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EXPLANATION

- Project Boundary
- Restricted Access Area
- Wildness Study Areas (WSAs)
- Analysis/Study Area for Recreation and Wildness Resources
- Pony Express Trail
- BLM Recreation Sites**
- Hickson Petroglyph Site
- Tonkin Spring



0 2 4 6 8 10 Miles			
DESIGN	EMLLC	DRAWN	CVD/GSL
CHECKED	APPROVED	REVIEWED	RFD
		DATE	08/01/2012
FILE NAME: p1635_Fig3-15-1_Wildness&Rec.mxd			

BUREAU OF LAND MANAGEMENT
MOUNT HOPE PROJECT



BATTLE MOUNTAIN DISTRICT OFFICE
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Battle Mountain, Nevada 89820

DRAWING TITLE:
Wildness Study Areas and Recreation Sites
Figure 3.15.1

petroglyph viewing, hiking, picnicking, camping, and horseback riding. Originally developed in 1968, the site has 16 camp sites, four picnic sites, three restrooms, and a 0.3 mile interpretive trail. Most visitors stay only 20 to 60 minutes; long enough to visit the petroglyphs. It is estimated that approximately 2,500 visitors a year spend at least one night in the campground. In 2005, 81 percent of the visitors who logged their name in the registration book at the site were from outside of Nevada and six percent were from outside of the U.S. Many visitors have visited the site on more than one occasion. An increasing number of visitors are considering the Hickison Petroglyph Recreation Site their destination rather than as a stopover on their way somewhere else. Recent developments at Hickison include construction of more than 13 miles of equestrian/hiker trails and installation of a trailhead with connector trails to the campground.

Table 3.15-1: Recreational Areas and Estimated Annual Visitors for 2006

Recreation Area	Estimated Annual Visitors
Antelope Range (Portion)	630
Hickison Petroglyph Recreation Site	21,870
Roberts Mountain	968
Roberts Mountain WSA	487
Simpson Park Mountains	739
Simpson Park WSA	150
Tonkin Spring	612
Pony Express National Historic Trail	230
Pony Express National Historic Trail Annual Re-ride	45
Dispersed Recreation	26,000
Total Estimated Recreation Visitors in the Study Area	51,731

Future funding would allow a total of 30 to 50 miles of trail to be built. The trail system would include a portion of the Pony Express National Historic Trail. Additional funding would also allow construction of new camp loops and improvements to existing facilities. Many visitors combine their visit to Hickison with a visit to the nearby Spencer Hot Springs, which is a popular natural hot spring site. Visitor feedback has shown a need for increased hiking/equestrian opportunities in the area.

Roberts Creek, Pete Hanson Creek, and Tonkin Springs

The Roberts Mountains in general, and Roberts Creek, Pete Hanson Creek, and Tonkin Springs in particular, are areas that receive a high level of use from locals and visitors. These areas provide numerous recreational opportunities, including fishing (Roberts Creek and Tonkin Reservoir are stocked by the NDOW), hiking, wildlife viewing, and hunting. Additionally, the Roberts Creek area is easily accessed by Southern Eureka County residents and used particularly for camping and fishing. Between 2000 and 2009, fishing use on Roberts Creek and Tonkin Reservoir **averaged** 17 and 101 anglers per year, respectively, and each angler caught seven and 16 fish respectively.

Organized Events or Special Recreation Permits

In 2006, all but one special recreation permit were for hunting related outfitting and guiding permits in the study area. The other permit was approved for XP Rides to conduct a Pony Express Trail re-ride in June of that year. The re-ride has been an annual event, conducted in June in recent years. The permit involves a re-ride for the entire Pony Express National Historic Trail across a multi-state area. The number of participants within the study area is estimated to be approximately 45 people for each event.

It is estimated that there are one to five guided hunts within the study area every year, each involving two to 25 participants. Due to the fact that permits are issued either statewide or for multiple BLM districts, the number of guided hunts in the area is highly variable and has been factored into the dispersed use visitor statistics.

Hunting

There are a variety of hunting opportunities in the general region. Common species hunted include mule deer, pronghorn antelope (*Antilocarpa americana*), mountain lion (*Puma concolor*), greater sage-grouse, chukar (*Alectoris chukar*), cottontail (*Sylvilagus nuttallii*), quail (*Oreortyx pictus*), pigeon (*Columba livia*), mourning dove (*Zenaidura macroura*), and waterfowl. Bighorn sheep (*Ovis canadensis*) and elk (*Cervus canadensis*) are also hunted in portions of the study area. Public scoping comments for the Project expressed concern over continued access for hunting in or near the Project Area.

The NDOW regulates big game hunting through a quota system, and tags are sold for each big game species in the various hunt units. The study area includes all of Hunt Units 142, 143, 145 and all but a very small portion of Hunt Unit 144. The study area overlaps portions of Hunt Units 65, 155, 161, 162, 163, 164, 131, and 108. The big game status and trend for the Project Area are discussed in Section 3.24 (Wildlife and Fisheries Resources). The big game hunt statistics for the hunt units that are within or that overlap the study area are shown in Table 3.15-2. The hunt unit statistics presented in Table 3.15-1 reflect the average number of animals harvested in each unit. This is a result of the statistics being divided by multiple hunt unit groups provided in the NDOW data (NDOW 2010).

Table 3.15-2: 2010 Harvest by Hunt Unit and Group

Hunt Unit	Bighorn Sheep			Elk			Mule Deer			Pronghorn Antelope		
	Tags	Number of Success	Percent of Success	Tags	Number of Success	Percent of Success	Tags	Number of Success	Percent of Success	Tags	Number of Success	Percent of Success
Hunt Units within the Recreation Study Area												
142	0	0	0	0	0	0	378	157	59	34	25	71
143	0	0	0	0	0	0	378	157	49	85	59	40
144'	0	0	0	0	0	0	386	161	53	31	23	74
145	0	0	0	0	0	0	368	151	34	69	49	49
Hunt Units that Overlap the Recreation Study Area												
65	4	4	100	0	0	0	52	33	62	41	25	47
155	0	0	0	0	0	0	125	133	57	105	64	37
161	14	11	82	183	80	51	560	196	43	18	16	70

Hunt Unit	Bighorn Sheep			Elk			Mule Deer			Pronghorn Antelope		
	Tags	Number of Success	Percent of Success	Tags	Number of Success	Percent of Success	Tags	Number of Success	Percent of Success	Tags	Number of Success	Percent of Success
162	4	4	100	183	80	51	560	196	43	18	16	70
163	4	4	100	183	80	51	561	197	49	70	49	37
164	3	2	67	183	80	51	560	196	43	70	49	37
131	4	4	100	90	51	68	86	47	42	76	54	46
108	0	0	0	30	20	63	4,055	1,048	42	94	55	54

¹A very small portion of the Hunt Unit is outside the Recreation Study Area boundary.
Source: NDOW 2009-2010 Big Game Status (NDOW 2010)

SCORP

The SCORP identified the ten most popular outdoor recreation activities in the Nevada market region, which includes Nevada, California, Oregon, Idaho, Utah, and Arizona. These activities included walking for pleasure, family gatherings, viewing/photographing natural scenery, visiting nature centers, gardening or landscaping, picnicking, sightseeing, driving for pleasure, viewing/photographing wildflowers, and visiting historic sites (Nevada Division of State Parks 2010). Respondents to the SCORP said that the five outdoor recreation areas and facilities that are most needed outside their local community were camping, fishing, parks, hiking, and biking. The SCORP also ranked and weighted the top eight outdoor recreation issues in Nevada. The number one issue identified was public access to public lands for diverse outdoor recreation (Nevada Division of State Parks 2010). Additionally, SCORP's strategies emphasize water-based recreational opportunities which are provided at Roberts Creek, Pete Hanson, and Tonkin Springs.

Local and County Recreation Facilities

Tourism and recreation attractions in southern Eureka County include hunting, sightseeing, off-road vehicle use, visits to the Eureka Opera House and Sentinel Museum, wild horse viewing, general interest in the historic mining character of the community, and events such as the county fair, the county youth fair, the high school rodeo and a series of horse shows, softball tournaments, and shooting and archery tournaments. Bicycle racers use the Town of Eureka for overnight stays.

In addition to the many available outdoor recreation opportunities available in southern Eureka County, Eureka County and the Eureka County School District (ECSD) provide a number of developed recreation facilities. The county provides a park in Eureka, which offers barbecue facilities, covered picnic tables, horseshoe pits and a children's playground. The county also provides two baseball diamonds and an indoor swimming pool in Eureka. The school district allows community use of an indoor gymnasium, football field, and a running track when these facilities are not being used for school events.

The Eureka County **Fairgrounds**, located on the **north end** of Eureka, provides a pavilion with a stage, a fair building, restrooms, concession stand, and large and small arenas (Eureka County 1996). This facility hosts events such as the county fair, the county youth fair, the high school rodeo, and a series of horse shows, softball tournaments, bicycle races and shooting and archery tournaments (Eureka County Economic Development Council 2006).

Of importance to the local community and visitors are Roberts Creek, Pete Hanson Creek, and Tonkin Reservoir, which are important parts of the recreational portfolio. These areas have been used as traditional and historic fishing areas for the residents of Eureka County and others, and provide important water-based recreational and fishing opportunities in areas within close proximity to residents.

3.15.2.2.2 Wilderness Study Areas

Roberts Mountain WSA

The Roberts Mountain WSA is located in the Roberts Mountains approximately 40 miles northwest of Eureka, Nevada (Figure 3.15.1). The WSA includes 15,090 acres of public land with no privately owned inholdings. The Roberts Mountain WSA is irregularly shaped and surrounded on the three sides by major valley systems. The WSA consists of rugged mountainous areas and contains three prominent peaks. The varied topography has led to a variety of vegetative communities in proximity to one another. Vegetation consists of willow, cottonwood, aspen, birch, and dogwood trees in the deep narrow canyons. Mountain mahogany trees and limber pine are found in isolated stands on the barren rock ridges. **The BLM recommends zero acres as suitable for wilderness designation.**

The Roberts Mountains are the type locality (the geologic point of first recognition for example) of the Roberts Mountains Thrust, which is a major geologic structure in western North America. The area has been referred to as “the Window of the World” because of the unique view it gives of the complex geologic structure of the region and has been studied by professional geologists and students from across the nation because of its rare qualities and geologic importance.

Simpson Park WSA

The Simpson Park WSA is located in the Simpson Park Mountain Range approximately 50 miles northwest of Eureka, Nevada. The WSA includes 49,670 acres of public land and surrounds two privately owned inholdings totaling 80 acres. The Simpson Park WSA consists of mountainous topography with scattered stands of aspen and mountain mahogany. The WSA is approximately 17 miles long and five miles wide. No special features of geological, ecological, scientific, educational, scenic, or historical value are known to exist in the Simpson Park WSA. **The BLM recommends zero acres as suitable for wilderness designation.**

3.15.3 Environmental Consequences and Mitigation Measures

3.15.3.1 Significance Criteria

The Proposed Action or alternatives would be considered to have a significant effect on the environment if the following would occur:

- Conflict with formally established recreational, educational, religious, or scientific uses of the area;
- Result in nonconformance with the Wilderness Act of 1964 or the BLM Interim Management Policy for Lands Under Wilderness Review;
- Substantially degrade or reduce the quantity or quality of the area available for existing or future recreational opportunities; or

- Result in the unmitigated loss of a unique recreational resource.

3.15.3.2 Assessment Methodology

The Proposed Action and alternatives were compared to the recreational planning information obtained from Eureka County, NDSP, and BLM to determine the potential for, and expected severity of, conflicts with existing and planned recreational uses. Potential effects on recreational resources can be categorized as short term (i.e., during the life of the Project) and long term. Short-term loss of recreation would occur in areas subject to surface disturbance and subsequent reclamation. Long-term loss of recreation would occur in areas that would not be reclaimed. The effects are determined to be significant or not significant based on the applicable significance criteria listed in Section 3.15.3.1.

3.15.3.3 Proposed Action

3.15.3.3.1 Short-Term Recreational Opportunities

Implementation of the Proposed Action would directly affect recreation through loss of public lands managed for multiple uses, including dispersed recreation, for the duration of the Project including reclamation (approximately 70 years) within the fenced portion of the Project Area. The portion of the Project Area that would not be accessible to the public, the 14,204 fenced acres that includes the main portion of the Project Area (open pit, WRDF, and TSFs) and the well heads and booster stations, is similar to the surrounding region and does not provide unique recreational opportunities for the area. This area would be reopened to the public as soon as the mine poses no safety risk following reclamation. The restoration of recreational opportunities within the Project Area would depend on the successful reclamation of the land. Large areas of open land outside the Project Area, but within the BLM's MLFO, are available for dispersed recreation. In a portion of central Nevada where most of the surrounding lands are open public lands, the fencing and restricted public use of the Project Area would not greatly limit recreational opportunities. However, those individuals that currently use the Project Area for recreational activities or hunting would be required to use other areas over the life of the Project.

- **Impact 3.15.3.3-1:** Public lands within the fenced portion of the Project Area (14,204 acres) potentially used for dispersed recreation would be removed from use in the short term as a result of the construction and operation of the Project.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.3.2 Long-Term Recreational Opportunities

Under the Proposed Action, 734 acres of the Project Area would be restricted from recreation in the long term for safety and security reasons through the installation of the berms and fencing. This area corresponds to the open pit.

- **Impact 3.15.3.3-2:** A total of 734 acres within the Project Area would be closed to public access and users in the long term.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.3.3 Regional Recreation Effects

The Proposed Action would result in an increased population in the local region and associated increase in demand for recreational opportunities. Dispersed and developed recreation areas would be impacted by increased use and demand.

- **Impact 3.15.3.3-3:** Public lands, developed recreation sites, and community recreation facilities would be impacted by increased use and demand.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.3.4 Wilderness Study Area Effects

The Proposed Action would have no direct impact on wilderness areas or WSAs. The Proposed Action conforms with the Wilderness Act of 1964 and the BLM's IMP for WSAs.

3.15.3.3.5 Indirect Effects

Potential indirect impacts to recreation could occur if ground water pumping activities decrease the flows in Roberts Creek. Decreased flows could limit fishing opportunities and the overall quality of the area for camping and general recreational activities. Other indirect impacts to recreation associated with the Proposed Action may result due to impacts to vegetation, wildlife, or visual resources. Potential impacts to these resources are analyzed in Sections 3.9, 3.24, and 3.7, respectively. Potential impacts and associated mitigation to flows in Roberts Creek are outlined in Section 3.2.

3.15.3.3.6 Residual Adverse Impacts

The Proposed Action would result in the unavoidable loss of up to 14,204 acres in the short term and an unavoidable and adverse loss of 734 acres in the long term of public land managed for multiple uses, including dispersed recreation, resulting from surface disturbance, and access to surrounding recreation areas would be restricted through a portion of the Project Area. As a result of the increased population in the area, there would be an increased demand for recreational areas and facilities; however, due to the proximity of similar public lands, the unavoidable potential impacts are considered less than significant. There would be no residual adverse impacts on wilderness or WSAs.

3.15.3.4 No Action Alternative

3.15.3.4.1 Short-Term Recreational Opportunities

Under the No Action Alternative, the proposed Project would not be developed and associated impacts to recreation would not occur; however, EML would continue to conduct mineral exploration and data acquisition within the Project Area. Ongoing reclamation would help to minimize impacts to recreation as a result of these activities. The area would remain available for future mineral development, recreational use, or for other purposes as approved by the BLM.

- **Impact 3.15.3.4-1:** Public lands potentially used for dispersed recreation adjacent to the mineral exploration and data acquisition areas would be removed from use for the duration of those activities.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.4.2 Residual Adverse Impacts

The No Action Alternative would result in the unavoidable loss of public land managed for multiple uses, including dispersed recreation, resulting from surface disturbance; however, the loss of recreational areas under this alternative would be minimal. There would be no residual adverse impacts on wilderness or WSAs.

3.15.3.5 Partial Backfill Alternative

3.15.3.5.1 Short-Term Recreational Opportunities

The Partial Backfill Alternative would involve the partial backfilling of the open pit to eliminate the pit lake and the floor of the open pit would be reclaimed with growth media and seeded. Although the Proposed Action would have 734 acres that would remain unvegetated in the open pit, under this alternative approximately 206 acres associated with the remaining open pit highwalls would remain unvegetated following Project completion and reclamation; however, impacts to recreation from this alternative would be the same as the Proposed Action since the fenced area around the Project would be the same.

- **Impact 3.15.3.5-1:** Public lands within the fenced portion of the Project Area (14,204 acres) potentially used for dispersed recreation would be removed from use in the short term as a result of the construction and operation of the Project.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.5.2 Long-Term Recreational Opportunities

Even though the open pit would be partially backfilled and the pit floor revegetated, the 734 acres of the open pit would be restricted from recreation in the long term for safety and security reasons, which is the same as under the Proposed Action.

- **Impact 3.15.3.5-2:** A total of 734 acres within the Project Area would be closed to public access and users in the long term through the installation of the berms and fencing.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.5.3 Regional Recreation Effects

The Partial Backfill Alternative would result in an increased population in the local region and associated increase in demand for recreational opportunities. Dispersed and developed recreation areas would be impacted by increased use and demand.

- **Impact 3.15.3.5-3:** Public lands, developed recreation sites, and community recreation facilities would be impacted by increased use and demand.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.5.4 Wilderness Study Area Effects

The Partial Backfill Alternative would have no direct impact on wilderness areas or WSAs. The Proposed Action conforms with the Wilderness Act of 1964 and the BLM's IMP for WSAs.

3.15.3.5.5 Indirect Effects

Potential indirect impacts to recreation could occur if ground water pumping activities decrease the flows in Roberts Creek. Decreased flows could limit fishing opportunities and the overall quality of the area for camping and general recreational activities. Indirect impacts to recreation associated with the Partial Backfill Alternative may result due to impacts to vegetation, wildlife, or visual resources. Potential impacts to these resources are analyzed in Sections 3.9, 3.24, and 3.7, respectively.

3.15.3.5.6 Residual Adverse Impacts

The Partial Backfill Alternative would result in the unavoidable loss of up to 14,204 acres in the short term and an unavoidable and adverse loss of 734 acres in the long term of public land managed for multiple uses, including dispersed recreation, resulting from surface disturbance,

and access to surrounding recreation areas would be restricted through a portion of the Project Area. There would be an increased demand for recreational areas and facilities; however, due to the proximity of similar public lands, the unavoidable potential impacts are considered less than significant. There would be no residual adverse impacts on wilderness or WSAs.

3.15.3.6 Off-Site Transfer of Ore Concentrate for Processing Alternative

3.15.3.6.1 Short-Term Recreational Opportunities

Although the Off-Site Transfer of Ore Concentrate for Processing Alternative would result in approximately 20 acres less surface disturbance compared to the Proposed Action, impacts to recreation from this alternative would be the same as the Proposed Action since the fenced area of the Project would be the same.

- **Impact 3.15.3.6-1:** Public lands within the fenced portion of the Project Area (14,204 acres) potentially used for dispersed recreation would be removed from use in the short term as a result of the construction and operation of the Project.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.6.2 Long-Term Recreational Opportunities

Under the Off-Site Transfer of Ore Concentrate for Processing Alternative, 734 acres of the Project Area would be restricted from recreation in the long term for safety and security reasons. This area corresponds to the open pit.

- **Impact 3.15.3.6-2:** A total of 734 acres within the Project Area would be closed to public access and users in the long term through the installation of the berms and fencing.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.6.3 Regional Recreation Effects

The Off-Site Transfer of Ore Concentrate for Processing Alternative would result in an increased population in the local region and associated increase in demand for recreational opportunities. Dispersed and developed recreation areas would be impacted by increased use and demand.

- **Impact 3.15.3.6-3:** Public lands, developed recreation sites, and community recreation facilities would be impacted by increased use and demand.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.6.4 Wilderness Study Area Effects

The Off-Site Transfer of Ore Concentrate for Processing Alternative would have no direct impact on wilderness areas or WSAs. The Proposed Action conforms with the Wilderness Act of 1964 and the BLM's IMP for WSAs.

3.15.3.6.5 Indirect Effects

Potential indirect impacts to recreation could occur if ground water pumping activities decrease the flows in Roberts Creek. Decreased flows could limit fishing opportunities and the overall quality of the area for camping and general recreational activities. Indirect impacts to recreation associated with the Off-Site Transfer of Ore Concentrate for Processing Alternative may result due to impacts to vegetation, wildlife, or visual resources. Potential impacts to these resources are analyzed in Sections 3.9, 3.24, and 3.7, respectively.

3.15.3.6.6 Residual Adverse Impacts

The Off-Site Transfer of Ore Concentrate for Processing Alternative would result in the unavoidable loss of up to 14,204 acres in the short-term and an unavoidable and adverse loss of 734 acres in the long-term of public land managed for multiple uses, including dispersed recreation, resulting from surface disturbance, and access to surrounding recreation areas would be restricted through a portion of the Project Area. There would be an increased demand for recreational areas and facilities; however, due to the proximity of similar public lands, the unavoidable potential impacts are considered less than significant. There would be no residual adverse impacts on wilderness or WSAs.

3.15.3.7 Slower, Longer Project Alternative

Impacts to recreation from the Slower, Longer Project Alternative are expected to be similar to impacts from the Proposed Action at the end of the Project; however, impacts from the Slower, Longer Project Alternative would occur over a period approximately twice as long in duration compared to the Proposed Action.

3.15.3.7.1 Short-Term Recreational Opportunities

- **Impact 3.15.3.7-1:** Public lands within the fenced portion of the Project Area (14,204 acres) potentially used for dispersed recreation would be removed from use in the short-term as a result of the construction and operation of the Project.

Significance of the Impact: The impact is not considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.7.2 Long-Term Recreational Opportunities

Under the Slower, Longer Project Alternative, 734 acres of the Project Area would be restricted from recreation in the long-term for safety and security reasons. This area corresponds to the open pit.

- **Impact 3.15.3.7-2:** A total of 734 acres within the Project Area would be closed to public access and users in the long-term.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.7.3 Regional Recreation Effects

The Slower, Longer Project Alternative would result in an increased population in the local region and associated increase in demand for recreational opportunities. Dispersed and developed recreation areas would be impacted by increased use and demand.

- **Impact 3.15.3.7-3:** Public lands, developed recreation sites, and community recreation facilities would be impacted by increased use and demand.

Significance of the Impact: The impact does not meet the significance criteria listed in Section 3.15.3.1.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.15.3.7.4 Wilderness Study Area Effects

The Slower, Longer Project Alternative would have no direct impact on wilderness areas or WSAs. The Slower, Longer Project Alternative conforms with the Wilderness Act of 1964 and the BLM's IMP for WSAs.

3.15.3.7.5 Indirect Effects

Potential indirect impacts to recreation could occur if ground water pumping activities decrease the flows in Roberts Creek. Decreased flows could limit fishing opportunities and the overall quality of the area for camping and general recreational activities. Indirect impacts to recreation associated with the Slower, Longer Project Alternative may result due to impacts to vegetation, wildlife, or visual resources. Potential impacts to these resources are analyzed in Sections 3.9, 3.24, and 3.7, respectively.

3.15.3.7.6 Residual Adverse Impacts

The Slower, Longer Project Alternative would result in the unavoidable loss of up to 14,204 acres in the short-term and an unavoidable and adverse loss of 734 acres in the long-term

of public land managed for multiple uses, including dispersed recreation, resulting from surface disturbance, and access to surrounding recreation areas would be restricted through a portion of the Project Area. There would be an increased demand for recreational areas and facilities; however, due to the proximity of similar public lands, the unavoidable potential impacts are considered less than significant. There would be no residual adverse impacts on wilderness or WSAs.

3.16 Auditory Resources

3.16.1 Regulatory Framework

The State of Nevada and Eureka County do not have auditory resources criteria or standards for evaluating auditory resource impacts associated with mining operations; therefore, auditory resource impacts would be evaluated in this document according to the estimated degree of disturbance to the nearest sensitive receptor sites. The BLM and the NPS do not have auditory criteria or standards.

3.16.2 Affected Environment

This section explains the terminology used to describe sound levels and auditory resources, as well as the existing noise conditions at selected locations near the Project. Hearing a sound occurs when rapid variations in air pressure are stimulating or moving the ear drum (tympanic membrane), and this mechanical movement, in turn, stimulates various components of the peripheral and central auditory system. Noise is a sound which is unwanted or not desired and which may disrupt human activities **and wildlife**. Air pressure variations are measured as the change in sound pressure exerted on the diaphragm of a microphone attached to a sound level meter.

Sound is measured in units of decibels (dB) and for environmental purposes usually is measured in units of decibels A-weighted (dBA). A-weighting refers to an electronic technique which simulates the relative response of the human auditory system to the various frequencies comprising all sounds. The sound levels are described in units of dBA, unless stated otherwise. The sound measurement scale is not linear, it is logarithmic. A logarithmic scale is used because sound levels can span over a very large range and the logarithmic scale permits use of relatively small numbers. For example, sound pressures of approximately 115 dBA are not uncommon in nightclubs or near loudspeakers at rock concerts. A sound pressure at 115 dBA is equal to 10,000,000 micropascals. In contrast, zero dBA is the threshold of human hearing, which is equivalent to 20 micropascals. Thus, a range of approximately ten million pressure units can be described with only 115 dB units. This range is specific to this example, but sound pressure levels of 140 dBA and above have been recorded near rocket engines.

Logarithmic scales cannot be added arithmetically. For example, one sound at 80 dB plus another sound at 80 dB would not equal 160 dB. The combined 80 dB sounds would result in a total sound level of approximately 83 dB because sound is measured on a logarithmic scale. The combined total sound level from two sources is only 40.3 dBA if one sound is at 40 dBA and the second sound is at 29 dBA. The following are rules that may be helpful in understanding this analysis:

- In general, one sound must be at least three dB louder than another sound for people to reliably determine that one sound source is louder than a second source; and
- A sound that is approximately ten dB louder than a second sound would be perceived as being about twice as loud as the second sound.

Federal recommendations for acceptable noise levels at residential receivers are generally in the range of 55 dB L_{dn} to 65 dB L_{dn} (L_{dn} = level day/night), based upon the recommendations contained in the EPA "Levels Document" (1974) and upon the 65 dB L_{dn} criterion applied by the U.S. Department of Housing and Urban Development and other federal agencies. These criteria are typically applied to noise from transportation noise sources, but may be used to assess the compatibility of other noise sources relative to residential land uses, provided that consideration is given to potential disturbances due to impulsive sound, tonal content (whistles, music, etc.), and the prevalence of nighttime activities.

For other noise sources, especially those that may occur over short periods of the day or night, it is common to apply noise criteria based upon hourly noise levels, making a distinction between noise levels produced during daytime and nighttime hours. Acceptable hourly noise levels in residential areas are usually considered to be in the range of 50 to 55 dB (average) during daytime hours and 45 to 50 dB (average) during nighttime hours; the lower noise level limits would be appropriate in areas that currently have low ambient noise levels. Hourly noise standards are usually expressed in terms of average (L_{eq}) or median (L_{50}) noise levels, and they often are corrected for the presence of impulsive sounds and tonal content.

Table 3.16-1 shows the approximate sound levels associated with various common sources. Note that the range of sound levels is 75 dBA (from 25 to 100 dBA) and ranges between the very quiet (rustling leaves) to a loud auto horn. The measured sound level decreases with increasing distance between a sound source and the sound-measuring device or the listener. Distances are specified for some sources in Table 3.16-1.

Table 3.16-1: Relative Scale of Various Noise Sources

Noise Level (dBA)*	Common Indoor Noise Levels	Common Outdoor Noise Levels
110	Rock band	--
105	--	Jet flyover at 1,000 feet
100	Inside New York subway train	--
95	--	Gas lawn mower at 3 feet
90	Food blender at 3 feet	--
80	Garbage disposal at 3 feet, or shouting at 3 feet	Noisy urban daytime
70	Vacuum cleaner at 10 feet	Gas lawn mower at 100 feet
65	Normal speech at 3 feet	Commercial area, heavy traffic at 300 feet
60	Large business office	--
50	Dishwasher in next room	Quiet urban daytime
40	Small theater, large conference room	Quiet urban nighttime
35	--	Quiet suburban nighttime
33	Library	--

Noise Level (dBA) ^a	Common Indoor Noise Levels	Common Outdoor Noise Levels
28	Bedroom at night	--
25	Concert hall (background)	Quiet rural nighttime
15	Broadcast and recording studio	--
5	Threshold of hearing	--

^a A-weighted decibel sound scale.

At relatively high levels, noise can be a nuisance because it may interfere with daytime activities such as hearing and understanding speech, it may disrupt sleep, or more generally degrade the quality of life; however, there is no simple answer to the question of “how much noise is too much?” In part, the answer depends on the loudness of the noise relative to ambient or background noise level, when it occurs, what the listener is doing, what the noise source is, and the listener’s attitude toward the source. Nonetheless, some reasonably accurate estimates of how communities of people may respond to noise can be made based on measurements and predictions of the A-weighted noise levels expected at some locations. These estimates are based on a fairly large number of scientific studies of community responses to noise at many average noise levels from a wide variety of noise sources (Harris 1991; Kryter 1985; and May 1978). The studies and empirically validated techniques for estimating (predicting) noise levels at receptors (Edison Electric Institute 1984) are used in predicting and evaluating noise effects on humans.

3.16.2.1 Study Methods

The Project noise impact analysis for the Project applied measured noise levels and frequency content of representative noise sources to the Environmental Noise Model (ENM). The ENM is a commercially-available noise propagation model that accepts input of noise levels and frequency content for a number of sources, located on an appropriate base map. In this case, a generalized model was used that assumed a level ground situation, and thus the modeling did not account for topography in the Project Area which results in a more conservative analysis. The ENM predicts noise propagation in terms of noise levels at selected receivers, or in terms of noise contours, accounting for the effects of atmospheric and ground absorption of sound.

Noise level data for the sources expected to be used at the Project were obtained from noise measurements conducted by Brown-Buntin Associates, Inc. (BBA) at aggregate and asphalt plants in California and Nevada.

The equipment used for most of the noise measurements was a Larson Davis Model 824 precision integrating sound level meter and frequency analyzer fitted with a Larson Davis Model 2541 free-field microphone, meeting the specifications of the American National Standards Institute (ANSI) for Type 1 sound measurement systems. The noise measurement system was calibrated before use with a Larson Davis Model CA-250 acoustical calibrator certified by its manufacturer to be consistent with reference values maintained by the National Bureau of Standards.

To prepare the data for use in the ENM, the measured noise levels were entered into the ENM in terms of octave band sound pressure levels, referring to the measurement distance. The ENM was then calibrated for each source to predict the same values as were measured in the field. For most noise sources, the data were entered as hourly equivalent noise levels (L_{eq}). For sound sources that were not continuous in nature, such as passing trucks, the data were entered as

Sound Exposure levels (SEL), and adjustments were made to derive the L_{eq} based upon the projected numbers of operations per hour at the Project.

The noise sources were placed on the ENM base map at representative heights above the ground surface, based upon the equipment observed at similar project sites. The receiver sites selected for this analysis generally describe the nearest residential areas or sites of potential concern. Ambient noise levels were assigned to each site based upon the noise measurement results obtained at the nearest ambient noise monitoring sites. This method allows comparison of predicted Project-related and representative ambient noise levels.

The ENM accounts for atmospheric absorption of sound, considering the factors of temperature, relative humidity, and absorption of sound by the ground. The noise level predictions made for this Project assume a uniform atmosphere with no wind. It is recognized that variations in atmospheric conditions may cause the actual Project noise levels to be either higher or lower than predicted by the ENM.

The effects of changes in temperature and humidity upon sound propagation are generally slight, so that variations in predicted noise levels within the range of temperature and relative humidity found in the Project Area would not be substantial.

Winds can affect sound propagation, generally by increasing noise levels downwind, and decreasing noise levels upwind; however, wind effects are difficult to predict reliably, as the range of wind speeds and directions experienced during even one night can be quite broad.

In the noise modeling process, the mining noise sources (power shovel, bulldozers, excavator, trucks and loaders) were placed in the approximate center of the assumed mining area. The processing equipment was placed on the base map as shown by the operations plan. The modeling assumed a flat earth scenario, where all equipment was placed at appropriate heights above the existing grade, and where no topographic shielding (by topography or excavations) was present.

It is recognized that the mining equipment may be placed at any point in the mining area, and would therefore be either closer to, or farther from, any given sensitive receiver location at different times during the mine development. As a result, the predicted noise levels would increase or decrease as a function of distance. Similarly, the equipment may be placed closer to, or farther from, the sides of the excavation, which would either enhance or reduce the insertion loss (shielding) and consequent noise level reduction provided by topographic barriers. Preparation of detailed noise models for all possible configurations of mining is clearly impractical.

The noise modeling assumptions provide a generalized depiction of mining and milling facility noise levels, based upon the available source noise emission data. The modeled noise levels provide a conservative basis for judging the likely noise impacts of this Project.

In addition to the analysis using the ENM, there are qualitative issues related to auditory effects. These include the consistency and duration of the noise.

The closest noise-sensitive receptors where noise from the existing and proposed operations is or could be heard are assessed in this section. These receptors include the following:

- Alpha Ranch;
- Roberts Creek Ranch;
- Risi Ranch; **and**
- Diamond Valley residences.

3.16.2.2 Existing Conditions

Ambient noise levels were collected at the Alpha and Roberts Creek Ranches and the results are listed in Table 3.16-2. The ambient noise levels were very low at 20 and 21 dB, respectively. The noise levels are typical of isolated desert areas. Other locations, such as the Risi Ranch or the Diamond Valley residences which are a similar distance from the Project Area would likely have similar or higher ambient noise levels due to the traffic traversing SR 278, U.S. Highway 50, and other roads in the area.

Table 3.16-2: Bases for Ambient Hourly Noise Level Assumptions

Receiver	Description	Ambient L ₅₀ , dB	Date of Ambient Measurements	Time Period
1	Alpha Ranch	21	September 10, 2007	0800-1200
2	Roberts Creek Ranch	20	September 11, 2007	0800-1200

3.16.3 Environmental Consequences and Mitigation Measures

3.16.3.1 Significance Criteria

Noise impacts from mining would be considered significant if the Proposed Action would result in noise levels in excess of 55 dBA, as measured outside the Project Area at a sensitive receptor site. Noise impacts from blasting would be considered significant if the Proposed Action resulted in the following:

- Maximum noise levels in excess of 70 dBA measured at a sensitive receptor site;
- Ground vibration as a result of blasting that could initiate or extend observable cosmetic cracking of structures at a sensitive receptor site;
- **Flyrock from blasting results in property damage or human injury outside the Project fence;** or
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project.

3.16.3.2 Assessment Methodology

Noise impacts were evaluated according to the estimated degree of disturbance to the nearest sensitive receptor sites. **Impacts to wildlife are discussed in Section 3.23.3.**

3.16.3.3 Proposed Action

Noise levels associated with the Project would be related to mining and construction operations and blasting activities. The ENM was run to predict hourly noise levels assuming that the mining and processing equipment was in continuous use.

The ambient noise level data for Alpha and Roberts Creek Ranches listed in Table 3.16-2 were carefully reviewed to select conservative bases for comparison to the relatively steady-state noise

levels produced by the proposed mining operation (as perceived at a distance). For this purpose, the "ambient noise level" was assumed to be represented by the measured hourly median noise levels (L_{50}) at the quietest part of the day.

The assumed ambient noise level was the arithmetic average of the hourly median noise levels of the quietest contiguous four-hour period of the quietest day. This describes the noise level experienced during the quietest time of the day. Table 3.16-3 lists the measurement locations and time periods used to establish the "quiet hours" ambient noise levels for the noise impact analysis, and the dominant noise sources at each location.

Table 3.16-3 lists the predicted average Project-related noise levels at each of the selected noise receptor monitoring location, and provides a comparison to the measured ambient hourly noise levels described by Table 3.16-2.

For assessment of noise levels in terms of the L_{dn} , it was necessary to make certain assumptions about the hours of operation for the Project. For this analysis, it was assumed that the Project would be in operation 24 hours on any given day. Given this assumption, the L_{dn} values would be 6.4 dB higher than the L_{eq} values shown by Table 3.16-3. Similarly, 6.4 dB should be added to the L_{eq} noise contours, so that, for example, the 45 dB L_{eq} contour represents 51.4 dB L_{dn} .

Table 3.16-3: Comparison of Predicted and Ambient Hourly Noise Levels

Receiver	Description	Project L_{eq} , dB	Ambient L_{50} , dB	Project + Ambient, dB	Change, dB
1	Alpha Ranch	<10	21	21	0
2	Roberts Creek Ranch	13	20	21	1

The ambient L_{dn} value was the energy-average of the daily L_{dn} values observed during the continuous noise measurement periods. Table 3.16-4 lists the predicted L_{dn} values for the Project operations and provides a comparison to the average measured ambient L_{dn} values.

Table 3.16-4: Comparison of Predicted and Ambient Day-Night Levels

Receiver	Description	Project L_{eq} , dB	Ambient L_{50} , dB	Project + Ambient, dB	Change, dB
1	Alpha Ranch	16	43.8	43.8	0
2	Roberts Creek Ranch	19	43.7	45.7	2

3.16.3.3.1 Noise Associated with the Water System Booster Station

The water for the mine would be pumped from wells using submersible pumps, which are typically inaudible at the ground surface. The water would then be pumped to the mine site using a booster station, which would have four 600-Horsepower (Hp) pump motors. These pumps would be above ground. Based upon accepted engineering methods, the noise level of a single pump would be about 96 dBA at a distance of three feet. A group of four pumps could produce a noise level as high as 55 dBA at a distance of 2,000 feet and 40 dBA at a distance of 3,000 feet. The booster pump station would be located at the north end of the Kobeh Valley, greater than 2,000 and 5,000 feet from the nearest sensitive receptors, greater sage-grouse leks and Roberts Creek Ranch, respectively (Figure 2.1.7).

3.16.3.3.2 Traffic Noise

Traffic noise from SR 278 is an existing noise source in the Project Area. Noise levels due to Project-related traffic on SR 278 were predicted using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

For the traffic noise impact analysis, it was assumed that a representative noise exposure would occur at a reference distance of 50 feet from the centerline of SR 278, which roughly corresponds to the nearest possible residential receivers. The ADT volume for year 2006 with the addition of construction traffic is predicted to be 313 vehicles north of the Project Area and 797 vehicles south of the Project Area. Assuming normal mining operations, the ADT volume is predicted to be 316 vehicles north of the Project Area and 700 vehicles south of the Project Area. Truck mix was adjusted to match the predicted ADT volumes for heavy trucks during construction and operational conditions. Day-night distribution of traffic noise was again assumed to be 87 percent (day) and 13 percent (night). Average vehicle speed was assumed to be 65 mph.

Table 3.16-5 lists the traffic noise modeling results for the year 2006 with the Project during construction and operational phases in terms of the L_{dn} . Table 3.16-6 shows reference noise emission levels and usage factors for construction equipment.

Table 3.16-5: State Route 278 Traffic Noise Levels Project Conditions

Positions Relative to Project Area	Predicted L_{dn} , dB, at 50 feet from Centerline				Distances from Centerline to L_{dn} Contours, feet		
	Autos	Medium Trucks	Heavy Trucks	Total	60 dB	65dB	70dB
<i>Construction Phase</i>							
North	54.5	51.5	53.4	58.1	37	17	8
South	58.7	55.5	56.0	61.7	65	30	14
<i>Operations Phase</i>							
North	54.1	52.3	56.1	59.2	44	21	10
South	58.1	54.5	56.2	61.3	61	28	13

Table 3.16-6: Reference Noise Emission Levels and Usage Factors for Construction Equipment

Equipment Description	Impact Device ?	Typical Use Factor %	Predicted L_{max} @ 50 ft (dBA, slow)	Average Measured L_{max} @ 50 ft (dBA, slow)	No. of Data Samples
All Other Equipment > 5 Hp	No	50	85	-- NA --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Boring Jack Power Unit	No	50	80	83	1
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Mixer Truck	No	40	85	79	40

Equipment Description	Impact Device ?	Typical Use Factor %	Predicted L_{max} @ 50 ft (dBA, slow)	Average Measured L_{max} @ 50 ft (dBA, slow)	No. of Data Samples
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25Kilo Volt Amperes, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader 19	No	40	85	-- NA --	0
Horizontal Boring Hydraulic Jack	No	25	80	82	6
Jackhammer	Yes	20	85	89	133
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarifier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Tractor	No	40	84	-- NA --	0
Ventilation Fan	No	100	85	79	13
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5

Source: FHWA Roadway Construction Noise Model, February 15, 2006

3.16.3.3.3 Construction Noise

Construction of the open pit and processing facilities would require use of a variety of engine-powered equipment on the site. Construction is expected to occur over a period of 18 to 20 months. In the first two months, it is anticipated that construction would occur on a 24-hour basis. The remaining construction would occur during daylight hours (7 a.m. to 6 p.m.), but could occur at night during the last four months of construction.

The noise levels associated with typical construction equipment are shown in Table 3.16-6. During the construction phase of the Project, noise from construction equipment would dominate the noise environment in the immediate area.

Maximum noise levels from different types of equipment under different operating conditions could range from 70 dB to 90 dB at a distance of 50 feet. The actual noise effects at any given

sensitive receiver location near the Project Area would be the result of a series of construction tasks. For example, bulldozers would rough out the roadway and building pads. Bulldozers and loaders would move the loose materials to haul trucks, which would either leave the site or transfer materials to areas needing fill. Scrapers and graders would level the site. Other equipment would deliver and install materials and utilities. Compressors and generators could be used at any time.

3.16.3.3.4 Blasting Noise

Blasting would be conducted to break up the rock for hauling and processing. Although blasts are perceived to be one large explosion, mining blasts are actually a series of smaller, single-hole explosions. Each hole is sequentially delayed and detonated independently of the other holes. Less noise and ground vibrations are generated because several small blasts (delays) are detonated in sequence rather than as one large instantaneous blast. Blasting can be further controlled by varying the amount of explosive, the type of delay, the delay sequence, and the type of explosives. In general, blasting is controlled to minimize dispersal of the rock fragments, and to ensure the safety of the workers. Blasting is also controlled to prevent damage to nearby structures, including any on-site construction trailers.

Airborne overpressures produced by blasting are typically measured in terms of the overall peak sound pressure level, without applying the A-weighting filter. The dominant frequencies of sound pressures associated with blasting lie in the low frequency range of 2 Hz to 25 Hz, and the acoustical energy is concentrated below approximately five Hz. Audible sound, in contrast, is usually assumed to begin at 20 Hz, ranging up to 20,000 Hz. People hear best at frequencies in the range of 1,000 Hz to 4,000 Hz, and people hear poorly at the low frequencies associated with blast overpressures.

The A-weighting adjustment factor for sound at 25 Hz (the upper limit of the dominant blast frequencies) is -44.7 dB. There are no published A-weighting correction factors below 12.5 Hz (where the A-weighting correction factor is -63.4 dB). These factors indicate that very high blast overpressures would be required to generate sound pressure levels that would be audible in an outdoor environment.

Assuming that the Project is designed so that a **designed maximum** blast would not exceed 0.01 psi, and that all the energy of a blast would be concentrated at 25 Hz, the highest possible peak A-weighted sound pressure level due to a blast at the property line would be 65 dB, and the maximum noise level would likely be in the range of 55 to 60 dB. The maximum sound pressure level is lower than the peak level because peak and maximum levels are measured differently.

Blasting noise levels are difficult to predict in terms of A-weighted sound pressure levels because of their frequency content and brief duration. No noise propagation models are known to exist to predict the audible noise due to blasting; the ENM does not predict sound propagation for frequencies below 25 Hz.

Blasting takes place only during daylight hours and is conducted under strict MSHA safety procedures. As the open pit increases in depth, the noise from blasting is increasingly reflected upward by the open pit walls, thus further reducing the noise level.

- **Impact 3.16.3.3-1:** Ambient noise levels associated with the Proposed Action could be increased and affect ambient noise levels at the nearest ranch houses and residences.

Significance of the Impact: The predicted changes in hourly ambient noise levels at the nearest ranch houses are 1 dB or less. The impact would be similar at the residences in Diamond Valley because of the similar distances from the Project activities. This impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.3-2:** Project-related noise levels associated with the Proposed Action could be increased to noise levels that would be less than 55 dBA as measured at a sensitive receptor site.

Significance of the Impact: The impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.3-3:** The Proposed Action would cause increases in traffic noise levels.

Significance of the Impact: The predicted changes in traffic noise levels are less than 3 dB where the existing traffic noise level exceeds 60 dB L_{dn} ; therefore, the predicted changes in traffic noise levels due to the Proposed Action would be less than significant. The predicted Project-related mining and processing noise level in the vicinity of the Project access road and SR 278 is approximately 39 dB L_{dn} . This level of noise would not cause a significant change in ambient noise levels at that location in terms of L_{dn} , since the existing traffic noise would be nearly 20 dB higher than the mining and processing noise level.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.3-4:** The Proposed Action would cause increases in noise levels that could impact local residences through construction activities or poorly maintained construction equipment. The maximum noise levels received at the nearest ranch house, which is approximately two miles away from the nearest areas where grading would occur, would be reduced by approximately 23 dB as compared to the values shown on Table 3.16-6, ignoring sound absorption or any shielding provided by topography; therefore, maximum construction noise levels at the nearest ranch house would be in the range of approximately 47 to 67 dB. In practice, considering the topography of the Project Area, much of the construction equipment would be shielded from view of the nearest ranch house by topography. In those cases, the construction noise levels would be further reduced by 5 to 10 dB or greater.

Significance of the Impact: Noise levels produced by construction activities or poorly maintained construction equipment in the vicinity of the Roberts Creek Ranch house

could be significant if such activities occurred at nighttime or if the noise level exceeds 55 dB.

- **Mitigation Measure 3.16.3.3-4:** Construction in the vicinity of the Roberts Creek Ranch house and greater sage-grouse leks would be limited to daylight hours and **would be limited during lekking periods (see Appendix D, Attachment 3)**. Construction equipment used in the vicinity of residences would be fitted with the best available technology manufacturers' noise control equipment, including engine exhaust silencers and acoustical enclosures. Noise control equipment would be maintained in good working order. Implementation of this mitigation measure would result in a less than significant impact.
- **Effectiveness of Mitigation and Residual Effects:** The implementation of this mitigation measure would be effective at reducing the potential impact to less than significant by controlling the generation of the noise.
- **Impact 3.16.3.3-5:** Noise caused by blasting during construction and mining could cause annoyance if residents were startled by unexpected blasts, or if blasting overpressures caused rattling of residence windows. The Proposed Action would not otherwise impact auditory resources associated with blasting.

Significance of the Impact: This impact is not considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

Blasting would result in flyrock that could travel beyond the Project fence. The potential for this to occur would be minimized by proper blast design which would include the following: understanding the geology and material blasted; the appropriate development of a blast pattern; understanding the burden, depth, diameter, and angle of the blast holes; appropriate delay systems, powder factors, and pounds per delay; the type and amount of explosive material; and the type and amount of stemming.

- **Impact 3.16.3.3-6:** The Proposed Action could generate flyrock. However, Project design would limit the potential for flyrock to travel beyond the Project fence.

Significance of the Impact: This impact would not be considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.16.3.3.5 Residual Adverse Impacts

There are no residual adverse impacts associated with the Proposed Action because noise would cease once the Project activities terminate.

3.16.3.4 No Action Alternative

Under the No Action Alternative, EML would not be authorized to develop the Mount Hope Project and mine the Mount Hope ore body as currently defined under the Proposed Action. The No Action Alternative would result from the BLM disallowing the activities proposed under the Plan (EML 2006); however, EML would be able to continue exploration activities as outlined in previously submitted Notices. Refer to Section 1.3 for a discussion of the existing Notice level activities. The area would remain available for future mineral development or for other purposes as approved by the BLM.

3.16.3.4.1 Noise Impacts

Under the No Action Alternative, none of the impacts associated with the Proposed Action would occur. Any noise generated by exploration activities under Notice-level activities would be below the level of significance.

3.16.3.4.2 Residual Adverse Impacts

Under the No Action Alternative there would be no residual adverse impacts.

3.16.3.5 Partial Backfill Alternative

Under this alternative, the Proposed Action would be developed and have the same surface disturbance footprint; however, at the end of the mining in the open pit, the open pit would be partially backfilled to eliminate the potential for a pit lake. The open pit would be backfilled to an elevation that varies from northwest to southeast across the open pit from approximately 7,300 to 6,850 feet amsl. The backfilling would commence in year 32 and be completed in approximately 13 years. The partial backfilling would be accomplished by the same fleet and personnel that completed the mining.

3.16.3.5.1 Noise Impacts

The noise related impacts under the Partial Backfill Alternative would be similar to that described for the Proposed Action, except that the duration of the mining related noise would last for 13 years longer. The Partial Backfill Alternative requires that a portion of the waste rock removed during mining be dumped back into the open pit to the point that would eliminate the potential for a pit lake. The equipment required for moving and dumping waste rock would remain on site longer than under the Proposed Action.

- **Impact 3.16.3.5-1:** Ambient noise levels associated with the Partial Backfill Alternative could be increased and affect ambient noise levels at the nearest ranch houses or residences.

Significance of the Impact: The predicted changes in hourly ambient noise levels at the nearest ranch houses are 1 dB or less. The impact would be similar at the residences in Diamond Valley. This impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.5-2:** Project-related noise levels associated with the Partial Backfill Alternative could be increased to noise levels that are less than 55 dBA as measured at a sensitive receptor site.

Significance of the Impact: The impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.5-3:** The Partial Backfill Alternative would cause increases in traffic noise levels.

Significance of the Impact: The predicted changes in traffic noise levels are less than 3 dB where the existing traffic noise level exceeds 60 dB L_{dn} ; therefore, the predicted changes in traffic noise levels due to the Partial Backfill Alternative would be less than significant. The predicted Project-related mining and processing noise level in the vicinity of the Project access road and SR 278 is approximately 39 dB L_{dn} . This level of noise would not cause a significant change in ambient noise levels at that location in terms of L_{dn} , since the existing traffic noise would be nearly 20 dB higher than the mining and processing noise level.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.5-4:** The Partial Backfill Alternative would cause increases in noise levels that could impact local residences through construction activities or poorly maintained construction equipment. The maximum noise levels received at the nearest ranch house, which is approximately two miles away from the nearest areas where grading would occur, would be reduced by approximately 23 dB as compared to the values shown on Table 3.16-6, ignoring sound absorption or any shielding provided by topography; therefore, maximum construction noise levels at the nearest ranch house would be in the range of approximately 47 to 67 dB. In practice, considering the topography of the Project Area, much of the construction equipment would be shielded from view of the nearest ranch house by topography. In those cases, the construction noise levels would be further reduced by five to 10 dB or greater.

Significance of the Impact: Noise levels produced by construction activities or poorly maintained construction equipment in the vicinity of the Roberts Creek Ranch house could be significant if such activities occurred at nighttime or if the noise level exceeds 55 dB.

- **Mitigation Measure 3.16.3.5-4:** Construction in the vicinity of the Roberts Creek Ranch house or greater sage-grouse leks would be limited to daylight hours and **would be limited during lekking periods (see Appendix D, Attachment 3)**. Construction equipment used in the vicinity of residences would be fitted with the best available technology manufacturers' noise control equipment, including engine exhaust silencers and acoustical enclosures. Noise control equipment would be maintained in good working order.

- **Effectiveness of Mitigation and Residual Effects:** The implementation of this mitigation measure would be effective at reducing the potential impact to less than significant by controlling the generation of the noise.
- **Impact 3.16.3.5-5:** Noise caused by blasting during construction and mining could cause annoyance if residents were startled by unexpected blasts, or if blasting overpressures caused rattling of residence windows. The Partial Backfill Alternative would not otherwise impact auditory resources associated with blasting.

Significance of the Impact: This impact is not considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.5-6:** The Proposed Action could generate flyrock. However, Project design would limit the potential for flyrock to travel beyond the Project fence.

Significance of the Impact: This impact would not be considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.16.3.5.2 Residual Adverse Impacts

There are no residual adverse impacts associated with the Partial Backfill Alternative.

3.16.3.6 Off-Site Transfer of Ore Concentrate for Processing Alternative

Under this alternative, the open pit, WRDFs, and TSFs would be developed as outlined under the Proposed Action; however, the ore processing facilities would include only the milling operations and production of the molybdenum sulfide concentrate. The TMO and FeMo portions of the processing facility would not be constructed, and as a result, the surface disturbance footprint would be approximately 20 acres less than under the Proposed Action. In addition, the leaching of the concentrate would likely not be done on site. The production of molybdenum sulfide concentrate would occur at an average rate of approximately 45.8 million pounds per year. This material would be stored at the Project Area in a concentrate storage structure adjacent to the mill. The molybdenum sulfide concentrate would be loaded from this storage facility into street-legal haul trucks with covered containers and transported on the public transportation system to either an existing or new TMO facility.

3.16.3.6.1 Noise Impacts

The noise related impacts under the Off-Site Transfer of Ore Concentrate for Processing Alternative would be similar to but less than the Proposed Action. There would be less noise from the processing facilities because of the elimination of the roaster portion of the process; however, all the other noise levels would be the same since there would be a similar number of trucks hauling ore concentrate under this alternative, versus trucks hauling TMO under the Proposed Action.

- **Impact 3.16.3.6-1:** Ambient noise levels associated with the Off-Site Transfer of Ore Concentrate for Processing Alternative could be increased and affect ambient noise levels at the nearest ranch houses or residences.

Significance of the Impact: The predicted changes in hourly ambient noise levels at the nearest ranch houses are 1 dB or less. The impact would be similar at the residences in Diamond Valley. This impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.6-2:** Project-related noise levels associated with the Off-Site Transfer of Ore Concentrate for Processing Alternative could be increased to noise levels to less than 55 dBA as measured at a sensitive receptor site.

Significance of the Impact: The impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.6-3:** The Off-Site Transfer of Ore Concentrate for Processing Alternative would cause increases in traffic noise levels.

Significance of the Impact: The predicted changes in traffic noise levels are less than 3 dB where the existing traffic noise level exceeds 60 dB L_{dn} ; therefore, the predicted changes in traffic noise levels due to the Off-Site Transfer of Ore Concentrate for Processing Alternative would be less than significant. The predicted Project-related mining and processing noise level in the vicinity of the Project access road and SR 278 is approximately 39 dB L_{dn} . This level of noise would not cause a significant change in ambient noise levels at that location in terms of L_{dn} , since the existing traffic noise would be nearly 20 dB higher than the mining and processing noise level.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.6-4:** The Off-Site Transfer of Ore Concentrate for Processing Alternative would cause increases in noise levels that could impact local residences through construction activities or poorly maintained construction equipment. The maximum noise levels received at the nearest ranch house, which is approximately two miles away from the nearest areas where grading would occur, would be reduced by approximately 23 dB as compared to the values shown on Table 3.16-6, ignoring sound absorption or any shielding provided by topography; therefore, maximum construction noise levels at the nearest ranch house would be in the range of approximately 47 to 67 dB. In practice, considering the topography of the Project Area, much of the construction equipment would be shielded from view of the nearest ranch house by topography. In those cases, the construction noise levels would be further reduced by five to 10 dB or greater.

Significance of the Impact: Noise levels produced by construction activities or poorly maintained construction equipment in the vicinity of the Roberts Creek Ranch house

could be significant if such activities occurred at nighttime or if the noise level exceeds 55 dB.

- **Mitigation Measure 3.16.3.6-4:** Construction in the vicinity of the Roberts Creek Ranch house or greater sage-grouse leks would be limited to daylight hours and **would be limited during lekking periods (see Appendix D, Attachment 3)**. Construction equipment used in the vicinity of residences would be fitted with the best available technology manufacturers' noise control equipment, including engine exhaust silencers and acoustical enclosures. Noise control equipment would be maintained in good working order. **Implementation of this mitigation measure would result in a less than significant impact.**
- **Effectiveness of Mitigation and Residual Effects:** The implementation of this mitigation measure would be effective at reducing the potential impact to less than significant by controlling the generation of the noise.
- **Impact 3.16.3.6-5:** Noise caused by blasting during construction and mining could cause annoyance if residents were startled by unexpected blasts, or if blasting overpressures caused rattling of residence windows. The Off-Site Transfer of Ore Concentrate for Processing Alternative would not otherwise impact auditory resources associated with blasting.

Significance of the Impact: This impact is not considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.6-6:** The Proposed Action could generate flyrock. However, Project design would limit the potential for flyrock to travel beyond the Project fence.

Significance of the Impact: This impact would not be considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.16.3.6.2 Residual Adverse Impacts

There are no residual adverse impacts from noise as a result of the Off-Site Transfer of Ore Concentrate for Processing Alternative.

3.16.3.7 Slower, Longer Project Alternative

Impacts to auditory resources as a result of the Slower, Longer Project Alternative are expected to be similar to those described for the Proposed Action because of the same noise-making activities and the similar noise generation by those activities.

3.16.3.7.1 Noise Impacts

- **Impact 3.16.3.7-1:** Ambient noise levels associated with the Slower, Longer Project Alternative could be increased and affect ambient noise levels at the nearest ranch houses.

Significance of the Impact: The predicted changes in hourly ambient noise levels at the nearest ranch houses are 1 dB or less and would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.7-2:** Project-related noise levels associated with the Slower, Longer Project Alternative could be increased to noise levels in excess of 55 dBA measured at a sensitive receptor site.

Significance of the Impact: The impact would be considered less than significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.7-3:** The Slower, Longer Project Alternative would cause increases in traffic noise levels.

Significance of the Impact: The predicted changes in traffic noise levels are less than 3 dB where the existing traffic noise level exceeds 60 dB L_{dn} ; therefore, the predicted changes in traffic noise levels due to the Slower, Longer Project Alternative would be less than significant. The predicted Project-related mining and processing noise level in the vicinity of the Project access road and SR 278 is approximately 39 dB L_{dn} . This level of noise would not cause a significant change in ambient noise levels at that location in terms of L_{dn} , since the existing traffic noise would be nearly 20 dB higher than the mining and processing noise level.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.7-4:** The Slower, Longer Project Alternative would cause increases in noise levels that could impact local residences through construction activities or poorly maintained construction equipment. The maximum noise levels received at the nearest ranch house, which is approximately two miles away from the nearest areas where grading would occur, would be reduced by approximately 23 dB as compared to the values shown on Table 3.16-6, ignoring sound absorption or any shielding provided by topography; therefore, maximum construction noise levels at the nearest ranch house would be in the range of approximately 47 to 67 dB. In practice, considering the topography of the Project Area, much of the construction equipment would be shielded from view of the nearest ranch house by topography. In those cases, the construction noise levels would be further reduced by 5 to 10 dB or greater.

Significance of the Impact: Noise levels produced by construction activities or poorly maintained construction equipment in the vicinity of the Roberts Creek Ranch house could be significant if such activities occurred at nighttime or if the noise level exceeds 55 dB.

- **Mitigation Measure 3.16.3.7-4:** Construction in the vicinity of the Roberts Creek Ranch house or greater sage-grouse leks would be limited to daylight hours **and would be limited during lekking periods (see Appendix D, Attachment 3)**. Construction equipment used in the vicinity of residences would be fitted with the best available technology manufacturers' noise control equipment, including engine exhaust silencers and acoustical enclosures. Noise control equipment would be maintained in good working order. Implementation of this mitigation measure would result in a less than significant impact.
- **Effectiveness of Mitigation and Residual Effects:** The implementation of this mitigation measure would be effective at reducing the potential impact to less than significant by controlling the generation of the noise.
- **Impact 3.16.3.7-5:** Noise caused by blasting during construction and mining could cause annoyance if residents were startled by unexpected blasts, or if blasting overpressures caused rattling of residence windows. The Slower, Longer Project Alternative would not otherwise impact auditory resources associated with blasting.

Significance of the Impact: This impact is not considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.7-6:** The Proposed Action could generate flyrock. However, Project design would limit the potential for flyrock to travel beyond the Project fence.

Significance of the Impact: This impact would not be considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.16.3.7.2 Residual Adverse Impacts

There are no residual adverse impacts associated with the Slower, Longer Project Alternative.

3.17 Socioeconomic Values

3.17.1 Regulatory Framework

The NEPA requires consideration of local plans and policies in the assessment of the social and economic effects of proposed activities involving federal lands (43 CFR 1506.2). Federal, state, and local plans and guidelines that apply to social and economic values within the Socioeconomic Values and Environmental Justice Study Area (Study Area), include the following: Eureka County 2010 Master Plan, including the updated Natural Resources, Federal

Significance of the Impact: Noise levels produced by construction activities or poorly maintained construction equipment in the vicinity of the Roberts Creek Ranch house could be significant if such activities occurred at nighttime or if the noise level exceeds 55 dB.

- **Mitigation Measure 3.16.3.7-4:** Construction in the vicinity of the Roberts Creek Ranch house or greater sage-grouse leks would be limited to daylight hours **and would be limited during lekking periods (see Appendix D, Attachment 3)**. Construction equipment used in the vicinity of residences would be fitted with the best available technology manufacturers' noise control equipment, including engine exhaust silencers and acoustical enclosures. Noise control equipment would be maintained in good working order. Implementation of this mitigation measure would result in a less than significant impact.
- **Effectiveness of Mitigation and Residual Effects:** The implementation of this mitigation measure would be effective at reducing the potential impact to less than significant by controlling the generation of the noise.
- **Impact 3.16.3.7-5:** Noise caused by blasting during construction and mining could cause annoyance if residents were startled by unexpected blasts, or if blasting overpressures caused rattling of residence windows. The Slower, Longer Project Alternative would not otherwise impact auditory resources associated with blasting.

Significance of the Impact: This impact is not considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

- **Impact 3.16.3.7-6:** The Proposed Action could generate flyrock. However, Project design would limit the potential for flyrock to travel beyond the Project fence.

Significance of the Impact: This impact would not be considered significant.

No mitigation is proposed for this impact; see Section 3.1.1 for a general discussion of significance and the development of mitigation measures.

3.16.3.7.2 Residual Adverse Impacts

There are no residual adverse impacts associated with the Slower, Longer Project Alternative.

3.17 Socioeconomic Values

3.17.1 Regulatory Framework

The NEPA requires consideration of local plans and policies in the assessment of the social and economic effects of proposed activities involving federal lands (43 CFR 1506.2). Federal, state, and local plans and guidelines that apply to social and economic values within the Socioeconomic Values and Environmental Justice Study Area (Study Area), include the following: Eureka County 2010 Master Plan, including the updated Natural Resources, Federal

or State Land Use, and Economic Development Elements; the Shoshone-Eureka RMP; and the Land and Resource Management Plan for the Toiyabe National Forest.

The updated Growth Management, Public Facilities and Services, Economic Development, Land Use (Eureka County 2010), and Housing Elements of the Eureka County Master Plan outline specific goals that pertain to the Proposed Action and alternatives. Guidance and input for this assessment have also been provided by Eureka County staff, the Board of Eureka County Commissioners, and the Eureka County NEPA Committee.

3.17.2 Affected Environment

3.17.2.1 Study Methods

The baseline descriptions and data presented below are based primarily on the Mount Hope Project Socioeconomic Assessment (2008 Socioeconomic Assessment) prepared by Blankenship Consulting LLC and Sammons/Dutton LLC for EML in 2008 (BCLLC/SDLLC 2008). That document is incorporated by reference and copies are on file at the BLM MLFO. The baseline also reflects supplemental information developed in consultation with Eureka County and submitted to the BLM (BCLLC/SDLLC 2009; Appendix E). In part, the supplemental information provided a series of three analyses to examine the implications of alternative demographic and residency assumptions on the population and demographic effects presented in the Socioeconomic Assessment, which is considered the Base Case. Results of this sensitivity analysis (SA) are summarized in Section 3.17.3.3.2 of this EIS. A copy of the memorandum describing the SA can be found in Appendix E of this EIS.

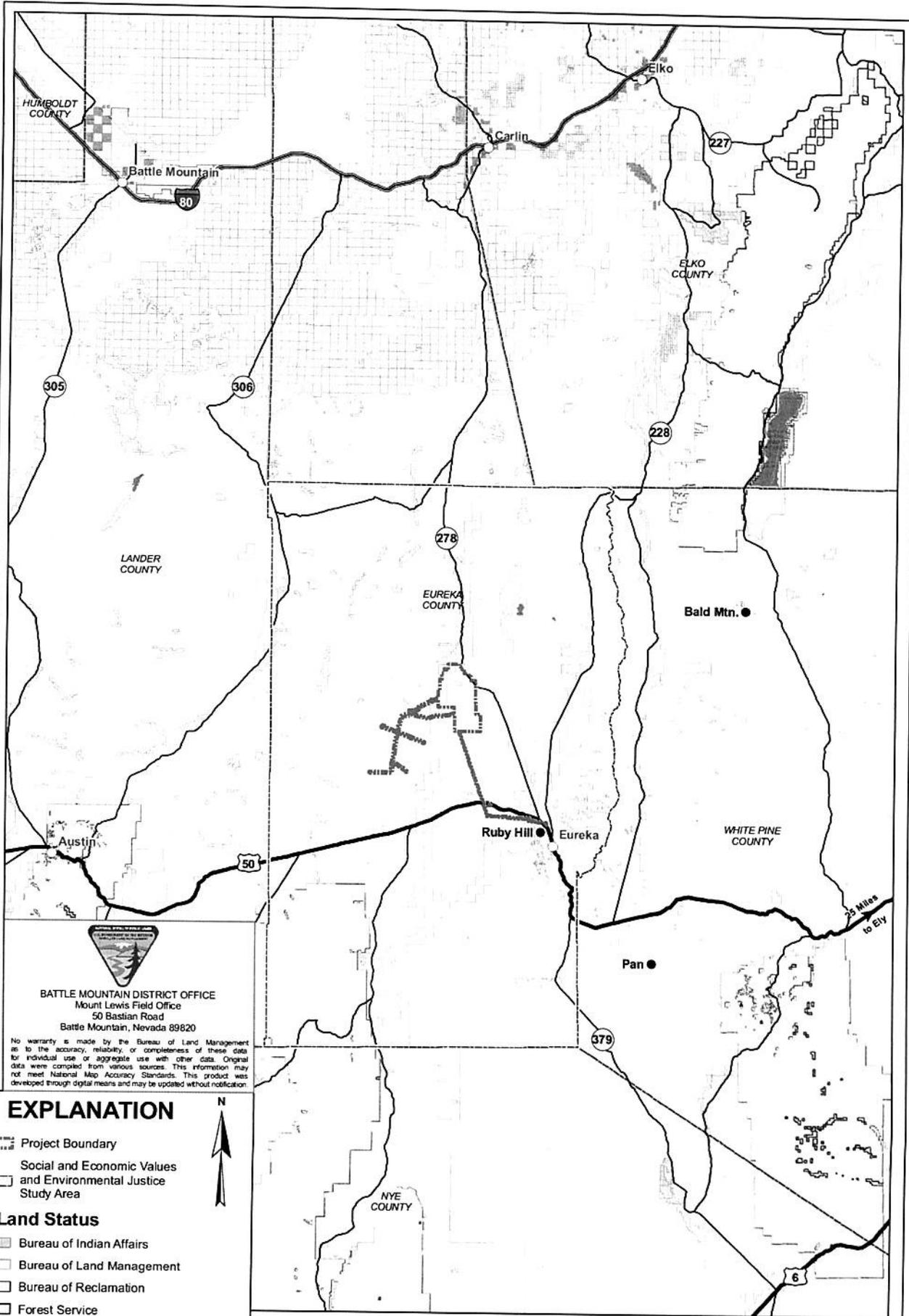
The EIS also considers material changes in economic, demographic, public infrastructure, service and fiscal conditions and EML plans that have occurred since the 2008 Socioeconomic Assessment was prepared. Information for the update was drawn from published sources as cited and from information provided by Eureka County and EML.

3.17.2.1.1 Study Area

The primary social and economic study area for the proposed project is Eureka County (Figure 3.17.1), focusing on southern Eureka County, particularly the community of Eureka and the nearby 3rd Street/Devil's Gate, Diamond Valley, and **Kobeh Valley** rural areas. Other, more distant communities, including Carlin, Elko, Ely, **Crescent Valley**, and Austin, are considered in terms of their potential to be a source of workers for the Project and for meeting housing needs of non-local workers of the Project during both the construction and operations phases of the Project.

There are no incorporated towns in Eureka County. Eureka County provides public services throughout the county. Eureka, the county seat, and Crescent Valley, which is located in the northern part of the county on the Lander County border, are unincorporated towns as defined by NRS.² The community of Beowawe is also located in the northern part of Eureka County, approximately six miles south of Interstate 80 (I-80). Beowawe does not have unincorporated

² NRS 269.520. "Unincorporated town" or "town" means a specific unincorporated area within a county in which one or more governmental services are provided by the county in addition to those services provided in the general unincorporated area of the county, for which the residents of such area pay through ad valorem taxes or for which other revenue is secured from within the area.



BATTLE MOUNTAIN DISTRICT OFFICE
 Mount Lewis Field Office
 50 Bastian Road
 Battle Mountain, Nevada 89820

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

EXPLANATION

- Project Boundary
- Social and Economic Values and Environmental Justice Study Area

Land Status

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Forest Service
- Fish and Wildlife Service
- Nevada State
- Private
- Water



0 5 10 15 20 Miles			
DESIGN	EMLLC	DRAWN	CVD/GSL
CHECKED	APPROVED	REVIEWED	RFD
FILE NAME	p1635_Fig3-17-1_SocoStudyArea.mxd		

BUREAU OF LAND MANAGEMENT
MOUNT HOPE PROJECT

DRAWING TITLE
**Social and Economic Values
 and Environmental Justice
 Study Area**
 Figure 3.17.1

town status. The Town of Eureka is substantially closer to the proposed Project than other northeastern Nevada communities (Table 3.17-1).

Table 3.17-1: Cities and Towns within 100 Miles of the Project Area

City or Town	County	Approximate One-Way Travel Distance (miles)	2010 Population
Eureka	Eureka	23	610
Crescent Valley	Eureka	60 (gravel surface)* or 108 (highway)	392
Carlin	Elko	70	2,368
Elko	Elko	90	18,297**
Ely	White Pine	100	4,255
Austin	Lander	73	192

*Although Crescent Valley is approximately 60 miles from the Project Area, travel between the two locales requires approximately 1.5 hours.

** This value does not include Spring Creek or areas surrounding Elko.

Source: U.S. Census Bureau 2010; BCLLC/SDLCC 2008.

3.17.2.2 Existing Conditions

3.17.2.2.1 Population and Demography

Table 3.17-2 displays U.S. Census Bureau decennial population counts from 1880, the first census taken following the creation of Eureka County, through 2010, the most recent census. The County's population trended downward from a high of over 7,000 in 1880 to the low of 767 residents in 1960. The population has increased to 1,987 in 2010.

Table 3.17-2: U.S. Census Bureau Eureka County Population Between 1880 and 2000

Census Year	Eureka County Population
1880	7,086
1890	3,275
1900	1,954
1910	1,830
1920	1,350
1930	1,333
1940	1,361
1950	896
1960	767
1970	948
1980	1,198
1990	1,547
2000	1,651
2010	1,987

Source: U.S. Census Bureau 2006 for 1880 – 1910; Eureka County Economic Development Council 2006 for 1920 – 2000; U.S. Census Bureau 2010 for 2010

During the past decade, the Eureka County population declined from 1,651 in 2000 to 1,384 in 2002, and subsequently climbed to 1,987 in 2010 (Table 3.17-3). Population trends in Eureka County's unincorporated towns mirror those of the entire County and employment in the mining industry between 2000 and 2010. As shown, the population of the towns of Eureka and Crescent Valley generally followed that of the County, initially declining and then growing modestly, followed by another cycle of contraction and expansion. The low point in terms of County population coincided with suspension of operations at the Ruby Hill Mine. Such patterns are not uncommon in small, rural western communities, where many types of natural resource and infrastructure development activities can trigger short-term population influxes, followed by a comparable decline in population when the activity is completed.

Table 3.17-3: Eureka County Population 2000 to 2010

Area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Eureka County	1,651	1,506	1,384	1,420	1,484	1,485	1,460	1,458	1,553	1,562	1,987
Eureka Town	499	470	434	446	454	440	433	431	473	483	610
Crescent Valley	330	298	279	300	304	311	292	289	283	283	392

Source: Nevada State Demographer 2010.

The Nevada State Demographer's office is funded by the Nevada Department of Taxation and is responsible for preparing annual population estimates and periodic population projections for Nevada's counties, cities, and unincorporated towns. Population projections are prepared using the REMI³ model, with the model's default assumptions modified to reflect local knowledge about key economic activities across the state. The Demographer also consults Moody's (www.moody.com) for economic data. The current forecasts for Eureka County, prepared in advance of the 2010 census and predicated on a 10 percent increase in countywide employment by 2017, followed by nearly a decade of stable employment, anticipated modest population growth through 2016/2017, followed by a decline of approximately 200 residents over the subsequent 15 years. The declines reflect a combination of assumed employment losses and demographic trends associated with the aging baby-boom population. The forecasts do not include the proposed Project, nor do they include allowances for any future but currently undefined activities, e.g., new mines, or other factors, such as retirement migration to the Town of Eureka, which might drive local growth development (Nevada State Demographer 2010).

At the time of the 2010 Census, just over two-thirds of the County's residents (1,351) lived in the Town of Eureka and nearby rural areas in the southern portion of the County, with 636 residents in Crescent Valley, Beowawe and elsewhere in the northern portion of the County. Approximately 53 percent of the residents were male and the median age of area residents was 42.4 years compared to 36.3 years in the State of Nevada as a whole. Residents 18 to 65 years of age comprised 62 percent of the County's population. The average household size in southern Eureka County was 2.38 persons, noticeably smaller than the statewide average of 2.65 individuals (U.S. Census Bureau 2010).

The racial composition of the local population in southern Eureka County is more predominately white than that of the state as a whole. In 2010, 89.6 percent of area residents identified

³ The REMI model is a proprietary economic-demographic model developed and marketed by Regional Economic Models, Inc. The model has broad acceptance within the professional community. The version used by the Nevada State Demographer has both a statewide component and separate modules for each of the state's 16 counties and for Carson City.

themselves as white, alone or in combination with one or more other races. That compares to 66.2 percent at the statewide level (U.S. Census Bureau 2010).

3.17.2.2.2 Housing

Eureka County had a total of 1,076 housing units in 2010 (see Table 3.17-4), a net increase of 51 units, or five percent, compared to the 2000 Census (U.S. Census Bureau 2002; 2010). The net change is consistent with that reported by the Eureka County Assessor based on local property tax records (Personal Communication, Michael Mears, Eureka County Assessor 2010). Most of the additions were multi-family units including some built in the Town of Eureka by Barrick to house workers at the Ruby Hill Mine (the Ruby Hill Mine is described in Section 3.17.2.2.3).

Table 3.17-4: Eureka County Housing Units 1990, 2000, and 2010 Estimate

Units	1990 Census	2000 Census	2010 Census	2000-2010 Change
Total Units	817	1,025	1,076	51
Single Family Units ¹	265	354	*	
Multifamily Units	25	37	*	
Mobile Homes/Other	527	634	*	

¹ Includes both attached and detached units.

² Includes 12 Senior housing units.

* 2010 Census **did not collect data** for housing units by type.

Sources: U.S. Census Bureau 2010.

At the time of the 2010 Census, 836 units or 78 percent of all units were occupied, with 240 vacant, the latter including homes held for recreational and seasonal use. Owner-occupied housing numbered 556 units and renter-occupied homes totaled 280. Two-thirds of the 2010 housing stock was located in the southern portion of the county, including in the Town of Eureka.

As in many rural western communities, mobile homes are the predominant housing type in Eureka County. Detailed housing information from the 2010 Census is not yet available at the time of this update, but according to the Eureka County Assessor, 71 percent of total Eureka County housing units were mobile homes in 2011 and of the total mobile homes 52 percent were on lots and 48 percent were in mobile home parks. A total of 27 percent of all housing units were single-family (attached and detached) and only two percent were apartments (Mears 2011).

Despite a large number of unoccupied units reported in the 2010 Census, there are few housing units available for purchase or rent in southern Eureka County. The County Assessor was aware of three homes for sale in the southern part of the county in January 2011 (Personal Communication, Michael Mears, Eureka County Assessor 2011). Generally very few rental properties are available, and those that become available are filled immediately through word-of-mouth rather than advertising. The apparent anomaly between the many unoccupied units and limited availability reflects vacant properties in town that are not listed for rent or for sale, many showing signs of disrepair. The owners have chosen for unknown, personal reasons not to rent or sell these properties (Personal Communication, Ron Damele, Eureka County Public Works 2006; Personal Communication, Michael Mears, Eureka County Assessor 2007; and 2011).

The 3rd Street/Devil's Gate area in Diamond Valley has been subdivided and has the potential to develop 112 lots (Lumos & Associates 2007). These lots are served by County-maintained General Improvement District (GID) water systems but do not have wastewater collection and treatment services so homeowners rely on septic systems. An additional 122 lots in the adjacent Ruby Hill Subdivisions - North and South are anticipated to be absorbed into the Devils Gate #2 GID (Damele 2010).

In 1997 Eureka County annexed 164 acres of land near the Eureka County fairgrounds, formerly administered by the BLM, into the Town of Eureka. The County and EML entered into a lease agreement for the site, now known as the Eureka Canyon Subdivision, allowing for the placement of temporary housing on the site. Subsequent to that lease, EML performed \$5.1 million on earthwork, tree removal and site preparation. Eureka County and EML mutually agreed to terminate the lease in 2010, but agreed that a portion of the site could be used to accommodate housing to meet needs of the community, including those needs of EML's Project (Fiorenzi and Hansen 2010). The Eureka County Commission subsequently entered into a contract with Nevada Rural Housing Authority to develop housing in the Eureka Canyon Subdivision. The subdivision could accommodate up to 110 multi-family units, 122 single-family residential units and some commercial development under a preliminary subdivision plan (Johnson 2010). There are also 47 residential lots in the Prospect Subdivision and 85 potential infill lots within the town (Damele 2010), although some of the latter are not readily developable or on the market (Housing in Southern Eureka County 2011).

The southern Eureka County housing inventory has grown slightly in recent years. During 2009 and 2010 only two conventional single-family homes were built in the Town of Eureka and five were built in Diamond Valley. Barrick constructed four of these units to house Ruby Canyon Mine employees. Barrick also developed several new rental apartment units in 2009, which were immediately occupied upon completion. Approximately ten new manufactured homes have been placed on lots during the last two years, primarily in Diamond Valley (Mears 2011).

Temporary housing resources are limited in southern Eureka County. All temporary accommodations for tourists and visitors, including four motels offering a total of 88 rooms, are located in the Town of Eureka (Eureka County 2010). Four mobile home and recreational vehicle (RV) parks provide nearly 100 spaces for short- and long-term rental. During the peak summer travel and hunting seasons, the short-term accommodations are frequently at or near full occupancy (BLM 2005). A 36-space mobile home park located within the Town of Eureka was purchased and refurbished by EML. One previously closed RV park is undergoing refurbishment and a new park with approximately 30 RV spaces is under construction (Personal Communication, Michael Mears, Eureka County Assessor 2011).

Housing in Other Area Communities

Table 3.17-5 displays housing information from the 2010 Census for communities within 100 miles of the Project.

Table 3.17-5: Housing in Communities within 100 Miles of the Project Area

	Crescent Valley	Carlin	Elko	Ely	Austin
Total Housing Units	237	1,043	7,221	2,185	162
For Rent	17	82	203	67	8
For Sale	5	2	36	40	1

Source: U.S. Census Bureau 2010 (Webcensus Factfinder 2)

Table 3.17-6 displays temporary housing resources (hotels, motels and RV parks) in communities within 100 miles of the Project.

Table 3.17-6: Temporary Housing Resources in Communities within 100 miles of Eureka County

	Crescent Valley	Carlin	Elko	Ely	Austin
Motels/Rooms	0/0	3/101	31/1,890	18/663	3/39
RV Parks/Spaces	1/30	1/47	7/518	9/244	2/32

Sources: Nevada Commission on Tourism 2011

3.17.2.2.3 Economy and Employment

Employment

Mining dominates the Eureka County economy in terms of employment and earnings. This dominance is reflected in the statistics on Eureka County employment by place of work, but not by statistics on employment by place of residence, which are more reflective of the much smaller and more recent mining presence in southern Eureka County. Total employment increased by more than 460 percent between 1984 and 1997, topping 5,300 jobs in 1997, led by increases in mining employment from 485 to 4,347 in those years. This dramatic increase was the result of the startup and expansion of several gold mines along the Carlin Trend⁴ in the northern part of the County whose employees reside for the most part outside of the County. During the peak employment year of 1997, total employment reached 5,321, driven by record high mining employment of 4,374. The latter included the startup operations for the Ruby Hill Mine in southern Eureka County, although that mine accounted for less than three percent of total mining jobs in Eureka County that year. Mining was 82 percent of total employment in the County during that year. Mining employment subsequently fell to 3,180 in 2003. The drop in mining employment resulted in a corresponding drop in total County-wide employment to 3,964 in 2003. Since that time, mining and total employment have both increased (see Table 3.17-7, which summarizes employment trends for Eureka County from 2000 to 2009).

⁴ The Carlin Trend, one of the world's most productive gold mining districts, is a northwest trending belt of mineral deposits over 50 miles long and five miles wide extending through northern Eureka County into Elko County on the northwest and southeast.

Table 3.17-7: Eureka County Employment, by Broad Industrial Grouping, on a Place of Work Basis, 2000-2009 (Selected Years)

Year	Farm	Mining ¹	All Other Private ² (non-farm)	Government	Total
2000	162	3,735	370	229	4,496
2001	127	3,615	274	229	4,245
2002	110	3,405	297	209	4,021
2003	127	3,304	367	166	3,964
2004	134	3,324	356	171	3,985
2005	143	3,565	321	199	4,222
2006	155	3,795	623	209	4,782
2007	157	4,005	1,121	219	5,502
2008	161	4,045	495	229	4,930
2009 (est)	161	4,112	462	189	4,924

¹ Mining employment for 2002 through 2004 is based on the U.S. Bureau of Economic Analysis' (U.S. BEA's) reported 2001 employment and year-to-year changes in mining jobs between 2001 and 2004 reported by the Nevada Department of Employment, Training, and Rehabilitation (NDETR). The vast majority of these mining jobs have been located at mines in northern Eureka County.

² All Other Private includes agricultural services and forestry, construction, manufacturing, wholesale and retail trade, transportation and utilities, and services.

Source: BCLLC/SDLLC 2008; U.S. Bureau of Economic Analysis, 2006 and 2010a; Nevada Division of Employment, Training and Rehabilitation, 2006.

Most Eureka County mining employment is associated with gold mines in the northern part of the County. In 2009, Newmont Mining Corporation's Eastern Nevada Operations employed 2,175 workers and Barrick's Goldstrike Betze-Post operations employed 1,008 workers. Barrick's Ruby Hill Mine, adjacent to the Town of Eureka, employed 127 workers (Nevada Bureau of Mines and Geology 2010). The Ruby Hill Mine, an open pit, cyanide heap leach gold mine, was opened in the mid-1990s by Homestake and acquired by Barrick in 2001. Mining ceased from 2002 until 2006, when Barrick began mining the East Archimedes extension at the mine. A few Eureka County residents also worked at the Cortez Gold Mine in Lander County and Barrick's Bald Mountain Mine in White Pine County.

Aggregate commuting/journey to work data are available from the 2000 Census. That data shows that 66 percent of workers employed in Eureka County lived in Elko County, 28 percent in Eureka County, and five percent in Lander, White Pine County and Washoe counties. The majority of the commuters are employed at gold mines located in northern Eureka County. These mines are relatively close to Elko and Carlin and at least a portion of the commute from Elko is over interstate highway.

Although the mining industry is the dominant employer in the County, other sectors play roles in supporting the County's economy, particularly that segment located in the southern portion of the County. Other sectors include agriculture, government and public education, retail trade and services, and construction. The levels of economic activity and employment in sectors other than agriculture, particularly construction, have historically reflected changes in mining activity, but they also reflect non-mining related demand, including that from tourism and outdoor recreation.

Farm employment has experienced some volatility in recent times, declining for several years at the beginning of the decade, but increasing thereafter. As a consequence, farm employment in 2009 was reported at 159, a net loss of three farm jobs as compared to 2000. The National Agricultural Statistics Service (NASS) reported 86 farms in Eureka County in 2007, up from 73 in 2002 and 84 in 1997 (NASS 2009). Eureka County farmers and ranchers reported just over \$25 million in agricultural product sales in 2007 and out of 17 counties in Nevada, Eureka County was ranked fourth in the state in terms of crop sales and eighth in terms of sales of livestock, poultry, and their products. Total sales rose to \$32.5 million in 2008, declining to \$26.5 million in 2009 (U.S. BEA 2010a; 2010b). Revenue derived from livestock sales generally account for 60 percent to 70 percent of the total sales by local farms and ranches. Cattle account for most of the livestock raised in Eureka County with sheep and horses accounting for most of the remainder. In 2007, 48 out of the 86 Eureka County farms had cattle; 43 with beef cattle (NASS 2009). The seven BLM grazing allotments identified in Section 3.12.2.2 consist of approximately 545,000 acres of public land. In Eureka County as a whole, the BLM manages 1,880,486 public acres in allotments under term grazing permits. Approximately 40 ranching operators are permitted to use these public acres for livestock grazing (Rangeland Administration System [RAS]) (BLM 2012b). The 2007 Census of Agriculture indicates that the 86 Eureka County farms cover 783,440 acres (of which approximately 727,000 acres are pastureland dedicated solely to grazing) up from 266,427 acres in 2002 and 201,077 acres in 1997. These land areas should not include public lands used by farms for grazing. Given that total non-Federally owned land in Eureka County is 564,557 acres, it appears that 2007 Census of Agriculture data on private farm acreage were inaccurate. The 1997 and 2002 figures (approximately 200,000 to 250,000 acres) may better reflect private farmland in the county.

Two areas potentially affected by the Project are the Diamond and Kobeh Valleys. Diamond Valley, located east of the Project Area, is an agricultural area irrigated by groundwater and center-pivot irrigation systems. Diamond Valley is known for its high quality native hay and alfalfa that is in some cases sold to specialty markets including dairies and racehorse breeders and trainers. Most Diamond Valley production is exported to other states and abroad. Approximately 22,000 acres are irrigated in Diamond Valley (see Section 4.3.1 Grazing and Agriculture). Agricultural use of the Kobeh Valley, located south and west of the Project Area, is used primarily for grazing. Only 1,200 acres were under cultivation in Kobeh Valley in 2007 (see Section 4.3.1).

Government employment, which includes federal, state and local government and public school employment, had increases through much of the 1990s, eventually peaking at approximately 280 in 1997/98 (U.S. BEA 2006). Public sector employment subsequently declined to 166 in 2003 before climbing to 216 in 2009. Available data from the NDETR for 2009 suggest a year-to-year loss in state government employment based in Eureka, most likely reflecting changes associated with the state's severe fiscal crisis brought on by the national economic recession.

Other private sector employment in Eureka County, which includes construction, retail trade and services, increased during the period when mining activities increased in the mid-1990s and then followed the decline in employment during the 2000 through 2002 period; however, other private employment increased during 2003 and 2004, which could have been a result of the induced effects of the Falcon-Gondor transmission line construction project.

The local business sector in the Town of Eureka is limited in diversity and scale, focused primarily on essential consumer, building, and automotive goods and services. Retail shopping opportunities include groceries, hardware and lumber, auto parts/fuel/supplies, and novelties and gifts targeted at tourists. There are also several restaurants and other food service establishments, two bars and a casino in the Town of Eureka. Consumer and business services include a bank, motels, RV/mobile home parks, equipment rental, trucking and motor vehicle repair services. Consumers use the internet or travel to Elko, Reno, or elsewhere to access a wider selection of goods, financial services, and a broader range of medical and dental care (BCLLC/SDLLC 2008).

As of the second quarter of 2010, Eureka County hosted 62 private and public employers, including a total of 8 federal, state and local governmental entities, 14 in consumer oriented trade and services other than health care, three in health care, and 16 in construction and mining (NDETR 2010).

Tourism and recreation attractions in southern Eureka County include hunting, fishing, sightseeing, OHV use, visits to the Eureka Opera House and Sentinel Museum, general interest in the historic mining character of the community, and events such as the County fair, County youth fair, high school rodeo, and a series of horse shows, softball tournaments, bicycle races, and shooting and archery tournaments (BCLLC/SDLLC 2008). Travelers along U.S. Highway 50, including bicyclists and motorcyclists, contribute to the southern Eureka County economy. The scale of the retail and services sectors in Eureka County result in numerous limitations on the reporting of employment, number of establishments, sales and sales tax receipts, and other economic data. In addition, recreation and tourism cut across multiple retail and service sectors and are not distinct; as a result, such data are not readily available.

Labor Force and Unemployment

Eureka County's labor market conditions generally parallel trends in the mining industry, although they are more closely tied to activities in the southern part of the County because most employees of the mines in northern Eureka County live in other counties. The local labor force grew from 785 in 1994 to 1,019 in 1998 when mining employment in the region was at its peak and the Ruby Hill Mine near the Town of Eureka was initiating operations. The resident labor force declined after the peak, partially in response to the suspension of operations at the Ruby Hill Mine. In 2005, when construction of the East Archimedes expansion of the Ruby Hill Mine was underway, the labor force stood at 674 and unemployment at 3.6 percent. In the fall of 2006, Eureka County and northeastern Nevada in general were experiencing a labor shortage. In September 2006, there were 243 employers who listed job openings with the Elko office of Nevada Job Connect, and many of those listings were for multiple positions. Employers in Eureka County reported difficulties filling vacant positions (BCLLC/SDLLC 2008). As shown in Table 3.17-8, the labor force subsequently grew to 911 in 2010, more than 29 percent over the 2006 level, even as effects of the recession resulted in increased unemployment.

Table 3.17-8: Eureka County Labor Force, Unemployed and Unemployment Rate Selected Years

	2005	2006	2007	2008	2009	2010	2011 (Apr)
Labor Force	674	705	797	843	893	911	879
Unemployed	24	28	35	43	66	83	54
Unemployment Rate (%)	3.6	4.0	4.4	5.1	7.4	9.1	6.1

Source: U.S. Bureau of Labor Statistics (BLS) 2011.

Table 3.17-9 shows the annual unemployment rates for Eureka County, Nevada, and the U.S. from 2005 to 2010. Prior to the expansion of mining in the region, which began in the early 1980s when intensive exploration of the Carlin Trend coincided with higher gold prices; Eureka County's unemployment rate was higher than that for Nevada and the U.S. The unemployment rate declined below the statewide and national averages from 1999 through 2002, the years when the Ruby Hill Mine was operating, rising slightly after the mine suspended operations. Bolstered by the mining industry, local unemployment rates have been below the state and national rate since 2005, and particularly in recent years when the global recession resulted in substantially higher unemployment. Nevada's unemployment rate, dominated by drastic decline in construction and gaming and tourism in Clark County/Las Vegas averaged 14.9 percent in 2010.

Table 3.17-9: Average Annual Unemployment Rates, United States, Nevada, and Eureka County

Location	Percentages					
	2005	2006	2007	2008	2009	2010
U.S.	5.1	4.6	4.6	5.8	9.3	9.6
Nevada	4.5	4.2	4.6	6.7	12.5	14.9
Eureka County	3.6	4.0	4.4	5.1	7.4	9.1

Source: U.S. BLS 2011.

Personal Income

Eureka County personal income data by place of work statistics reflect the effect of the Barrick and Newmont mines in the northern part of the County. Following the opening of these mines, total earnings increased more than five-fold to \$182 million between 1985 and 1990 (U.S. BEA 1984). Further increases marked the expansion of those mines, with total annual earnings reaching \$274.8 million in 1995. Since that time, total earnings on a place of work basis have climbed, but at a slower rate.

The non-local status of the northern mines' employees is reflected in the labor earnings data. As shown in Table 3.17-10, most of the labor earnings paid by Eureka County employers flow out of the local economy. During 2004 a net outflow of \$247.9 million occurred, equivalent to 81 percent of the total \$307.9 million in wages and salaries paid to jobs located in Eureka County. In 2004 the personal income of residents, including adjustments for social security deductions and other income such as interest and dividends, was \$40.9 million. Five years later in 2008, total earnings paid by Eureka County employers had climbed nearly 40 percent to \$429.3 million

and the net outflow increasing to \$335.6 million. The aggregate personal income of residents was \$65.0 million.

Table 3.17-10: Eureka County Personal Income by Place of Residence: Selected Years

	2004	2005	2006	2007	2008
Earnings by Place of Work (\$ M)	307.9	311.7	387.6	457.6	429.3
Residency Adjustment (\$ M)	-247.9	-247.3	-310.1	-367.1	-335.6
Social Security Deductions (\$ M)	-\$32.7	-32.5	-41.2	-49.7	-43.7
Other Income to Residents (\$ M)	13.6	13.7	13.3	14.2	15.1
Total Personal Income - Residents (\$ M)	40.9	45.6	49.6	55.0	65.0
Per Capita Income	\$28,827	\$33,238	\$33,944	\$35,826	\$40,674

1) (\$M) = millions of current dollars. 2) A negative residency adjustment reflects the net earnings of workers employed in Eureka County, but who reside elsewhere, primarily in Elko County, that are in excess of the earnings of Eureka County residents employed outside the County.
Source: U.S. BEA 2010c.

Although higher than Nevada and the U.S. before the late 1990s, Eureka County residents fell below the state and nation in terms of per capita income during the 2000 to 2007 period. In 2004 the per capita income of Eureka County residents (\$28,827) was 15 percent below the statewide average of \$33,787 and 13 percent below the nationwide average of \$33,050 for that year. Personal income growth in Eureka County in recent years has outpaced that across the state and nation, such that local per capita in 2008 (\$40,674) was again comparable to the statewide and national averages (see Table 3.17-11). Median income in Eureka County during 2009 was \$56,815, approximately seven percent higher than the Nevada statewide median income of \$53,310, and 13 percent above the national average (\$50,221) (U.S. Census Bureau 2010).

Table 3.17-11: Per Capita Personal Income, Eureka County, Nevada, and United States Selected Years

	1990	1995	2000	2005	2006	2007	2008
Eureka	\$23,052	\$25,708	\$23,299	\$33,238	\$33,944	\$35,826	\$40,674
Nevada	\$20,346	\$24,817	\$30,437	\$38,117	\$39,231	\$40,930	\$40,936
United States	\$19,447	\$23,076	\$29,845	\$35,424	\$37,698	\$39,392	\$40,166

Source: U.S. BEA 2010d.

3.17.2.2.4 Fiscal Conditions

Local government finances in Nevada are complex, involving locally derived and state-shared revenues. The former consist primarily of ad valorem/property taxes on real and personal property and the net proceeds of mines operating in the County. The latter include sales, motor vehicle, fuel and gaming tax revenues. Intergovernmental revenues from the state are also very important for rural Nevada counties, having evolved in response to the state's unique tax, economic and geopolitical structures, including the differences in economic conditions affecting the Las Vegas and Reno metropolitan areas, as compared to those affecting rural agricultural and mining communities.

Eureka County's current fiscal structure reflects a heavy reliance on ad valorem taxes and intergovernmental transfers, combined with the influences of a small population base, large

service territory, and year-to-year variances in the mining related tax base and revenues. For example, Eureka County's assessed valuation, which also supports local property taxes for the school district, declined by more than \$154 million (31 percent) between fiscal years 2001/2002 and 2002/2003, following a reappraisal of the mines, but increased by nearly \$200 million the following year (Table 3.17-12). Since then, Eureka County's total assessed valuation has grown dramatically as a result of capital investment in mining, combined with the effects of higher production output and gold prices. In 2008/2009, the County's total assessed value reached an all-time historical high of \$1.48 billion. The total valuation declined to \$1.36 billion the following year (2009/2010) as gains of \$100 million in real property assessments were offset by a drop of more than \$210 million in net proceeds of mining and other assessments. Total assessed valuation climbed by \$54 million for the current 2010/2011 tax year.

Table 3.17-12: Eureka County Assessed Value, Fiscal Years 2000/2001 through 2010/2011 (in Millions of Dollars)

Fiscal Year	Secured ¹	Unsecured, Including Net Proceeds of Mines ¹	Total
2000/2001	356.6	261.2	617.8
2001/2002	400.3	91.4	491.7
2002/2003	235.4	102.1	337.5
2003/2004	308.2	227.9	536.1
2004/2005	340.2	260.5	600.7
2005/2006	273.4	298.5	571.9
2006/2007	333.8	473.4	807.2
2007/2008	381.9	628.1	1,010.0
2008/2009	473.1	1002.2	1,475.3
2009/2010	573.4	789.5	1,362.9
2010/2011	648.6	767.7	1,416.3

¹ Secured property generally refers to real property, mobile homes placed on foundations, and some improvements held by a title, whereby the taxes assessed create a lien on the property. Unsecured property generally refers to personal property, mobile homes not placed on foundation, and other property interest subject to property tax. Source: Nevada Department of Taxation 2010.

The volatility in taxable value carries over to ad valorem tax revenues, influencing local government and school district fiscal budgeting and policies. Within the past five years, ad valorem taxes levied by Eureka County increased from \$5.2 million in fiscal year 2005/2006 to \$17.2 million in 2008/2009 (Table 3.17-13). The latter was a record high, occurring in part due to legislatively approved changes in the collection of net proceeds of mining taxes. These changes resulted in a one-time advancement of receipts that the County would have previously received in 2009/2010. Although the one-time acceleration in receipts contributed to a decline in tax revenues the following year as the new schedule was established, the total revenues were still nearly 50 percent higher than in 2007/2008 due to the intervening increases in production levels and higher market value.

Combining the real and personal property valuations associated with the mining industry and net proceeds reveals that the mining industry accounts for approximately 90 percent of the total ad valorem tax base of the County and ECSD. Intergovernmental revenues can also vary dramatically from year to year, which when combined with fluctuations in taxes on net proceeds

results in substantial variances in total revenues. Over the past five years the County's total revenues increased from \$17.7 million in 2005/2006 to \$32.1 million in 2008/2009, the latter reflecting a one-time shift in the assessment and receipt mining tax revenues in response to statutory changes. Total revenues declined by \$2.9 million the following year (approximately nine percent) with declines from most sources other than intergovernmental transfers, the latter increasing by \$2.2 million.

Table 3.17-13: Eureka County Revenues (In Dollars): Fiscal Years 2006 to 2010

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Taxes	\$ 5,155,474	\$ 7,106,760	\$ 8,845,802	\$ 17,219,653	\$ 12,892,856
Licenses and Permits	\$ 16,747	\$ 14,960	\$ 12,932	\$ 12,633	\$ 16,376
Intergovernmental	\$ 8,809,292	\$ 11,578,968	\$ 11,261,021	\$ 11,081,640	\$ 13,318,785
Charges for Services	\$ 1,209,527	\$ 1,319,790	\$ 1,571,648	\$ 2,348,076	\$ 1,935,850
Fines and Forfeits	\$ 153,570	\$ 178,792	\$ 102,324	\$ 123,652	\$ 93,025
Miscellaneous	\$ 2,372,550	\$ 2,367,536	\$ 2,701,718	\$ 1,302,759	\$ 985,147
Total Revenue	\$ 17,717,160	\$ 22,566,806	\$ 24,495,445	\$ 32,088,413	\$ 29,242,039

Source: Eureka County 2010.

Intergovernmental revenues account for the vast majority of the County's non-ad valorem tax revenues. A total of \$13.3 million in such revenues were received in 2009/2010, up from \$8.8 million in 2005/2006. Intergovernmental revenues from the state include the Basic County-City Relief Tax, Supplemental County-City Relief Tax, motor vehicle property taxes, and fuel taxes. Basic County-City Relief Tax and Supplemental County-City Relief Tax are statewide sales and use taxes enacted to provide property tax relief. Basic County-City Relief Tax is a state-mandated county-imposed sales and use tax returned to the county of origin, while revenues derived from the Supplemental County-City Relief Tax sales and use tax are pooled and distributed according to a specific formula. Intergovernmental revenues also include various federal payments and grants, including receipts of federal Payments in Lieu of Taxes (PILT). In 2010, federal PILT payments totaled \$275,208, based on 2,156,915 acres of qualifying federal lands (BLM 2010).

Recognizing the volatility in revenues and timing lags associated with mining activity, assessment of taxes and receipt of revenues, the Board of Eureka County Commissioners has a long-standing policy to maintain relatively steady property tax rates, funding reserve accounts during periods of prosperity and drawing down reserves to cushion the budgetary impacts of mine closures or declining net proceeds or assessments (BCLLC/SDLLC 2008; BLM 2005).

The overlapping ad valorem tax rates of all entities imposed on property in the Town of Eureka is \$1.9896 per \$100 of assessed valuation for 2010/2011. That rate is consistently the lowest or among the lowest rates in the state and is more than 45 percent below the state-mandated maximum of \$3.64. Table 3.17-14 shows the ad valorem tax rates in the Town of Eureka during fiscal year 2010. Eureka County's levy is \$0.8458, 43 percent of the total. ECSD's levy is \$0.750, the mandated statewide levy, a drop of \$0.1625 from the preceding year reflecting the retirement of the district's outstanding bonded debt and subsequent elimination of the corresponding debt service levy. Other levies include \$0.2153 per \$100 of assessed value dedicated to the Town of Eureka primarily to fund public works, a county-wide levy to support television service, and a state-mandated levy of \$0.17.

Table 3.17-14: Ad Valorem Tax Rates in the Town of Eureka: Fiscal Year 2010/2011

Taxing Entity	Tax Rate (\$)
Eureka County	0.8458
Eureka County School District	0.7500
Eureka Town	0.2153
State of Nevada	0.1700
Eureka County Television (TV) District	0.0085
Total	1.9896

Note: Rates are in dollars per \$100 of assessed valuation.
Source: Nevada Department of Taxation 2010.

County-wide ad valorem taxes also apply to the net proceeds of mining. Such proceeds are taxed by the state at a rate of \$5.00 per \$100 of net proceeds. From the total revenues thereby generated, revenues equivalent to those that would have been derived by the local levy are returned to the county and school district of origin, the remainder being retained by the state to fund other needs. While the level of local revenues derived from net proceeds can vary considerably from year-to-year in response to market prices, production and allowable deductions by the mining companies, more than \$5.1 million in net proceeds revenues accrued to the county, with another \$9.1 million to the school district in 2009.

Eureka County expenditures have increased in recent years from \$12.5 million in 2005/2006 to \$28.2 million in 2009/2010, the rise generally tracking the growth in revenues over time (Table 3.17-15). Budgeted expenditures increased across all major functions/departments. Much of the increase is accounted for by non-recurring outlays for facility and road improvements funded from current revenues and the County's accumulated reserves for such purposes.

Table 3.17-15: Eureka County Budgeted Expenditures Fiscal Years 2006 to 2010

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
General Government	\$ 3,089,721	\$ 4,563,306	\$ 6,901,906	\$ 9,360,002	\$ 7,078,305
Public Safety	\$ 1,984,091	\$ 2,202,399	\$ 2,620,349	\$ 2,319,528	\$ 3,167,273
Judicial	\$ 595,857	\$ 911,649	\$ 1,098,340	\$ 1,064,787	\$ 1,126,404
Public Works	\$ 2,468,542	\$ 3,308,029	\$ 5,158,508	\$ 5,164,730	\$ 7,786,714
Health and Sanitation	\$ 845,291	\$ 1,221,028	\$ 1,062,653	\$ 1,289,008	\$ 1,208,777
Culture and Recreation	\$ 972,314	\$ 1,006,237	\$ 1,086,293	\$ 1,211,887	\$ 1,324,386
Community Support	\$ 382,374	\$ 411,240	\$ 384,553	\$ 424,247	\$ 463,467
Intergovernmental	\$ 2,165,102	\$ 816,100	\$ 3,156,243	\$ 3,816,953	\$ 6,046,716
Total Expenditures	\$ 12,503,292	\$ 14,439,988	\$ 21,468,845	\$ 24,651,142	\$ 28,202,042

Source: Eureka County 2010.

Budgeted outlays for operating purposes, including payroll and benefits associated with a staffing increase of five full time equivalents (FTEs), were more modest.

Net current revenues, defined as total revenues less total expenditures, ranged between \$1.0 and \$8.1 million over the past five years (Table 3.17-16). After accounting for other financing sources or outlays, net surpluses occurred in four years, the residual net revenue transferred to the County's reserve funds. As a result the County's reserve fund balances climbed by

49 percent, from \$38.3 million to \$57.0 million at the end of the 2008/2009 fiscal year. Capital outlays in 2009/2010 resulted in a net use of just over \$710,000 in reserve balances, reducing the total reserve balance to \$56.3 million.

Eureka County completed several major capital improvement projects in 2009 and 2010. These projects included a new Eureka Fire House, a water storage and distribution projects in Eureka and As treatment projects in Devil's Gate and Crescent Valley. Eureka County has a long-standing policy of refraining from the use of long-term debt for capital improvements. The policy of funding improvements using available resources reflects the substantial revenues generated by mining and the County's awareness of the uncertainties surrounding the industry and the associated potential implications for variability in tax revenues. While current plans of the existing mines indicate sufficient reserves to sustain operations for some time, variability in the price of gold can affect production levels and net proceeds, in turn affecting the County's tax base. Such uncertainties make the policy of avoiding debt when possible a prudent course of action (BCLLC/SDLLC 2008; BLM 2005).

Table 3.17-16: Eureka County Budget Summary, Fiscal Years 2006 to 2010

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Total Revenues	\$17,717,160	\$22,566,806	\$24,495,445	\$32,088,413	\$29,242,039
Total Expenditures	\$12,503,292	\$14,439,988	\$21,468,845	\$24,651,142	\$28,202,042
Net Current Revenue	\$5,213,868	\$8,126,818	\$3,026,600	\$7,437,271	\$1,039,997
Other Financing Sources		\$90,351	\$15,000	\$6,400	\$(1,750,000)
Net Transfer to/Use of Reserve Fund Balance	\$5,213,868	\$8,217,169	\$3,041,600	\$7,443,671	\$(710,003)
Reserve Fund Balance (Ending)	\$38,330,900	\$46,551,069	\$49,592,669	\$57,036,340	\$56,326,337
Note receivable reserve	\$484,328	\$415,819	\$343,297	\$266,334	\$185,656
General Fund	\$10,159,434	\$17,068,570	\$10,450,236	\$12,467,226	\$10,105,839
Capital Projects	\$8,541,428	\$7,981,844	\$9,782,820	\$9,553,687	\$8,741,945
Special Revenue	\$19,145,710	\$21,084,836	\$29,016,316	\$34,749,093	\$37,292,897

Source: Eureka County 2010.

A very small portion of the reserve fund is held as a reserve against an outstanding note receivable; however, the vast majority of the funds are unreserved being held for potential use in meeting future general fund needs, capital projects, and other special needs as established by the County Commission.

3.17.2.2.5 Public Utilities and Eureka County Services/Facilities

Utilities

Information concerning public utilities in southern Eureka County was obtained from the Master Plan for the Town of Eureka Water and Sewer Systems and Devil's Gate GID (District 1& 2) Water Systems (Lumos & Associates 2007), from the Overview of the Summary Report of Existing Municipal Water Conditions in Southern Eureka County (Damele 2010), and from information contained in Eureka County's 2007 through 2010 Comprehensive Annual Financial Reports (Eureka County 2010).

Water Supply, Treatment, Storage and Distribution

Eureka County maintains and operates three water systems in the southern part of the county:

- Eureka Town Water System;
- Devil's Gate GID #1; and
- Devil's Gate GID District #2.

The Town of Eureka water utility is supplied by two ground water wells located approximately 3.5 miles north of town. One well produces 900 gpm and another produces 750 gpm. Water from the two wells is piped to two storage tanks that feed booster pumps, which in turn transfer the water to the town. Together the wells produced 58.4 million gallons (approximately 179 acre feet) in 2009, an increase of ten percent over the quantity produced in 1995. Water levels in both wells have been declining at annual average rates of just over two feet in recent years.

During 2009, an additional 300,000 gallon storage tank was constructed at the booster station and an additional booster pump and new generator were installed. Water storage in town now consists of a 350,000 gallon storage tank on the southeast end of town and a 750,000 gallon storage tank and newly constructed 1,250,000 gallon storage tank on the west side of town. During 2010 the water and wastewater lines on Main Street were replaced. The cost of these and other utility system improvements totaled nearly \$6 million (Damele 2010).

Ten springs, which currently only provide water to a mobile home park, could serve as a supplemental water source for the town, but improvements would be required to connect the springs to the main water system. **A ROW has been issued to Eureka County to make the necessary improvements.**

The Town of Eureka water system served 276 residential and commercial customers in 2009. Average daily demand during 2009 was 160,000 gpd and maximum daily demand (**MDD**) was 480,000 gpd. Well production capacity was 1,296,000 gpd. Eureka County estimates that the potential customer base for the Town of Eureka water system could be an additional 409 customers, including 277 housing units in the Eureka Canyon Subdivision, 47 lots in the Prospect Subdivision and 85 lots in the townsite (Damele 2010).

Water supply and distribution services in the Devil's Gate area of Diamond Valley are provided by the Devil's Gate GID #1 and GID #2. GID #1 operates one well that produced 2,073,600 gallons (6.4 acre feet) in 2009. This well is capable of producing 60 gpm. GID # 1 serves 14 customers and has an average daily demand of 5,681 gallons and a **MDD** of 17,043 gallons. Given the limited land area of the district, substantial additional growth is not anticipated.

GID #2 has one 60 gpm well that serves as the primary source of water for the district. The well produced 5,733,600 gallons (17.6 acre feet) in 2009 and feeds a 250,000 gallon storage tank. A second well produces 200 gpm, but this water exceeds EPA standards for **As** and is therefore not in the municipal system, although it does provide construction water. The GID Board is in the process of making necessary improvements to bring the present system into compliance (BCLLC/SDLLC 2009; Appendix E). GID #2 had 41 customers in 2009 with an average daily demand of 15,708 gpd and a **MDD** of 47,125 gpd. The current storage requirement is for 225,462 gallons with fire flow of 1,000 gpm for two hours. The existing 250,000 gallon tank meets the storage requirement (Damele 2010). The County constructed an additional

400,000 gallon storage tank and installed 7,000 linear feet of water main during 2010 and early 2011 (Personal Communication, Ron Damele, Eureka County Public Works 2011).

The projected customer base for GID #2 includes an additional 234 customers including a build-out of an additional 112 lots currently within the district and the 122 lots in Ruby Hill Subdivisions – North and South – that may be absorbed into the district (Damele 2010).

As with the wells serving the Town of Eureka water system, the average decline in water levels in the Devil's Gate GID # 1 and #2 districts has been one to two feet per year.

Wastewater Collection and Treatment

Wastewater treatment services within the Town of Eureka are provided by a multiple-cell, aerated, evaporative lagoon wastewater treatment facility (WWTF) managed by the County public works department. The WWTF is currently permitted to discharge a maximum of 100,000 gpd, and currently operates at 70 percent of its permitted capacity. Eureka County has received permits to expand the facility to 200,000 gpd (Massey 2011). The estimated cost for the expansion is \$1.3 million. The outfall pipe at the WWTF can accommodate approximately 100 additional connections before capacity is exceeded. Costs for expanding the outfall pipe have been estimated at \$300,000 (Damele 2010).

Wastewater treatment in Diamond Valley is accomplished through the use of individual septic systems.

Solid Waste Disposal

Eureka County operates the Class II-rated Whiskey Flat Landfill just north of the Town of Eureka. The landfill serves the entire county and currently receives less than 20 tpd of solid waste including solid waste hauled from Crescent Valley. As of 2008, the landfill had an estimated 30 years of remaining life at recent disposal volumes (Research and Consulting Services, Inc. 2008). **Expansion of the current landfill site would require Eureka County to obtain the rights of mineral claims on adjacent lands.** The landfill is staffed by two County public works employees and fees are charged on a quarterly or per use basis (Personal Communication, Ron Damele, Eureka County Public Works 2006). A private vendor provides solid waste collection services in the Town of Eureka and the surrounding area.

Other Utilities

Electricity

Mt. Wheeler Power provides electric power to central and southern Eureka County including the Town of Eureka and the Project Area. Mt. Wheeler currently has capacity to serve additional customers in southern Eureka County (Personal Communication, Jesse Murdock, Mt. Wheeler Power, Inc. 2006).

Propane

Residential and commercial gas is provided by private propane vendors.

Telephone

Telephone service is provided by Nevada Bell. Cellular phone coverage is available across much of the County except in Pine Valley along SR 278.

Facilities and General Services

Eureka County is governed by a three member Board of County Commissioners elected at large to overlapping four-year terms. Each year the Board selects one of its members to serve as Chairperson. County government provides a range of services to the two unincorporated towns and to the County as a whole.

Table 3.17-17 displays Eureka County full time employment by function for the four previous fiscal years. The County added five employees during the four-year period. County employment is anticipated to increase by one staff position in the coming year.

Table 3.17-17: Eureka County Government Full Time Employees by Function, Fiscal Years 2007 to 2010

Function	Year Ending June 30, 2007	Year Ending June 30, 2008	Year Ending June 30, 2009	Year Ending June 30, 2010
General Government	17	18	18	18
Judicial	9	9	9	9
Public Safety	21	22	23	23
Public Works	24	24	25	25
Health and Sanitation	1	1	2	2
Culture and Recreation	10	10	10	10
Community Support	2	2	2	2
Total Full Time Employees	84	86	89	89

Source: Eureka County 2010.

Eureka County administrative functions include the following:

- Board of County Commissioners
- Assessor
- Clerk and Treasurer
- Recorder/Auditor
- District Attorney
- Natural Resources

Most of the Eureka County administrative offices are housed in the historic courthouse. The District Attorney, Yucca Mountain Information Office and Natural Resources Office are housed in the auxiliary administrative office building along with the Public Works Department. The courthouse was renovated in 1998.

Law Enforcement and Criminal Justice

Sheriff's Office

The Eureka County Sheriff's Office provides law enforcement for the entire County, operates the County's detention facilities and provides dispatch services for all County public safety functions including police, emergency medical and fire suppression activities. The detention facility can accommodate 20 inmates, including four female inmates. Occupancy averaged seven to eight inmates in 2006/07. Juvenile detention facilities are located in Elko, requiring the department to provide transportation services. Although an infrequent occurrence, juvenile transportation poses a burden on the department, requiring dedication of an officer and vehicle for at least a half day per trip. **Also, the Sheriff's office is responsible for the transportation of inmates for health and medical services as well as other courts of jurisdiction. Increasing that work load may require one full-time officer dedicated to transportation only** (Personal Communication, Robert Cutler, Eureka County Sheriff's Office 2006; Personal Communication, Ken Jones, Eureka County Sheriff's Office 2007).

The Criminal Justice Center is adequate for Eureka's current population in terms of overall administrative space and detention capacity. A sheriff's substation is located in Crescent Valley (Personal Communication, Ken Jones, Eureka County Sheriff's Office 2007).

In December 2010, the Sheriff's Office staff totaled 20 including the sheriff, undersheriff, patrol officers, dispatchers, administrative personnel and jailers. The department has a current staffing ratio of one patrol officer for every 100 to 200 residents. The department faces challenges recruiting qualified personnel willing to relocate to the Town of Eureka. The lack of available housing is a critical recruitment issue. Additionally, between \$35,000 and \$40,000 is required to provide a vehicle and equipment, and up to six months is required to fully train a new officer. Current staffing does not allow continuous seven-day per week, round-the-clock patrol in the Town of Eureka; however, officers are on call during non-patrolled hours and to back up the on-duty staff as needed. The department has a part-time animal control officer (Personal Communication, Ken Jones, Eureka County Sheriff's Office 2007; Massey 2010).

According to the Nevada Department of Public Safety (NDPS), the Eureka County Sheriff's Office made 42 criminal arrests during 2010 (NDPS 2011). Eureka County crime rates⁵ are substantially lower than the State of Nevada as a whole. In 2010, Eureka County's crime rate (offenses) of 16.16 was less than half the 34.04 rate for the State of Nevada as a whole (NDPS undated).

District Attorney

The District Attorney is responsible for prosecuting all felony, gross misdemeanor, and juvenile offender cases committed within the County. The Office of the District Attorney is also the legal branch of local government representing the Eureka County Commission and other County agencies in civil, administrative, and litigation matters. The District Attorney's staff includes the District Attorney and one secretary/paralegal. The District Attorney's office has historically experienced an increase in its caseload during times of transition in communities, such as during

⁵ Crime rates refer to the number of Part I offenses per 1,000 inhabitants. Part I offenses include: homicide, forcible rape, robbery, assault, burglary, larceny-theft, motor vehicle theft and arson.

construction projects or when a mine starts up, changes or shuts down (Personal Communication, Ted Beutel, Eureka County 2007). A majority of these cases are not Part 1 offenses.

Public Defender

Eureka County depends on the State Public Defender's office in Ely (White Pine County) to provide services for indigent defendants. Criminal representation is adequate for the current level of demand. However, civil indigent representation and legal aid service is currently inadequate (Massey 2010).

Eureka Justice Court

The Eureka Justice Court adjudicates small claims (up to \$5,000), civil cases (up to \$10,000), all traffic offenses, felonies up to preliminary hearing and protective orders, and also performs marriages. The justice court staff includes the Justice of the Peace, one full-time and one half-time administrative staff, and casual administrative staff, as needed (Personal Communication, J. Schweble, Eureka County Justice of the Peace 2007).

Eureka County Juvenile Probation Office

The probation office provides a variety of probation services for adjudicated youth and prevention services for adjudicated and non-adjudicated youth in Eureka County. The office has a Chief Probation Officer and a Grants Administrator. The youth probation caseload averages ten to fifteen cases per month. Probationers are also provided counseling by a licensed clinical social worker. As shown in Table 3.17-18, the probation office offers a variety of programs to its target population of Eureka County youth (Personal Communication, Karen LaBarry, Eureka County Juvenile Probation Department 2007).

Table 3.17-18: Eureka County Tutorial and Life Skills Program Participation 2010

Program	Participants
Eureka Elementary School Tutorial	43
Eureka Elementary School Life Skills	35
Crescent Valley Elementary School Tutorial	10
Crescent Valley Elementary School Life Skills	20
Eureka High School Tutorial	17
Eureka High School Life Skills	35
Girls Circle	40
Boys Council	20

Source: Massey 2010

The probation office also provides a variety of recreation and sports programs to youth throughout the County including soccer, wrestling, basketball, swimming, dance program, ski trips, graduation night, back to school pool parties, and others (Personal Communication, Karen LaBarry, Eureka County Juvenile Probation Department 2007; Massey 2010).

Emergency Response

Emergency response includes fire protection and emergency medical/ambulance services. Eureka County funds an emergency management services coordinator (Coordinator) to coordinate emergency planning, response and management among the various local service providers and to serve as a liaison with various statewide entities. The Coordinator also directs the volunteer ambulance/EMS in Eureka (Personal Communication, Mike Sullivan, Eureka County EMS 2006).

Fire Protection

Eureka County funds six local volunteer fire departments (VFDs). In addition to the Town of Eureka and Diamond Valley, VFDs are located in Beowawe, Crescent Valley, Dunphy and Pine Valley, none of which have full-time employees. These departments, along with the NDF and BLM, maintain mutual-aid agreements to augment the capacities of any given department should the need arise. Eureka County provides funds to the NDF to help fund its fire suppression activities. Two local fire departments, the Eureka Volunteer Fire Service (VFS) and the Diamond Valley VFS service southern Eureka County, the primary study area for the Mount Hope Project.

The Eureka VFS provides fire suppression service in and around the Town of Eureka. The Eureka VFS is staffed by 25 volunteers and maintains eight vehicles including the following: two Type 1 structure engines, one 3,800 gallon water tender; one Type 6 brush fire truck; two Type 4 brush fire trucks; one rescue/extraction truck equipped with jaws-of-life, spreaders, etc.; and a pumper truck, which is only used within the Town of Eureka (Personal Communication, Dan Brown, Eureka Volunteer Fire Service 2006, Massey 2010).

The rolling stock is housed in the Town of Eureka in a new two-story, seven-bay fire station commissioned in late 2009. The fire station houses the Chief's office, a training room, future living quarters and a self-contained breathing apparatus refill station. Although the Eureka VFS primary service area is southern Eureka County, the department has and would continue to be called to other parts of the County to support other VFDs and agencies for fire suppression incidents. During dry years, the department frequently responds to multiple calls per week to fight wildland fires. The VFS also accompanies the ambulance on motor vehicle accident calls. Given the large service area that the Eureka VFS must cover, response times can be as long as 30 to 45 minutes including the time required to assemble volunteers. In addition to County support, the Eureka VFS supplements its budget with social events and a raffle. Training is supplemented by the State of Nevada (Personal Communication, Dan Brown, Eureka Volunteer Fire Service 2006; Massey 2010).

Fire protection services to the area that includes the proposed Project Area are provided by the Diamond Valley VFS located on 11th Street in Diamond Valley, approximately 15 miles from Mount Hope. The Diamond Valley VFS has 13 volunteers, three of whom are certified Emergency Management Technicians (EMTs). The Diamond Valley VFS maintains the following four pieces of equipment: a structure/rescue unit; one 3,000 gallon tanker truck; an older military six-wheel drive (aka a 6x6) wildland unit; and a one-ton wildland unit (Personal Communication, Paul Strite, Diamond Valley Volunteer Fire Station 2007).

The Diamond Valley VFS maintains a three-bay fire station, to accommodate five vehicles including an ambulance. The department would like to expand the station in the future. Most

calls to the VFS are for vehicle accidents along SR 278 and for wildland fires. Response time to the Mount Hope area is likely to be over 30 minutes given the time required to assemble volunteers in this rural area (Personal Communication, Paul Strite, Diamond Valley Volunteer Fire Station 2007).

Emergency Medical/Ambulance Services

Emergency medical care and transportation are provided by the Eureka County EMS, a volunteer ambulance service serving the entire County. **The emergency medical and ambulance service also responds to calls in adjacent counties including southern Lander County, southwestern White Pine County, and northern Nye County.** The service is funded through user fees and Eureka County. In the southern part of the County, the EMS is staffed by a full-time paid EMS Coordinator, who is an EMT, and ten volunteers (Personal Communication, Mike Sullivan, Eureka County EMS 2006; Massey 2010). Approximately half of the volunteers are intermediate EMT certified. Two ambulances and a search and rescue vehicle are housed in the Town of Eureka. One ambulance is a larger 2009 model, with more modern treatment capabilities, capable of transporting three patients, which has improved the EMS's reliability and treatment response. An older 1997 ambulance has been stationed in Diamond Valley in anticipation of activity at the Project Area. The ambulances have radio communication with Northeast Nevada Regional Hospital in Elko, where most patients are transported. Fixed-wing and helicopter emergency medical air transportation is available to hospitals in Elko, Reno, and Salt Lake City, Utah. Overall responses and responses in southern Eureka County have been increasing in recent years. In 2005, the EMS responded to a total of 151 calls, 90 of which were in the southern part of the County. The EMS responded to 205 calls in 2009 (134 in the southern part of the county) and 211 calls through late December 2010 (125 in the southern part of the County). The EMS Coordinator anticipates hiring full-time staff if calls substantially increase (Personal Communication, Mike Sullivan, Eureka County EMS 2006; Massey 2010).

Health Care

Health care in southern Eureka County is provided at the Eureka Medical Clinic, located in the Town of Eureka and operated by the Nevada Health Centers, Inc. The clinic, when fully staffed, employs a physician, a physician's assistant/clinic coordinator, two medical assistants, and an administrative employee. The current physician and physician's assistant are both family care providers with experience in emergency care and pediatrics. The clinic provides a full range of basic and EMS. A physical therapist is available twice a week at the Eureka Clinic (Personal Communication, William Jensen, Eureka Medical Center 2006; Personal Communication, Steve Hansen, Nevada Rural Health Centers Inc. 2007; Massey 2010).

The Eureka Medical Clinic facility was constructed in 1998 with funding from Eureka County. Financial support for the clinic is provided from fees for service, county revenues, federal grants and health care funding programs. The Eureka Medical Clinic is open during normal business hours, Monday through Friday, with **24 hours per day/seven days per week (24/7)** on-call service available at other times. The clinic includes the following facilities: four examination rooms; medical supplies and records storage facilities; radiology (X-ray) facilities; emergency and basic trauma treatment facilities with advanced cardiac life support capabilities; EKG and pulmonary function diagnostic facilities; hearing and vision testing facilities; and an in-house pharmacy for prescriptions written by the clinic's physician. Eureka County recently purchased a

digital X-ray machine for the clinic (Personal Communication, William Jensen, Eureka Medical Center 2006; Massey 2010).

Most patients requiring hospitalization use the Northeastern Nevada Regional Hospital in Elko, 115 miles from the Town of Eureka. A smaller hospital is available in Ely. Patients requiring specialized care often choose to access facilities in Reno. The clinic offers immunizations and routine medical screening. Dental care is provided by a visiting dentist and a dental technician, using facilities at the clinic (Personal Communication, Steve Hansen, Nevada Rural Health Centers Inc. 2007; Massey 2010).

During 2004 the Eureka Medical Clinic had 2,287 patient visits by 904 people. Nine percent of these visits were from patients who were uninsured; three percent were covered by Medicaid; and 15 percent were covered by Medicare (NHCI 2006). The current (2010) level of patient visits is similar to 2004 levels (Massey 2010). The clinic has capacity to treat additional patients. The rural health care standard is 1,500 people for one physician (Personal Communication, Steve Hansen, Nevada Rural Health Centers Inc. 2007). There were approximately 1,350 people in southern Eureka County at the time of the 2010 Census (see Section 3.1.2.2.1).

Social and Senior Services

Eureka County provides emergency assistance (emergency food, shelter, transportation to the Nevada Department of Human Resources office in Ely) to those requesting it on an as-needed basis. The County Social Services Coordinator administers the assistance program that ranges from providing indigent health care to energy payment assistance. The income qualifications associated with most programs limit eligibility. Residents seeking social assistance available through the Nevada Department of Human Resources (cash grants, medical assistance, food stamps) must either visit the department's office in Ely, apply by mail, or over the Internet. The caseload from Eureka has traditionally been limited, with the largest demand for food stamps (BLM 2005; Personal Communication, Millie Oram, Eureka County Social and Senior Services 2007).

Eureka's Senior Citizens' Center provides lunches and a Meals-on-Wheels program to all seniors in the community. The Senior Center also organizes social and recreational events, provides transportation services, and operates a food bank for all low-income citizens. West States Apartments owns 12 housing units, which are rented to low-income seniors. These units are fully occupied and have a waiting list. Home Health coordinates a visiting helper to persons in Eureka County who need assistance in taking medicines or daily living (Eureka County Economic Development Council 2006; Personal Communication, Millie Oram, Eureka County Social and Senior Services 2007).

Library and Recreational Facilities

Eureka County provides a building, operations funding, and equipment for the library in the Town of Eureka and contracts with the Elko-Lander-Eureka Library System for personnel and administrative support. The library in the Town of Eureka is open 25 hours a week. The building housing Eureka's library was built in 1982. A wide selection of books and periodicals is available, along with Internet service and materials available through interlibrary loan accessed through a statewide computer database (Eureka County Economic Development Council 2006).

Recreational facilities and services are discussed in Section 3.15 (Recreation and Wilderness).

Public Education

Public education (kindergarten through 12th grade) in Eureka County is provided by the ECSD, which is headquartered in the Town of Eureka. In addition to administrative offices, the ECSD operates an elementary school and a junior/senior high school in Eureka, which serve students in the Town of Eureka and the southern portion of the county. ECSD operates an elementary school in Crescent Valley, which serves the Crescent Valley/Beowawe area. The ECSD sends junior and senior high school students from the Crescent Valley/Beowawe area to the Lander County School District's junior and senior high schools in Battle Mountain, and also sends some Pine Valley area students to the Elko County School District Combined School in Carlin, paying these two districts for tuition and transportation.

School Capacities

Total fall enrollment in the ECSD experienced a long-term decline from a peak of 378 students during the 1997-1998 school year to a recent low of 220 students during the 2003-2004 school year. By the fall of 2009/2010, the total had climbed to 260 students, including pre-kindergarten and kindergarten students (Table 3.17-19). The declining student enrollments had generated capacity to allow future enrollment increases within current facilities, without immediately requiring additional capital construction.

Table 3.17-19: Eureka County School District Enrollment from the 1996-1997 School Year to the 2009-2010 School Year

School Year	Enrollment		
	Kindergarten Through 6th	7th Through 12 th	Total
1996-1997	189	143	332
1997-1998	220	158	378
1998-1999	204	154	358
1999-2000	187	160	347
2000-2001	152	153	305
2001-2002	149	136	285
2002-2003	139	100	239
2003-2004	129	91	220
2004-2005	127	109	236
2005-2006	117	107	224
2006-2007*	135	110	235
2007-2008 *	114	122	236
2008-2009 *	114	128	242
2009-2010 *	135	125	260

*2006-2007 and later includes pre-school and kindergarten students, at full enrollment.

Source: BCLLC/SDLLC 2008; Nevada Department of Education 2010.

The Eureka elementary school has a maximum capacity of 280 students and an optimum capacity of 240. The junior/senior high school has a maximum capacity of 232 students and an optimum capacity of 190. Maximum capacity is typically calculated by multiplying the number of classrooms by the number of students each classroom is designed to accommodate. Optimum capacity considers the appropriate amount of space that the school district determines should be dedicated to specific instructional programs or administrative functions that occur within a school building. In addition, the statutory limits on some elementary class sizes and any specific needs of incoming students (e.g., English as a Second Language classes) may limit each building's actual capacity (Personal Communication, Ben Zunino, ECSD 2007).

In operation since the 1995-1996 school year, the Eureka elementary school facility had a peak enrollment of 220 students during the 1997-1998 school year compared to the lowest fall enrollment of 94 students in 2008-2009. Class sizes and pupil to teacher ratios for elementary grades are generally under 20 students with kindergarten through third grades statutorily required to be fewer than 15 students.

The core facility at the junior/senior high school was built in 1968. Recent renovations to the junior/senior high school have replaced three older functionally and mechanically obsolete modular classrooms and relocated a bus barn and vocational shop facilities. The junior/senior high school has accommodated a peak of 160 students in the 1999-2000 school year; 2008-2009 fall enrollment was 128 students (Nevada Department of Education [NDE] 2009).

Eureka County schools are recognized among the best in Nevada. During the 2005-06 school year, both the Eureka Elementary School and the Eureka County Junior/Senior High School were designated as Nevada High Achieving Schools by the NDE. The Eureka County Senior High School was also designated a STARS Honor Grant High School. ECSD schools consistently score higher than the statewide average on the Nevada Criterion-Referenced Examinations.

School District Fiscal Conditions

Unlike many other school districts in Nevada that rely on state funding, ECSD derives virtually all of its revenue from locally generated ad valorem property taxes levied on real and personal property and the net proceeds of mining. Total revenue reached a record high of \$16.6 million in 2008-2009, more than twice the revenues available three years earlier (Table 3.17-20). Like Eureka County's revenue, much of the increase was due to net proceeds of mining taxes, with a spike in such revenues in 2008-2009 due in part to the one time change in the timing of collection and disbursement of taxes on net proceeds of mining. Total revenues declined to \$14.4 million the following year. Ad valorem taxes typically account for more than 75 percent of the ECSD's annual revenue, with 85 to 90 percent of that tied to mining.

Change in economic times along with historical declines in enrollment reflect underlying demographic trends that resulted in a challenging environment for the school board, ECSD administrators, faculty and staff in past years as they collectively strove to maintain quality public education in Eureka County. The ECSD's total staffing level declined by one-third between the 2000-2001 and 2002-2003 school years, and the total annual expenditures budget fell to \$3.74 million in 2002-2003. The cuts reflected the effects of falling enrollments on allowable expenditures and reductions in mine-related property tax revenue to fund discretionary programs, faculty, and other costs. Although some savings accompany enrollment decline, facility operating and maintenance costs, transportation costs, and those costs required to provide

a core curriculum are less variable. Due to the remoteness of the schools, housing shortages and other factors, the ECSD salaries are among the highest in the state.

Table 3.17-20: Eureka County School District Revenues, Fiscal Years 2005-2006 to 2009-2010

Revenue Source	Revenues by School Year (In Dollars)				
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Local - Ad valorem	5,029,025	5,423,379	7,713,820	13,901,984	12,162,570
Local - Other	1,665,870	1,140,900	2,703,817	2,432,882	2,091,693
State and Federal Programs and Grants	410,600	277,600	94,861	224,842	135,950
Total Revenue	\$ 7,105,495	\$ 6,841,879	\$ 10,512,498	\$ 16,559,708	\$ 14,390,213

Source: BCLLC/SDLLC 2008; ECSD 2009 and 2010.

More recently, enrollment has climbed, supporting increases in allowable expenditures. Increases in the number of junior/senior high students in Beowawe and Crescent Valley also contributed to increases in the amount of tuition paid to the Lander County School District and to higher transportation costs. As a consequence, the general fund operating expenditures of the ECSD grew from \$4.35 million for the 2005-2006 school year to just over \$7 million in the 2009-2010 school year (Table 3.17-21).

Table 3.17-21: Eureka County School District Expenditures

Expenditure	Expenditures by School Year (In Dollars)				
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
General Fund:					
Regular Programs	\$ 1,801,605	\$ 1,928,895	\$ 2,472,146	\$ 2,327,334	\$ 3,311,024
Vocational and Other Programs	269,779	314,145	465,696	511,550	609,930
Undistributed and Food Service	2,288,392	3,027,741	2,926,747	3,395,819	3,121,760
General Fund Operating Expenditures	\$4,359,776	\$5,270,781	\$5,864,589	\$6,234,703	\$7,042,714
Capital / Debt Service	5,601,015	5,582,088	2,096,197	1,331,528	2,087,700
Total Expenditures 1	\$ 9,960,791	\$ 10,852,869	\$7,960,786	\$7,566,231	\$9,130,414

¹ These totals exclude transfers to reserve fund balances.

Source: BCLLC/SDLLC 2008; ECSD 2009 and 2010.

In addition to the general fund expenditures, the adopted budget for the 2005-2006 school year contained a total of \$5.6 million in capital outlays and debt service. Capital and debt service outlays were just over \$2 million during the 2009-2010 school year. The ECSD, like Eureka County on the whole, has taken advantage of the economic prosperity associated with the resurgence of mining to undertake major capital improvements without incurring excessive long-term debt. In 2004, the ECSD gained electorate approval to issue \$6 million in long-term debt. Proceeds from the debt issuance funded renovations at the high school, including replacing three portable classrooms in order to stem increasing utility and maintenance costs, integrate classroom spaces with the existing structure and improve the overall functionality of the educational environment. Higher than anticipated construction costs for relocation of the bus barn and vocational shop facilities pushed the total cost for the renovations to over \$8 million

(BCLLC/SDLLC 2008). As a result of multi-year high revenues from taxes on the net proceeds of mining, the bonded indebtedness used to build those facilities was retired in 2010.

3.17.2.2.6 Social Conditions and Affected Publics

This section generally describes existing social conditions in Eureka County and groups that could be affected by the Project. Information for this section was obtained from interviews (between 2006 and 2008) with local officials, County staff and local residents, and from a review of secondary sources (BCLLC/SDLLC 2008).

Southern Eureka County, including the Town of Eureka and Diamond Valley, is a close-knit community where many residents know each other because of their long association with the community. There are a number of multi-generational families in the community, some whose roots date back to the original settlement of the area by people of European descent. Many southern Eureka County residents are deeply involved in the community. It is not uncommon for an individual to be a hay grower or business person, serve as an elected official or be an appointed member of a board or committee and also serve as a member of a VFD, search and rescue team, or other civic organization.

Although the Town of Eureka hosts tourists and highway travelers during summer months and periodic influxes of mine workers from area mines, it remains a town that endeavors to maintain its small town traditions and lifestyles. Many residents enjoy knowing many of their neighbors and value the low crime rate, and the slow paced, casual atmosphere of the town.

On the other hand, some community members are concerned that many of the community's youth move away to find suitable employment and would like to have a somewhat larger student body at the high school to support a broader curriculum. The narrow range of commercial, dining and entertainment options is a drawback for some residents.

The Project mine/milling facility is a large project relative to the population base in southern Eureka County. Consequently virtually everyone in southern Eureka County would likely be affected by the Project to some degree.

Specific public and groups identified during scoping and interviews as potentially affected by development and operation of the mine include:

- Individuals and businesses that provide goods and services to the mining and construction industries and to the population at large;
- Eureka County residents who are unemployed or underemployed and families with children who might otherwise leave the community to seek employment;
- Southern Eureka County residents who have low or fixed incomes, such as senior citizens and individuals and families who receive public assistance;
- Diamond Valley farmers, most of whom grow alfalfa, meadow hay or other grasses. Much of the Diamond Valley crop is marketed as high quality dairy and export grade hay. Diamond Valley producers are keenly interested in maintaining the current quantity and quality of

ground water that these agricultural enterprises rely upon and are concerned about the effect of ground water withdrawals on their farming operations;

- Grazing operators who run cattle on two BLM grazing allotments that include portions of the Project Area and in Kobeh Valley;
- Businesses that support farming and ranching; and
- Recreation users of the area around the Project. These users mainly include hunters, some OHV users (ATV and snowmobile) and visitors, re-enactors and supporters of the Pony Express National Historic Trail, which traverses the Project Area.

3.17.3 Environmental Consequences and Mitigation Measures

3.17.3.1 Significance Criteria

The NEPA (Section 1508.14) states that "...economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement would discuss all of these effects on the human environment." This means that social or economic differences are not enough to result in a potentially significant adverse effect, but they need to manifest themselves with some physical change, as described in the NEPA (Section 1508.8(b)), "...effects may include growth inducing impacts and other effects related to induced changes in the pattern of land use, population density or growth rate."

The Proposed Action would be considered to have a significant effect on social and economic values if the following occurred:

- Substantial long-term change in any sector of the local economy, such as major expansion or contraction of employment, output or diversity;
- An increase in temporary or resident populations that would unduly strain the ability of affected communities to provide housing and services or otherwise adapt to growth-related social and economic changes;
- An aggregate change in public sector revenue and/or expenditure flows likely to either compromise the ability on the part of affected units of government to maintain public services and facilities at established service levels, or allow for improved services without increasing the tax burdens on existing taxpayers; or,
- Permanent displacement of residents or users of affected areas that would result from project-induced changes in or conflicts with existing uses or ways of life.

The significance threshold would be triggered if any one of the above criteria were satisfied.

3.17.3.2 Assessment Methodology

The social and economic characteristics of the Study Area and socioeconomic aspects of the proposed Project were analyzed to determine potential effects or impacts of the Proposed Action and alternatives on employment, income, population, housing, public infrastructure and services and social conditions. Fiscal effects were assessed based on information obtained from EML and Eureka County.

Due to the dynamic nature of economic conditions in Eureka County, the nation, and the small number of recent mining operations in southern Eureka County, assessing social and economic effects of the Proposed Action and alternatives is challenging. The assessment is based on the Project's location, existing labor force and housing conditions, and recent southern Eureka County mining experience, adjusted for the differences in size, mine location, and Project duration.

Economic conditions have changed substantially since the preparation of the 2008 Socioeconomic Assessment (BCLLC/SDLLC 2008). The regional economy was robust during 2007 and early 2008, but at the time of the 2010/2011 update there were increased levels of unemployment locally, with substantially higher unemployment rates across the State of Nevada and the nation. The implications of higher unemployment for the socioeconomic effects of the Project are unclear. On one hand, there is a larger, albeit still relatively small, pool of unemployed workers in Eureka County and adjacent counties, increasing the potential that locals and daily commuters would fill direct and secondary jobs associated with Project construction and operations, if these conditions persist. On the other hand, continuing high unemployment levels across the state and nation could mean that more non-local unemployed workers would be willing to relocate to the Town of Eureka or surrounding communities for the possibility of work. It is uncertain whether more or fewer workers would be willing to relocate their families or commute weekly than was anticipated in the 2008 Socioeconomic Assessment (BCLLC/SDLLC 2008).

This assessment focuses on the 18-month construction phase and the first nine years of production operations, a period when the mine would achieve and maintain full production, creating long-term steady job opportunities conducive to household relocation and to the creation of indirect and induced jobs in the community. This is the period when the major socioeconomic effects and need for community response would be anticipated. The assessment includes a brief discussion of the Project effects of subsequent changes in operation beyond the first nine years of operations; however, socioeconomic effects are not analyzed in detail because they are anticipated to occur gradually over an extended period of time and the capability and capacities of the community would have changed in response to the intervening growth, making such an assessment highly speculative.

The residency patterns for EML workers developed for the 2008 Socioeconomic Assessment assumed that EML would facilitate the development of both temporary and long-term housing in the Eureka Canyon subdivision, such that most construction and operations workers would find accommodations in southern Eureka County. This assumption also made it likely that the bulk of Project-related population growth and demand for local government and public facilities and services would occur in southern Eureka County. Although the site plan for the Eureka Canyon subdivision contains areas designated for construction worker housing facilities and for multi-family and single family units and lots that could house operations and secondary workers, the

anticipated development schedule of the subdivision, other than construction of 66 units to accommodate demand unrelated to the Project, has not been announced as of mid-2011.

Given that the plans, timing and pace of housing development in southern Eureka County are as yet unresolved, it is uncertain whether adequate housing would be available to accommodate the Project-related population forecast in the 2008 Socioeconomic Assessment during Project construction and the initial months of Project operations. A potential response to such a housing shortage would be that more construction and operations workers would commute on a daily basis from other, more distant communities. Fewer workers in southern Eureka County would mean that the short-term demand for community infrastructure and services described in the 2008 Socioeconomic Assessment would be overstated. Conversely, Project-related demand for housing and local government infrastructure and services would occur in communities outside of southern Eureka County. Through the construction period, demand in other communities would be temporary and likely extend to a limited range of infrastructure and services. Some of the long-term demand associated with Project operations would also be temporary, until adequate housing was developed in southern Eureka County.

Even if adequate housing became available in southern Eureka County, the experience of the Ruby Hill Mine and other mines in Nevada suggest that some Project workers would commute to the Project daily from other communities. Two categories of daily commuters would be anticipated: existing residents of those communities who would not generate additional demand for housing or public services in their home communities, and non-local construction and operations workers who choose to locate in communities outside southern Eureka County and commute on a daily basis. The number of non-local daily commuters would likely be small in comparison to the populations of the host communities and result in minimal socioeconomic effects. Potential effects on communities outside of southern Eureka County by relocating Project workers are discussed in subsequent parts of the socioeconomic analysis.

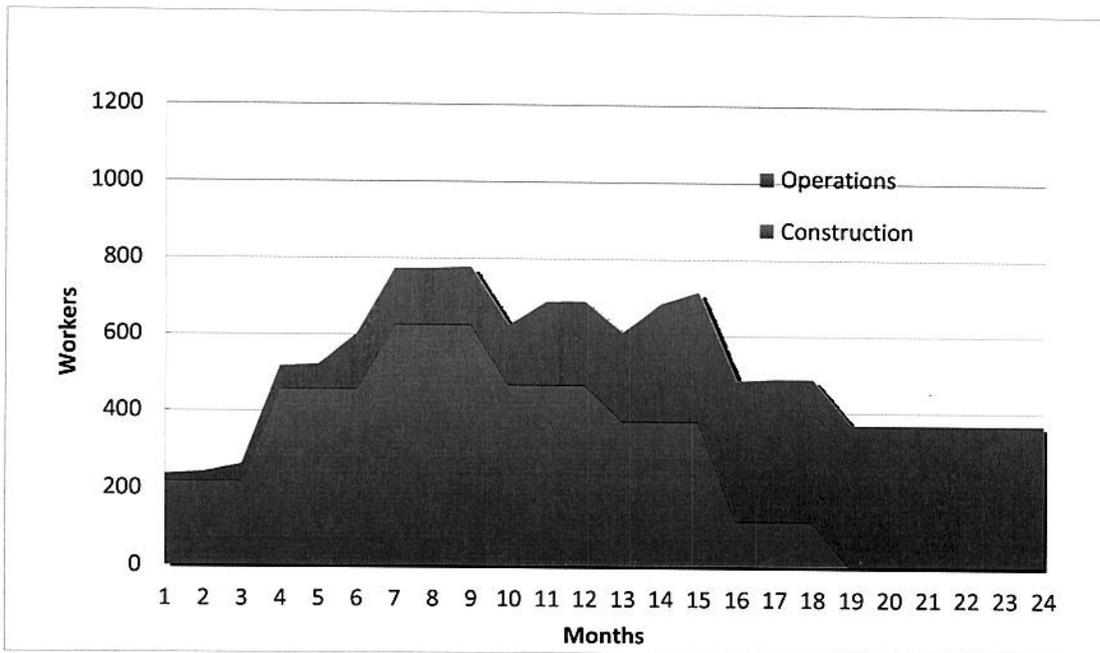
In consultation with Eureka County, a SA was conducted to supplement the 2008 Socioeconomic Assessment, as noted in Section 3.17.2.1; Study Methods (see Appendix E). The SA examined the secondary employment, population and school enrollment effects of differing operations workforce residency, labor participation, and demographic assumptions than those contained in the 2008 Socioeconomic Assessment. The SA results are expressed in terms of population and school enrollment and the implications of the SAs are included under those topics and also considered under Section 3.17.3.2.3 Housing Effects, Section 3.17.3.2.5 Public Utilities and Services Effects and Section 3.17.3.2.6 Public Fiscal Effects.

For the Slower, Longer Project Alternative and Partial Backfill Alternative, the assessment methodology is based on data provided by EML in a memorandum dated January 24, 2011 (EML 2011).

3.17.3.3 Proposed Action

The proposed Project would have an estimated 18 to 24 month construction period, followed by a 44-year production life. Figure 3.17.2 in the following section provides a timeline and workforce loading schedule for Project construction and the first six months of Project operations. Figure 3.17-3 provides an operations workforce loading schedule over the estimated production life of the Project.

Figure 3.17.2: Estimated Mount Hope Construction and Operations Workforce, First 24 Months After Project Initiation



Source: EML estimates.

Increases in Proposed Action-related employment and population are discussed in detail in the Socioeconomic Assessment (BCLLC/SDLLC 2008) and are summarized in the following sections.

3.17.3.3.1 Economic and Employment Effects

The Project would generate three types of employment:

1. Workers in a variety of construction crafts would be required to construct mine facilities. Mine construction would be performed by an engineering, procurement, and construction management contractor, and a number of specialty sub-contractors.
2. A wide variety of managerial, administrative, technical, skilled, and unskilled workers would be needed to operate the mine during the production phase.
3. Purchases of goods and services by the mine, contractors, suppliers, and by mine construction and operations employees would generate additional jobs across all sectors of the local and regional economies.

Figure 3.17.2 displays projected construction and operations employment for the 24 months after Project initiation.

Employment During Construction

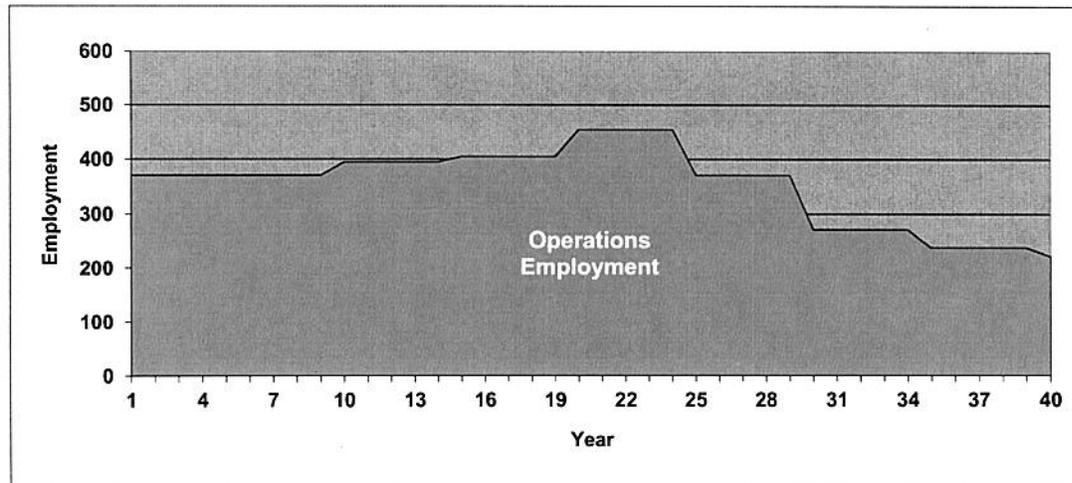
Projections provided by EML (BCLLC/SDLLC 2008) indicate that on-site construction would begin with approximately 220 workers, expanding over time until peaking at over 600 workers during completion of the mill and processing facilities in the third quarter of construction. The estimated construction workforce would average nearly 400 workers over the 18-month period.

EML would also begin employing operations workers during Project construction (see Figure 3.17.2). Project direct operations employment would total approximately 20 workers as construction begins, increasing to the full operations compliment during the last two months of construction. Over the first 24 months of construction and operations, direct on-site employment would result in an average of approximately 567 jobs. There would be a three month peak where a total of approximately 775 combined construction and operations workers would be on site, starting around the seventh month of construction.

Employment During Production Operations

After construction is completed, EML anticipates operations employment of approximately 370 employees for nine years, at which time the number of workers would gradually build to 455 in Year 20, remain at that level for five years, and then gradually decline to approximately 220 in Year 40 (Figure 3.17.3).

Figure 3.17.3: Estimated Mount Hope Operations Employment



Source: EML workforce estimates.

Although the size of the Project workforce and the highly specialized occupations needed for some mine construction and operations activities would dictate a need to recruit non-local labor for initial mine operations, it is likely that some southern Eureka County residents would leave their current employment to work at the Project, as discussed in the Labor Competition and Job Shift section, below.

Secondary Employment

Economic data for northeastern Nevada indicate each mining construction job supports approximately 0.6 secondary job in the region and approximately 1:1 secondary jobs supported by each permanent mining job (Fadali et al. 2005). Secondary employment includes two types of non-direct employment:

- Indirect employment includes jobs supported by EML and contractor purchases of goods and services from local and regional businesses. Although EML would purchase goods and services in Eureka County, most construction and mining supply and service firms are located in Elko or Reno (BCLLC/SDLLC 2008).