

### 3.0 Affected Environment

This section describes the affected environment of the BLM-administered public lands within the NEMO planning area. A complete description of the resources can be found in the CDCA Plan and EIS and is incorporated by reference (40 CFR 1502.21). The existing management situation for the planning area is summarized in Appendix K. A separate, more detailed, existing management situation for the desert tortoise and the resource values and uses of its habitat in the NEMO planning area was prepared in April, 1998, (Foreman 1998) and is available for review at local BLM offices in Needles, Barstow, and Riverside, California.

The NEMO planning area is a large and diverse region in southeastern California<sup>1</sup> characterized by several north-south trending, parallel mountain ranges separated by narrow valleys in the north and by wide valleys in the south (See Chapter 8, Figure 1). The planning area is considered to contain parts of both the Great Basin and Mojave Deserts. BLM-managed public lands in the planning area exist in three distinct and geographically separated regions.

The northernmost area of public lands includes those lands north and west of Death Valley National Park, and north of the Fort Irwin National Training Center. This area is the westernmost extent of the Great Basin mountain ranges and their valleys, including the Panamint Range, the Inyo Mountains, and the Argus Range. The mountain ranges are moderately to very steep, and the higher elevations tend to get more rain than Death Valley to the east. Although overall annual precipitation levels are still within the desert range, short-term flood flows are not unusual.

The central area of public lands includes those lands east and south of Death Valley National Park, between Nevada on the east and State Route 247 on the west, extending south to the peaks of the Kingston Range in a line approximately parallel to and about a mile south of the Inyo/San Bernardino County line. This is the Amargosa watershed, a complex of mountain ranges feeding into the Amargosa River and its tributaries to provide a desert oasis for wildlife and humans, since prehistoric times. This area provides the first trails and settlements of men and women from the eastern United States seeking ranching and farming opportunities in Southern California.

The southern area of public lands includes those lands from the Kingston and Mesquite Range on the north, between Nevada on the east, and six miles east of Baker or the Mojave National Preserve on the west to highway I-40 on the south. In this area the valleys and mountains become more gently rolling, elevation rises gently upward from the Baker sink on the west to the Halloran Summit and then tapers down somewhat to the Nevada border. This is a country of wider open spaces, more and larger dry lakebeds, and somewhat more consistent, but still very low rainfall that generally results in good spring and fall vegetation growth. This is desert tortoise habitat. Primary land uses are grazing, mining, major transportation, and utility corridors.

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<sup>1</sup> The planning area also includes a very small portion of land in Nevada that is entirely within the Death Valley National Park (DVNP), which is described and analyzed in a separate planning document specific to DVNP.

### 3.1 Vegetation

#### 3.1.1 General Vegetation

The vegetation within the planning area is divided into the Mojave Desert and Great Basin subprovinces as classified by *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). The Mojave Desert covers most of the planning area and the Great Basin covers less than ten percent of the total area. Most of the vegetation of the planning area can be classified within creosote bush/white bursage, creosote bush scrub, mixed saltbush, Joshua tree, blackbush, and Mojave yucca vegetation series. Fremont cottonwood, mixed willow, black willow, and water birch series do not cover large areas, but the structure and variety of plants and the variety of animals found in these series make them a significant resource to maintain. As general references to vegetation sections of this Chapter, please refer to the CDCA Plan, (1980), Hickman (1993), and the California Native Plant Society (2001).

The NEMO planning area contains a number of Unusual Plant Assemblages designated in the CDCA Plan for emphasis in the environmental review process and for special monitoring attention. UPAs in areas affected by the NEMO planning effort include Salt and Brackish Marsh (near Carson Slough), Valley Well Shadscale Scrub (in Shadow Valley), Piute Valley Smoke Tree Assemblage in Piute Valley, and Riparian and River Bottomland along the Amargosa River and in the Inyo Mountains and Panamint Range.

The 18 grazing allotments administered by BLM (See Chapter 8, Figure 2a) have numerous vegetation series. Refer to Table 3-1 for a list of the most abundant of the series in the allotments.

**Table 3.1 – Vegetation**

Allotment Name	Vegetation Series
Clark Mountain	Creosote bush-white bursage; creosote bush; hop-sage; Indian Ricegrass
Deep Springs	Creosote bush-white bursage; winterfat; greasewood; hopsage; combination of Fremont cottonwood, mixed willow, and water birch
Fish Lake Valley	Creosote bush-white bursage; greasewood; hopsage
Hunter Mountain	Creosote bush-white bursage; greasewood; Joshua tree; mixed saltbush; California juniper
Kessler Springs	Big galleta; creosote bush;
Last Chance	Creosote bush-white bursage; winterfat; greasewood; hopsage; California juniper
Pahrump Valley	Creosote bush; creosote bush-white bursage; allscale
South Oasis	Creosote bush-white bursage; greasewood; Joshua tree; mixed saltbush; hopsage
Valley Wells	Creosote bush; Mojave yucca
Crescent Peak	Desert needle grass; Joshua tree;
Eureka Valley	Creosote bush-white bursage; winterfat greasewood
Horse Thief Springs	Creosote bush-white bursage; creosote bush; Nolina; Mojave yucca
Jean Lake	Big Galleta
Oasis Ranch	Creosote bush-white bursage; winterfat; greasewood; hopsage; combination of Fremont cottonwood, mixed willow, and water birch (riparian)
Piute Valley	Creosote bush; Mojave yucca; creosote bush-white bursage; mesquite
Valley View	Creosote bush; Mojave yucca
White Wolf	Creosote bush-white bursage; greasewood; hopsage

### 3.1.2 Specialty Status Plants

Two federally listed plant species, the endangered Amargosa niterwort (*Nitrophilia mohavensis*) and the threatened Ash Meadows gumplant (*Grindelia fraxino-pratensis*), are known to occur on BLM lands in the planning area. Critical habitat has been designated for both species in the Carson Slough area. (See Chapter 8, Figure 10) The two critical habitat units are separated by a 1.2 mile-wide stretch of public lands, and both units, as well as the area between these units, are suspected to support the federally listed threatened spring-loving centauray (*Centaureum namaphilum*). In addition, two other state-listed plant species and 23 BLM California sensitive plant species occur or potentially occur in the NEMO planning area. See Appendix I for a complete list of the special status plant species.

Often, special status plants are associated with unusual soils or a series of particular site conditions creating unusual microhabitats. For example, special status plants are often found in the planning area in the presence of limestone outcrops, granitic boulders, calcareous or dolomitic soils, or conditions conducive to perennial soil hydration (e.g., alkaline meadows and playas, desert springs and riparian areas).

The Clark Range, Kingston Range and Mesquite Mountain, as well as the Amargosa River Basin and Lower Carson Slough are focal areas for a number of special status plants. Additionally, several High Sierran-influenced canyons and peaks in the Inyo and Panamint Mountains, notably Pleasant and Wildrose Canyons in the latter range, and around the Cerro Gordo Peak area, in the former mountain range, contain an unusually high number of special status plants (Sawyer and Keeler-Wolf 1995). For further information contact John Willoughby, State Botanist for BLM 2800 Cottage Way Room W-1834, Sacramento, CA.

The MUC M designated area at the south end of the Inyo Mountains contains several special status plant species, including: Inyo hulsea (*Hulsea vestita ssp inyoensis*) and Jaeger's caulostramina (*Caulostramina jaegeri*). Additionally, Panamint Mountains lupine (*Lupinus magnificus* var. *magnificus*) is known from a MUC M area in the Panamint Mountains. Other special status plant species are thought to occur in this area as well.

### 3.1.3 Biological Soil Crusts

In arid and semi-arid lands, vegetation cover is often sparse or absent. The soil surface in open spaces between the higher plants is generally not bare of life, but covered by a community of highly specialized organisms. These communities are referred to as biological soil crusts, or cryptogamic, cryptobiotic, microbotic, or microphytic soil crusts (Harper and Marble 1988; West 1990). They may constitute up to 70% of the living cover in some plant communities (Belnap 1994), including substantial portions of the NEMO Planning area.

Biological soil crusts consist of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungi filaments weave throughout the top few millimeters of soil, gluing loose soil particles together and forming a matrix which stabilizes and protects soil surfaces from erosive forces (Cameron 1966; Belnap and Balun 1974; Friedman and Ocampo-Paus 1976; Belnap and Gardner 1993).

Biological soil crusts conduct many important functions in arid and semi-arid lands. In the large interspaces between plants, biological soil crusts are an important source of fixed carbon. Interspace soils between plants are often stabilized by biological soil crusts. Biological soil crusts protect soils from both wind and water erosion by binding the soil particles. Cyanobacteria and cyanolichens can be an important source of fixed nitrogen for plants and soils in desert ecosystems (Evans and Ehleringer 1993).

#### 3.1.4 Riparian-Wetland Vegetation

In recent years, there has been increasing awareness and understanding of the economic benefits of wetland areas. Healthy wetland systems purify water as it moves through the vegetation and act like a sponge by retaining water in stream banks and ground water aquifers. Wetland areas absorb and dissipate much of the energy of floodwaters.

Wetland-riparian vegetation is dependent upon the water provided by the running water of rivers, streams, and large springs (*lotic* habitat) and/or by the standing water of lakes, ponds, seeps, bogs, small springs and meadows (*lentic* habitat). The vegetation of riparian-wetland areas usually contrasts sharply with the vegetation of adjacent uplands. Although the area covered by wetland-riparian vegetation is small compared to upland vegetation, the importance of this vegetation is well recognized. For example, more species and greater numbers of wildlife are found in riparian environments than in any other habitat type (Kattelman and Embury 1996; Thomas et al. 1979; Kauffman and Krueger 1984; Schulz and Leininger 1991). Wetland-riparian vegetation provides important sources of forage for domestic livestock (Clary and Webster 1990). Riparian vegetation is very important to the proper functioning of the adjacent stream, providing shading and adding chemical energy and nitrogen through the plant materials and insects that falls into the stream (Kattelman and Embury 1996; Meehan et al. 1977; Cummins et al. 1989). Riparian vegetation protects stream banks from erosion and traps sediments and nutrients coming from upstream, thereby ensuring high water quality (Kattelman and Embury 1996). Healthy stands of riparian vegetation can ameliorate the adverse effects of upslope disturbances (Schlosser and Karr 1981).

Temporal variation in wetland-riparian vegetation occurs in response to disturbances. Natural disturbances due to flooding are common in riparian habitats. The degree of change to the vegetation in response to floods depends upon the severity of an individual flood and the condition of the riparian vegetation at the time. Very severe floods can remove much of the vegetation. When this occurs, the vegetation progresses through a series of different successional stages until a relatively stable stage is reached. Manning and Padgett (1995) provided an excellent description of community types and successional pathways of riparian areas in the Great Basin.

Wetland areas also are focal points for recreation, including fishing, hunting, camping, boating, hiking, nature observation, photography, and picnicking. Many of these activities associated with wetland areas generate high economic values.

Riparian communities occur near desert springs and along flowing streams and are of special interest. Under the CDCA Plan, all riparian areas in the planning area are designated as Unusual Plant Assemblages (UPAs), which are to be given special consideration in management decisions.

The amount of scientific data and history of BLM-managed wetland habitats varies greatly by location. The best information available on wetland habitats for this EIS is Functioning Condition Assessment data (See Appendix J). There are three categories of functioning condition: 1) proper functioning, 2) functioning-at-risk, and 3) non-functional. Detailed definitions of these categories are available in BLM's Technical References 1737-9 (1993, revised 1995) and 1737-11 (1994).

Many of the desert spring riparian areas within the NEMO planning area have been rated as non-functional or functioning-at-risk, primarily resulting from water diversion, weed establishment, vehicle use, mining, burro use or livestock grazing (Refer to Appendix J). Many riparian riverine segments have similarly been rated as functioning-at-risk due to upstream water use, groundwater overdraft and/or exotic plant establishment (Tamarisk/saltcedar or *Tamarix ramosissima*).

The major stream channel and riparian attributes that are assessed when determining functional condition are hydrologic, vegetative, and soils/erosion. Land uses can impact all of these attributes. For example, livestock could consume enough of the streambank vegetation so that there would not be adequate cover to protect stream banks during high flows. If a stream is not rock armored along its banks and there is not adequate vegetation, the stream bank and associated riparian habitat may erode into the stream channel during high flows. This erosion sediment might be more than stream channels could handle and cause them to decrease in depth and widen. If a stream channel does not have the correct width/depth ratio for the landscape setting in which it occurs, then the stream cannot provide the proper habitat for fish, amphibians, insects, etc., that should occur in that stream. Non-native Invasive Plants

A number of weeds are of concern in the planning area. Mustards and thistles are present and take advantage of favorable weather conditions. Tree of heaven (*Ailanthus altissima*) and African rue (*Peganum harmala*) are known to occur in a few sites, and probably elsewhere. Filaree (*Erodium cicutarium*), red brome (*Bromus rubens*), and Mediterranean split grass (*Schismus barbatus*) can be found throughout the planning area at varying densities based on weather conditions. Black locust (*Robinia pseudoacacia*) and honey locust (*Gleditsia triacanthos*) infest spring-fed riparian areas in the same manner as tree of heaven, greatly impacting critical riparian areas, and replace native vegetation. Both are known to occur at many old mining sites. Halogeton (*Halogeton glomeratus*) infests a small area on either side of Interstate 15 several miles east of the rest stop in Shadow Valley and it appears not to be spreading. Tamarisk (salt cedar - *T. ramosissima*) is of great concern because it easily spreads in riparian or wetland areas and if not treated with prescribed burning, mechanical methods, or herbicides, it will eventually be the only vegetation to occupy the site. Athel tree (*Tamarix aphylla*) is not considered an invasive species, but can cause problems at spring sites due to the tremendous amount of water they absorb and transpire. This has been a problem at several sensitive fish habitats. Other than tamarisk (salt cedar), most weed control efforts have been limited. Most weeds, other than salt cedar, take advantage of wetter years and native plants appear to have the advantage during drier years.

## 3.2 Wildlife

The complex combination of soil types, topography, vegetative communities and climatic conditions found in the planning area supports numerous wildlife habitats and many endemic (i.e., found only here) animal species. The area is well known for its species diversity, particularly of reptiles, neotropical migratory birds, small mammals and aquatic insects. Major wildlife habitats or special habitat features, in addition to the plant communities listed previously, include: sand dunes, rocky outcrops, talus slopes, cliffs, mineshafts, adits, streams, and spring pools.

### 3.2.1 General Wildlife

Over 35 reptile species are known to occur within planning area, with representative species including the western whiptail lizard (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), Chuckwalla (*Sauromalus obesus*), sidewinder rattlesnake (*Crotalus cerastes*) and speckled rattlesnake (*Crotalus mitchelli*). Seven amphibian species are also known to inhabit some of the springs, streams and moist areas found in the planning area. These include the Inyo Mountains slender salamander (*Batrachoseps campi*), red-spotted toad (*Bufo punctatus*), western toad (*Bufo boreas*), Great Basin spadefoot toad (*Scaphiopus intermontanus*), Pacific tree frog (*Hyla regilla*), leopard frog (*Rana pipiens*) and bullfrog (*Rana catesbeiana*). However, the latter species is an introduced, non-native species. The presence of an eighth species, the Amargosa Toad (*Bufo boreas nelsoni*) is also suspected.

The varied habitats which occur also support over 150 avian species, most of which are classified as neotropical migratory birds. Some habitats support both nesting and migratory use, whereas others, particularly riparian areas, support extensive migratory use.

Horned lark (*Eremophila alpestris*), greater roadrunner (*Geococcyx californianus*), Le Contes thrasher (*Toxostoma lecontei*), black-throated sparrow (*Amphispiza bilineata*) and common raven (*Corvus corax*) are known to occur throughout the planning area, particularly in creosote bush (*Larrea tridentata*) scrub, and Joshua tree (*Yucca brevifolia*) plant communities. Phainopepla (*Phainopepla nitens*), yellow warbler (*Dendroica petechia*), verdin (*Auriparus flaviceps*) and Gambel's quail (*Callipepla gambelii*) are common to mesquite bosque forests (*Prosopis* spp.) in the region; whereas northern flicker (*Colaptes auratus*), blue grosbeak (*Guiraca caerulea*), ladder-backed woodpecker (*Picoides scalaris*), ash-throated flycatcher (*Myiarchus cinerascens*) and western kingbird (*Tyrannus verticalis*) frequent willow (*Salix* spp.) and cottonwood (*Populus fremontii*) dominated riparian areas.

Bewick's wren (*Thryomanes bewickii*), blue-gray gnatcatcher (*Polioptila caerulea*) and long-eared owl (*Asio otus*) are also known from wash habitats that support heavy shrub cover, whereas Say's phoebe (*Sayornis saya*), rock wren (*Salpinctes obsoletus*) and canyon wren (*Catherpes mexicanus*) are common to less vegetated canyons. Foothill areas supporting pinyon (*Pinus monophylla*) and juniper (*Juniperus* spp.) stands support birds such as bushtit (*Psaltriparus minimus*), yellow-rumped warbler (*Dendroica coronata*), scrub jay (*Aphelocoma coerulescens*) and pinyon jay (*Gymnorhinus cyanocephalus*). In forested mountains, the white-breasted nuthatch (*Sitta pygmaea*), mountain chickadee (*Parus gambeli*), Townsend's solitaire (*Myadestes townsendi*) and great horned owl (*Bubo virginianus*) are known to occur. Raptors with large territories, such as prairie falcon (*Falco mexicanus*) and golden eagle (*Aquila chrysaetos*), can range over all these habitats, but suitable nesting sites are usually limited to cliff and canyon areas.

Numerous small mammals also exist in the Planning area. Representative species include canyon, cactus and deer mice (*Peromyscus* spp.), Botta's pocket gopher (*Thomomys bottae*), antelope ground squirrel (*Ammospermophilus leucurus*) and round-tailed ground squirrel (*Spermophilus tereticaudus*), kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* spp.), and black-tailed hare (*Lepus californicus*), as well as desert cottontail (*Sylvilagus audubonii*). Large mammals common to the region include badger (*Taxidea taxus*), ringtail (*Bassariscus astutus*), kit fox (*Vulpes macrotis*), bobcat (*Felis rufus*), coyote (*Canis latrans*), mountain lion (*Felis concolor*) and mule deer (*Odocoileus hemionus*).

### 3.2.2 Special Status Animals

State and federally listed animals found on public lands in the planning area include the following:

- State and federally-listed-threatened desert tortoise (*Gopherus agassizii*);
- State and federally-listed endangered Amargosa vole (*Microtus californicus scirpensis*);
- State and federally-listed endangered least bells vireo (*Vireo bellii pusillus*);
- State and federally-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*);
- State-listed endangered and federally-listed threatened Inyo California towhee (*Pipilo crissalis eremophila*)
- State-listed endangered western yellow-billed cuckoo (*Coccyzus americanus occidentalis*);
- State-listed threatened Mohave ground squirrel (*Spermophilus mohavensis*); and
- State-listed threatened Swainson's hawk (*Buteo swainsoni*).

Several BLM-designated sensitive wildlife species also occur within the Planning area. Sensitive wildlife species are generally associated with specialized habitats, such as desert bighorn sheep (*Ovis canadensis nelsoni*) in their preferred mountainous terrain; mineshaft, cliff and rock crevice-dwelling animals (eight bat species) and their extensive habitat in the Planning area; western burrowing owl (*Athene cunicularia-hypugea*) and mixed Mojave woody scrublands or creosote bush scrublands; Amargosa River and tributary riparian-obligate species, such as the Amargosa pupfish (*Cyprinodon nevadensis amargosae*) and the Amargosa speckled dace (*Rhinichthys osculus amargosae*); the Mojave fringe-toed lizard (*Uma scoparia*), and its limited sand dune habitat; Gila monster (*Heloderma suspectum*), and its patchy succulent scrub-canyon habitat, and the endemic Shoshone cave whip-scorpion (*Trithyreus shoshonensis*) and its unique subterranean habitat.

Appendix I, Special Status Species, has a complete description of listed, sensitive and special concern species occurring within the NEMO planning area. A complete list of known species which occur within the planning area is found in the *California Desert Conservation Area Plan, Final Environmental Impact Statement and Proposed Plan, Appendix IX: Wildlife* and *Appendix X: Vegetation (USDI 1980)*.

The remainder of the discussion of biological resources focuses on specific listed or sensitive species affected by one or more proposed amendments. Some of the NEMO proposals are specifically aimed at addressing the needs of rare or declining species.

### 3.2.3 Desert Tortoise

The desert tortoise is found throughout arid lands of the southwest United States in Arizona, California, Nevada, Utah and northern Mexico. The species has two distinct populations, referred to as the Mojave and Sonoran populations, effectively separated by the Colorado River.

Data from a variety of sources indicate that there are at least six ecologically significant units of the desert tortoise within the Mojave region. These units (hereafter referred to as Recovery Units) consist of populations or groups of populations that show significant differences in genetics, morphology, ecology, or behavior. The four Recovery Units occurring in the CDCA include the Western Mojave, Eastern Mojave, Northern Colorado Desert, and Eastern Colorado Desert Recovery Units. The Eastern Mojave Recovery Unit, addressed in the NEMO plan amendments, lies east of Death Valley and extends in the north from the Nevada border southward to Interstate Highway I-40. The small portion of the Northeastern Mojave Recovery Unit in Ivanpah Valley is included in the Eastern Mojave Recovery Unit in this document.

Desert tortoises spend much of their lives in burrows, emerging to feed and mate during late winter and early spring. They typically remain active through the spring, and sometimes emerge again after summer storms. During these activity periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Berry 1974, Luckenbach 1982 *In: USFWS 1994*, p. 18) Eggs and young are quite vulnerable to predation due to their small size and soft shells. Adults, however, are well protected against most predators other than humans and other environmental hazards and consequently are long-lived. (Germano 1992, Turner *et al.* 1987 *In:USFWS 1994*, p.18)

In adverse conditions the tortoises retreat to burrows or caves, at which time they reduce their metabolism and loss of water and consume very little food. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind (*USFWS 1994*, p. 18). Desert tortoises apparently tolerate large imbalances in their water and energy budgets (Nagy and Medica 1986). This ability enables them to survive lean years and exploit resources that are only periodically available. During years of average, or better than average precipitation and forage production, desert tortoises can balance their water budgets and have a positive energy balance, providing opportunity for growth and reproduction (Nagy and Medica 1986 *In:USFWS 1994*, p.18)

Habitat requirements include sufficient suitable plants for forage and cover, and suitable substrates for burrow and nest sites. Throughout most of the Mojave region, desert tortoises occur primarily on flats and bajadas with soils ranging from sand to sandy gravel, characterized vegetationally by scattered shrubs and abundant intershrub space for the growth of herbaceous plants. Desert tortoises are also found on rocky terrain and slopes in parts of the Mojave region (*USFWS 1994*, p.15).

It is estimated that many desert tortoise populations have declined at rates ranging between 3 and 59 % per year (Berry 1990, as amended). These declines have been attributed to direct take by humans (e.g., collection for pets or food, shooting, killing and injuring with motor vehicles). Habitat loss, degradation, and fragmentation due to roads, agriculture, residential development, military training, diseases and recent drought are other decline factors (Sievers et al. 1988, Luckenbach 1982, Coombs 1977a and b, Appendix D). Populations in areas with a high incidence of known human-caused mortality exhibit the greatest declines (*USFWS 1994*, p.3). In the Planning area, declines up to 90% have been recorded at the Goffs permanent study plot in Fenner Valley (K.H. Berry, USGS, desert tortoise researcher, pers. comms. 2000-2002.).

In 1989, the Fish and Wildlife Service listed the desert tortoise – Mojave population - as an endangered species on an emergency basis (*USFWS 1989*). The Mojave population was subsequently listed as threatened on April 2, 1990 (*USFWS 1990*).

Critical habitats that are essential to achieve recovery were identified by USFWS in 1994. Portions of the Ivanpah Critical Habitat Unit and Piute-El Dorado Critical Habitat Unit occur in the planning area (Fig. 6a). BLM has designated tortoise habitat categories. Category I habitat within the Planning Unit occurs in Shadow Valley, Ivanpah Valley, and the Piute and Fenner Valleys (Fig 6a). BLM's goal for Category I desert tortoise habitat is to maintain a viable population of tortoises. All other tortoise habitat in the planning area (e.g., Pahrump Valley) is BLM Category III desert tortoise habitat. The management goal is to mitigate impacts to the extent possible.

There is a large body of literature analyzing the threats to desert tortoise populations. Table 1 in the Desert Tortoise (Mojave Population) Recovery Plan lists many of the references up to 1994 on the direct and indirect effects of human activities, off-highway vehicles, and livestock grazing on tortoises and tortoise habitat (USFWS 1994, p. 5). Boarman reviewed the literature on threats to the desert tortoise in 1999.

### **3.2.4 Amargosa Vole**

Critical habitat for the Amargosa vole, a small rodent, has been designated (Federal Register Volume 49, No. 222, 1984) and includes approximately 2,440 acres of public land. Located along the Amargosa River between the towns of Shoshone and Tecopa, California, critical habitat primarily encompasses lands in the Grimshaw Lake Natural Area ACEC vicinity and immediately south. Additional suitable riparian habitat for the vole occurs on public and private lands located to the south in the Amargosa Canyon Natural Area ACEC, and to the north as far upstream as the town of Shoshone. The public and private lands between the two existing ACECs form a critical link protecting the species.

### **3.2.5 North Mojave Desert Bats**

The planning area supports at least nine different bat species, eight of which are designated as California BLM sensitive species (Appendix I). Bats use both natural features, such as rock crevices, rocky outcrops, cliffs, caves, desert washes and riparian and human-created habitat features, such as historic mine-workings, mineshafts, adits and abandoned buildings. The Amargosa River and its tributaries (China Ranch Wash, Salt Creek), together with the Kingston Mountain-Silurian Hills-Kingston Wash area, represent a bat concentration zone in the Planning area.

The Silurian Hills is a semi-mountainous region located in Silurian Valley. It is bounded on the west by a flat plain, Silurian Dry Lake and Salt Creek. On the east are the Shadow Mountains and a flat plain. On the north it is bordered by Kingston Wash and Valjean Dunes, and on the south by the Hollow Hills Wilderness. Public lands in this area total approximately 7,400 acres, with a scattering of private lands located immediately to the south. Mining occurs on some of the private parcels. Numerous cliff faces and crevice slopes are common in the Silurian Hills. Mine shafts and adits are also numerous, and at least four bat species are known to use these shafts and adits as roosting, hibernation or maternity sites. Additional bat species are suspected to use the area as well.

Habitats crucial for a wide variety of desert bat species surround Silurian Hills, i.e., desert washes, springs, desert riparian areas, sand dunes, crevice slopes, wide plains and mountains. The Kingston Wash is thought to be a major bat foraging area and flight travel corridor into the Kingston Mountains. The Salt Creek Hills and riparian area are both a major bat foraging and roosting area, and are suspected to serve as a crucial flight travel corridor into the Avawatz Mountains, where numerous spring foraging and roosting sites occur. This same corridor is also important for bat species that use the Ibex Dunes and Dumont Dunes.

### 3.2.6 Inyo Mountains Slender Salamander

Amphibians are rare in the desert as they depend on pools and streams for reproduction. The Inyo Mountains slender salamander (*Batrachoseps campi*) is an uncommon species known only from several canyons on the west and east slopes of the Inyo Mountains. They are associated with permanent springs or seepage, primarily below the pinyon-juniper belt, where they reside under rocks on moist soil in shaded, steep-walled canyons (Morey 1988). Giuliani (1976) found the Inyo Mountains slender salamander in a majority of the canyons on the east slope of the Inyo Mountains, including Hunter and Craig Canyons and Willow Creek.

### 3.2.7 Inyo California Towhee

The total known distribution of the Inyo California towhee lies in the southern Argus Range at elevations ranging from 2,680 ft. to 5,630 ft. The Inyo California towhee was listed as a state endangered species and a federally threatened species under the Endangered Species Act due to the small population, its restricted range, and the potential destruction of its habitat. (LaBerteaux and Garlinger 1998). Potential threats to its habitat include wild burros and horses, mining, recreational activities, cattle grazing, water exportation, and encroachment by rural residents.

Critical habitat (5,802 acres) was designated for the towhee in 1987. It includes riparian habitat at springs as well as upland and streambed habitats surrounding the springs. Only a small portion (less than 5%) of towhee critical habitat occurs within the NEMO planning area. The majority of the critical habitat occurs to the south and west, within the West Mojave planning area.

The following discussion of habitat for the Inyo California towhee is taken from The Recovery Plan for the Inyo California Towhee (U.S. Fish and Wildlife Service 1998).

Inyo California towhees nest and forage in areas of dense riparian vegetation dominated by willows (*Salix* spp), Fremont cottonwood (*Populus fremontii*), and desert olive (*Forestiera neomexicana*) with associated rubber rabbit brush (*Chrysothamnus nauseosus*) and squaw waterweed (*Baccharis sergiloides*). They also nest in shrubs of the upland community adjacent to riparian habitat and use the upland habitat as their principal foraging grounds. This habitat consists of Mojave creosote bush (*Larrea tridentata*) scrub or Mojave mixed woody scrub. (LaBerteaux 1994).

LaBerteaux and Garlinger (1998) conducted an Inyo California towhee survey during the 1998-breeding season. A total of 640 adult towhees representing an estimated 317 pairs and 23 single adults was detected at 210 sites within the Argus Range. Prior to the 1998 survey, the towhee population was estimated to be no more than 200 individuals. Along with an increase in the numbers of birds detected, the 1998 census documented a range expansion of 15 km to the north of the previous known range. Seventy-three percent of the population occurred on U.S. Navy lands, 25% on BLM lands on the east slopes of the Argus Range, and 2% on State-owned and private lands.

### 3.2.8 Least Bell's Vireo

Least Bell's vireo (*Vireo bellii pusillus*) is a state and federally listed endangered species. The vireo was federally listed in 1986 and critical habitat was designated in February 1994. The NEMO planning area does not contain critical habitat for this species. At the time of listing, an estimated population of the least Bell's vireo was only 300 pairs (RECON 1989).

The least Bell's vireo is a small, gray migratory songbird that has declined dramatically in both numbers and distribution. This species was once widespread and abundant throughout the Central Valley and other low elevation riparian zones in California. Least Bell's vireo historically bred in riparian woodlands from the interior of northern California (near Red Bluff, Tehama County) to northwestern Baja California, Mexico. In 1973, no least Bell's vireos were found during an extensive search of their formerly occupied habitat between Tehama County and San Joaquin County (Gaines 1974). By 1980 the species was extirpated from the entire Central Valley (U.S. Fish and Wildlife Service 1998). Its current breeding distribution is restricted to a few localities in southern California and northwestern Baja California, Mexico (Franzreb 1989). There are breeding records for the southern Owens Valley of Inyo County and it regularly breeds at the South Fork of the Kern River Preserve (Heindel pers. comm.).

Least Bell's vireo nests primarily in willows (*Salix* spp.), but also uses a variety of other shrub and tree species for nest placement. Foraging occurs in riparian and adjoining upland habitats. Quality habitat occurs within the NEMO Planning area, along the Amargosa River in San Bernadino County. The reduction of least Bell's vireo numbers and distribution is associated with widespread loss of riparian habitats and brood parasitism by the brown-headed cowbird (*Molothrus ater*). Habitat degradation characterized by changes in predator-prey relationships, livestock grazing, agricultural use, dam construction, fragmentation, isolation, pollution, and human disturbance is associated with habitat loss (Kus 1998). About 76 percent of the U.S. population is found at just five localities (Federal Register 1992).

Since federal listing in 1986, and follow-up restoration and management activities, the species has undergone a population increase almost as dramatic as its decline (U.S. Fish and Wildlife Service 1998). The current breeding population of the least Bell's vireo in California consists of approximately 500 pairs (Federal Register 1992). In addition to population increases, observations indicate that the species is undergoing a northward expansion (Craig and Williams 1998). Currently, least Bell's vireos are recolonizing areas unoccupied for decades and have the potential to reestablish breeding populations in the central and northern portions of their historical range (USFWS 1998).

### **3.2.9 Southwestern Willow Flycatcher**

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a federally endangered species. The final ruling listing the southwestern flycatcher as endangered was published in February 1995, although designation of critical habitat was postponed (USFWS 1995). It is currently known to breed at only about 75 sites in riparian areas throughout the southwest. The known breeding population is estimated at between 300 and 500 pairs. The southwestern willow flycatcher nests only in dense riparian vegetation associated with streams, rivers, lakes, springs, and other watercourses and wetlands.

The most significant historical factor in the decline of the southwestern willow flycatcher is the extensive loss, fragmentation, and modification of riparian breeding habitat. Large-scale losses of wetlands have occurred, particularly the cottonwood-willow riparian habitat. (Phillips et al. 1964, Johnson and Haight 1984, Katibah 1984, Johnson et al. 1987, Unitt 1987, General Accounting Office 1988, Dahl 1990, State of Arizona 1990). Habitat changes have occurred and continue to occur because of urban, recreational, and agricultural development, water diversion and impoundment, channelization, livestock grazing, and replacement of native habitats by introduced plant species. Fire danger in riparian systems may increase with the conversion from native to exotic vegetation, diversions or reductions of surface water and drawdown of local water tables.

Brood parasitism by the brown-headed cowbird is another significant and widespread threat to the southwestern willow flycatcher. Once a flycatcher nest is parasitized, it has almost no chance of producing flycatcher young, which may result only in the rearing of cowbird chicks (National Park Service Technical Report 1997). At the South Fork Kern River Preserve, an average of 63.5% of nests were parasitized from 1989 to 1992, with a range from 50% in 1989 to 80% in 1991 (Craig and Williams 1998). Trapping of brown-headed cowbirds has proven to be successful in decreasing the rate of parasitism and is a valuable tool that can be used as riparian habitat restoration proceeds.

### **3.2.10 Swainson's Hawk**

The Swainson's hawk is a California threatened species. Swainson's hawks were considered to be a common to abundant breeding species in California at the end of the 19<sup>th</sup> century (Sharp 1902). By the early 1940s, breeding population declines were being documented (Grinnell and Miller 1944). Bloom (1980) conducted the first statewide survey of Swainson's hawks in California in 1979 and estimated 110 nesting pairs and a total population of 375 pairs in California. These data revealed that the remaining population centers were in the Great Basin in the extreme northeastern portion of the state and in the Central Valley, and that the species was nearly extirpated throughout large parts of its former range. The declines were greatest in coastal southern California where Sharp in 1902 had classified the species as abundant. In 1988, the total statewide population was estimated to be 550 breeding pairs. Additional surveys done in the 1990s indicate that the total statewide population is 500-1,000 breeding pairs. The difference in numbers of breeding pairs between 1980 and the 1990s is thought to be the result of increased survey efforts and not a population increase.

The decline of Swainson's hawks in California has been attributed to mortality during migration and on the wintering grounds in South America, poisoning by toxic chemicals, including pesticides in South America, eggshell thinning, habitat loss on wintering grounds, disturbance on breeding grounds, loss or degradation of habitat on the breeding grounds, and increased competition with other species. Habitat degradation could occur through a variety of mechanisms including but not limited to fires which eliminate nesting opportunities in Joshua trees and riparian trees. Decreases in prey populations or long-term recruitment of new nest trees, alteration of normal stream and wash hydrology, can lead to the loss of riparian habitat, and lowering of water tables that result in the loss of nesting habitat, or contribute to a decline in prey availability. Shooting, has historically contributed to the loss of birds (England 1998). Bloom (1980) estimated the historical population in the Mojave and Colorado Deserts at 270-1,080 pairs. Declines of the hawk in the Mojave Desert, according to Bloom, could be directly related to the decrease in the range of the Joshua tree. As the tree's range decreased, especially in the Antelope Valley, Swainson's hawk numbers probably decreased proportionately.

Historically, the Swainson's hawk breeding range in California included the Great Basin and Modoc Plateau, the Sacramento and San Joaquin Valleys, the coastline in Marin, Monterey, Ventura, Los Angeles, and San Diego counties, and a few scattered sites in the Colorado and Mojave deserts (Bloom 1980). Swainson's hawks nest almost exclusively in trees, but in a few instances have been recorded nesting on cliffs, coulees, human-built structures, and the ground. But these types of sites are rarely used (England et al. 1997). A survey of nesting birds in 1979 revealed that Swainson's hawks nested almost exclusively in large, sparsely vegetated flatlands characterized by valleys, plateaus, broad floodplains, and large expanses of desert.

Typical habitat for the Swainson's hawk is open desert, grassland, or cropland containing scattered, large trees or small groves where they prey upon a variety of animals including bats, birds, lizards, snakes, amphibians, and insects. The prey species vary from location to location, but are generally dominated by ground squirrels, jackrabbits, cottontails, mice, gophers, and birds, such as mourning doves, during the breeding season. Insects are an important part of the diet outside of the breeding season.

### 3.2.11 Western Yellow-billed Cuckoo

The yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a California endangered species. A statewide survey of yellow-billed cuckoos in California during 1986 and 1987 found a total of 30-33 pairs and 31 unmated males at nine localities (Laymon and Halterman 1989). More recent surveys on the Sacramento River from 1988-1990 have shown a fluctuating population of 23-35 pairs depending on the year (Halterman 1991). Continuous surveys on the South Fork of the Kern River from 1985-1996 have shown a population that varied from a low of 2 pairs in 1990 to a high of 24 pairs in 1992 (Laymon et al. 1997). These two sites are the only localities in California that sustain breeding populations. Small and unstable breeding populations are found along the Amargosa River near Tecopa and at several locations in the Owens Valley.

Yellow-billed cuckoos have one of the most restrictive suites of macro-habitat requirements of any bird species. They inhabit extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut on slow-moving watercourses, backwaters, or seeps. Willow is almost always a dominant component of the vegetation. They may inhabit mesquite thickets when willow is absent. Nesting typically occurs in sites with at least some willow, dense low-level or understory foliage, high humidity, and wooded foraging spaces in excess of 300 feet in width and 25 acres in area. Nesting sites with less than 40% canopy closure are unsuitable. Those areas with greater than 65% closure are optimal (Laymon 1998). In California, during the breeding season the cuckoos remain in cottonwood-willow riparian habitats (Laymon 1998). Cuckoos have large home ranges, often exceeding 50 acres and sometimes approaching 100 acres (Laymon and Halterman 1985).

The cause of decline of yellow-billed cuckoos both historically and recently is primarily from habitat loss on the breeding grounds in California. Habitat loss has occurred due to clearing for agriculture, clearing for flood control, flooding behind dams, withdrawal of ground water causing a lowering of the water table, clearing for urban and suburban development, invasion by exotic vegetation, and long-term (greater than 100 years) and intensive year-round grazing (Laymon 1998). Firewood cutting and wildfire cause important temporary losses of riparian habitat.

### 3.3 Soil, Water, and Air Resources

#### 3.3.1 Soil

The soils in the NEMO planning area are as varied as the landforms, microclimates and geology of the region. Soil surveys have been conducted in the Saline Valley area and the Kingston-Amargosa areas, but most of the soils in the NEMO planning area have not been formally surveyed. Most soils in the area are poorly developed, and are generally well drained and coarse textured. Some portions of the planning area are internally drained, resulting in small playas with surface clays, surface physical soil crusts and increased salinity. The soil depth ranges from deeper alluvial materials to very shallow or non-existent depth over the rocky substrate. The soils are susceptible to accelerated erosion from wind and water, especially when the surface has been disturbed. Portions of the soils have been subject to periodic disturbances due to grazing, mining, agriculture, OHV activity and other resource uses.

The California Desert Conservation Area Plan (USDI 1980) classified the desert soils into sensitivity classes. These classes were based on surface texture, slope, rock topography and other factors, which affect soil sensitivity to surface disturbance. The CDCA Plan classified a majority of the soils in the northwest portion of the NEMO planning area in the high sensitivity class with most of the remaining soils in the medium sensitivity class. Soils in the eastern and southeastern portions of the NEMO planning area are nearly evenly split between a high and medium classification. There are small sections of low sensitivity soils spread through the entire area.

#### 3.3.2 Water

Groundwater and surface water sources occur throughout the NEMO planning area. A large number of surface water sources exist within the northwestern portion of the planning area, where most mountain ranges reach over 10,000 feet elevation and include numerous streams, springs, seeps, and a lake. Perennial streams exist in Middle Park, Pleasant, Happy, Surprise, Hall and Jail Canyons in the Panamint Mountains, Water, Knight, Revenue, Snow and Thompson Canyons in the Argus Range, Daisy, Craig, Hunter, Beverage, Keynot, McElvoy, Pat Keys and Willow Creek Canyons in the Inyo Mountains and Weyman, Cottonwood, Toler, McAfee and Perry Akin Canyons in the White Mountains. Weyman, Cottonwood, McAfee and Perry Akin creeks all support trout fisheries and are diverted near their mouth for irrigation. Several large springs occur on private land in Deep Springs Valley. Corral Spring has a very large flow and is one of the major sources of water for Deep Springs Lake, which covers nearly 2,000 acres. The associated private wetland, includes habitat for the state endangered black toad (*Bufo exsul*). The eastern and southeastern portions of the NEMO planning area have a number of significant water sources including the Amargosa River, Willow Creek, Grimshaw Lake, Salt Creek and Tecopa Hot Springs.

The Amargosa River is the focal hydrological system of the northern and eastern Mojave Desert (NEMO) planning area. The hydrologic systems of the southern Great Basin and northern Mojave Desert are generally characterized by deep water tables. They are also considered primarily closed groundwater basins. One of only two large rivers in the Mojave Desert, the free-flowing Amargosa River includes perennial and ephemeral surface flows as well as subterranean flows.

Water runoff from the Bullfrog Hills, Yucca Mountain, Shoshone and Spring Mountains in Nevada, all contribute to Amargosa River water flow in California. Major river tributaries include the aforementioned Lower Carson Slough in the northern reach of the river, China Ranch Wash in the central reach, and Salt Creek in the south. Approximately 94% of the lands along the river in California are in Federal ownership. Portions of this river have been determined eligible for Wild and Scenic Rivers System suitability (see Appendix O).

Groundwater occurs in nearly all of the valley basins in the planning area, varying greatly in depth, quantity and quality. A portion of the water comes from current recharge from the surrounding mountains and old water deposited during the fluvial lake period 10,000 years ago. For many of the basins, the current recharge rate is low. Groundwater withdrawals from these basins can result in large drawdowns. Portions of the Amargosa Valley are underlain by a regional carbonate rock aquifer. This aquifer transports large volumes of water under mountain ranges in the area and collects water from many widespread watersheds. Major springs occur along this carbonate aquifer system including Ash Meadows Springs, which annually discharges 17,000 acre-feet of water, and the Furnace Creek springs which produce 5 cubic feet per second (3,500 acre-feet per year). Discharges from this carbonate rock aquifer are the source of water for Devils Hole and the Lower Carson Slough. Water withdrawals from the Amargosa watershed in the Death Valley Junction area could impact the flows at Ash Meadows and Furnace Creek. Currently, commercial ground water pumping is occurring in Fish Lake Valley, Ash Meadows, Pahrump Valley and Ivanpah Valley.

The unified watershed assessment conducted in preparation of the Clean Water Action Plan (1998) classified the watersheds into one of four categories. They are:

- Category I- Watersheds that are candidates for increased restoration activities due to impaired water quality.
- Category II- Watersheds with good water quality that, through regular program activities can be sustained and improved.
- Category III- Watersheds with pristine or sensitive areas on federal, state or tribal lands that need protection, and
- Category IV- Watersheds where more information is needed.

Table 3.2 displays the watersheds as classified within the NEMO planning area.

**Table 3.2 – Watershed Categories**

<b>Category I Watersheds (Impaired)</b>	<b>Category III Watersheds</b>
Eureka-Saline Valleys Upper Amargosa <sup>2</sup> Upper Mojave	Fish Lake – Soda Springs Valleys Ivanpah – Pahrump Valleys Death Valley – Central and Lower Amargosa Panamint Valley

<sup>2</sup> This classification may be due to salinity that is a natural phenomenon. According to the California Regional Water Quality Control Board, Lahonton Region, South Lake Tahoe, California and USEPA Region 9 (2000), in the Amendments to the Lahonton Water Quality Control Basin Plan, the Amargosa River is a naturally impaired water body in terms of drinking water quality, and has been removed from beneficial use designation.

### 3.3.3 Air Quality

The Northern and Eastern Mohave planning area is located in two different air basins. These are the Great Basin Valley Air Basin and the Mojave Desert Air Basin. The Great Basin Valley Air Basin includes all of Inyo County. The Mojave Desert Air Basin is subdivided into the desert portions of San Bernardino County and Owens Valley.

Air quality standards in the planning area are managed and enforced by two Air Quality Management Districts. The desert portions of San Bernardino County and Owens Valley are within the Mojave Desert Air Quality District, and Inyo County is within the Great Basin Unified Air Pollution Control District.

Air quality throughout the Northern and Eastern Mojave planning area is generally fair, but large portions of the area are in non-attainment of Clean Air Act health standards for one or two air pollutants, and unclassified for a third pollutant. The non-attainment areas do not meet air quality standards because of local generation of and/or long distance transportation of pollution to the area. Definitions used to determine whether an area meets air quality standards for health are found in the Federal Clean Air Act as Amended (1990), and associated national ambient air quality standards. Generally, stricter state standards are associated with the California Clean Air Act (1988), which also considers aesthetic and visual factors. National and/or state ambient air quality standards have been established for ten different pollutants. These standards are used to classify all areas of the state of California as to whether they are in attainment, in non-attainment or are unclassified for any of the ten standards. Currently all, or portions of the Northern and Eastern Mojave planning area are in non-attainment for ozone and PM<sub>10</sub>, under the state and/or national standards. EPA has also identified certain wilderness areas and National Parks as Class I airsheds. These areas also have stricter non-deterioration standards and mitigation requirements. There are currently no Class I airsheds in or adjacent to the Northern and Eastern Mojave planning area, but the National Park Service has petitioned EPA for reclassification of airsheds in the Mojave National Preserve and Death Valley National Park to Class 1 as a goal (Record of Decision for the EISs for the Preserve and Park 2001). There is concern for visibility-reducing particles and PM<sub>10</sub> precursor emissions, including oxides of nitrogen (NO<sub>x</sub>), oxides of sulfur (SO<sub>x</sub>) and reactive organic gases (ROG) in most of Southern California, including the Northern and Eastern Mojave planning area.

#### Description of the Current Situation

**Ozone Pollution:** The only major contributing source of ozone in the planning area is motor vehicle emissions, but these emissions alone would not result in exceedance of federal ozone standards. Much of the ozone pollution in the desert has been transported from the Los Angeles air basin and the San Joaquin Valley air basin. National standards do not allow for subtraction of transported ozone in determining attainment/non-attainment status. State standards allow for the subtraction of transported ozone in determining attainment/non-attainment areas. However, state standards are more restrictive than federal standards that do not allow for transport as a factor. As a result, all of the planning area outside of Inyo County is in non-attainment of the California ozone standards, and the southern and western portions of the San Bernardino County areas are in "serious" non-attainment of the federal ozone standard.

**PM<sub>10</sub> Pollution:** Suspended particulate matter, PM<sub>10</sub>, is the air pollutant of most concern in the Northern and Eastern Mojave planning area. PM<sub>10</sub> emissions are comprised of particulate material less than 10 microns in diameter. PM<sub>10</sub> is a mixture of substances including elemental carbon, lead and nickel, compounds such as nitrates, organics and sulfates and complex mixtures such as diesel exhaust and soil. Ambient PM<sub>10</sub> in the air comes from direct and precursor emission sources. Direct emissions are PM<sub>10</sub> particles emitted directly from the source. Many PM<sub>10</sub> precursors are emitted as gases and form into particles in the atmosphere downwind from the source.

One of the reasons for the concern with PM<sub>10</sub> emissions is their adverse effect on human health. Particles below 2.5 microns in size are termed fine particles (sometimes listed as PM<sub>2.5</sub>), and those from 2.5 to 10 microns in size are coarse particles. All of the PM<sub>10</sub> particles can be inhaled, and tend to deposit in the air sacks of the lungs. The fine particles are generated primarily from precursor emissions, and many are toxic or carcinogenic. Fugitive dust mostly consists of coarse particles that are not as likely to contain toxic materials.

PM<sub>10</sub> in the atmosphere can be caused by natural factors and human activities. In the planning area, human activities primarily contribute to direct PM<sub>10</sub> emissions through fugitive dust generation. These human activities include construction, excavation and demolition, off-highway vehicle (OHV) travel, wind action on unpaved roads and other denuded areas such as parking lots, dust from moving vehicles associated with unpaved and paved roads, OHV open areas and military activities, and industrial activities.

National PM<sub>10</sub> standards are considered to be a level at which the whole population would have health effects from PM<sub>10</sub>. State standards are considered public health goals, and have been set at a level where the elderly, the very young and those with other respiratory illnesses would be affected. Nearly all of the NEMO planning area has recorded concentrations of PM<sub>10</sub> in excess of the national and state ambient air quality standards for PM<sub>10</sub> emissions. EPA has classified two areas in the planning area as federal non-attainment areas. They are the Owens Valley PM<sub>10</sub> planning area, classified as “serious”, and the general San Bernardino County area, classified as “moderate”.

Areas classified as federal non-attainment areas by the EPA are required to prepare and implement a State Implementation Plan that identifies and quantifies sources of emissions and presents a comprehensive strategy to control and reduce locally generated PM<sub>10</sub> emissions.

All federal actions within air quality districts areas that have been designated as “moderate” must make a determination of federal conformity with the State Implementation Plans. Reasonably available control measures (RACM) implemented for activities/sources, including existing sources, unless their effect on PM<sub>10</sub> emissions is insignificant (below *de minimus* levels). The Bureau of Land Management has existing strategies in place for specific activities that provide a basis for federal conformity for plan-level actions.

The Owens Valley PM<sub>10</sub> State Implementation Plan area includes portions of the Northern and Eastern Mojave planning area east of Darwin. The primary source of PM<sub>10</sub> emissions in this area is wind erosion dust from Owens Dry Lake. The objective of the PM<sub>10</sub> plan is to reduce Owens Lake emissions and work through the permit process for any new possible emission sources. None of the Reasonably Available Control Measures in this plan are aimed at current general activities on the public lands. Future actions would be evaluated prior to authorization with appropriate Reasonably Available Control Measures applied.

The EPA classified the San Bernardino County desert as a PM<sub>10</sub> non-attainment area on January 20, 1994. The State Implementation Plan was prepared and is under review. Emission sources identified in the plan include BLM Off-Highway Vehicle open areas outside of the Northern and Eastern Mojave planning area that are within the non-attainment area. BLM has developed a dust control strategy to meet federal conformity requirements consistent with the State Implementation Plan for the San Bernardino County desert area (Barstow Field Office, July, 1997). This strategy has been submitted and approved by the Mojave Desert Air Quality Management District and includes parameters and procedures for conformity analyses and implementation of reasonably available control measures, as appropriate, when actions exceed *de minimus* levels for large portions of San Bernardino County.

**Visibility Reducing Particles (VRP):** The Northern and Eastern Mojave planning area is currently unclassified for visibility reducing particles under both national and state ambient air standards, and many VRP are transported from outside the planning area. Reduced atmospheric visibility results mainly from suspended particles. Particles between 0.1 and 1.5 microns diameter are the most effective in reducing visibility. This range of particle sizes is a subset of the fine PM<sub>10</sub> particles. Soot particles in particular are effective in reducing visibility. Small nitrate and sulfate particles may also substantially reduce visibility. Nitrogen dioxide and water droplets can reduce visibility. Many of the VRP form in the atmosphere downwind from sources of emissions.

### 3.4 Cultural and Native American Resources

Numerous sites within the boundaries of the planning area have been listed on or determined eligible for inclusion on the National Register of Historic Places (NRHP) (Table 3.3). In addition, several sites are listed as California Historic Landmarks (CHL) and California Points of Historic Interest (CPHI). Sites listed on the CHL and CPHI may or may not have been evaluated for NRHP. Several were identified as historic landmarks as a consequence of eligibility evaluations. Due to their potential to yield information important to prehistory and history, several archaeological sites have been determined eligible for inclusion on the National Register of Historic Places. The locations of these sites are confidential. Old Traction Road and 20-Mule Team Road also cross the planning area, and are potentially eligible for inclusion on the NRHP. Both sites were identified as sites of concern during NEMO public scoping.

Ethnographic studies of tribal distributions were completed for all of the CDCA as part of CDCA Plan. The NEMO cultural analysis tiers from the CDCA Plan studies. At European contact, circa 1776, with the crossing of the Mojave Desert by the Spanish Franciscan priest Francisco Garces, various Yuman and Shoshonean peoples whose cultures were characterized by complex adaptations to the arid environment inhabited the area. These include the Serrano Indians, who occupied the Mojave River Valley and San Bernardino Mountains during the Late Prehistoric until the Historic Era. The Mohave natives occupied the Colorado River Valley and portions of the Mojave Desert adjacent to the river, Western Shoshone (Panamint/Koso and Timbisha Band). Kawaiisu and Southern Piute peoples inhabited portions of the Colorado River Valley, lands adjacent to Death Valley, Fort Irwin, and the Chemehuevi lived in the Mojave Desert from the Colorado River to lands within the Mojave Preserve. All of the desert-adapted groups practiced a hunting and gathering subsistence strategy, making the seasonal round, exploiting available plants, grass seed resources, acorns, and available mammals. They interacted with their neighbors and some type of trade existed, evidenced by marine shell beads and obsidian utilized for tools. In addition, the Mohave practiced limited agriculture in the flood plains of the Colorado River.

In 1980, BLM entered into a Programmatic Agreement with the California State Historic Preservation Office that governs BLM's implementation of the CDCA Plan for cultural resources and provides processes for the resolution of effects on significant historic properties. The agreement forms the basis for cultural resources program activities, land management planning, and undertakings in the CDCA regarding Sections 106 and 110 of the National Historic Preservation Act.

**Table 3.3 – Identified Significant Cultural and Native American Resource Sites**

Property Name	Listed	Eligible	CHL	CPHI	Notes
CA-SBr-3186 (Baker vicinity)	X				(AKA Aboriginal Rock Cairn Site)
Paiute Pass Archaeological District	X				Mojave Preserve
Cerro Gordo National Historic District	X				
Death Valley Junction Historic District	X				Private land
National Old Trails Road (CA-SBr-2910H)		X			(AKA Route 66)
Mormon Road/Trail (Ca-SBr-4411H)		X			
AT & SF Railroad (CA-SBr-6693)		X			
Old Spanish Trail (CA-SBr-4272H)		X			
Tonapah & Tidewater Railroad (CA-INY-4772H)		X			(AKA CA-SBr-2340H)
Hoover Dam to San Bernardino Transmission Line		X			(CA-PSBr-38H)
Boulder Transmission Lines 1, 2, 3		X			(CA-SBr-7694H)
Mormon Road Monument (Ca-SBr-4411H)			X		
Harry Wade Exit route			X		
Searles Lake Borax Discovery Site			X		
National Old Trails Monument			X		
Von Schmidt State Boundary			X		
Mojave Road (CA-SBr-3033H)			X		
California/Arizona Desert Training Center Maneuver Area			X		
Camp Ibis (Desert Training Center)			X		(Patton Camps)
Lanfair				X	

### 3.5 Wild Horses and Burros

There were 10 potential burro herd areas (HAs) in the NEMO planning area that were recognized in the Wild Horse and Burro Act of 1971 and another 9 outside of the NEMO planning area in the California Desert at the time of the CDCA Plan (1980). Eight HAs in the planning area and another 6 in the rest of the CDCA were assigned acreages, and associated Appropriate Management Levels (numbers of burros to manage within Herd Management Areas in HAs) in conformance with the Wild Horse and Burro Act. At the signing of the CDCA Plan, approximately 3.28 million acres (92 percent of potential HAs) in the planning area and another 1.12 million acres (79.5 percent of potential HAs) outside of the planning area, for a total of 4.4 million acres of herd areas was identified for burro management for some or all of the land within those herd area boundaries. By 1994, 2 of the smallest HAs, both outside of the NEMO planning area, totaling approximately 53,183 acres with 32 AML had been deleted through plan amendment.

In 1994, 8 HAs within the NEMO planning area and another two outside of the planning area received a reduction in acreage, and, as appropriate on 5 of these, corresponding AML reduction to reflect the loss of forage base, due to the transfer of public lands to the National Park Service (NPS) through the 1994 California Desert Protection Act. In 2001, AML was just under 7.9 percent of what it was in 1994 in the planning area as a result of forage reductions from the transfer of lands to NPS. As a result of these reductions, 3 HAs no longer had any acreage and associated forage base for their burro herds (Centennial, Panamint, and Slate Range). Outside of the planning area, the reductions were less drastic, with 57 percent of the AML available in Year 2001 that were available in pre-CDPA (all other CDCA HAs with AML are now in the NECO planning area). Two other changes have also occurred in the NEMO planning area related to the burro herds since the CDCA Plan was approved that were not directly related to the CDPA—two existing HMAs with assigned AML no longer have burro populations (Piper Mountain and Chicago Valley HMAs).

Currently in the planning area there are three Herd Management Areas (HMAs) that are managed for wild horses (Waucoba/Hunter Mountain, Piper Mountain, and Chicago Valley) covering 691,616 acres. There are five HMAs managed for burros (Waucoba/Hunter Mountain, Lee Flat, Clark Mountain, Piper Mountain, and Chicago Valley), covering 545,841 acres and totaling 198 AML, taking into account changes from the CDPA. Note from previous paragraph discussion, that the last two areas have no burros, although the CDCA Plan assigned them 110 AML, and they therefore account for over one-half the remaining AML in the planning area.

There are two Herd Areas (HAs) in the NEMO planning area within the USFWS designated recovery units (Dead Mountain, and Clark Mountain Herd Area) and three other HAs not in designated habitat, but adjacent to DVNP (See Chapter 8, Figure 8a). The Dead Mountain HA partially overlaps Piute-Fenner critical habitat and all alternatives for a Piute Fenner Desert Wildlife Management Area ACEC, and covers approximately 48,600 acres. The CDCA Plan set a management prescription of zero (0) burros for this HA and it is not currently managed for burros. The current population estimate is 19 burros.

The Clark Mountain HA includes portions of the Shadow Valley critical habitat and Northern Ivanpah Category I desert tortoise habitat that are within various alternatives proposed as Desert Wildlife Management Areas. The HA covers approximately 196,140 acres. With the CDPA, the Clark Mountain Herd Area lost some acreage (the CDCA estimated the HA at 233,410 acres), but the AML was unaffected. The western portion of the Clark Mountain HA is the Clark Mountain Herd Management Area. It is located to the west of NPS lands. Designated in the CDCA Plan and located primarily in critical desert tortoise habitat, it covers approximately 75,350 acres in the Shadow Valley area. This HMA has a Herd Concentration Area (#27) located within the boundaries of the proposed Shadow Valley ACEC. It has an established AML of 44 burros (371 AUMs) and management is set forth in the East Mojave HMA Plan. There has been a general downward trend in animal numbers since 1984 with removals occurring at regular intervals through the 1990's. The current estimated census is 150 burros. Two other Herd Concentration Areas are located in the Northern Ivanpah area, east of NPS lands, have 0 AML, and are outside the boundaries of the HMA. The current estimated burro census in these areas is 126 animals.

Herd Areas become Herd Management Areas (HMAs) when the decision has been made that wild horses and/or burros can be managed for the long term within the ecological balance of the habitat. The decision that a Herd Area should receive long-term wild horse and burro management is accomplished by designating the area as an HMA. Upon designation as an HMA, wild horses and burros shall be managed as an integral component of the public lands in a manner that maintains an ecological balance.

The Chicago Valley HMA has a population estimate of zero burros. The 1980 CDCA Plan estimated a population of 28 burros. The animals could have drifted into the adjoining Nevada Mt. Sterling – Wallace Cany herd area and been subsequently removed, in the burro gathers which occurred for that area.

The east side of the Clark Mountain Herd Area has limited water sources. The only known waters in the Mesquite Dry Lake area are from range improvements (windmills, tanks and troughs) that have not been maintained since the rancher stopped ranging cattle. The last report of burros in the area was in 1996, at the time when BLM conducted a removal operation and removed 32 animals through water trapping. Pole Line Spring is the only potential water source for burros on public lands. This spring would require improvements to the spring box, pipeline and troughs, and maintenance of those improvements. There are no other known springs with surface water on public lands for the east side of the Clark Mountain herd area. Mescal Spring is a seep with limited water on state lands. Ivanpah and Willow Springs are water sources used by burros on the Mojave National Preserve, but will probably be fenced from burros by the National Park Service.

The Clark Mountain HMA has an estimated burro population of 170. The following table shows removals from 1985 for the Clark Mountain Herd. The removal data were used to analyze the sex ratio, average recruitment and age structure.

**Table 3.4 – Burro Removal**

Removals	Sex Ratio	Average Recruitment
1985 – 03/ 2002	Male / Female	
764	1 / 0.91	6%

Age (Years) and Percent of Population								
<1	1	2	3	4	5	6-8	9-12	+12
6%	17%	20%	10%	8%	12%	18%	5%	4%

The Clark Mountain HMA is mostly within the Valley Wells Cattle Grazing Allotment. This cattle allotment comprises 223,000 acres of public land with a carrying capacity from the CDCA Plan adjusted for the loss of NPS acreage of 5,011 AUMs, 4,640 of which are currently allocated to cattle use. The rangeland health assessment performed in 1999 for the Valley Wells Allotment determined that continued cattle and burro grazing would degrade the quality of vegetation to the point that the native species standard may fail to be attained in the near future. The assessment concluded that the grazing was occurring above the proper use level for key plant species, which was attributed to an overpopulation of burros. From June 1999 to February 2002, 374 burros were removed from the Clark Mountain HMA, leaving an estimated population of 170 burros. The gathered burros are placed in the BLM's National Wild Horse and Burro Adoption Program.

HMAs cover only BLM managed lands, but horses and burros wander across jurisdictional boundaries. NPS-managed, plus other federal and private lands may have wild horses and burros. The current management situation is summarized in Appendix K, with existing censuses of animals and target population levels. The Appendix includes BLM-administered HAs and HMAs, which are now under NPS jurisdiction (listed in Appendix M, summarizing changes made by the CDPA), and these are herds and HMAs which the NPS land use plans (GMPs) have now zeroed out or eliminated.

### 3.6 Cattle Grazing Allotments

There are 17 cattle allotments (a designated area suitable for grazing) within the NEMO planning area. Eight allotments are in the Ridgecrest Resource Area, nine are in the Needles Resource Area, and one is in the Barstow Resource Area. With the passage of the California Desert Protection Act, three allotments have portions located in Death Valley National Park, and eight allotments have portions located in the Mojave National Preserve. Colton Hills, Round Valley, and Gold Valley Allotments were completely administered by the BLM, but after enactment of CDPA the NPS solely administers these allotments in the Mojave National Preserve.

Grazing use of perennial vegetation in all allotments is expected to continue except for the Piute Valley Allotment. In the last ten years, lessees have not requested, nor has grazing been authorized for ephemeral forage or temporary non-renewable perennial forage. Livestock producers have voluntarily reduced stocking rates for much of the 1990s. Consumption of perennial forage has been lower than the leases allow. The eastern Mojave Desert has been dry, and forage conditions have been poor in many places. Cattle grazing has been authorized under existing Biological Opinions in desert tortoise habitat (Appendix E). Few range improvements have been installed in the last ten years. Installation of new improvements would be based on a case-by-case analysis and available funding. Periodic and annual maintenance is required on existing facilities. Maintenance requires the lessee to visit improvements. There are significant numbers of range improvements found in wilderness. Ongoing maintenance of existing improvements coupled with minimal additions of new infrastructure, has marginally increased demands for maintenance. Allotments not fully utilizing the grazing lease would have increased proportional overhead costs for maintenance, animal husbandry, and administration.

The 1998 Plan Amendment for grazing allotments allowed grazing on Granite Mountain and Lanfair Valley Allotments to be voluntarily canceled by the lessee. This process was based on third-party buy-out provisions. The allotments were terminated. This cancellation process amends the CDCA Plan by removing the designation of the allotments, their forage allocations, and cancellation of authorizations for range improvements. It is unknown whether this option will be exercised on other allotments, but it remains a potential opportunity that would lead to substantial decreases in grazing the East Mojave.

The allotments located within the planning area are classified as Section 15 grazing leases in accordance with the Taylor Grazing Act. Allotments with perennial forage have an established limit of forage based on the quality and quantity of perennial plants, stated in animal unit months (AUMs) for a defined period of grazing use. An AUM is a measure of perennial or ephemeral feed that will support a cow and its calf or a bull for one month. Perennial forage is typically authorized to be grazed at the same level from year to year unless forage production does not meet seasonal norms. In contrast, grazing use in allotments with ephemeral forage do not have an established level or specified period of use. Instead, the amount and length of grazing is determined just prior to authorization.

Typically, grazing leases are authorized by the BLM in the planning area for 10 years. A shorter period of time is sometimes issued for special circumstances, such as to accommodate a shorter-term lease of the base property or when the Authorized Officer determines that a shorter term is in the best interest of range management. Additionally, non-renewable grazing authorizations may be issued for special short-term needs such as trailing, or when there is short-term surplus forage available. All leases are subject to modifications and to annual adjustments. These are implemented through consultation between the lessee and the BLM.

The lease identifies the number, kind and/or type of livestock that may graze the allotment and the grazing period, usually with specific beginning and ending dates. Many leases also require adherence to grazing prescriptions in the form of systems such as deferred, deferred-rotation, or rest-rotation. Other authorizations may have conditions pertaining to turnout dates based on vegetation conditions. Some leases have specific grazing utilization standards and other conditions to protect sites, such as riparian areas, wildlife habitat, special status plant populations, etc. Usually these conditions have been developed in consultation and cooperation between BLM and the livestock operator in the form of an allotment management plan.

Often there are occasions when the lessee elects to graze less than the full amount of grazing authorized. Sometimes this is due to environmentally related factors such as droughts or fires. In other cases it may be to accommodate the livestock operator's needs to adjust livestock numbers for marketing or husbandry purposes. Normally the BLM will authorize the requested amount of non-use on a short-term basis. In some situations, the BLM may temporarily authorize another qualified applicant to graze the amount of authorized non-use in an allotment, but this is not common.

About 60 percent of the allotments have Allotment Management Plans (AMP). Most of the AMPs are in the Needles Resource Area. Nine of the eighteen allotments are jointly-administered by BLM and NPS, including seven in the Mojave National Preserve and two in Death Valley National Park. The following is a general description for the eighteen allotments. Refer to Table 3-4 and Appendix P for resource related information.

### **Current Grazing Leases in the NEMO Planning Area**

**Clark Mountain #9003:** The BLM portion of Clark Mountain Allotment is 97,560 acres in size and constitutes 80% of the allotment. The remaining acreage is within the Mojave National Preserve (MNP) and is administered by the National Park Service (NPS). The allotment can be grazed all year-long with 132 cattle. However, about 25 cattle have been using the allotment for the past several years. The Allotment Management Plan (AMP) for Clark Mountain Allotment was completed in 1984. Rangeland health field assessments for this allotment were completed by April 1999. The allotment is within Category I desert tortoise habitat and portions of the Stateline Wilderness, the Mesquite Wilderness and Clark Mountain HMA.

**Crescent Peak #9013:** The BLM portion of Crescent Peak Allotment is 6,719 acres and comprises 23% of the total allotment. The remaining acreage is within the MNP and is managed by NPS. The allotment can be grazed all year-long with 30 cattle. No grazing has occurred for several years. The AMP for the Crescent Peak Allotment was completed in 1986. Rangeland health field assessments, for this allotment, were completed by April 1999. There is no tortoise habitat in the BLM portion of the allotment.

**Deep Springs #5062:** This allotment is 43,932 acres in size. There are 167 cattle grazing from December 1 through February 28, and 250 cattle grazing from March through May. There is no AMP for this allotment. An interdisciplinary team from the BLM, Forest Service, Deep Springs College (the lessee), and various other interest groups are working on development of the AMP. Until plan completion, the team decides on livestock stocking levels, and rotation of livestock within BLM and Forest Service pastures.

**Eureka Valley #5001:** This 17,000-acre ephemeral allotment has received infrequent grazing for the last ten years. Grazing use is managed under ephemeral guidelines in the CDCA Plan. An interdisciplinary team determines turnout for this allotment.

**Fish Lake Valley #5090:** Grazing use occurs from September 1 to October 1 with 93 cattle. There is no AMP for this allotment. The BLM Tonopah, Nevada Field Office administers this allotment for the Ridgecrest Field Office.

**Horse Thief Springs #9007:** This allotment can be grazed year-long with 202 cattle. However, for the past several years grazing use has been a third to none of the permitted use. The AMP for the Horse Thief Springs Allotment was completed in 1985. Rangeland health field assessments for this allotment were completed by April 1999. The allotment is within Category III desert tortoise habitat and portions of the Kingston Range Wilderness, the North Mesquite Mountains Wilderness, the South Nopah Range Wilderness, the Pahrump Valley Wilderness, and the Nopah Range Wilderness.

**Hunter Mountain # 5013:** This allotment is located on BLM-managed land and in Death Valley National Park. The BLM portion is 53,920 acres and there are no AUMs allocated to the BLM portion. In the past, lack of water prevented grazing of the area now administered by BLM. Water can be hauled to approved locations, and future production studies will establish carrying capacity for this allotment. The AMP for the Hunter Mountain Allotment was completed in 1989.

**Jean Lake #9017:** The allotment can be grazed with 25 cattle and this use is limited to the winter months by mitigation measures for critical desert tortoise habitat. However, grazing has not occurred for many years. There is no AMP for the Jean Lake Allotment. Rangeland health field assessments for this allotment were completed by April 1999.

**Kessler Springs #9008:** The Kessler Springs Allotment is 14,161 acres in size. The portion managed by NPS in the MNP was canceled on 29 August 2000. The allotment can be grazed year-long with 33 cattle. Grazing is based on forage condition and management needs for the allotment. The AMP for the Kessler Springs Allotment was completed in 1982. Rangeland health field assessments for this allotment were completed by April 1999. The allotment contains critical desert tortoise habitat designated by the USFWS.

**Last Chance #5062:** With the passage of the CDPA, a portion of this allotment is now located within Death Valley National Park. The BLM allotment is 35,532 acres with 1,639 AUMs. There is no AMP for this allotment. Allotment inspections and monitoring grazing intensity of key forage plant are used to determine changes in livestock stocking levels.

**Oasis Ranch #5059:** This allotment is approximately 22,968 acres. The authorized use is 656 AUMs or 215 cattle for any three-month period between April 1 and September 30. There is no AMP for this allotment. This allotment is managed with a companion allotment in Nevada. A deferred grazing management system has been implemented.

**Pahrump Valley #8000:** This allotment has 26,952 acres. The authorized use is 353 AUMs, or a maximum of 175 head of cattle from February 15 to February 28, and 175 head of cattle from March 1 to April 15. There is no AMP for this allotment. Approximately 90% of the allotment is located within the Nopah Range Wilderness. The allotment is situated in desert tortoise habitat, but outside critical habitat. Allotment inspection and monitoring of key plant species grazing levels are used to determine any needed changes in livestock stocking.

**Piute Valley #9004:** The Piute Valley Allotment is 20,145 acres with 42% of the allotment managed by the BLM. The remaining acreage is within the MNP and administered by NPS. The authorized use for ephemeral grazing activities is 73 AUMs or 33 cattle per year. The AMP for the Piute Valley Allotment was completed in 1984. Rangeland health field assessments for this allotment were completed by April 1999. The allotment contains critical desert tortoise habitat designated by the USFWS.

**South Oasis #5063:** This allotment is 15,173 acres. The authorized use is 477 AUMs or 59 head of cattle from April 1 through August 31. There is an AMP for this allotment. A deferred grazing management system has been implemented.

**Valley View #9000:** The BLM Valley View allotment is 31,575 acres and covers 10% of the total allotment. The remaining 90% is within the MNP and managed by the NPS. The authorized use is 933 AUMs or 71 cattle per year for all year long. The AMP for the Valley View Allotment was completed in 1984. Rangeland health field assessments for this allotment were completed by April 1999. The allotment contains critical desert tortoise habitat designated by the USFWS at the lower elevations.

**Valley Wells #9009:** The BLM Valley Wells allotment has 223,000 acres and covers 86% of the total allotment. The remaining 14% is within the MNP and is managed by the NPS. The permitted use is 3,994 AUMs or 317 cattle year round. The AMP for the Valley Wells allotment was completed in 1984. Rangeland health field assessments for this allotment were completed by April 1999. The allotment contains critical desert tortoise habitat designated by the USFWS. Portions of the Hollow Hills Wilderness, the Kingston Range Wilderness, the Mesquite Mountains Wilderness, North Mesquite Mountains Wilderness, and the Clark Mountain burro herd management areas occur in the allotment.

**White Wolf #5060:** This allotment is approximately 13,733 acres. The authorized use is 307 AUMs or 55 head of cattle from September 15 through February 28. There is no AMP for this allotment. Allotment inspection and monitoring of key forage plant species are used to determine any desired changes in livestock stocking.

**Range Improvements:** In order to facilitate effective and economic grazing use, structural facilities and other range improvements are installed on the allotments. Some of these improvements, such as corrals and feed supplements, are needed to facilitate the handling of livestock. Other developments are primarily used to enhance or impede cattle movement or improve the condition of forages such as the installation of wells, pipelines, troughs, prescribed fires, fences, spring developments, and reservoirs. Developed water sources are used for livestock and wildlife. Many of these facilities have been installed under cooperative ventures between the lessee and BLM. Most improvements are installed and maintained exclusively by the rancher on private lands and as permitted by BLM on public lands.

**Grazing Systems:** Grazing systems (strategies, plans, etc.) are designed cooperatively between the lessee and the BLM to meet both the needs of the grazing operation and to protect or enhance some non-livestock related rangeland resources. Systems may prescribe scheduled livestock movement, specific area of use, percentages of forage consumption, and special mitigation measures (e.g., 200 lbs./acre of ephemeral forage before turnout). The grazing system may become a term and condition for grazing use and would be described in the grazing lease. All grazing use must conform to the grazing lease.

On allotments where riparian areas exist, the riparian areas, whether lentic or lotic, constitute a very small proportion of the allotment area and are often located in a fragmented pattern throughout each allotment. Although these areas constitute a small amount of the overall forage available for livestock, they are attractive to the animals, because of their proximity to water, shade, and vegetation that remains succulent much longer than adjacent upland vegetation. Consequently, livestock tend to congregate in these areas and can quickly overuse the riparian vegetation. The use of riparian-wetland areas by other ungulates, in conjunction with livestock, makes the problems complex. Wild horses and burros, in particular, present a difficult management problem. These animals also find most riparian-wetland areas attractive and may overuse the vegetation even in the absence of livestock.

**Monitoring:** Since the early 1980's grazing allotments have been assigned to one of four categories, based upon current resource conditions and the potential for improvement. This categorization has served as a method for the BLM to determine which allotments should have the most management attention. Each allotment is to be reviewed periodically to determine if the categorization is still appropriate for the particular allotment based on monitoring or other information. If not, the Authorized Officer will reassign the allotment to the appropriate category. Table 3-4 shows the number of allotments and their current category.

**Table 3.5 – Grazing Allotment Resource Information for the NEMO Planning Area**

Allotment Name	Forage Type <sup>3</sup>	Acres	AUMs	MIC <sup>4</sup>	Assessment Complete <sup>5</sup>	Standards	
						Fallback <sup>6</sup>	Alt 1
Clark Mountain	Per/Eph	97,560	1,303	M	Yes	2	2
Crescent Peak	Per/Eph	6,719	359	C	Yes	2	2
Deep Springs	Perennial	43,932	1,250	M	Yes	2 (3)	2 (3)
Eureka Valley <sup>2</sup>	Ephemeral	17,000	0	UC	No	2 (3)	2 (3)
Fish Lake Valley	Perennial	577	52	UC	No	2 (3)	2 (3)
Horsethief Springs	Per/Eph	150,140	2,424	M	No	2	2
Hunter Mountain	Perennial	53,920	0	I	Yes	2	2
Jean Lake	Per/Eph	9,806	300	C	Yes	2	2
Kessler Springs	Per/Eph	14,161	481	C	Yes	2	2
Last Chance	Perennial	35,532	1,639	I	Yes	1	1
Oasis Ranch	Perennial	22,968	656	I	Yes	2	2
Pahrump Valley	Per/Eph	26,952	353	M	No	2	2
Piute Valley	Ephemeral	20,145	0	M	Yes	2	2
South Oasis	Perennial	15,173	477	I	Yes	4	4
Valley View	Per/Eph	31,575	849	C	Yes	2	2
Valley Wells	Per/Eph	223,007	4,272	I	Yes	2	2
White Wolf	Perennial	13,733	307	M	No	2 (3)	2 (3)

<sup>3</sup> Ephemeral and/or perennial are the two forage types that may be grazed on an allotment. Ephemeral forage primarily consists of ephemeral grasses and forbs. Perennial forage primarily consists of perennial grasses and shrubs.

<sup>4</sup> There are four Selective Management Categories (M, I, C, UC) for grazing allotments. Category M allotments are in satisfactory resource condition and are producing near their potential under existing management strategies. There are little or no known resource use conflicts or controversies. Category I allotments generally have potential for increasing resource production or conditions, but are not producing at that potential. There could be conflicts or controversy involving resource conditions and uses, but there are realistic opportunities to enhance resource conditions. Category C allotments usually consist of relatively small acreage or parcels of public land. They are often, but not always, intermingled with larger amounts of non-federally owned lands. There are little or no known resource use conflicts or controversies. Usually opportunities for positive economic return from public investments are limited in these allotments.

<sup>5</sup> This column indicates if a rangeland health assessment has been completed. Prior to determining achievement of standards, a field assessment of resource conditions is to be conducted by a team of field specialists.

<sup>6</sup> The fallback column indicates the category based on results from the health assessment or an estimation of resource conditions if the assessment is not completed. Alternative 1 column estimates the category an allotment is expected to attain. The categories are; (1) areas where one or more standards are not being met, (2) areas where all standards are being met, (3) areas where the status of one or more standards is not known, and (4) areas where one or more standards are not being met, but factors other than cattle grazing is the primary contributor to the problem.

### **3.7 Wilderness**

The NEMO planning area encompasses all or portions of 24 areas of designated wilderness totaling 1,225,000 acres, eight wilderness study areas totaling 200,000 acres and approximately 475,000 acres of “released lands”. Wilderness and wilderness study areas are congressionally designated. “Released lands” are those lands within BLM's former wilderness study area boundaries that Congress did not designate as wilderness or wilderness study area. The planning area has the highest concentration of designated wilderness of any region in the contiguous U.S.

BLM manages designated wilderness and wilderness study areas within the NEMO planning area consistent with the California Desert Protection Act (CDPA) of 1994, the administrative instruments (regulations, policies, etc.) from that statute, and other applicable federal statutes. These instruments identified management direction for these lands with respect to specific uses that may occur within wilderness, as well as overall goals for lands designated. Of particular importance is the clear Congressional intent that wilderness designations not lead to the creation of “buffer zones” around wilderness boundaries. In and of themselves, non-wilderness activities visible or audible from wilderness are not to be precluded up to such boundaries.

Until released lands become classified again, BLM manages them consistent with the CDCA Plan and Amendment #53 of the 1982 Amendments. The CDCA Plan provides that such lands be returned to their original MUC designation unless they were recommended as wilderness by the BLM. Amendment #53 provides that recommended lands that were released from wilderness consideration be managed under Class L (limited use of resource) guidelines while they await formal classification. Classification decisions will be a determination made by BLM's District Manager, California Desert District, and must be pursued through plan amendment.

### **3.8 Recreation Resources and Activities**

With expanded leisure time and growing affluence among the general population, the California Desert attracts millions of visitors annually. The desert provides the resources necessary for a variety of recreation. These resources provide natural beauty, solitude, and freedom from the structure and regulations of urban areas. In all recreational opportunities, scenic values are often cited as an important resource to the participants’ recreation experience. Virtually all recreation activities are dependent upon availability of access within the planning area. Most visitors travel on previously used or marked motorized vehicle routes. Recreation opportunities are grouped along a continuum of opportunities ranging from intensive vehicle-oriented to resource-oriented activities, although there is often overlap between the two.

In most cases, public recreation use of BLM-administered lands is unsupervised and unorganized. BLM management of recreation activities, facilities and visitor contacts center around OHV organized events, the Dumont OHV area, permitted commercial and organized activities (bighorn sheep hunts, trail rides, vision quests), and specific local wildlife conservation sites.

### **3.8.1 Organized Competitive Vehicle Events**

BLM's Multiple-Use Classification (MUC) guidelines allow for competitive events in varying degrees on public lands within the planning area. The CDCA Plan as amended in 1982 designated one long-distance, point-to-point, competitive event racecourse in the planning area – the “Barstow-to-Vegas (B-to-V) Motorcycle Race.” The B-to-V Racecourse (Chapter 8, Figure 14) is roughly parallel to and north of I-15, utilizing a portion of the Boulder Utility Corridor for some of its length, and crosses critical tortoise habitat in northern Shadow Valley and northern Ivanpah Valley. This racecourse was designed for a specific kind of competitive event and is not for access or casual use unless all or portions of the routes were “approved” in the routes of travel designation process. While the Barstow-to-Vegas racecourse is still in the CDCA Plan, it has not been used for a competitive event since 1989 due to the listing of the desert tortoise and issues of competitor and spectator compliance.

### **3.8.2 Dumont Dunes Open Area**

The Dumont Dunes Recreation Area is located off Highway 127 north of Baker. The Kingston Range Wilderness Area to the northeast, Death Valley National Park to the west, and the Salt Creek ACEC to the south surround the recreation area. The main Dumont Dunes system, though relatively small, exhibits more types of dunes than any other dune system in the California Desert. This makes for excellent OHV recreational opportunities. Since the 1960s, Dumont Dunes has attracted people to the challenge of dune riding. The recreation area attracts over 60,000 visitors annually. Most visitors are from southern Nevada and the Los Angeles Basin.

Peak use periods in OHV open areas center around holiday weekends and the “spring break” at colleges. The net effect is a general use period from September through May of each year with the greatest use occurring in September-November and March-April. Use levels are lowest during the summer months, with the exception of holiday weekends. BLM active management presence is generally limited to peak use periods.

In the past, only one permitted event has been held at Dumont Dunes each year. The Las Vegas Jeep Club usually holds an annual event over the Presidents Day holiday weekend and operates within an area of the main dune system to avoid conflict with unrelated activities. Recently, more commercial activities have been occurring at the dunes. This is most likely due to the increase in population in the Las Vegas area and proximity of the dunes to Nevada. These events include the Suzuki Quadzillathon, an ATV hill climb drag race, and the Dune Riders Sandboarding Competition. This latter event has been held at the dunes for the past three years.

### **3.8.3 Dual Sports Events**

Each year, the BLM receives requests for organized touring events. In response to this recreational demand, the BLM has consulted with the USFWS on an organized motorcycle/OHV touring program, or dual-sports events in desert tortoise habitat. To fall under the criteria of the relevant biological opinion (1-6-92-F-2; October 25, 1991) the event must be non-competitive in nature, occur between November 1 and March 1, occur entirely on existing open routes, and have no more than 500 participants.

The Dual Sport Committee of District 37 of the American Motorcyclist Association applies on a regular basis for a recreation permit for use of existing routes of travel through lands managed by the BLM as part of their Dual Sport National Trail Ride. The LA-B-to-V Dual Sport Trail Ride has been a permitted event since 1984 and is limited to no more than 500 participants. The event involves motorcycle touring through the NEMO planning area.

### **3.8.4 Vehicle Touring**

Casual-use vehicle touring is one of the most popular forms of recreation in the NEMO planning area. It is to some degree inseparable from the subject of destination recreation and, to a certain extent, from the subject of access where roads are common. Small informal group events occur on a regular basis throughout the Planning area. Their use levels are currently unknown. They are generally related to rock and mineral collection, bird watching, equestrian use, OHV touring, wind-driven vehicle use, camping, and hiking.

### **3.8.5 Historical Trail Touring**

The off-road vehicle experience of traveling historical routes (Table 3-5) provides an educational and scenic experience of the natural wonders of a harsh desert region and the elements that the pioneers and founders of the historical route had to endure. The annual NORCO Trail Ride, an equestrian event, follows the historic Mojave Road. Other vehicular and equestrian use occurs throughout the use season, on the historic Mojave Road, which passes through the Piute Valley in an east-west direction. Current visitor use levels are unknown. Indications from the condition of the road and infrequent observations by staff in the field are that there are about 2,000 visits per year to this segment of the Mojave Road. The East Mojave Heritage Trail was created as an extension of the Mojave Road Project for people who enjoy the backcountry and are looking for an educational experience. The trail is a 650 mile closed loop that makes use of existing roads and trails. With the passage of the California Desert Protection Act in 1994, much of the trail has been closed, and only fragments remain.

Much of the Old Spanish Trail (Mormon Road) has been paved within the NEMO planning area. Tracks of the trail can still be seen at Emigrant Pass just off the Old Spanish Trail Highway as well as at Impassable Pass at the Alvord Mountains and points west. The route leading west from the highway is closed to motorized vehicles to preserve what remains of the Old Spanish Trail. Variations of this route were traveled from 1829 to 1848, all being called the Spanish Trail, making it difficult to trace the original route. Most of the route in California is also known as the Mormon Road and became a commercial trade route between Los Angeles and Salt Lake City.

A portion of Route 66, "Old National Trails Highway," forms the southern boundary of the NEMO Planning area. Route 66 was designated in 1926 and was the Main Street of America. It was the first national highway to connect Chicago with Los Angeles and was known as the "Mother Road." By 1985 however, the federal government deleted Route 66 from the Federal Highway System. Today, Interstate 40 has replaced much of the route in the Mojave Desert. Route 66 still offers travelers an interesting touring opportunity. The recent revival of Route 66 and the fact that more than 80% of the original route is still open has led to a substantial increase in travelers.

From 1905 to 1940, the Tonopah & Tidewater railroad ran from Ludlow to Goldfield, Nevada. The line was very important for the mines, mining companies, residents and employees, even though it never financially flourished. The T&T railroad line was the fastest, shortest, and cheapest route to Los Angeles and San Francisco for all the towns and mines along the Amargosa River and Death Valley regions. In order to preserve what remains of the original route, the remnant berm north from Sperry to its junction with the California/Nevada border has been closed to motorized vehicle use. However, there are adjacent roads along the berm providing vehicular access. The berm is open to motorized vehicles from Sperry south to Riggs.

**Table 3.6 – Major Historical Trails in the NEMO Planning Area**

Name	Miles	Miles On Public Land <sup>7</sup>	Resource Values
The Mojave Road	130	11 miles – California border to east boundary of Mojave National Preserve (Fort Piute)	Scenic, historical, Native American values
East Mojave Heritage Trail	650	38 miles open from Rocky Ridge to Fernner. 61 miles from Needles to Ivanpah. 97 miles from Ivanpah to Rocky Ridge.	Scenic, historical, Native American values.
Old Spanish Trail/ Mormon Road	1200	50 miles – California border to Ft. Irwin Military boundary	Scenic, historical, Native American values
Route 66	2400	68 miles – Section between Ludlow and Kelbaker Road, and between Fenner and east NEMO boundary	Scenic, historical
Tonapah and Tidewater Railroad	160	75 miles – 20 miles open from Riggs to Sperry	Scenic, historical

### 3.8.6 Nature Study

Season of use for non-regulated activities (no legal limitation on season or permit required) is dependent upon the environmental conditions that either are being sought (land sailing, photography of wildflowers) or which limit the ability to enjoy or engage in the activity (equestrian use, hiking, OHV touring). Many activities, such as sightseeing, bird and wildlife viewing, photography, and hiking, depend on an unspoiled natural setting for a rewarding experience. Wilderness areas and ACECs provide good opportunities to study rare or endangered plant and wildlife species, geological and archeological features and desert ecology.

Table 3-6 shows BLM ACECs providing opportunities for nature study. These ACECs provide only a small portion of available resource-oriented recreation on public lands. Wilderness areas also provide good opportunities for nature study.

Although all ACECs within the NEMO planning area are of importance, the Amargosa Canyon/Grimshaw Lake Natural Area ACEC is of significant value. Portions of the Amargosa River have been determined eligible for and are being evaluated for inclusion in the National Wild and Scenic Rivers System (See Appendix O). Both areas are currently designated as national Watchable Wildlife Sites. Both ACECs are listed on numerous maps, as well as in several guidebooks and are near a “snowbird” winter use camping area located at Tecopa Hot Springs.

<sup>7</sup> Miles on Public Land represent miles in the NEMO planning area only.

**Table 3.7 – Areas of Critical Environmental Concern (ACEC) in the NEMO Planning Area**

Name	Field Office	Acres <sup>8</sup>	Resource Values
Amargosa Canyon/Grimshaw	Barstow	9,206 1,096	Wildlife habitat, vegetation, outstanding scenery, riparian
Bigelow Cholla RNA	Needles	83	Botanical values
Cerro Gordo	Ridgecrest	9,073	Prehistoric and historic values, vegetation
Clark Mountain	Needles	4,234	Prehistoric and Historic values, outstanding scenery, wildlife habitat
Dead Mountains	Needles	28,559	Native American values
Denning Spring	Barstow	465	Prehistoric and historic values
Greenwater Canyon	Barstow	798	Prehistoric and Native American values
Halloran Wash	Needles	1,743	Prehistoric values
Kingston Range	Barstow/ Needles	19,620	Wildlife habitat
Mesquite Hills/ Crucero	Barstow	5,002	Prehistoric values
Mesquite Lake	Needles	6,731	Prehistoric values
Mt. Pass Dinosaur Trackway	Needles	628	Historic and paleontological values
Saline Valley	Ridgecrest	1,389	Wildlife habitat
Salt Creek (Dumont)	Barstow	2,205	Wildlife habitat, prehistoric values
Surprise Canyon	Ridgecrest	4,639	Prehistoric and historic values, outstanding scenery, wildlife habitat, vegetation
White Mountain City	Ridgecrest	32	Cultural and historical values

Petroglyphs, archeological sites, and many old mining towns still remain fairly pristine. Along major highways and backcountry roads, adits and mining shafts of the early prospectors' dot the mountainsides. Most hiking trails (Table 3-7) that lead to historical places are grown over with vegetation, washed-out, or no longer open for vehicular travel in order to protect the resources. These remnant trails and canyon washes provide the opportunity for hikers to explore on foot.

**Table 3.8 – Historic Hiking Trails in the NEMO Planning Area**

Name/Field Office	Miles	Resource Values
Burgess Mine Trail - Ridgecrest	7.0	Historic mining district and Frenchy's cabin
Lonesome Miner Trail - Ridgecrest	40.0	Heart of historic trail system, Frenchy's cabin, and a mill site
Snowflake Mine Trail - Ridgecrest	7.0	Best-known and most used trails in the Inyo Mountains, and historical features.
Amargosa Natural Area Trail- Barstow	7.0	Old Spanish Trail, T&T Railroad, historic mining workings and buildings

<sup>8</sup> Acres computed using Geographic Information System and include all public lands and private inholdings.

### 3.8.7 Camping

Traditionally, most camping in the CDCA has been in established campground areas, but in the NEMO planning area camping mainly has been in the open desert where facilities are not available. Camping is generally associated with other recreation, such as vehicle touring, nature study, rockhounding, and hunting.

### 3.8.8 Lakebed Activities

Dry lakebeds have often been ideal areas for recreational activities. They provide the basic requirements of open space and smooth surfaces needed for land sailing, model rocket and airplane flying, hang gliding, and stargazing (particularly during celestial events such as the passing of comets). In addition to recreation activities occurring on lakebeds, applications for filming and research are processed annually, particularly at Ivanpah and Silurian dry lakes.

Ivanpah Dry Lake is located on Interstate 15 at the California/Nevada border. Its close proximity to hotels, restaurants and casinos makes the lake bed a favorite place for wind-dependent recreationists. Enthusiasts throughout the world travel to Ivanpah Dry Lake’s expansive open spaces. International championship racing and land sailing, long-distance archery, kite buggying, and kite demonstrations are some of the many activities this area is used for. The current world speed record for land sailing was set on the Ivanpah Dry Lakebed. The lakebed is closed to motorized vehicles without a permit.

Because of the increased amount of activity associated with the lakebed, the BLM identified Ivanpah as an area appropriate for volunteer efforts for development, improvement, or maintenance. The Friends of Ivanpah was established as a non-profit organization to help maintain the recreational and natural resources of the area.

The management objectives for each dry lake dictate the area’s use and special monitoring requirements needed to protect their resource values. Table 3.8 represents the significant dry lakebeds in the NEMO planning area and their recreational availability.

**Table 3.9 – Dry Lakes in the NEMO Planning Area**

Dry Lakes	Access
Broadwell Dry Lake	Open
Ivanpah Lake Dry	Open to non-motorized vehicle access only
Mesquite Dry Lake	Closed except for approved routes
Salt Dry Lake	Closed except for approved routes
Silurian Dry Lake	Open
Silver Dry Lake	Closed, except for approved routes or by permit

### 3.8.9 Rock Hounding

Rockhounds from southern California and Nevada heavily use the California Desert. Much of the collecting occurs on BLM lands, with the remainder occurring largely on privately owned land, where it is subject to landowner permission. Collecting is prohibited in the National Parks and National Preserves and on most State Park lands, and on “developed recreation sites and areas,” or where otherwise prohibited or posted.

Few, if any, direct conflicts between rock hounding and other land uses appear to exist. Most rock hounds prefer areas that are accessible by vehicle on the existing network of roads and trails. Table 3-9 lists the areas where minerals and rocks have historically been collected in the Planning area. It does not include wilderness areas that are no longer available by vehicle.

**Table 3.10 – Rock Hounding Sites in the NEMO Planning Area**

Area	Field Office	Site	Materials	Location
Eureka Valley	Ridgecrest	Deep Springs Crystal Area (Crystal Hill) Sulphur Mine Eureka Valley	Smoky Quartz Crystals Variscite Obsidian	T7S, R36E, Sec. 9 (MDM)
Darwin	Ridgecrest	Cerro Gordo Mines Lee Mines	Numerous Minerals Lazulite	T16S, R38E, Sec. 13 (MDM) T17S, R40E, Sec. 23 (MDM)
Panamint	Ridgecrest	Surprise Canyon Panamint City Onyx Mine Ballarat	Lepidolite Idocrase, Diopside, Epidote, Wulfenite “Death Valley Onyx” (Travertine) “Ballarat Marble” (Onyx)	T21S, R45E (MDM) T21S, R45E, Sec. 11 (MDM) T22S, R43E, Sec. 6 (MDM)
Bitter Water	Ridgecrest	Ryan Eagle Peak (Eagle Mountain) Old Ryan (Lila C. Mine) Zabriski Tecopa Pass Eclipse Mine Crystal Spring Mine	Colemanite Agate  Jasper Fire Opal Petrified Wood Silver Quartz	T25N, R3E, Sec. 8 (SBM) T24N, R5E, Sec. 24 (SBM)  T24N, R4E, Sec. 12 (SBM) T21N, R7E, Sec. 18 (SBM)  T20N, R6E, Sec. 18 (SBM) T20N, R9E, Sec. 25 (SBM)
Owlshead/ Amargosa	Barstow	Sperry Wash	Palm Fiber, Palm Root and Limb Sections, Wood	
Kingston	Barstow/Needles	Kingston Range (Horsethief Springs) Shadow Mountain Toltec Mines (Turquoise Mountain) Mohawk Mine Halloran Spring	Amethyst  Azurite  Turquoise  Cerussite, Galena, Sphalerite, Smithsonite Azurite	T19N, R10E, Sec. 3 (SBM)  T17N, R11E, Sec. 5 (SBM)  T16N, R10E (SBM)  T15N, R10E, Sec. 14 (SBM)
Mojave	Barstow	Ash Hill Black Ridge  Bagdad Obsidianite Field	Flower Agate, Jasper, Chalcedony, Sard Chalcedony Roses, Jasper, Onyx, Perlite, Chrysocolla Obsidianite	T7N, R9E (SBM)  T6N, R11E, Sec. 9 (SBM)

### 3.8.10 Shooting and Hunting

The public lands administered by the BLM in the California Desert have always been important to shooting and hunting. Recreational shooting continues to be a popular activity in the desert. The wide-open and seldom visited areas provide an appropriate place for this activity. Residents from Southern California and Las Vegas often visit the NEMO planning area for target shooting, and visitors often bring firearms with them to partake in this activity.

The shooting or discharge of firearms is generally permitted on public lands, except in specified areas including wilderness in the NEMO planning area, as long as state and local laws permit such activity. Shooting within ½ mile of structures is forbidden. These activities are regulated in order to minimize conflicts and resource impacts.

The California Department of Fish and Game regulates all hunting in the desert. Hunting peaks during the upland gamebird season, but occurs at a much lower level at other times. During hunting season, there is an increase in use of motorized vehicles throughout the planning area.

### 3.9 Vehicle Access

One of the primary issues behind preparation of the CDCA Plan was access to and use of the resources of the California Desert. Access to desert resources by the public occurs for many reasons such as economic, recreation, or transportation purposes. Some access involves the use of major roads, maintained gravel and dirt roads, unmaintained dirt roads, trails and accessible desert washes.

Average route density in the NEMO planning area is lower than regions of the CDCA that are closer to major metropolitan areas. In the southern third of the planning area, two major freeways, Route 66, SH 127 and US 95, carry well over 90% of the motor-vehicle traffic. Portions or all of routes covering approximately 850 miles are proposed for designation within the 350,000 acres of inventory area.

Primary east-west access is provided by portions of National Trails Highway (Route 66) and Interstate 40 on the southern boundary of the planning area, and Interstate 15 through the southern third of the planning area. The major east-west access through the central portion of the planning area provides visitor access to Death Valley National Park. It consists of State Highway H 178 which connects the state line, west through the Tecopa/Shoshone area with SH 190; and SH 190 itself, which runs west from SH 127 through Death Valley Junction and the Furnace Creek area within Death Valley National Park, to Lone Pine just west of the planning area on US 395. Primary north-south access is provided by US 95 which provides access to the southeastern portion of the planning area, SH 127, which spans the central third of the planning area from Baker on I-15 northward to the state line north of Death Valley Junction, and SH 168 which provides access to the northernmost reaches of the planning area.

The desert topography and geomorphic features present in the northern part of the NEMO planning area limits, and sometimes prevents cross-country access. In a few places, occasional rains and flash floods make routes impassable. Physical limitation (slope aspects, etc.) often provides little flexibility of alternative access to desert resources. Access may involve a single road into an area, while other areas provide several options for the management of a route network.

In the southern part of the NEMO planning area, desert topography and geomorphic features are relatively different, represented by broader valleys and more gently sloping mountains. This type of desert terrain provides increased opportunities for motorized vehicle access. This results in additional management pressures when attempting to create an appropriate land management balance between access to and use of the California desert.

Much of the southern portion of the planning area is designated critical habitat for desert tortoise. Land management planning, goals, objectives and implementation must be consistent with the recovery goals developed for the desert tortoise.

### 3.10 Minerals and Mining

The Southern California region, including portions of the Mojave Desert, is one of the most highly mineralized areas in the United States. This is due to the variety of geologic terrain exposed in the many mountain ranges and the depositional environments of the intervening basins. A discussion of the analysis and interpretation of the geology-energy-minerals data base and preliminary analysis of economic geology, mineral commodities, and related socio-economics of the CDCA is contained in Appendix G of the 1980 CDCA Plan. Guidelines for mineral exploration and development may be found on pages 89 to 91 of the 1980 CDCA Plan as amended. Maps 12 and 14 of the plan show potentials for locatable and saleable minerals, respectively.

The NEMO planning area is situated along the northeastern margin of this mineralized region, and contains many known mineral deposits and potential for the discovery of additional mineral resources as shown on Figure 3a (Chapter 8). Passage of the California Desert Protection Act has withdrawn many of the deposits and mineral potential areas from mineral entry and development in designated wilderness areas, except for valid existing rights. It is anticipated that mining at the iron deposit northwest of Baker will continue, even though it is now part of the Fort Irwin military withdrawal. Mineral development is encouraged on public lands outside of specially designated areas and managed under several laws by three categories: locatable, leaseable, and saleable. Current management practices are described in Appendix K.

Mineral commodities mined currently or in the recent past include gold, silver, barite, boron, hectorite, bentonite, gypsum, tungsten, talc, zeolites, sodium, limestone, sand and gravel, stone, turquoise, and rare earth elements (e.g., cerium, praseodymium, europium, and yttrium). Gold production occurs at two major mines located in the northern portion of the planning area at the Briggs Mine in the Panamint Range and the Castle Mountain Mine in the Castle Mountains. Gold prospecting occurs throughout the planning area. Inactive small mines and prospects are scattered throughout the planning area. (Chapter 8, Figure 3b)

Hectorite and bentonite are produced at the Southern Clay Mine, north of Death Valley Junction within the western half of the Upper Amargosa portion of the proposed Central Amargosa ACEC. This is one of four hectorite mines in the United States. The world's largest hectorite mine occurs south of the Cady Mountains in the West Mojave Desert Planning area. The Upper Amargosa portion of the proposed ACEC also contains the access road to the Sidehill Mine.

Rare earth elements are produced at the Mountain Pass Mine, which is not within any proposed DWMA. This is one of two significant rare earth mines in the world. Potential reserves of rare earths are mapped in an area outside the boundaries of the current mine and a small portion of the reserves overlaps the proposed Shadow Valley ACEC. These reserves may be developed over the next 25 years. A small expansion of the mine is currently under environmental review. The geology and mineral potential of this area is discussed in detail in Appendix G of the 1980 CDCA Plan (p. 23-68).

Talc is mined from a few deposits located in the Inyo Mountains and Kingston Range. Limestone is quarried in the Argus Range and new production can be expected from the southeastern Bristol Mountains and elsewhere. Diatomaceous earth, used as a moisture absorbent, is mined from a small operation located in Piute Valley. Active gypsum mining has been reported on Mesquite Lake and the surrounding area. Many small-scale intermittent mines exist throughout the planning area for various mineral commodities.

There are no active mines within DWMA's, although access to a zeolite mine southeast of Death Valley Junction passes through critical habitat for the endangered Amargosa niterwort.

Sand and gravel and other aggregates are produced within the planning area. Although they occur throughout the planning area in alluvial fans and other sedimentary deposits, commercial deposits are limited by transportation costs and, therefore, usually located near market areas. These commodities are used primarily for major highway construction and repair, and as aggregate for concrete in urban areas.

Access and water resources are important aspects associated with mineral development, and will be an important consideration for future development.

Minor geothermal resources exist at such locations as Tecopa and Ivanpah Valley. However, further development of geothermal resources is not anticipated within the Planning area. Although oil and gas potential has been identified in some areas, further exploration is not foreseen. There are no current leases for sodium resources.

Future production is expected to be concentrated in the categories of gold (especially with a price increase), aggregate, particularly along I-15, and nonmetallic minerals including specialty clays and limestone. Only minor activity is anticipated in lead-zinc-silver deposits due to depressed commodity prices.

### **3.11 Land Tenure**

Lands are acquired, disposed of, or exchanged in accordance with FLPMA and other applicable Federal laws and regulations, to assure more efficient management of the public lands and reduce conflicts with other public and private landowners and facilitate consistency and logic in desert wide land-use patterns. The existing and proposed land tenure strategy for the NEMO planning area is discussed in more detail in Appendix N.

### **3.12 Regional Economy**

The largest portion of the planning area is within the eastern half of San Bernardino County with a smaller portion in eastern and southeastern Inyo County. In general, the area is sparsely populated. In the northern part of the planning area is the village of Shoshone with a population of 79, where public and emergency services are available. The community of Baker is located in the westerly portion of the planning area along Interstate 15 and has a population of 550. It services travelers along Interstate 15, particularly those traveling to Las Vegas. Just outside the southeastern part of the planning area is the City of Needles, with a population of 5,750 located near Interstate 40 on the banks of the Colorado River.

In the NEMO planning area, travel, dining and recreation services contribute a significant portion of the economy, and the service industry drives the region's economics (Dean Runyan and Associates 1998). The designation of Death Valley National Park and the new Mojave National Preserve will likely serve to increase the number of visitors and thereby further increase the service sector. Cattle grazing and mining also contribute to the local economy.

### **3.13 Amendment Specific Environment**

Alternative proposals presented in Chapter 2 of this document were screened and evaluated with regard to the 13 critical elements and other major land-use planning elements of the human environment (Council of Environmental Quality, 1980, as amended).

Elements that are present and potentially affected by the proposals are described in detail in this chapter. Elements present but not affected are addressed only briefly herein, and elements not present and not affected will not be addressed further in this document.

Elements of the human environment that were identified as likely to be affected by one or more of the alternatives are vegetation, wildlife, soil, water and air quality, wild and scenic rivers, wilderness, cultural resources and Native American values, wild horses and burros, cattle grazing, recreation resources, minerals and mining, vehicle access, other land uses and socioeconomic values. Critical elements that are present, but not substantially affected by any of the alternatives, include hazardous and solid wastes, floodplains and environmental justice. Critical elements, which are not present and therefore not affected, include prime and unique farmlands. Tables 3.10 identifies, by amendment, critical elements and other resources that are potentially affected. Taken in conjunction with the Summary of Impacts Tables at the end of Chapter 2, Table 3.11 provides an overview of the potential affects of alternatives.

Table 3.11 – Amendment Specific Resources Affected in the NEMO Planning Area

Resource	Stds & Guidelines		DT DWMA's		DT-Grazing		DT-WH&B		Amargosa Vole		T&E Plants	
	Present	Affected	Present	Affected	Present	Affected	Present	Affected	Present	Affected	Present	Affected
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Vegetation	•		•		•		•		•		•	
T&E, Special Status*	•		•		•		•		•		•	
Invasive/Noxious Weeds*	•		•		•		•		•		•	
Wetlands & Riparian*	•		•		•		•		•		•	
Existing ACECs*	•		•		•		•		•		•	
Wildlife	•		•		•		•		•		•	
T & E, Special Status*	•		•		•		•		•		•	
Existing ACECs*	•		•		•		•		•		•	
Soil-Water-Air	•		•		•		•		•		•	
Water Quality*	•		•		•		•		•		•	
Water Quantity	•		•		•		•		•		•	
Wild & Scenic Rivers*	•		•		•		•		•		•	
Wilderness* and Visual	•		•		•		•		•		•	
Cultural* -Native American*	•		•		•		•		•		•	
Existing ACECs*	•		•		•		•		•		•	
Wild Horse & Burro	•		•		•		•		•		•	
Cattle Grazing	•		•		•		•		•		•	
Recreation	•		•		•		•		•		•	
Minerals and Mining	•		•		•		•		•		•	
Vehicle Access	•		•		•		•		•		•	
Land Uses/ Utilities	•		•		•		•		•		•	
Socioeconomic	•		•		•		•		•		•	

\* Critical Elements of the Human Environment

Table 3.1 – Amendment Specific Resources Affected in the NEMO Planning Area (cont.)

Resource	Sensitive Spp-Bats		Released Lands		Greenwater		SpeedEvents		Routes of Travel		Landfill Zoning	
	Present	Affected	Present	Affected	Present	Affected	Present	Affected	Present	Affected	Present	Affected
Vegetation	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
T&E, Special Status*	•	•	•	•	•	•	•	•	•	•	•	•
Invasive/Noxious Weeds*	•	•	•	•	•	•	•	•	•	•	•	•
Wetlands & Riparian*	•	•	•	•	•	•	•	•	•	•	•	•
Existing ACECs*	•	•	•	•	•	•	•	•	•	•	•	•
Wildlife	•	•	•	•	•	•	•	•	•	•	•	•
T & E, Special Status*	•	•	•	•	•	•	•	•	•	•	•	•
Existing ACECs*	•	•	•	•	•	•	•	•	•	•	•	•
Soil-Water-Air	•	•	•	•	•	•	•	•	•	•	•	•
Water Quality*	•	•	•	•	•	•	•	•	•	•	•	•
Water Quantity	•	•	•	•	•	•	•	•	•	•	•	•
Wild & Scenic Rivers*	•	•	•	•	•	•	•	•	•	•	•	•
Wilderness* and Visual	•	•	•	•	•	•	•	•	•	•	•	•
Cultural* -Native American*	•	•	•	•	•	•	•	•	•	•	•	•
Existing ACECs*	•	•	•	•	•	•	•	•	•	•	•	•
Wild Horse & Burro	•	•	•	•	•	•	•	•	•	•	•	•
Cattle Grazing	•	•	•	•	•	•	•	•	•	•	•	•
Recreation	•	•	•	•	•	•	•	•	•	•	•	•
Minerals and Mining	•	•	•	•	•	•	•	•	•	•	•	•
Vehicle Access	•	•	•	•	•	•	•	•	•	•	•	•
Land Uses/ Utilities	•	•	•	•	•	•	•	•	•	•	•	•
Socioeconomic	•	•	•	•	•	•	•	•	•	•	•	•

\* Critical Elements of the Human Environment

### 3.13.1 Standards and Guidelines

The fundamentals of rangeland health standards and guidelines address ecological components that are affected by all uses of the public rangelands. Currently, grazing is the only use with associated resource management activities that is required to have standards of rangeland health assessed. Short and long-term implementation strategies must be developed in areas that have been determined not to be meeting rangeland health standards if grazing is determined to be a contributing factor to rangeland health conditions. These strategies are designed to improve rangeland health conditions and move rangelands toward meeting identified rangeland standards and guidelines.

The grazing regulations established a set of fallback standards and guidelines that are to be used until the State Director develops a set of regional standards and guidelines. Currently, grazing activities within the planning area utilize the fallback standards and guidelines. Assessments for most allotments in the planning area were completed in 1999. The results are summarized in Table 3.4. Range conditions in allotments are described in more detail in the next section for areas within desert tortoise DWMA's.

### 3.13.2 Desert Tortoise Management Area Boundary, Cattle Grazing and Burro Management Proposals

#### Piute-Fenner Valley

The Piute-Fenner Valley area has approximately 173,850 acres of land bounded by I-40 on the south, the California-Nevada border on the northeast, the Dead Mountains on the east and southeast, and the Mojave National Preserve on the north and west. Approximately 3,960 acres are within Multiple-Use Class (MUC) "Moderate"; 13,700 acres are within MUC "Controlled", with the remainder is within MUC "Limited", according to the CDCA Plan, as amended (1994). Multiple-use class applies to the federal lands within these areas under BLM jurisdiction. In addition, 34 acres have been segregated from the public land laws<sup>9</sup>.

**Vegetation and Related Natural Values:** Natural vegetation communities are primarily creosote bush series and creosote bush - white bursage series. Less common communities include big galleta grass series, Indian rice grass series, and shadscale series. The valley is dissected by washes of various sizes. The larger washes, such as Piute Wash, Woods Wash, and Watson Wash drain the area from north to south. No special status plants occur in this area.

**Wildlife Values:** Wildlife species include a variety of animals typical of creosote bush flats and washes in the Mojave Desert. Common species include the following:

**Mammals:** desert shrew, California myotis, western pipistrelle, big brown bat, desert cottontail, black-tailed hare, little pocket mouse, desert kangaroo rat, Merriam's kangaroo rat, deer mouse, kit fox, coyote, badger;

**Birds:** red-tailed hawk, golden eagle, prairie falcon, Gambel's quail, mourning dove, poor-will, Bendire's thrasher, cactus wren, verdin, black-throated sparrow, Brewer's sparrow;

**Reptiles:** desert iguana, zebra-tailed lizard, long-nosed leopard lizard, side-blotched lizard, desert horned lizard, western whiptail, glossy snake, gopher snake, western shovel-nosed snake, sidewinder, Mojave rattlesnake.

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<sup>9</sup> Notice R-236 published in the Federal Register on November 19, 1966.

*Special Status Species*

**Desert Tortoise:** The Piute-Fenner Valley area is considered the most critical geographical unit of desert tortoise habitat on public lands in the East Mojave. The valleys contain good to excellent quality desert tortoise habitat. They provide the central connection in the largest contiguous habitat unit of the East Mojave population, which stretches from the southeastern portion of the Mojave National Preserve through Fenner Valley and Piute Valley into Nevada. An ACEC has been established in Nevada from the state line to the northern extent of the range of the East Mojave recovery unit (See Volume II, Map 2-7 of the Proposed Las Vegas Resource Management Plan and Final Environmental Impact Statement, Las Vegas Field Office, May 1998).

**Wilderness Values:** The eastern boundary of the Piute-Fenner Valley area bisects the Dead Mountains Wilderness. The western 13,700 acres of the total of 47,100 acres of the wilderness are within the Piute-Fenner Valley. This corresponds to the wilderness acreage that is Category I and critical desert tortoise habitat. The Dead Mountains Wilderness and its values are described in detail in the *BLM Wilderness Booklet - October 1994*, available for review at all Bureau field offices within the California Desert District.

**Cultural and Native American Values:** The Piute-Fenner Valley area has religious and secular areas of importance within the physical boundaries recognized by affected North American tribes. Prehistoric cultural resources include permanent and temporary habitation sites, rock shelters, milling stations, lithic manufacture sites, trails, rock alignments, and rock art sites. Historic resources within the area include historic mining activity, portions of the Mojave Road, U.S. Route 66, the AT&SF railroad, and the Von Schmidt boundary. The Fort Piute National Historic District and an associated petroglyph area are immediately east of the Piute-Fenner Valley area in the Mojave National Preserve.

**Wild Horse and Burro Values:** The Piute-Fenner Valley area overlaps approximately 26,100 acres (15%) of the Dead Mountain Herd Area, which has a “no retain burros” designation in the CDCA Plan and a management level of 0 burros. It is addressed in the Colorado River HMA Plan. This herd area is now almost entirely within designated wilderness. The most recent census for the Dead Mountains Herd Area is approximately 24 burros. Consistent with the CDCA Plan, burro removals shall continue to move the population numbers closer to zero burros.

**Cattle Grazing and Allotments:** Some of the public lands in this area is part of public rangelands with permitted cattle grazing authorized, generally at moderate levels. Piute Valley is an ephemeral allotment with no designated AUM permitted to graze at any particular time. The level of grazing is based on seasonal weather and forage conditions, if a permittee requests use. This allotment has been infrequently used over the past 20 years.

**Linear Utility Corridors:** Portions of two major utility corridors transverse the Piute-Fenner Valley area: Corridors R and E. Corridor R is an east-west corridor, which follows and includes lands adjacent to I-40, the southern boundary of Piute-Fenner. This corridor contains a telephone line.

Corridor E is a three-mile-wide north-south corridor that sits at the boundary between the Mojave National Preserve and the western boundary of the Piute-Fenner area, and includes lands in the westernmost portion of the valley. Major utilities located in this corridor include two 230KV alternating current transmission lines and one telephone line.

**Recreation Activities and Vehicle Access:** Primary uses include low-level, widely dispersed motorized recreational activities. The area is primarily a touring through-area rather than a destination for the general public, as it provides a gateway from the east to the Mojave National Preserve. Other recreational uses in the area include hunting, recreational shooting, and rock hounding. Equestrian trail rides and cattle drives have been authorized in the Piute-Fenner Valley area. .

**Mineral Potential and Historic and Current Mining:** Within the Piute-Fenner Valley area, there are nearly 2,700 acres having high potential for an open pit heap leach operation.

**Other Land Uses:** Other than major transportation and utility corridors on the southern and eastern boundary, the area contains few developments. The most frequent developments are vehicle access routes for residences and other facilities on private lands, connector utility lines, rural dumps, and telecommunications sites. The telecommunications sites are primarily along I-40, and U.S. 95. The dumps tend to be small areas for household items and appliances created by rural residents or campers. No permitted landfills are located within the Piute-Fenner area. Although numerous, all of these developments are small in size.

**Land Tenure:** Approximately 139,000 acres (80%) of the Piute-Fenner Valley area are Bureau-managed public lands. Remaining lands are private (approximately 16%) and state-owned (4%), with most private lands owned by two large corporations. These private lands were originally granted when the transcontinental railroad was built. Catellus Development Corporation is affiliated with the railroad, and is responsible for the largest block of private holdings.

Development potential here is relatively higher than in the other areas of the planning area because of the existing checkerboard land ownership pattern. Catellus is currently actively seeking ways to develop lands, either on existing parcels, or by exchanging them for parcels in areas more favorable for development. The checkerboard land-ownership pattern is a major basis for potential threats to desert tortoise. Currently no coordinated conservation planning exists across jurisdictional boundaries. Other specific land-use conflicts may also arise from adjacent agencies and landowners pursuing different and potentially incompatible goals, or having inadvertent indirect impacts such as from dumping that attracts ravens and other tortoise predators. Agricultural development is also an issue.

A large-scale land exchange agreement between the BLM and Catellus was developed similar in scope and rationale to the West Mojave Land Tenure Adjustment Project Agreement approved in 1991. In addition to desert tortoise critical habitat, this exchange agreement included wilderness and other lands associated with the California Desert Protection Act of 1994. In the planning area, a total of about 322,500 acres were added to the BLM public land base as a result of these exchanges. This included approximately 98,000 acres of high value desert tortoise habitat, with large portion located in the Piute Fenner Valley area.

### **Ivanpah Valley**

The Ivanpah Valley area has approximately 37,280 acres of land bounded by the Mojave National Preserve at Nipton Road on the south and southwest, a power line road parallel to and south of I-15 across Ivanpah Dry Lake on the northwest and north, and the Nevada border on the east. Permitted activities on the lakebed consist of utility maintenance, international air sailing events, and ancillary monitoring facilities associated with the Molycorp Mine. Development potential is considered high for the northern portion of the lakebed outside of the Ivanpah Valley area, particularly adjacent to existing casino developments.

**Vegetation and Related Natural Values:** Natural vegetation communities are primarily Creosote bush series and mixed saltbush series on the basin floor. Other less common communities include big galleta series, Indian rice grass series, four-wing saltbush series, shadscale series, winter fat series, mesquite series and greasewood series. No special status plants occur in the area.

**Other Wildlife Values:** Wildlife species include a variety of animals typical of creosote bush flats and playas in the Mojave Desert. Common species are similar to those found in Piute-Fenner Valley. Additional common species associated with Ivanpah Dry Lake include horned lark and various shorebirds.

*Special Status Species*

**Desert Tortoise:** The area is currently designated BLM Category I desert tortoise habitat and the southern two-thirds is also designated critical habitat. The non-lakebed portion of the valley is excellent quality desert tortoise habitat, with some of the highest population densities in the East Mojave. Desert tortoise also occupies the southern portion of the lakebed, but the habitat values are lower.

**Cultural and Native American Values:** Ivanpah Valley is Class L to protect identified values, to include cultural values and Native American concerns. Recorded site types in the area include village, temporary camps, lithic scatters, and many historic sites. Historic period sites include portions of the Von Schmidt Boundary and Old Traction Road. The southern shore of Ivanpah Lake has been previously nominated to the National Register of Historic Places.

**Cattle Grazing and Allotments:** The public lands in Ivanpah Valley are also public rangelands with permitted cattle grazing, generally at moderate levels. The entire area is in three perennial/ephemeral allotments with current preference of 1630 AUMs, which allows 165 cattle to graze yearlong in the allotments.

**Linear Utility Corridors:** A small portion of utility corridor BB is within the northern boundary of the Ivanpah Valley area, which is formed by the existing Southern California Edison utility maintenance road parallel to I-15. Corridor BB is an east-west corridor, three-miles wide, which follows and includes lands adjacent to I-15. Most of the utilities have been sited across Ivanpah Dry Lake bed, which is immediately adjacent and generally to the north of the Ivanpah Valley. Major utilities located in this corridor include one 131 KV Alternating Current Transmission Line (Southern Cal Edison), two gas pipelines and two fiber optic cables. This corridor also includes Interstate 15. The southernmost main utility maintenance road parallel to I-15 forms the proposed boundary of the Ivanpah DWMA.

**Recreation Activities and Vehicle Access:** Organized non-motorized recreation occurs on Ivanpah Dry Lake, including land sailing, kite bugging, long distance archery. Some of the land sailing competitions are considered world-class events. The lakebed is closed except by permit, to prevent damage from other activities that may interfere with international wind-dependent events, which require a very smooth surface. South of the dry lakebed, the area is primarily used for very low-level, widely dispersed motorized recreational activities. Casual public users primarily tour through this area rather than having particular destinations in mind. Since the area is adjacent to and north of the Mojave National Preserve, the area north of Nipton Road provides dispersed camping areas for some MNP visitors that would prefer not to camp in designated camping areas. Other recreational uses in the area include hunting, recreational shooting, and rock hounding. Occasionally, organized, permitted, motorized or non-motorized touring activities are authorized in the area.

**Mineral Potential and Historic and Current Mining:** There is a portion of the 5,000-plus acres on Ivanpah Dry Lake having moderate potential for development of salt resources located south of the second power line maintenance road, that is within the Ivanpah Valley area. It has a known sodium chloride body at 2,000 feet depth.

**Land Tenure:** Approximately 94% (35,200 acres) of the total 37,280 acres of the Ivanpah Valley area are public lands, with the remainder in private ownership.

### **Northern Ivanpah Valley**

The Northern Ivanpah Valley area has approximately 29,110 acres of land bounded by I-15 on the south, the California-Nevada border on the east, Mesquite Valley on the north, and the Clark Mountains on the west. The easternmost portion of the valley includes extensive private land, and is undergoing substantial development at the Nevada border. This development includes casinos and associated hotels, restaurants and other tourist attractions, including a nine-hole golf course. Primary uses in the Northern Ivanpah Valley area include non-competitive land sailing on the west side of Ivanpah Dry Lake and organized, permitted recreational activities including equestrian trail rides, cattle drives, and dual sport rides.

**Vegetation and Related Natural Values:** Same as Ivanpah Valley.

**Other Wildlife Values:** Same as Ivanpah Valley.

#### ***Special Status Species***

**Desert Tortoise:** The area is currently designated BLM Category I desert tortoise habitat, but it was not included in designated desert tortoise critical habitat by USFWS. Most of the valley is considered good quality desert tortoise habitat, except at or immediately adjacent to areas that have been developed, such as near the state line or I-15.

**Cultural and Native American Values:** Northern Ivanpah Valley contains numerous sites and specific areas that have been identified as important to Native American tribes. An extensive number of prehistoric sites (e.g., rock art, temporary habitation sites, trails, roasting pits, lithic manufacturing sites and rock shelters) and many historic period sites (e.g., Ivanpah town site, mills, mines, shafts, Von Schmidt Boundary and the Old Traction Road) have been recorded within the Northern Ivanpah Valley area.

**Wild Horse and Burro:** The Northern Ivanpah Valley area includes two wild burro concentration areas within the Clark Mountain Herd Area. Although this part of the Herd Area is not designated for the management of burros in the CDCA Plan and associated East Mojave Herd Management Area Plan, a population of burros has been occupying this range since prior to 1971. There have been periodic removals of burros and currently an estimated population of 126 burros occupies this portion of the herd area. The rangeland health assessment performed in 1999 determined that:

- The Clark Mountain Grazing Allotment is in healthy condition,
- Current grazing levels are appropriate for site conditions,
- Management is currently resulting in a sustained yield of resources.

**Cattle Grazing and Allotments:** The Northern Ivanpah Valley area is also within public rangelands with permitted cattle grazing authorized. The Clark Mountain allotment is perennial/ephemeral with current preference of 1,303 AUMs, which allows 132 cattle to graze yearlong in the allotment.

**Linear Utility Corridors:** Two utility corridors transverse the Northern Ivanpah area. One of these is corridor BB, which is an east-west corridor that follows and includes lands adjacent to I-15. In this area, corridor BB splits in two, then rejoins at the California/Nevada state line. Two almost parallel portions of corridor follow the southern boundary of the Northern Ivanpah Valley area, which is I-15. Major utilities located in this corridor are two 131 KV transmission lines, two gas pipelines and two fiber optic cables. Utility Corridor D (the Boulder Corridor) is within the Northern Ivanpah area on its northern boundary, and most of the corridor width would be in the area, except for a slim corridor north of the main corridor road and south of designated wilderness. Major utilities located in this corridor include one 287 KV and two 500 KV alternating current transmission lines, one 500 KV direct current transmission line, one 40 inch gas pipeline and two fiber optic lines.

**Recreation Activities:** Primary uses on public lands include low-level, widely dispersed motorized recreational activities. Casual public users primarily tour through this area rather than having particular destinations in mind, as it provides a gateway from the east to the Mojave National Preserve. Other recreational uses in the area include hunting, recreational shooting, land sailing, horseback riding and rock hounding. Occasionally, organized, motorized or non-motorized touring activities are authorized in the area. The Barstow-to-Vegas competitive racecourse forms the northern boundary of the Northern Ivanpah Valley area and some of the routes for past B-V events are evident within the Northern Ivanpah area.

**Other Major Land Uses:** There is some development associated with the casino/hotel complexes located at Primm Nevada (Stateline) including a golf course on the California/Nevada border.

**Land Tenure:** Approximately 94 percent (27,280 acres) of the 29,110 acres of the Northern Ivanpah Valley area are public lands.

### **Shadow Valley**

The Shadow Valley area has approximately 114,060 acres of land bounded by the Kingston Range on the north, I-15 on the south, the Clark Mountains on the east, and the Shadow Mountains on the west. Approximately 38,753 acres are within an area zoned as MUC “Moderate”, 31,000 acres are within MUC “Controlled”, and 44,307 acres are within MUC “Limited”, according to the CDCA Plan, as amended. Multiple-use classes apply to federal lands under BLM jurisdiction only. In addition, 380 acres are segregated from the public land laws. Very little development is occurring on public lands except within transportation and utility corridors.

**Vegetation and Related Natural Values:** Natural communities are primarily creosote bush series and Joshua tree series. Other less common communities include catclaw acacia series, creosote bush - white bursage series, and hop-sage series. No special status plants occur in this area.

**Wildlife Values:** Wildlife species include a variety of animals typical of creosote bush series in the Mojave Desert. Common species are similar to those found in Piute-Fenner Valley. Additional common species associated with Joshua tree woodland include common flicker, great-horned owl, desert spiny lizard, cactus mouse, and desert woodrat.

#### ***Special Status Species***

**Desert Tortoise:** The area is currently designated as BLM Category I desert tortoise habitat and USFWS critical habitat. The valley has good quality desert tortoise habitat, but some signs of shell disease have been observed in the population in recent years. The Clark Mountain ACEC/HMP Plan discussed below has measures that address desert tortoise habitat issues.

**Wilderness Values:** Approximately 31,000 acres of the Shadow Valley area are located in four designated wilderness areas. The vast majority of the wilderness encompasses the entire Shadow Valley area north of the Boulder utility corridor. This consists of portions of three contiguous, adjacent designated wilderness areas:

1. Approximately 20,700 acres in the southern and southeastern portion of the Kingston Range Wilderness,
2. Approximately 3,000 acres of the southern portion of the North Mesquite Mountains Wilderness, and
3. Approximately 5,600 acres of the southwestern portion of the Mesquite Wilderness.

Approximately 1,600 acres of the westernmost portion of the Shadow Valley area overlap a portion of the Hollow Hills Wilderness. This corresponds to the wilderness acreage that is Category I and critical desert tortoise habitat. For more detailed descriptions of the four wilderness areas and their values, see BLM Booklet "Wilderness Areas, Maps and Information - Oct 94", available for review at all Bureau field offices within the California Desert District.

**Cultural and Native American Values:** Portions of the Shadow Valley area have extremely important cultural values. The resources are generally concentrated around springs, lake margins and within the Turquoise Mountain vicinity (aboriginal turquoise mines). Mesquite Valley is currently used as a seasonal collection area by Native American peoples.

The Halloran Springs ACEC is located within the Shadow Valley area. In addition, a few small areas of high cultural sensitivity are scattered throughout the area including zones of prehistoric and historic activity. The historic sites are clustered in the vicinity of permanent water sources or near valuable ore deposits. Prehistoric values are associated with water and located near natural resources.

**Wild Horse and Burro Grazing:** The Shadow Valley area includes wild burro concentration areas and range, and the area overlaps approximately 75,350 acres of one herd management area that is currently managed for retention of burros. Burro grazing occurring in this area is the most intense within desert tortoise habitat in the East Mojave. The Clark Mountain Herd Management Area (HMA) currently has an Appropriate Management Level of 44 burros, a target number, which was set in the CDCA Plan. The population in the HMA was estimated to be 365 burros at the time of adoption of the CDCA Plan in 1980. Since 1984, there has been a general downward trend in the population. The area is managed under the East Mojave HMA Plan, signed in 1984. After several years of removal and adoption, population levels slowly decreased in the early 1990s. Populations have leveled off in recent years, peaking at about 250 earlier in 1999, prior to the latest removals. The latest census figures for Shadow Valley approximate the herd at about 150. Additional removals are planned, and the AML is expected within three to five years.

**Cattle Grazing and Allotments:** The public lands in this area are part of public rangelands with permitted cattle grazing authorized, generally at moderate levels (see Table 2.5). Cattle grazing in Shadow Valley is the most intense within desert tortoise habitat in the East Mojave. Approximately 104,800 acres of the Valley Wells Allotment is in the Shadow Valley area critical habitat.

In the 1980 CDCA Plan, the Valley Wells allotment was rated to be in "fair" range condition. A follow-up evaluation was conducted during the spring of 1999. To date, the range assessment of Valley Wells has revealed some high utilization on key forage species. The native species component of the fallback standards and fallback guidelines is being minimally met due to the high burro concentration within Shadow Valley. Shadow Valley is the highest area of concentration for cattle and burros in the allotment, due to accessible water sources and available forage.

A herd management area (HMA) occurs in part of the allotment. In some areas of Shadow Valley, forage use exceeds 40%. Presently the allotment is meeting all standards, but a portion of the allotment, specifically Shadow Valley, is in a downward trend. The continuation of cattle and burro grazing at current levels within Shadow Valley would eventually cause the allotment to fail the native species component of the fallback standards and the fallback guidelines. Specific parameters used in the Valley Wells Allotment include cattle water troughs that are managed to encourage summer use of higher elevations outside of Shadow Valley.

**Linear Utility Corridors:** Utility Corridor D (the Boulder Corridor) transverses the Shadow Valley area, running roughly parallel to and north of I-15. Major utilities located in this corridor are one 287 KV and two 500 KV alternating current transmission lines, one 500 KV direct current transmission line, one 40 inch gas pipeline and two fiber optic lines.

**Recreation Activities:** Primary uses include low-level, widely dispersed motorized recreational activities. Casual public users primarily tour through this area rather than having particular destinations in mind. The exception is the Turquoise Mountain area, which is a relatively popular visitation area of rock hounds and others. Recreational uses in the area include hunting, camping, wilderness hiking, and birding. Occasionally, organized motorized or non-motorized touring activities are authorized in the area. The Barstow-to-Vegas competitive racecourse transverses the Shadow Valley area through the Boulder Corridor and around the Turquoise Mountain area. Various old routes for the B-to-V events are evident through the area, some within the designated corridor and some outside of it.

**Mineral Potential and Historic and Current Mining:** The westernmost portion of the area may have potential for rare earth metals. Historic mining has occurred in the Turquoise Mountains in the 10,000 acres accessed by and east of Turquoise Mountain Road.

**Land Tenure:** Approximately 94 percent (106,960 acres) of the total 114,060 acres of land area are public lands. Most of the non-federal lands consist of the two sections originally granted to the State for schools, with a few additional private parcels.

### **Pahrump Valley**

The Pahrump Valley is bounded by the Nopah Range on the west and northwest, the Nevada State line on the east, the town of Pahrump on the northeast, and the Inyo/San Bernardino county line on the south. Scattered development is occurring on public lands associated with the dispersed rural population in the valley. This area is one of the less frequented gateways to Death Valley National Park and other recreational destinations from Nevada, and is also an area used for dispersed recreation, with occasional permitted OHV recreational activities.

**Vegetation and Related Natural Values:** Natural communities are primarily creosote bush series. Other less common communities include creosote bush - white bursage series, Joshua tree series, Indian rice grass series, greasewood series, mesquite series, and mixed saltbush series on the basin floor. No special status plants occur in this area.

**Wildlife Values:** Wildlife species include a variety of animals typical of creosote bush series in the Mojave Desert. Common species are similar to those found in Piute-Fenner Valley. Additional common species associated within Pahrump Dry Lake include horned lark, various shorebirds, and the Great Basin spade foot toad.

### *Special Status Species*

**Desert Tortoise:** This area includes approximately 172,000 acres of BLM Category III desert tortoise habitat. The area was not included as USFWS critical habitat. The valley has fair quality desert tortoise habitat. Approximately 146,200 acres of the total desert tortoise habitat are on public lands. Almost 15% is private or state land. Category III desert tortoise habitat includes almost 15,000 acres of designated wilderness. There are about 124,000 acres of MUC “Limited”, just over 32,000 acres of MUC “Moderate” and 1,200 acres of “Unclassified” lands.

**Cultural and Native American Values:** High and very high sensitive cultural values occur within Panrump Valley. The whole array of site types, from simple, to complex are present. Some of the sites are associated with presumed lacustrine adaptation. A portion of the planning unit includes areas traditionally used by federally recognized Native American tribes. Permanent village sites and temporary habitation sites are also located within this region. The Old Traction Road crosses the area.

**Wild Horse and Burro Grazing:** The Pahrump Valley area overlaps a small portion of the easternmost extent of the Chicago Valley Herd Management Area, which has an appropriate management level of 28 horses and 28 burros. The current horse herd has four animals and there are seven burros in the HMA. Forage is often supplemented by feed offered by area residents, and forage use throughout the HMA is generally low.

**Cattle Grazing and Allotments:** The public lands are also public rangelands with permitted cattle grazing authorized. The Pahrump Valley allotment is perennial/ephemeral with current preference of 353 AUMs, which allows 175 cattle to graze from February 15<sup>th</sup> to February 28<sup>th</sup> and 175 head from March 1 to April 15 in the allotment.

**Recreation Activities and Vehicle Access:** Primary uses on public lands include low-level, dispersed motorized recreational activities. Casual public users primarily tour through this area. Other recreation in the area includes hunting, land sailing and birding. Occasionally, organized, permitted, motorized or non-motorized touring activities are authorized.

**Mineral Potential and Historic and Current Mining:** There are approximately 23,000 acres having potential for the occurrence of metallic mineral resources. Within critical habitat for the desert tortoise, 640 acres have potential for the occurrence of industrial minerals, and 380 acres have the potential for the occurrence of construction materials. There are nearly 50,000 acres having potential value for oil and gas (in the overthrust belt) in desert tortoise habitat.

### **3.13.3 Amargosa Vole ACEC Proposal**

**Biological:** Critical habitat for the Amargosa Vole has been designated (Federal Register Volume 49, No. 222, 1984). It includes approximately 2,440 acres of public land located south of Shoshone, along the Amargosa River, primarily within the Grimshaw Lake Natural Area ACEC located north of Tecopa, California, and the Amargosa Canyon Natural Area located south of Tecopa (see Chapter 8, Figures 9a and b and Appendix H). Additional public lands, outside the ACEC are included in this critical habitat unit and are located north and east of the Grimshaw Lake Natural Area ACEC. This critical habitat designation also encompasses private lands located east of Grimshaw Lake Natural Area and state lands located between the Amargosa Canyon Natural Area and Tecopa. Public and private lands between these two ACECs form a critical link for Amargosa vole between the two natural areas. Lands north of the Grimshaw Lake Natural Area ACEC continue the riparian habitat in the ACEC and are good quality vole habitat.

**Special Status Plants and Animals:** The China Ranch Canyon Area is a mile wide and three miles long stretch of public lands located adjacent and east of the existing Amargosa Canyon Natural Area ACEC. This canyon is a tributary of the larger Amargosa River and supports little water flow except at springs and following heavy precipitation events. The riparian, wetland and spring habitats present within this canyon are suspected to support Amargosa voles, Amargosa southern pocket gophers (*Thomomys umbrinus*), several species of endemic springsnails (*Pyrgulopsis* spp.), as well as a host of other riparian obligate and endemic species.

The type locality for the Amargosa vole has been identified as being near a small spring, located adjacent to the Amargosa River in the vicinity of Shoshone, California. It is unclear whether or not the species still occurs in this portion of the Amargosa River, though the riparian and adjacent hill terrain are known to support several endemic species, particularly rare invertebrates such as the Shoshone Cave whip-scorpion (*Trithyreus shoshonensis*) and Shoshone Cave millipede (*Colactis briggsi*). To protect the former species, the Shoshone Cave HMP Area was designated in the CDCA Plan and an HMP (BLM and CDFG 1982) was prepared.

Another Amargosa River endemic species, the Tecopa pupfish (*Cyprinodon nevadensis calidae*), once occurred in this vicinity but is considered extinct due to human alteration of associated spring habitat. A third Amargosa River endemic, the Shoshone pupfish (*Cyprinodon nevadensis shoshone*), is known only from Shoshone Spring located on private lands in the town of Shoshone. The continued existence of this species is precarious, as its sole habitat area is threatened by human alteration, including reduced instream water flow, pollution, exotic plants and competition with the introduced mosquito fish (*Gambusia affinis*). A fourth Amargosa River endemic species, the rare Amargosa pocket gopher (*Thomomys bottae amargosae*) is also known from the Shoshone-Tecopa river corridor.

Portions of the Amargosa River between Shoshone and Grimshaw Lake at Tecopa Hot Springs, California, support varying stand densities of a productive mesquite (*Prosopis* spp.) bosque-saltgrass meadow-wetland complex important to Amargosa pupfish (*Cyprinodon nevadensis amargosae*), numerous neotropical migratory bird species, a variety of desert bats, and wild horses. In the Amargosa River vicinity of Shoshone, a considerable amount of this habitat is located on private lands. Only small pockets of this habitat occur on public lands in this river segment, separated by barren stream segments.

Introduced animals, particularly domestic cats (*Felis catus*) in the vicinity of Tecopa Hot Springs, and wild horses (*Equus caballus*) in the vicinity of Death Valley Junction, as well as the spread of exotic saltcedar along the river, are also an ongoing concern in their relation to listed species, and the integrity of riparian and wetland habitats. An exotic plant removal and riparian restoration program has been initiated by the BLM in both the Amargosa Canyon and China Ranch Wash areas of the Amargosa River, and is anticipated to benefit Amargosa vole, neotropical migratory bird species, including the state and federally-listed and endangered least Bell's vireo (*Vireo bellii pusillus*), the state listed endangered western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), numerous bat species and a host of other riparian obligate species.

**Water:** The Amargosa River is the focal hydrologic system of the Northern and Eastern Mojave (NEMO) Planning area. The hydrologic systems of the southern Great Basin and northern Mojave Desert are generally characterized by deep water tables. They are also considered primarily closed groundwater basins.

One of only two large rivers in the Mojave Desert, the free-flowing Amargosa, is largely subterranean. It begins its southerly, largely underground flow near Beatty, Nevada. A 10 mile segment of the river supports shallow, perennial water flow near Oasis Valley in Nevada, but this “bitter water” river then generally flows in a sub-surface fashion as it bisects the remainder of the Amargosa Desert in Nevada. It flows adjacent to the California and Nevada state line, and then southerly through the towns of Death Valley Junction, Shoshone and Tecopa, in California. It crosses State Highway 127 and terminates in the lowest elevation area in the United States; Badwater Basin within Death Valley National Park (DVNP).

Water runoff from the Bullfrog Hills, Yucca Mountain, Shoshone and Spring Mountains in Nevada, contributes to Amargosa River water flow in California. The Spring Mountains provide a large amount of runoff. The Lower Carson Slough tributary of the Amargosa drains Ash Meadows and the southern portion of the Amargosa Desert in Nevada. These watersheds contribute to a largely subterranean Amargosa River at Franklin Playa in California. Several mountain ranges and alluvial basins in California, particularly Eagle Mountain and the Resting Spring Mountain Range in the upper California reaches of the river, the Nopah and Kingston Mountain Ranges, as well as California Valley, progressively add to the flow of the central Amargosa River. Major tributaries include Lower Carson Slough in the northern reach of the river, China Ranch Wash in the central reach, and Salt Creek in the southern reach of the river. Drainage from the Kingston Range to the east-southeast and from Ash Meadows Wildlife Reserve on the eastern side of Pahrump Valley in Nevada funnels into this narrow, steep canyon in route to the Amargosa ACEC and Grimshaw Lake ACEC.

In California, the Amargosa flows extensively underground, surfacing perennially at only two areas (Shoshone-Tecopa hot springs and Tecopa townsite-Sperry siding). Ephemeral surface flows and salt flats are common in the upper reaches of the river. Shallow perennial water flow and clay-hole ponding are common in the Shoshone Reach. Perennial ponding and ephemeral mudflats are common in the Grimshaw Reach of the river. A substantial perennial water flow begins in the Amargosa Canyon Reach, which continues to the Sperry siding of the abandoned Tonapah & Tidewater Railroad. Between Sperry siding and the eastern boundary of Death Valley National Park at State Highway 127, water flows over the years have alternated between intermittent and perennial flows, with ponding occurring in ephemeral years. Shallow, perennial flows beneath State Highway 127 have been recorded as the norm in recent years, following largely ephemeral flows in the early 1990's. These ephemeral and/or perennial surface water flows contribute to the subterranean flow, which terminates in Badwater Basin.

Lands along the river in California are largely in federal ownership. Approximately 53 riverine miles are public lands managed by the BLM and about 45 additional riverine miles occur within DVNP. Substantial private ownership (3.5 riverine miles) occurs along the river in the vicinity of Shoshone, both north and south of State Highway 178. A degree of river diversion and modification has also occurred on the north (Shoshone) side of State Highway 178. A total of 2.5 riverine miles are also privately owned in the Grimshaw Lake reach of the river, as is a total of 2.5 riverine miles in the Amargosa Canyon segment.

**Cultural:** Sensitive historic (principally the Tonapah and Tidewater Railroad) and prehistoric cultural resources (temporary camps and possible village sites) occur in the identified habitat, both within and outside of the existing Amargosa Canyon and Grimshaw Lake Natural Area ACECs. Significant cultural resources have been identified primarily associated with nearby springs and riparian areas, as well as Native American seasonal collection and traditional use areas. Recently acquired lands south of China Ranch include prehistoric and historic resources including milling sites, lithic scatter, trails, and a historic structure built in 1903. The habitat is currently managed under MUC L guidelines. Lands identified for exchange out of Federal ownership contain a known prehistoric campsite, historic period mine and house and an identified twentieth century grave.

The Tonapah & Tidewater railroad, abandoned and dismantled in the 1940's, parallels the river for a majority of its length in California. This railroad once crossed the river on wooden bridges at several sites in California. Three historic crossings occurred in the high water flow segment of the river between Shoshone and Sperry siding. A pedestrian trail now exists on the T&T railroad, which is breached in many areas between Shoshone and Sperry siding. Few roads are adjacent to the river in the Shoshone to Sperry siding segment, although State Highway 178, Tecopa Hot Springs Road and Old Spanish Trail Highway cross the river, over a 21 mile segment of the river. Several roads parallel and cross the river in the Sperry siding to State Highway 127. An access road to the popular Dumont Dunes Off-highway Vehicle Area parallels the river in this segment for four miles, crossing the river at the entrance to the open area.

**Recreation:** Both the Amargosa Canyon and Grimshaw Lake Natural Area ACECs are popular hiking and nature appreciation areas, as is China Ranch Wash. China Ranch is a popular tourist attraction at the west end of the canyon, surrounded by the Amargosa ACEC, and includes a date farm and trailed, riparian area. Both ACECs have been designated as national Watchable Wildlife Sites and are listed on numerous maps as well as in several guidebooks. No active livestock or mining operations occur within these areas. Motor vehicles are prohibited within these natural areas, with the exception of parking areas located at major trailheads. Fire activity is fairly low, and resource advisors address fire suppression activities.

Tecopa is one of a few towns in the northern half of the planning area, and has a small permanent population and a larger seasonal population during the winter months. Located immediately north of Tecopa are hot springs that support several resorts and campgrounds. The larger town of Shoshone is located north of Tecopa. Shoshone is located at the junction of State Highways 127 and 178. Its tourist attractions include its own hot springs located within the town and its location as the eastern gateway to Death Valley National Park.

**Mineral Potential and Historic and Current Mining:** In 1967 an exploratory water well was drilled north of Tecopa. Strong artesian flow occurs from this well near the boundary of the existing and proposed ACEC extension in SW1/4 Section 28, T.21 N., R.7 E. and just north of Tecopa's hot springs. The water continues to rise to the surface and flow into the marsh. In 1970 the temperature was 100 degrees at the surface and flowing at 150 to 200 gallons per minute.

The Inyo County Transportation Department produces between 500 and 600 tons per year of sand and gravel from a borrow pit within the west boundary of the study area and just northeast of Furnace Creek Road in NW1/4 Section 29, T.21 N., R. 7 E. There are no other current mining operations in the Amargosa area.

The area has moderate potential for the occurrence of saline, sodium borate deposits based on past production of borax from a spring from 1882 to 1890. The potential for production of borates in this area within the next 25 years is probably low, based on a lack of production over the last 100 years.

The entire planning area in the vicinity of Tecopa is within an area classified by BLM as having valuable prospect for geothermal resources. The potential for future production of geothermal energy within the planning area boundaries is probably low. Future development of geothermal resources would probably be limited to such things as the heating of bathhouses or buildings.

Southern Clay Products company has applied for a mineral patent on about 225 acres in Section 31, T.27 N., R.5 E, and Section 6, T.26 N., R.5 E. in the Upper Amargosa portion of the planning area. Hectorite clay at this site has been mined since 1974 and occurs in a shallow, elongated deposit oriented northwest to southeast-situated southwest of the Amargosa River drainage. In Section 31, the patent application block comes within 700 feet of the Amargosa River and in Section 6 it comes within 1,300 feet. Southern Clay Products has two open pit mines for hectorite clay within the area and is currently mining at a rate of about 5,000 tons per year. This area is within lands classified by BLM as a Potential Geothermal Resource Area by BLM, but the potential for occurrence is difficult to assess because there are no data on ground water temperatures. Therefore, the potential for development is also difficult to assess.

#### 3.13.4 Lower Carson Slough T&E Plants

**Vegetation:** Vegetation is sparse throughout the Lower Carson Slough drainage, where a salt-encrusted alkaline playa dominates. However, the state and federally-listed endangered Amargosa niterwort, the federally-listed threatened Ash Meadows gumplant, the federally-listed threatened spring-loving centaury, the BLM designated sensitive plant Tecopa birdsbeak (*Cordylanthus tecopensis*), iodine weed (*Suaeda torreyana ramosissima*), and saltgrass (*Distichilis spicata*) occur in patches throughout the drainage. The Lower Carson Slough drainage area bisected by Ash Meadows Road has been designated as the Salt and Brackish Water Marsh Unusual Plant Assemblage (UPA) in the CDCA Plan.

Numerous special status plant surveys have been conducted in the Lower Carson Slough, including a 1993 survey undertaken by Death Valley National Park personnel. Surveys from the 1970s were used by the USFWS in 1995 to delineate critical habitats for two listed plant species, Amargosa niterwort (1,200 acres) and Ash Meadows gumplant. There was a total of 1,968 acres of critical habitat, including 340 acres in California and 1,628 acres in Nevada (Federal Register Volume 50, No. 97, 1985). The latter critical habitat unit is situated on the California-Nevada border, 2.5 miles north of Ash Meadows Road. The former critical habitat unit is situated on both sides of Ash Meadows Road (See Chapter 8, Figure 10).

The critical habitat designation for Amargosa niterwort and Ash Meadows gumplant lists depletion of local and source water aquifers, road construction and maintenance, trampling by wild horses, mining and off-road vehicle activity as the primary threats to Carson Slough plants and associated habitat. Amargosa niterwort plants and several acres of associated playa habitat were damaged within the critical habitat unit in the course of trespass activities and legal mining claim marker installation.

**Mineral Development:** Mineral exploration in the vicinity of Franklin Playa and in the Lower Carson Slough area north of Ash Meadows Road has been ongoing for several years, though no large-scale mining operation has been proposed for the area. The area is dotted with prospect pits clays, zeolites, borates or sodium minerals. The nearest recently active mine is an open pit mine for zeolite located one and a quarter miles east of the southeast corner of Carson Slough.

The Lower Carson Slough area is within lands classified as a Potential Geothermal Resource Area by BLM. The potential for the occurrence of geothermal resources in this area is difficult to assess because there is no data on ground water temperatures. The subject ACEC proposal is also within lands classified by BLM as prospectively valuable for sodium resources, based on historical prospecting permits for sodium minerals on Alkali Flat three miles to the south.

**Wild Horse and Burro:** The Chicago Valley wild horse herd uses an artesian spring in the center of Franklin Playa, and regularly traverses the playa between Death Valley Junction and Eagle Mountain.

**Land Use and Development:** The town of Death Valley Junction, one of the main gateways to DVNP, currently supports only a handful of residents, although the town is an occasional stop for tourists visiting DVNP and the Death Valley Junction Opera House. Park tourism is the primary recreational activity in the immediate area. Maintenance of the Ash Meadows road on both sides of the state border occurs regularly.

### **3.13.5 Silurian Hills Bat Habitat Management Plan (HMP) Proposal**

**Wildlife:** The Silurian Hills area is a semi-mountainous region centrally located in Silurian Valley. It is bounded on the west by a flat plain, Silurian Dry Lake and Salt Creek, on the east by a flat plain and the Shadow Mountains, with Kingston Wash and Valjean Valley located to the north, and the Hollow Hills located to the south. Public lands in this area total approximately 7,400 acres, with a scattering of patented lands located immediately to the south.

Numerous washes dissect the plain that surrounds this mountainous island. Cliff faces and crevice slopes are common in the Silurian Hills. Mine shafts and adits are also numerous, and at least four bat species are known to use these shafts and adits as roosting, hibernation or maternity sites. Additional bat species are thought to use the area as well. Habitats crucial for a wide variety of desert bat species surround the Silurian Hills including desert washes, springs, desert riparian areas, sand dunes, crevice slopes and mountains. The Kingston Wash is suspected to be a major bat foraging use area and flight travel corridor into the Kingston Mountains. The Salt Creek Hills and riparian area are major bat foraging and roosting areas, and are suspected to serve as a crucial flight travel corridor into the Avawatz Mountains, where there are numerous spring forage areas and roosting sites. This corridor is also important for bat species that use the Ibex Dunes and Dumont Dunes as well as portions of DVNP.

**Mineral Development:** The Silurian Hills region is within an area having moderate high potential for the future discovery of metallic minerals, mainly silver. The subject area has mostly low potential for talc resources, but two areas of high potential, one in the west half where there are known occurrences, and one in the southeast corner where production has occurred in the past.

Mines in the Silurian Hills have produced lead, copper, silver, gold, and talc. In the Riggs District, the patented Riggs mine, within 1,500 feet of the southern boundary of the area, produced 200,000 ounces of silver up to 1920 and has been idle since then, except for recent drilling. Assays at another claim group in the southeast part of the Silurian Hills identified silver values to 2.85 ounces per ton and copper to 36 pounds per ton. Additional mining claims, located ½ mile south of the area, have been actively worked for silver and lead for many years.

Idle talc mines known collectively as the Patricia-Blue White-Ceramic zone occur in the southeast corner of the Silurian Hills. The Ceramic mine produced up to 1,000 tons from 1940 to 1942. Workings consist of shallow exploratory excavations, several adits, and a 40-foot inclined shaft and several cuts. The patented Silver Lake talc deposits, 3 miles to the south of the area, produced over 160,000 tons from 1915 through the 1950s.

The potential for future development is difficult to assess. Unless commodity prices increase, production of metallic minerals such as lead, silver, and gold would probably be limited to small, two-man operations in underground workings such as adits. Talc production is anticipated to be low, based on the lack of production within the area over 50 years, the small volume of past production, and the fact that no plans of operation have been received.

**Cultural and Native American Values:** The area contains evidence of early twentieth century mining and one recorded petroglyph site. Additional historic period mining sites are located south of the identified area. A portion of the Tonapah and Tidewater railroad line traverses the area.

**Vehicle access:** The Silurian Hills and adjacent land receive relatively little permitted and casual recreational use. This is a challenging place for desert touring and exploration. Travel is difficult and rough because there are few routes and none are maintained. Occasional route proliferation is associated with visitation to some of the historic mining areas.

### 3.13.6 Released Wilderness Study Area MUC Proposals

The following are descriptions of areas proposed for a Multiple-Use Classification other than those prescribed in the CDCA Plan.

**Cerro Gordo:** The 21,244 acres of public lands surrounding the Cerro Gordo ACEC and National Register of Historic Places District originally designated as MUC Moderate were designated as “high sensitivity” under the CDCA Plan. Lack of inventory data precluded a higher sensitivity rating, although there were indications that the mesas probably contained unrecorded cultural resources. This area has been subject to some recent archeological assessment as a result of mineral activity. Additional data and analysis has identified substantial resources and values after the initial classification, which would warrant consideration of MUC L. Additional sites have been located that are probably associated with the mining town of Cerro Gordo, a National Register property. This is an area of high sensitivity for prehistoric resources.

**Surprise Canyon:** The approximately 4,390 acres of public lands remaining in the Surprise Canyon ACEC would continue to be managed as an ACEC. Approximately 8,778 acres of formerly public lands are now under NPS jurisdiction and not subject to public lands designations, including ACECs. Approximately 849 of the 1,920 acres of BLM-managed lands released from wilderness review are in an area where changing conditions, and additional data and/or analysis indicate a need for consideration of MUC L to protect sensitive resource values, and for consistency with surrounding lands. This is the eastern portion of Middle Park Canyon. This area is prime habitat for a large and diverse group of plants and animals, including sensitive species. Elevations range to 7,000 feet in the eastern portion of the area, and topography is often steep. When the area was determined not suitable for wilderness, the record stated that the recommendation should be “implemented in a manner which will use all practical means to avoid or minimize environmental impacts.”

**Greenwater:** Approximately 3,000 of the 34,720 acres of BLM-managed lands released from wilderness review are being considered for a change of Multiple-Use Class. It is an area where changing conditions, and additional data and/or analysis indicate a need for consideration of MUC L to protect sensitive raptors, bighorn sheep, Category III desert tortoise habitat, and other wildlife and plant community values, and for consistency with surrounding lands. This area was originally designated as MUC M along the northern boundary of released lands in the 1980 CDCA Plan, based on mineral values. This 3,000-acre area is adjacent to 849 acres designated as the Greenwater Canyon Cultural ACEC.

**Eagle Mountain:** The CDCA Plan classified these lands as MUC M east of the T&T railroad and MUC L west of the T&T railroad. The rationale was that there was ongoing mining activity in the west and protects sensitive wildlife, cultural, and riparian values to the east. Three sites were determined eligible for the National Register and contain highly sensitive wildlife. The values that provided the rationale for MUC L include lands sacred to indigenous tribes and T&E railroad plant locations recorded since the CDCA Plan analysis.

**Dumont:** The CDCA Plan classification for these lands is MUC L and MUC M. This area is immediately adjacent to and south of the Dumont Dunes OHV Open Area, and adjacent to and north of the Salt Creek ACEC. Recent new information has been gathered on MUC M lands in conjunction with surveys conducted on expansion alternatives for Fort Irwin National Training Center identifying 27 previously unidentified highly sensitive cultural resources. The historic Tidewater and Tonapah Railroad bed forms the eastern boundary of this area, which additionally has now been determined eligible for the National Register of Historic Places. The previously unidentified Mojave fringe-toed lizard now designated BLM-Sensitive (not identified in the CDCA Plan, 1980) has been found on lands now classified MUC M. There is a high potential for additional habitat for this species to the west, south and east of the Dumont Dunes area. Therefore, these lands are being considered for a change in Multiple-Use Class

**Boulder Corridor East and West:** Approximately 4 of 10 miles of the corridor within the western end of the Shadow Valley area are being considered for a MUC change from M to L based on critical desert tortoise habitat. The other 6 miles outside of critical habitat are not being considered for change from MUC M. There would be approximately 12 additional corridor miles to the east in Mesquite Valley at the Nevada border, which are being considered for a change from MUC L to M based on consistency with the level of activities on surrounding lands. These lands are primary corridors for major utilities between the Los Angeles and Las Vegas Basins.

**Avawatz:** Almost all of the underlying area of released lands was designated as MUC M in the CDCA Plan to provide access for exploration and development of mineral potential and recreational values. Additional data and/or analysis indicate a need for consideration of MUC L to protect sensitive resources. This area is adjacent to MUC M lands and lands managed by the military.

**East of China Ranch:** The CDCA Plan underlying classification for these 4,010 acres is primarily MUC L, with two areas of MUC M; each under 500 acres. One MUC M area is located in the northeastern area, encompassing a portion of the canyon and the plateau that was the Old Bon Mesa mill site. The other is in the southeast portion along Sperry Wash. The CDCA rationale for MUC M was to facilitate historic mining access. In the past decade, the Bon Mesa site has been cleaned up and both hazardous and non-hazardous materials have been removed. The surrounding MUC L lands contain a highly sensitive wildlife corridor, which includes the main China Ranch Wash and side canyons, including a portion of Sperry Wash, that provide riparian habitat for many endemic species including potential habitat for the federally endangered vole.

**Mesquite Spring:** The original MUC in the CDCA Plan was classified as M in order to provide vehicle access for recreation and mineral exploration, while mitigating impacts of permitted uses on desert resources, particularly for historic and prehistoric values. Access is now provided into the Mojave National Preserve, which surrounds this area on two-thirds of its length. Adjacent to the parcel is the Crucero/Mesquite Hills Cultural ACEC. Historic and prehistoric resources in this area are now known to be more common and sensitive than originally believed, based on information developed during ACEC planning. Recreation use is affected by the proximity of the Razor Open Area to the northwest. Vehicular use is primarily concentrated in the Mesquite Spring area. The entire area is being considered for Multiple-Use Class L.

### **3.13.7 Greenwater Canyon Proposed ACEC Deletion**

Prior to the California Desert Protection Act of 1994, the Greenwater Canyon ACEC included some 3,000 acres of public lands in the Greenwater Mountains of southeastern Inyo County and was established for cultural resource protection. Approximately 73 percent of the ACEC is now in Death Valley National Park. There are only a few archaeological sites or cultural resource values in the remaining 820 acres of public land, although a minor amount of desert wash and riparian habitat would be affected. BLM public lands in the area are managed under the existing Greenwater Canyon ACEC Plan.

### 3.13.8 Organized Competitive Vehicle Events

**Vegetation:** As general references to vegetation sections of this Chapter, please refer to the CDCA Plan, (1980), Hickman (1993), and the California Native Plant Society (2001). The Barstow-to-Vegas course crosses creosote bush shrubland (*Larrea tridentata*), blackbrush shrubland (*Coleogyne ramosissima*), mixed desert shrubland, and desert wash. No federal or state listed threatened or endangered plant species are known to occur along the routes.

Creosote bush communities vary considerably in composition and diversity. This plant community is found throughout the region at from 1,000 to 3,000 feet elevation. Creosote is the dominant species in association with burrobrush (*Ambrosia dumosa*) or four-winged saltbush (*Atriplex canescens*). Other typical species are joint-fir (*Ephedra sp.*), little-leaved ratany (*Krameria parvifolia*), thornbushes (*Lycium cooperi*, *L. andersoni*), galleta grass (*Hilaria rigida*), Indian rice grass (*Oryzopsis hymenoides*), mallow (*Sphaeralcea ambigua*), and desert straw (*Stephanomeria pauciflora*).

The blackbrush community occurs on the slopes of Clark Mountain at elevations from 4,000 to 5,000 feet. Blackbrush is the most common species. Others are spiny mendora, California buckwheat, joint-fir and desert rue (*Thamnosoma montana*). Washes contain acacia, snakeweed, and spear-leaved Brickellia (*Brickellia arguta*).

Mixed desert shrubland and desert washes contain a variety of species such as rabbitbrush (*Chrysothamnus paniculatus*), paper bag bush (*Salazaria mexicana*), Joshua tree (*Yucca brevifolia*), Mojave yucca (*Yucca schidigera*), beavertail (*Opuntia basilaris*), and silver cholla (*O. echinocarpa*).

The vegetation along the 1990 proposed course has not fully recovered from previous events. Some shrubs have died and numerous plants show signs of damage. These plants exhibit broken branches, splits in the main stems, and overall reduction in the extent of aerial canopy. Due to the drought conditions in the desert region, plant vigor and regrowth potential is poor. Reduced growth rates, dieback, extended dormancy. In some cases plant mortality is a common condition in the desert. Regrowth along the racecourse has been poor.

The proposed route around Solomons Knob in the Needles Resource Area was last used in the 1974 race. A 1990 field inspection showed little regrowth of vegetation. After 16 years, plant cover was estimated to be only 10 percent of cover adjacent to the racecourse. Much of that portion of the course had no plant cover, and effects of soil erosion were evident. Portions of the route use an existing dry wash where sparse vegetation is normal.

One federal candidate species, Rusby's desert mallow (*Sphaeralcea rusbyi spp. eremicola*), occurs directly adjacent to the Barstow-to-Vegas course in the vicinity of the Clark Mountains. This low growing perennial herb exists along a four-mile stretch adjacent to the powerline road north of the Clark Mountains.

There is a potential that bicolored penstemon (*Penstemon bicolor spp. bicolor*) a federal candidate and a Nevada watchlist species, occurs adjacent to the course in Nevada. The habitat for this species is similar to that found along the Barstow-to-Vegas course, and has been found within 5 miles of the course (Environmental Assessment CA-060-EA0-01 1990).

**Wildlife:** The racecourse as depicted in the CDCA Plan passes through 33.5 miles of BLM Category I and 16.4 miles of Category III desert tortoise habitat. Wildlife and plant values are further described in the Wildlife and Vegetation Elements of the CDCA Plan.

Wildlife species characteristic of these desert habitats include coyotes (*Canis latrans*), black-tailed jackrabbits (*Lepus californicus*), white-tailed antelope squirrels (*Ammospermophilus leucurus*), desert kit foxes (*Vulpes macrotis arsipus*), red-tailed hawks (*Buteo jamajcensis*), horned larks (*Eremophila alpestris*), zebra-tailed lizards (*Callisaurus draconoides*), and sidewinder rattlesnakes (*Crotalus cerastes*).

The course crosses approximately seven miles of desert bighorn sheep (*Ovis canadensis nelsoni*) habitat in the Clark Mountain area. The desert bighorn sheep is a BLM sensitive species fully protected by the State of California. The Clark Mountain herd was estimated in 1988 to have 150 sheep. Bighorn regularly travel between different ranges, and some movement between the Clark Mountains, New York Mountains, and neighboring ranges in Nevada is likely.

Several wildlife species of special management concern are known to occur in this region. These are the gilded northern flicker (*Colaptes auratus chrysoides*), Virginia's warbler (*Vermivora virginiae*), hepatic tanager (*Piranga flava*), gray vireo (*Vireo vicinior*), Bendire's thrasher (*Toxostoma bendirei*), California grey headed junco (*Junco hyemalis caniceps*), and the Kingston Mountain chipmunk (*Tamias panamintinus acrus*). The gilded northern flicker is listed by the State of California as endangered. It has been observed on top of Clark Mountain, several miles away from the course in different habitat, and should not be affected by Barstow-to-Vegas races. The Kingston Mountain chipmunk has a montane distribution and should be similarly unaffected by event activities. Remaining wildlife species listed above are widely distributed in the eastern Mojave Desert and do not have legal status as sensitive species. No other wildlife species listed by the state or federal government as threatened or endangered are known to occur in the area other than the desert tortoise discussed below.

The primary habitat type of the Nevada portion of the course is a creosote bush-white bursage assemblage similar to the California communities (Analysis from the 1990 Environmental Assessment CA-060-EA0-01).

**Desert Tortoise:** Approximately 35 miles of the course is Category III desert tortoise habitat, which have either low or low to moderate population densities (Environmental Assessment CA-060-EA0-01 1990). There are 45 miles of Category I and 35 Miles of Category II desert tortoise habitat (Table 3.11).

**Table 3.12 – Estimated Miles of Racecourse Crossing Desert Tortoise Habitat**

	Category I	Category II	Category III	Non-category	Total
Number of miles	45	35	35	55	170

In Nevada, approximately seven miles of the course Category II desert tortoise habitat, which has moderate to high population densities.

**Soil:** Soils along the course routes are located in two relatively distinct physiographic areas: (1) uplands consisting of old terraces, alluvial fans, and low desert foothills, and (2) mountains and lowlands consisting of alluvial flood plains, terraces, fans, and basin rims. These soil types are moderately highly susceptible to erosion and compaction. Disturbances that cause the soil to break down or become compacted may cause erosion and the release of fine materials susceptible to wind erosion.

Current conditions along the race corridor are variable. Some areas in washes are mostly repaired through normal water flow patterns. Some roads used are in acceptable condition, due in part to repair by natural processes and road maintenance. However, the majority of the course route through non-roaded areas remains rutted, contains “whoop-de-does” or is deeply “washboarded”, and exhibits powder-like surface soils where desert pavement has been removed and soil consistency disturbed. Soil cover is reduced in many instances (Environmental Assessment CA-060-EA0-01 1990).

**Water:** The area has no permanent surface water. Surface flow occurs only after intense rainfall events, and it soon infiltrates the dry desert soils, or evaporates. Some water reaches the playas, which become inundated for short periods of time.

**Air quality:** Portions of northeastern San Bernardino County are within the Federal Mojave Desert ozone non-attainment area, and all of San Bernardino County is within the Federal San Bernardino County PM<sub>10</sub> Non-attainment Area. Under State standards, the San Bernardino County portion of the planning area is an ozone non-attainment area and the entire plan area is classified as non-attainment for PM<sub>10</sub>.

**Cultural Resources:** The Barstow-to-Vegas course passes through one recorded historic site on private property at the Silver Lake town site (CA-Sbr-2922). However, there are no known cultural resources directly on the course. Three other recorded cultural resources are located on public lands adjacent to the course with other recorded sites located within one mile. In Nevada, cultural resource inventories have been conducted along the course, which include surveys described in CR5-1198N, 184N, 1508N, 1509N, 247N, 268N, and 87N. No cultural resources were found during these surveys.

**Wilderness:** The Barstow-to-Vegas course has roads along the boundaries of several wilderness study areas. In 1983, the course used routes within the Soda Mountains WSA that were the subject of a court inspection and were approved by the court. The route of the proposed action does not enter any WSAs, but routes that form boundaries of WSAs are proposed for use (Environmental Analysis CA-060-EA0-01 1990). With the passage of the California Desert Protection Act, the following wilderness areas form boundaries along the course; Hollow Hills, Kingston Range, Mesquite Mountains, and Stateline.

**Recreation:** There are about 100 permitted competitive events of all kinds held each year in the CDCA involving on average about 25,000 participants. In the past only about five percent of the total number of yearly participants took part in the long distance point-to-point events.

The Barstow-to-Vegas race was one of four competitive vehicle corridors established in the CDCA Plan. These four events, the only OHV competitive events that took place outside OHV Open Areas, involved approximately 1,300 participants each year until 1990. The Stoddard Valley-to-Johnson Valley event was run only in 1980. The Johnson Valley-to-Parker was last run in 1986 with 173 participants and has been run five times since 1980. The Barstow-to-Vegas race occurred under permit annually from 1983 to 1989 with 1,200 participants. The Parker 400 was permitted by the BLM annually since 1972 and involved 425 participants, 300 of which race on the California side except in 1989 when the California loop was not run (Environmental Assessment CA-060-EA0-01 1990). There have been no major long distance point-to-point competitive motorized events in the CDCA since 1989, including the annual B-to-V motorcycle race.

**Socioeconomics:** Expenditures by participants and spectators involved with the Barstow-to-Vegas race in the past contributed to the local economies of several communities along the racecourse, including Barstow and Baker in California, and Stateline (now known as Primm) in Nevada. This race had been a major fundraiser for the AMA’s District 37, which used most of the proceeds to fund umbrella insurance policies that allowed small, affiliated clubs to run other races. There was a national, as well as international, participation and interest in this race.

### 3.13.9 Motor Vehicle Access – Routes of Travel

General motor vehicle access is described in Section 3.8. Appendix Q lists in detail the routes of travel for each subregion, as well as proposed designations and rationales for choices.

#### 3.13.10 Tecopa Landfill Proposed MUC Change

**Biological:** Plant and wildlife habitat values have largely been lost at this site. The area is currently managed under MUC L. Any proposals require 30 days for environmental analysis and development of mitigation measures to protect plant and wildlife communities that might be impacted. Public lands activities are subject to MUC L guidelines which emphasize use of existing routes and minimizing surface disturbance.

**Cultural:** There are no identified cultural resources or Native American values within this area.

**Land Use:** The existing MUC L classification does not allow for the sale of public lands. This is not consistent with BLM policy, given the existing use of the site as a landfill, unless closure is currently underway. Closure to state standards is not currently feasible by the operator and would not provide for the short-term solid-waste disposal needs of residents.

#### 3.13.11 Shoshone Landfill Proposed MUC Change

**Biological:** Plant and wildlife habitat values have largely been lost at this site. The area is currently managed under MUC L. Any proposals require 30 days for environmental analysis and development of mitigation measures to protect adjacent plant and wildlife communities that might be impacted. Public lands activities are subject to MUC L guidelines which emphasize use of existing routes and minimizing surface disturbance.

**Land Use:** The existing CDCA MUC L classification does not allow for the sale of public lands. This is not consistent with BLM policy, given the existing use of the site as a landfill, unless closure is underway. Closure to state standards is not currently feasible by the operator and would not provide for the short-term solid-waste disposal needs of area residents.

#### 3.13.12 Wild and Scenic Rivers

After completion of the 1980 CDCA Plan, regulations were published in 43 CFR 8350 (7 FR 173, Sept. 7, 1982) addressing designation of waters for the National Wild and Scenic Rivers Systems on public lands. The first step in this process is to identify what river(s) segment(s) are eligible for designation. In the NEMO planning area, three rivers, the Amargosa River, Cottonwood Creek and Surprise Canyon Creek have been identified with six eligible segments. The process for designation and consideration of the Amargosa River, including its three eligible segments, are further described in Appendix O; Cottonwood Creek and its eligible segment is further described in Appendix S, and Surprise Canyon Creek and its segments are described in Appendix T.

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