would make a contribution to the common good of the community (Hieb 2002:91). The new Hopi society was made of many peoples and cultures that today constitute *Hopitutskwa* (Hopi Land). This land encompasses everywhere the Hopi people and their ancestors traveled, lived, and were buried during the long migration from the place of origin to *Tuuwanasavi* (earth center) on the Hopi Mesas (Kuwanwisiwma and Ferguson 2004).

Like the Hopi in 1780, the Southern Paiute and Goshute people had irrigated farms watered with rivers and springs situated along major trade and travel routes. The primary Indian settlements in southern Utah were located along the western base of the Wasatch Mountains that extend from the south near the Virgin River, to the Sevier River in the north. These farming settlements were occupied by the Mormons beginning in the late 1840s. When gold was discovered in California and Mexican lands became a part of the United States, a relatively large migration passed through southern Utah along established wagon trails that linked Salt Lake City, Utah to California via the Old Spanish Trail. These migrants to California carried various diseases and directly exposed the nearby Mormon and Indian populations. As a consequence, by the early 1850s Indian settlements near the new Mormon towns were either greatly reduced in population or eliminated (Stoffle, Jones, and Dobyns 1995). It can be assumed that some Paiute and Goshute peoples moved to more isolated regions of refuge (see below) at this time to protect themselves from further devastation.

The Domínguez and Escalante Expedition 1776

The Domínguez and Escalante Expedition (see Figure 18 for the route traveled) marked the first time in historic recorded in which Southern Paiutes encountered Europeans first hand. In July of 1776, the Franciscan fray Francisco Atanasio Domínguez headed this famed expedition with Fray Silvestre Velez de Escalante as his second in command. The expedition was charged by the Spanish government to discover an overland route connecting the Nuevo México and Las Californias territories of Nueva España. After over a year of delays, the expedition departed from Santa Fe, New Mexico with a goal destination point in Monterey, California. They left with ten men on the 29th of July. By the 14th of August, the expedition had picked up two more men from Abiquiu, New Mexico. Throughout the expedition, native guides were hired to maneuver the expedition through the territory. The first was identified by Escalante as a Tabehuachi Yuta, whom they met on the 23rd of August. The second guide they took on their expedition was called a Laguna Indian and the last guide was a Laguna boy who joined the party on the 2nd of September. It is unclear when the guides departed from the expedition, but they were all given their own mounts to ride. Because of this insight, we know that there was a minimum of 15 horses in the expedition and it can be deduced that the actual size was probably triple or more this number since the expedition members would have had a great need for spare mounts. The number of pack animals (mainly mules) that were brought on the expedition is also unclear, however it is known that as supplies diminished and they grew less necessary, the pack animals were used for food.

the expedition hiked to the top of noticeable hills in the flat expanse of the valley floor. These hills were formed from alkali hot springs, known today as the Thermo Hot Springs. These hot springs are a significant contributor to the importance of the Milford Flats South SEZ American Indian study area. From these hills, they continued south and stop at a place they name San Elucian. The next day, the expedition continued southwest and stopped at a spot near Blue Knoll. There they cast lots to determine the fate of the expedition. The results caused the expedition to abandon their ambitions of reaching Monterey, California and to return to Santa Fe, New Mexico (Warner 1995:87-93). For the rest of the day, the expedition continued to cross the valley and arrived at the foothills of the Wah Wah Mountains by the end of the day. On October 12th, the Domínguez and Escalante expedition passed to the west of Lund, through the proposed Escalante SEZ American Indian study area. Here, Escalante documents running into marsh lands that were difficult to wade through. Escalante states that an irrigation ditch appeared to be running through the middle of the marsh. As this region is particularly arid, relief came in the form of the numerous springs in the eastern foothills of the Wah Wah Mountains. The areas around these springs are lush and full of high grasses. The largest spring closest to the valley floor is the Sulphur Spring. There was an established Indian community at these springs that still remains in the historical memory of the tribal representatives. Southeast of this area, the expedition encountered around twenty Indians gathering wild plants and seeds. Two women were forcible detained and said that many of their people lived in this area (Warner 1995). Based on the agricultural and cultivate practices of the Numic-speaking people, what Escalante described as an irrigation ditch could have been exactly that since it was close to an agricultural area. The plants that Escalante termed “wild” were in fact food staples of the Numic-speaking people in the area, who nurtured and cultivated desert plants to ensure good crop yield. That area of the valley would have most likely needed the support of surrounding springs because of the arid nature of the valley floor.

Travelers Along the Old Spanish Trail 1829 – 1849

During the Mexican national period, caravans of pack mules with loads of woolen goods produced in New Mexico were driven from Abiquiu, New Mexico to San Gabriel, California over what was to become the Old Spanish Trail.

Between 1829 and 1848, the Old Spanish Trail was the primary land route between the two provincial outposts of Santa Fe and Los Angeles. During these years, it was used extensively by Mexican and American traders who traded New Mexico woolen goods for California-bred horses and mules (Stoffle et al. 2008:2).

Animals were moved from California to Santa Fe in herds of up to 4,000. Few records survived these early periods to describe the interaction between Natives and Hispanic herders and traders. However, Santa Fe and Abiquiu were places where some Indian people, particularly Southern Paiutes, were sold into slavery by other Indians and Europeans. Because of this, it can be assumed that relations differed based on which tribe was interacting with the traders. By the time the Old Spanish Trail trade route was opened in 1829, conflict, encroachment, and disease had taken their toll, allowing travel to California to become possible (Stoffle et al. 2008:265).

The opening of the Old Spanish Trail created a lucrative slave trade. Anglo, Indian, and “Hispanic traders would raid Indian villages to take slaves for profit; the prices of slaves in New Mexico and California markets ranged from \$50 to \$400, and girls sold at higher prices than boys since they were valued as household servants. This trade also stimulated slave raids among neighboring Indian groups” (Zedeño, Carroll, and Stoffle 2006:26). Ute, Southern Paiute, and Goshute territories overlapped in areas like the Escalante Valley, helping to perpetuate these raids. Because of slavery, Southern Paiutes often suffered the loss of their women and children. The loss of females and by extension marriage partners and food providers to Ute slave traders was a cause of great concern to the Las Vegas and Moapa Paiutes, continuing as late as 1855 (Edwards 1978:52; Jensen 1926:188). One historically documented case is of the Utes selling a Paiute boy to Kit Carson for \$40 at Antoine Robidoux’s trading post in 1844 (Simmons 2000:58). Because of the constant threat of kidnapping from the Utes, the Southern Paiutes refused to join the Utes on the Uintah Reservation.

Utes and other affiliated tribes received gifts in exchange for safe passage along the Old Spanish Trail. However, the depletion of grass, game, and water was resented so theft of woolen goods, animal herds, and other wares was common (Simmons 2000:48). One of the most daring drives of horse theft on the Old Spanish Trail was led by Ute Indian Chief Walkara (Simmons 2000; Roubidoux 1999). Walkara teamed up with two mountain men, Pegleg Smith and Jim Beckwourth, in 1835 to steal thousands of horses from the Spanish in the California territory.

The most famous expedition involved an intricate strategy in which different groups of Utes simultaneously drove off choice herd from various sources they had pinpointed previously as ripe for the taking. The group was pursued, and a skirmish took place at California’s Cajon Pass (Simmons 2000:49).

It is estimated that Walkara and his men made off with 4,000 horses. As they made their way back east, over half of the horses escaped into the wilderness of Southern Utah. The remaining 2,000 were most likely sold or traded in the Colorado territory.

The horses that escaped Walkara’s band are known today known as the Sulphur Herd. These wild horses are genetically linked to a breed of Spanish mustangs brought over during the time of colonial Nueva España. They are descended from a line of Iberian horses that are virtually extinct in Spain today (Roubidoux 1999). The Sulphur Herd has developed in the Escalante Valley and surrounding foothills. Initially, the farms and gardens of the Southern Paiute and Goshutes were damaged by the wild horses, so the latter were generally driven away or shot and eaten. However by 1900, Europeans had encroached on most Paiute and Goshute farming areas and subsequently shifted their economy to the emerging ranching way of life. To make this transition, the males learned to capture and ride the wild horses. Extra horses were broken to ride and either sold or traded, contributing to the economy. Horses also enabled quicker travel and greater distances for trade and activities of various ceremonies.

Mormon Settlement 1840s – 1850s

Mormon colonization began shortly before the mass influx of emigration to California. It should be noted that prior to the Gold Rush, their settlement of the area was limited. Between

1847 and 1848, Mormons began settling in the Salt Lake Valley. There, they subsisted on the food stuffs brought with them on their journey and on wild plant and animal resources. By the end of 1848, they had expanded their settlements to Weber Valley, north of Salt Lake City.

In the spring of 1849, Brigham Young dispatched a party to establish Provo at Utah Lake, south of Salt Lake City (Arrington 1958:84). The economy in these communities was unstable. Few of the Mormon settlers had been financially well-off prior to moving to Utah; many had lost their property during their persecutions in Illinois and elsewhere. The trans-Plains emigration route limited the types and amounts of goods that they could transport to their new communities. As a result, the colonists struggled along with a few clothes, building homes with limited tools, and surviving on wild foods and gardens.

When the Forty-niners started passing through the Mormon communities, they brought with them much needed supplies, livestock, building materials, iron, and wagons. The Mormons, who arrived between 1847 and 1848, acquired a wealth of goods from their transactions with the Forty-niners between 1849 and 1850. As a result, the centrally directed Church of Jesus Christ of Latter-day Saints was able to well equip its own arriving immigrants and outfit them with wagons, livestock, tools, and clothing. The church then sent these new colonists out to establish communities beyond the Ogden-Salt Lake City-Provo region.

Brigham Young and other Mormon leaders were keen to the possibilities of increasing profits and expanding and strengthening the boundaries of Zion. They planned to establish a Mormon Corridor of settlements from the Salt Lake City region to the Pacific Coast so they could establish their own seaport. They envisioned that these towns would continue to profit from overland migration as the original settlements did during the Gold Rush. They also planned to establish Mormon communities along the boundaries of the United States and Zion.

In 1850, Brigham Young sent a colony of Mormons to Parowan Gap and the development of Cedar City quickly followed (Ricks 1964). With the arrival of more settlers in the area, adverse impacts grew and Numic livelihoods were undermined as settlers moved across Indian territory, settling oases, springs, and rivers (Stoffle et al. 2008). Hostile interactions were often precipitated as traditional resources were abused and annexed by new comers. Edward Lyman describes the dynamic as, “the outsiders who so frequently crossed Indian lands, using their trails, livestock feed, water, as well as scarce game, refused to pay willingly, the Native Americans naturally adopted methods of exacting payment by stealing and wounding passing livestock so that the whites would leave it behind for their use” (2004:24). While Southern Paiutes and Goshutes sometimes requested payment successfully, oftentimes non-Indians who traveled along the wagon road would more likely shoot at Indian people who approached to request toll fees. This hostility and conflict grew to define the climate of negotiation at the time (Lyman 2004).

The development of permanent Euro-American settlement along the Mormon Corridor combined with the continued overland travel along the national wagon road impacted the nature of Native American land use in and around this route forever. These new communities were established at the primary water sources through this region and ultimately the settlers pushed the remaining Indian people away from their traditional agricultural fields and communities. Many of the new settlers lacked previous experiences with Indian people and viewed them as hostile.

This view made Indian resource use dangerous. Mormon settlement also disrupted the major Indian east-west trail network between the eastern mountain and plateau areas and led to a reduction of traditional Indian use.

In 1859, Mormon colonists began to move away from the corridor to begin farming in the Sevier River delta. They named their community Deseret (Day and Ekins 1951:436-437). The Mormon advance into the delta region discouraged later Numic utilization of traditional resources. The farming development in and around Deseret started a process of individual acquisition of title to public domain lands in the delta. Because of the reduced resource areas and the loss of access to key water sources, such as the Sevier River and Lake, Indian people found themselves working in labor gangs in Mormon communities where they earned, begged, stole, or were given food.

The Forty-Niners and the California Gold Rush

In 1849, the United States acquired the lands of present-day California, Nevada, Utah, Arizona, New Mexico, and Texas following the signing of the Treaty of Guadalupe Hidalgo. These lands were of great interest to the United States because they offered a wealth of natural resources and access to shipping ports on the Pacific Ocean. The Federal Government began to develop policies that would make these lands accessible to the general public, which affected the Indian people in the SEZ American Indian study area. Individual citizen initiatives, however, quickly outran national policy planning when sawmill workers near Sacramento discovered gold in the millrace in 1848. The Gold Rush began when the word spread throughout the country that gold had been discovered in California. By the spring of 1849, 40,000 to 50,000 people emigrated westward to California. While some took to ocean routes to reach the West Coast, many traveled overland along established trails and wagon roads. Some overland emigrants from the southern states traveled across northern Mexico or followed the wagon roads opened by Mormon military battalions (Cooke 1878; Coutts 1961). Most overland travelers followed the central route ascending the Missouri and Platte Rivers and crossing the Rockies to Mormon Salt Lake City. It was estimated that 10,000 to 15,000 were thought to have traveled through Salt Lake Valley in 1849 and an equal number in 1850 (Arrington 1958:68). Then most of the emigrants crossed the mountain passes in the Sierra Nevadas, directly to the gold region of California. Others detoured south very near the SEZ American Indian study area through Goshute and Pahvant Southern Paiute territory to Cajon Pass and southern California. This particular route offered the advantage to late-start travelers because it remained snow-free during the winter when deep snows make the passes in the high Sierra Nevadas impossible to travel (Stoffle and Dobyns 1982).

The surge of emigration intensified the Euro-American pressure on traditional resources throughout traditional Numic territory. Some areas experienced continued and often increased pressure put on resources that started during the Old Spanish Trail period. Some areas that once experienced indirect impacts during the Old Spanish Trail period now saw direct effects on resources due to the large volume of non-Indian travelers. Suddenly Indian people living in these newly impacted areas had to compete for wild plant and animal resources with the massive steady stream of migrating travelers.

The Southern Goshutes division suddenly found itself confronted by emigrants traveling south from Salt Lake City to the lower Sevier River. Goshute people appeared to have attempted to trade with these new travelers who tended to camp along the river to allow their draft and riding animals to graze. The Goshutes (or as there are sometimes referred to as in the literature, the “Snake Indians”) traded horses for firearms (Young 1954:64). Some historians have argued that these Indian traders were not Goshute people, but members of Chief Walker’s raiding band exchanging horses for guns. Ethnographic research suggests otherwise. These Indian people were identified as the “Snakes”, a term applied to Shoshone/Goshute peoples during this time. The Indian people were located along the Sevier River; a major agricultural center for Goshute peoples.

By mid-October 1849, Forty-niners recorded no Native Americans along the lower Sevier River. Evidence suggests that Goshute people moved away from the now highly used wagon road through their territory because the new emigrants brought social and environmental problems that were forced upon the Indian populations.

Goshute people moved away from the wagon road because it became an extremely dangerous along and around the road, creating a security issue. Plant and animal communities were greatly diminished by California bound travelers thus it was difficult for Indian people to access their traditional resources. For example, a Mormon in one of the wagon trains recorded Euro-American hunting behavior on Chalk Creek (currently Fillmore, Utah). Emigrants discovered a number of jackrabbits hiding under some sagebrush and they unleashed their dogs to flush out the rabbits. As the rabbits sprinted out from the bushes, “the rifle balls began to fly in every direction,” (Pratt 1998:72-73). The hunters slaughtered about a hundred jackrabbits and numerous sage hens. The large-scale slaughter of game animals likely led to a rapid depletion of food sources, which sufficiently handicapped Native American hunters.

By the time this documented shooting incident occurred, Pahvant Southern Paiutes had also moved away from the wagon road. While passing Chalk Creek, the Forty-niner who documented the shooting commented that Southern Paiutes were located along the creek’s headwaters (Pratt 1998:73). The wagon road veered eastward crossing Pahvant Southern Paiute territory and east of the Mineral and Black Mountains. As the travelers continued to move along the wagon road, they continued their mass shooting of game animals (Pratt 1998:75).

The Euro-American travelers also documented catching fish as they passed through present-day Utah. Pratt (1998:74) documented that one traveler caught a two pound trout along the Beaver River in late October 1849. There was a stone dam along another portion of the river that was likely used by Southern Paiutes for irrigation management of their agricultural fields that once surrounded the river. At the location of the dam, the Forty-niners caught large trout that weighed up to five pounds. When the party traveled through the Little Salt Lake area, Pratt (1954) noted the presence of numerous animal species such as geese, ducks, jackrabbits, and sage hens. He also recorded that the Indian people in the area at this time were friendly and visited with the Euro-American travelers. Later travelers did not mention meeting any Native Americans along the wagon trail at Little Salt Lake.

The massive migration by Euro-Americans often spread contagious Old World Pathogens to Native Americans. These diseases spread rapidly throughout Indian communities causing major population loss. In 1848, prior to the start of the Gold Rush, emigrants were already leaving the east coast of the United States for Oregon by taking the Oregon Trail. This route ascended the Platte River and in 1848, emigrants transmitted measles to the Snake Indians who then in turn they passed it on to the Plains Crow (Denig 1961:185). During the second summer of Mormon emigration, some of the contingent crossing to Great Salt Lake Valley appeared to have carried measles and took the sickness with them to their new outpost in Provo on Utah Lake. By 1849, the measles spread into the surrounding Ute communities (Anderson 1942:101). Given the highly contagious nature of this virus, it is likely that Goshute and Southern Paiute communities were impacted. There is indirect evidence in the ethnographic and ethnohistoric literature that suggests that this measles epidemic reached the Kaibab Paiutes and decimated their population (Euler 1966:90).

The start of the Gold Rush also brought a massive cholera outbreak that greatly affected Indian people across the United States. During this time, many non-Indian people were ill with cholera in most of the American cities and those who headed west towards California had ill persons in their traveling parties. The sanitary conditions in these wagon trains allowed cholera to continue to spread to new, susceptible people for long periods of time. The continued spread of this disease reached the western portion of the continent. Along the route, the infected Euro-American travelers contaminated the water supplies of various Native American groups, thus causing a major loss of lives. The spread of diseases likely played a major role in Goshute and Southern Paiute people moving away from the wagon road. They probably contacted whatever disease was being carried by the individual pack trains and suffered an unknown number of deaths. Some of these diseases like cholera hit these communities about a decade earlier, but the Indian people had retained knowledge of the symptoms and deadly nature of these illnesses that allowed them to develop coping strategies (Stoffle and Dobyns 1982).

As a result of the diseases and the increased levels of danger along the wagon road, Indian people sought refuge in other areas. When Southern Paiutes pulled away from the road, they moved to nearby highland areas in the Escalante Desert-Needles Range to the west and Colorado Plateau to the east (Stoffle and Dobyns 1982). Indian Peaks has been an area that has been repeatedly discussed as a region of refuge (see below). Indian Peaks was an isolated area that was a great distance from the trails and roads to California. In the upland areas in and around Indian Peaks, Southern Paiutes had a wide variety of food and medicinal resources that were untouched by Euro-American encroachment. Most importantly, the Indian Peaks area had a stable water source that could support people and agriculture.

Region of Refuge – Late 1700s until 1873

The term Region of Refuge was coined by G. Aguirre Beltrán in 1979 to describe what happened to traditional peoples in Mexico when they lost control over key aspects of their land, economy and social lives. Indigenous populations shifted themselves and important activities to isolated and protected portions of their traditional lands in the hopes of living out a traditional life in the face of encroachment forces (Beltrán 1979).

The Milford Flats South SEZ American Indian study area (including Indian Peaks to the west) became a region of refuge for Numic-speaking peoples living in southern Utah as early as 1849 during the first waves of major encroachment by the Forty-niners. The Forty-niners forced the Goshute and Southern Paiute people off the Indian roads and converted them to wagon roads. Large wagon trains did extensive damage to springs and river beds that took years to renew. These encroachments were exacerbated in the early 1850s. During this time, the Latter Day Saints Mormon Corridor was established. These settlements further forced Indian people off agriculturally and culturally valuable land. When water, agricultural lands, other natural resources, and even the privacy to conduct ceremonies were lost because of the new Mormon settlers, Numic people increasingly moved their key activities and even their residences to remote hinterlands in areas such as the Milford Flats South study area. Even after moving off coveted lands, however, additional encroachment and forced relocations by the US military and Euro-American settlers continued until the remaining members of Goshutes and Southern Paiutes in the area were settled on reservations.

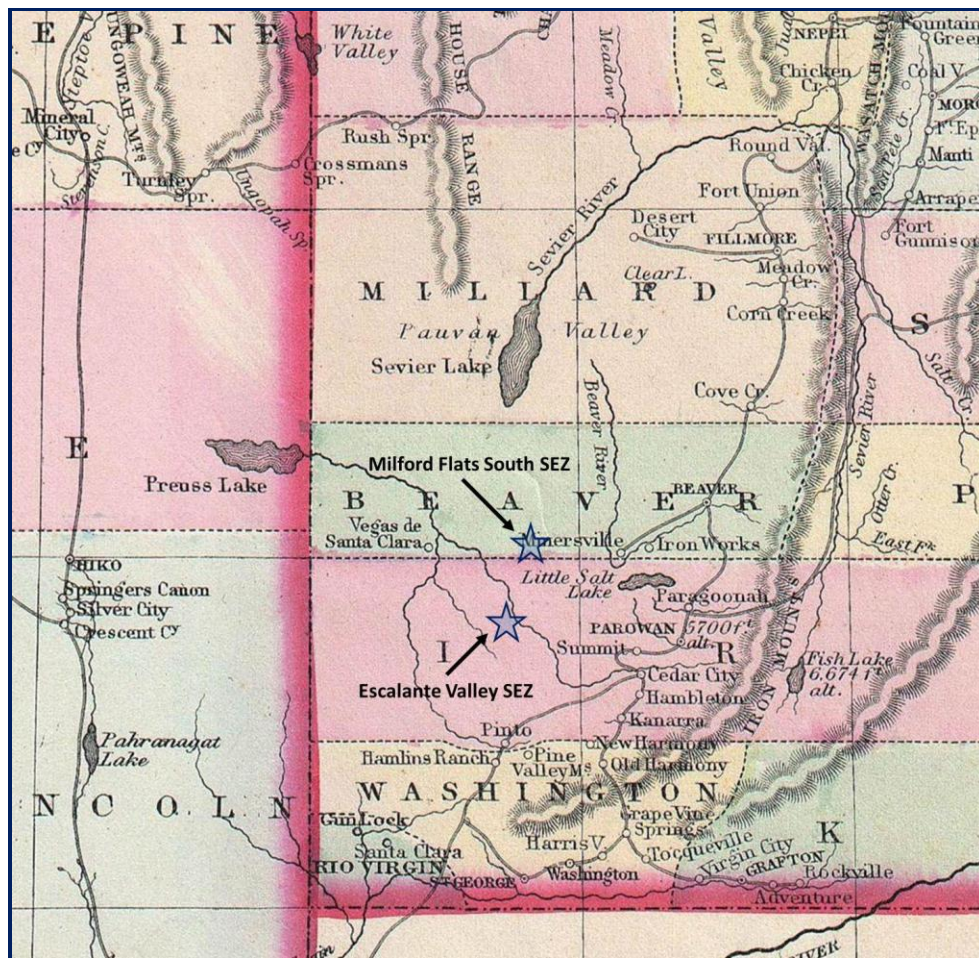


Figure 19 Map of SEZ American Indian Study Area and surrounding Region in 1872

Figure 19, drawn in 1872, indicates that the Escalante Valley was one of the most isolated areas in southern Utah. It remained so until mines were established to the west and transportation systems penetrated the area opening it up to development. The United States government passed a law in 1890, after the widespread Ghost Dance movement, outlawing any

Indian ceremony (Crum 1994). So even after 1900, isolated portions of the Milford Flats South SEZ American Indian study area such as the Thermo Hot Springs, Doctor Rock, and Indian Peaks were sought out by people for conducting ceremonies, social gatherings, and building communities.

Establishment of Ranching and Mining – Late 1800s to Early 1900s

The California Gold Rush migration began in 1849. Although northern towns such as Provo were established at this time, most of the Mormon towns were not established along the Wascha Oasis corridor until the early 1850s. “In mid-January of 1851, a Mormon company founded Parowan in Little Salt Lake Valley in Southern Paiute and Goshute territory” (Stoffle, Jones, and Dobyns 1995:184). The Gold Rush migration continued through this region throughout the 1850s, as illustrated by the Mormon massacre in 1857 at Mountain Meadows.

Cowboys and cattlemen were in Utah before the first Mormon pioneers and strongly influenced Mormon settlements and culture. The development of ranching grew alongside mining and transportation industries. Livestock came into Utah with the opening of the Old Spanish Trail that came through the southern part of Utah. Various goods such as rugs and blankets were exchanged for horses and mules (Powell 2010).

The first livestock herds arrived in the 1840s. Jim Bridger and Miles Goodyear brought livestock from Santa Fe to Fort Buenaventura and sold their livestock on November 25, 1847 to Captain James Brown. This was the first livestock sale in Utah and included seventy-five cattle, seventy-five goats, twelve sheep, and six horses. The first substantial amount of livestock was brought to Utah by the second company of the Mormon pioneers in 1847. They brought 358 sheep, 887 cattle, 2,213 oxen, thirty-five hog, 124 horses, and 716 chickens (Jacobs 1984). By 1850, the number of cattle in Utah had increased to 12,000 head and 34,000 head by 1860 (Powell 2010). Texas cattle were brought into Utah by John Hamilton Morgan in 1866. Morgan and a friend drove the first thousand head of Texas longhorns from Missouri to Salt Lake City. During his second expedition, Powell witnessed 2,000 head of Texas longhorns on June 8, 1871 along the Green River (Jacobs 1984).

The completion of the transcontinental railroad greatly changed Utah’s cattle industry. The railroad allowed a greater supply of cattle to be transported to eastern markets. Eastern and foreign capitalists stimulated economic investment in the West through livestock investments. By 1890, Utah had over 278,313 head (Powell 2010).

Mining related impacts in the Escalante Valley centered on activity in Iron Springs, Parowan Gap, and Cedar City. In 1849, as part of Latter Day Saints (LDS) exploration of the area, Parley Pratt discovered the iron deposits which would come to define the aptly named Iron County. A group of 150 adults was immediately dispatched by the LDS Church to settle and develop iron in the area (Ege 2005). The settlement at Parowan colony in 1851 was followed shortly after as the Mormon settlers pushed into the Cedar City area for the development of another iron settlement (Seegmiller 1998). During the later portion of 1851, Cedar City saw its population triple as the family members of the workers and military company members arrived. Later that year, the newly occupied Cedar City saw the development of its first iron

manufacturing on Coal Creek. In 1852 the population swelled again after the first successful batch of iron stimulated Brigham Young to call 100 new families to Cedar City. Janet Seegmiller estimated between 300 and 500 Indian residents lived in the Cedar City area, with the Cedar City chief Cal-o-e-chipe also representing the head of the Paiute council of bands (1998:58). With the arrival of the settlers in Cedar City Paiute peoples were displaced from their traditional homes and land base. While relationships with local Indian people were generally stable, the pressure of encroachment occasionally turned violent between Mormon settlers and Ute and Navajo populations passing through the Cedar City area. This violence escalated to the Walker War with Chief Walkara, which concluded in 1854. While relationships with the Native American populations were stable, tensions remained visible in the continued construction of adobe forts and the training of militia soldiers. Cedar City's initially push for iron mining and manufacturing never attained the level of production desired and was eventually sidetracked by military conflict with the United States government in the 1857 Utah War. (Seegmiller 1998)

Coal mining in the Escalante Valley focused predominately in Coal Canyon. Two veins were found in the canyon almost concurrently with Cedar City iron in 1851 and represented the needed fuel that drove iron production. In 1893, Henry Holt discovered silver west of Shoal Creek however, the claim that this mine (Escalante Mine) would become the second most successful mine in Iron County did not yield great results until 1980 because the mineshaft quickly filled with water. The Jennie Mine, on Buck Mountain represented the greatest producer of gold in the area between 1907 and the 1940s. Aside from silver and gold in the Escalante and Jennie mines, other minerals were found only sporadically throughout between 1890 and 1940. (Seegmiller 1998)

Railroad 1899

The transcontinental railroad finished crossing Utah in 1869. This date is a benchmark in Utah history, marking the end of the Pioneer Era (Strack 1994:450; Seegmiller 1998:381). Milford was established as a town in 1870 for mining and cattle ranching. The Utah Southern Railroad Extension tracks reached Milford on May 15, 1880 (Strack 2011), after which Milford became an important transportation center for ore and livestock shipments. The construction of railroad line crossing the Escalante Valley from Milford, Utah was encouraged by the opening of mines at Stateline and Gold Springs in the 1890s. The Utah and Pacific Railroad completed the route from Milford to Uvada, Utah between October 1898 and July 1899 (Seegmiller 1998:382).

Railroads needed to build extensive waterworks to supply the trains and were faced with the problem of operating over a vast, waterless landscape. Water was diverted from springs to support railroad construction, maintenance, operations, and steam locomotives. The development of these extensive waterworks allowed for increased transportation and urban progress (Orsi 1991:46, 49). Towns grew around the train stations at Modena, Beryl, Lund, and Milford, Utah. The development of the railroad became important for shipping, tourism, and farming in the area. Milford, Utah became the key shipping center for the surrounding area, catering mostly to mines with the introduction of the railroad (Seegmiller 1998:383).

Potential SEZ American Indian Study Area Impacts – Tribal Recommendations

During the field visits, tribal representatives expressed concerns pertaining to the current environmental and cultural conditions of the Milford Flats South SEZ American Indian study area. During interviews, they provided management recommendations for Native American resources and for potential solar energy development.

Solar Recommendations

- Tribal representatives believe that solar energy development in the Milford Flats South SEZ American Indian study area will adversely impact the identified special features (Table 1).
- Tribal Representatives stipulate that the cultural resources in the Milford Flats South SEZ American Indian study area are important to understanding their past, their present, and their future. They stipulate that these resources will always be culturally important to Indian people.
- Tribal representatives believe that the culturally significant places mentioned in the above text should be considered for tribal declarations as Sacred Sites (Executive Order 13007) and nominations as Traditional Cultural Properties (Bulletin 38) to the National Register of Historic Places.

Bureau of Land Management Recommendations

The consulting tribes believe the Milford Flats South SEZ American Indian study area should be managed as an integrated spiritual cultural landscape. To accomplish this goal, Southern Paiute and Goshute tribal representatives should be brought together with Bureau of Land Management managers to work out an integrated cultural landscape management plan.

- Tribal representatives stipulate that they would like to return to the Thermo Hot Springs in the future and reestablish traditional usage of the springs as a ceremonial and medicinal use area for Numic-speaking peoples.
- Tribal representatives requested that the Shoshone Veterans Union return to Thermo Hot Springs for traditional healing ceremonies and other cultural activities.
- Tribal representatives believe that the culturally significant places mentioned in the above text should be considered for tribal declarations as Sacred Sites (Executive Order 13007) and nominations as Traditional Cultural Properties (Bulletin 38) to the National Register of Historic Places.

- The consulting tribes desire to be formally contacted on a government to government basis whenever projects or proposed land management actions occur on and/or near the following topographic areas:
 - Thermo Hot Springs
 - Lake Bonneville
 - Beaver River
 - Parowan Gap
 - Indian Graves Peak