

Contents

INTRODUCTION	1	Specific Recommendations	47
Purpose of Plan	1	1) Site Recommendations	47
Project History	2	Kelso Depot	47
Executive Summary	4	Hole-in-the-Wall Information Center.....	51
FOUNDATION FOR PLANNING AND		Baker Information Center	52
DESIGN	5	Mojave National Preserve Headquarters	52
National Park Service Mission.....	5	Zzyzx.....	52
Park Purpose.....	7	Mitchell Caverns at Providence Mountains	
Park Significance.....	7	State Recreation Area	53
Management Objectives.....	8	Fort Piute.....	53
Interpretive Audiences.....	10	Quail Springs Trailhead.....	53
Visitor Experience Goals	11	Historic Ranching – OX and Kessler Springs	
Primary Interpretive Themes	12	53
EXISTING CONDITIONS.....	13	Cal-Trans Rest Areas.....	53
Mojave National Preserve	13	2) Interpretive Media	54
Natural Resources.....	14	Wayside Exhibits.....	54
Natural Resources.....	15	Publications.....	54
Natural Resource Management Issues	18	Exhibits.....	55
Cultural Resources.....	21	Digital Media	55
Local Communities.....	33	Audiovisual Programs	56
Partners Inside Mojave National Preserve...	35	Personal Services.....	56
Information Centers & Campgrounds	37	Outreach.....	57
Minimally developed points of interest.....	39	3) Interpreting Primary Themes	58
Areas where development is planned	40	All themes.....	58
Undeveloped points of interest	41	Research Needs.....	69
Visitors.....	42	Staffing Needs.....	70
RECOMMENDATIONS	46	4) Implementation Plan.....	71
General Recommendations.....	46	APPENDICES	78
		Planning Team.....	78
		References.....	78

INTRODUCTION

Purpose of Plan

This Long-Range Interpretive Plan (LRIP) has three components:

Goals: Describes foundation elements and goals for visitor experience, interpretation, education, and resource stewardship

Recommendations: Recommends ways to achieve those goals and address the issues through facilities, interpretive media and programs, and access to resources and experiences

Background: Provides relevant background information

The Long Range Interpretive Plan gives a broad vision for interpretation for the next decade. Annual Interpretive Plans, based on the framework of this plan, identify specific goals for each year. The Long Range and Annual Interpretive Plans, together with the Interpretive Database, make up the Comprehensive

Interpretive Plan (CIP) for Mojave National Preserve.

This plan is consistent with and incorporates aspects of the Mojave National Preserve General Management Plan, Draft Resource Management Plan, Strategic Plan, and other park plans. It includes perspectives from partners and interested publics.

Intended audiences for the plan include park staff, interpretive media and facility designers, partners, and regional office staff.

Project History

Mojave National Preserve is a relatively new park, established in 1994. A general management plan (GMP) was completed in September 2001. The park was identified by the Pacific West Region as a priority for interpretive planning in response to a fiscal year 1999 call from Harpers Ferry Center (HFC). Interpretive planning commenced when a preferred alternative was drafted for the GMP.



Yucca and Barrel cactus

A planning workshop was held April 6-8, 1999. Participants included National Park Service (NPS) staff, partners, and an interpretive planner from Harpers Ferry Center (HFC). At that workshop, participants drafted interpretive themes and goals, formally assessed current conditions, and began discussing recommendations. Recommendations, implementation planning, and issues relating to the Kelso Depot have been addressed in subsequent workshops in July and October, 2000, and March, 2001.

The Mojave NP Advisory Commission, a group of citizens appointed by the Secretary of the Interior to advise park management, assisted in drafting theme statements for this plan.



Clark Mountain

Executive Summary

Mojave National Preserve is not highly developed. Visitors value the sense of discovery that is still available here, and it is a management objective to perpetuate conditions that make that experience possible. The goal of interpretation is to facilitate the ability of visitors to learn about and enjoy the park safely while still maintaining the opportunity to explore and discover. Therefore, interpretive programs and media will be clustered in only a few developed areas. Wayside exhibits and kiosks will be kept to a minimum. A limited number of low-impact developments such as trails and roadside pulloffs will provide opportunities for direct connections by visitors who don't have the time, experience, or capabilities for more strenuous experiences.

Initial contacts will often be made over the Internet and through telephone and mail inquiries. Information will be available at state welcome centers and other information outlets in nearby communities such as Primm, Lancaster, Needles, Las Vegas, and Los Angeles. Peripheral information centers in Baker and Barstow will provide (through personal services and non-personal media) basic safety and resource

protection information, orientation, and an introduction to interpretive themes. Information centers inside the park at Kelso and Hole-in-the-Wall will provide this basic information, as well as more in-depth services such as audio-visual programs, museum exhibits, interpretive talks, and printed guides. Publications, videotapes, and other theme-related items will be available for sale through the cooperating association at information centers and over the Internet.

Planning for a comprehensive visitor center for the park will begin in the second half of the life cycle of this plan.

Education programs will initially target local and regional schools with increased in-school programming. Since staffing is limited, the staff will explore opportunities to expand programming through the use of volunteers. To serve adult communities, the park will seek opportunities to partner with existing adult education activities such as the Desert Studies Center.

FOUNDATION FOR PLANNING AND DESIGN

The National Park Service mission and mandates (laws), and Mojave National Preserve purpose, significance, and management goals form the basis for management decisions and planning. Visitor experience goals and primary interpretive themes more specifically describe desired outcomes relating to visitors. Decisions about park management are generally measured against these elements to determine activities that may be acceptable in a unit.

National Park Service Mission

As a unit of the national park system, Mojave must be managed in accordance with the National Park Service preservation mission as provided in the agency's authorizing legislation (Organic Act of 1916; 16 USC 1), which provides that the primary purpose of park units are:

... to conserve the scenery and the natural and historic

objects and the wildlife therein, and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.

In the 1970 General Authorities Act, Congress recognized that a confusing variety of designations had been used in the creation of National Park System units (parks, monuments, seashores, historic parks, recreation areas, preserves, etc.). They responded by amending the Organic Act to clarify that all units, regardless of their specific designation, are to be managed under the Organic Act mandate.

... these areas, though distinct in character, are united through their interrelated purposes and resources into one national park system as cumulative expressions of a single national heritage; ...and that it is the purpose of this Act to include all such areas in the System and to clarify the authorities applicable to the system.

In 1978, Congress amended the General Authorities Act in the Redwood National Park Act

Foundation for Planning and Design

to further clarify the importance of park resources systemwide:

The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided for by Congress.

In addition to the overall purpose of parks as outlined in the NPS Organic Act, as amended, specific purposes may also be provided in each unit's establishing or enabling legislation. Certain activities may also be authorized that would otherwise be contrary to the Organic Act (i.e. hunting, grazing, mining, etc.). These activities are not legislative purposes of the unit, but rather exceptions made by Congress to recognize pre-existing rights or activities. In the case of Mojave National Preserve, for example, hunting is an activity not normally found in national park units. About 700,000 of the Preserve's 1.6 million acres are legislated wilderness.

Congress provides more specific direction for the new California desert parks and wilderness areas in section 2 (b)(1) of the 1994 California Desert

Protection Act (CDPA). Mojave National Preserve was established by the CDPA in order to:

- *Preserve unrivaled scenic, geologic and wildlife values associated with these unique natural landscapes;*
- *Perpetuate in their natural state significant and diverse ecosystems of the California Desert;*
- *Protect and preserve the historical and cultural values of the California Desert associated with ancient Indian cultures, patterns of western exploration and settlement, and sites exemplifying the mining, ranching and railroading history of the Old West;*
- *Provide opportunities for compatible public outdoor recreation, protect and interpret ecological and geological features and historic, paleontological, and archeological sites, maintain wilderness resource values, and promote public understanding and appreciation of the California desert; and*
- *Retain and enhance opportunities for scientific research in undisturbed ecosystems.*

Park Purpose

The specific purposes for Mojave National Preserve, as derived from the Organic Act and the CDPA, can be summarized as follows:

- *Preserve and protect the natural and scenic resources of the Mojave Desert, including transitional elements of the Sonoran and Great Basin deserts.*
- *Preserve and protect cultural resources representing human use associated with Native American cultures and westward expansion.*
- *Provide opportunities for compatible outdoor recreation and promote understanding and appreciation of the California desert.*

Park Significance

Park significance statements clearly define the importance of the park's resources as they relate to the park purpose. Significance in this context

means a feature or characteristic that is locally, regionally, nationally or globally important to our national and cultural heritage; it is not used here in a legal sense, such as with the National Environmental Policy Act or the National Historic Preservation Act.

These statements help set resource protection priorities, identify primary interpretive themes, and develop desirable visitor experiences.

- *Mojave National Preserve protects an extensive variety of habitats, species, and landforms unique to the Mojave Desert and is the best place to experience this ecosystem.*
- *Mojave National Preserve contains outstanding scenic resources, rich in visual diversity containing a varied landscape of sand dunes, mountain ranges, dry lake beds, lava flows, cinder cones, Joshua tree forests, and far-reaching vistas.*
- *The Joshua tree forest of Cima Dome and Shadow Valley is the largest and densest population of Joshua trees in the world.*
- *The Preserve is internationally known as a place to conduct desert research, and its lands*

Foundation for Planning and Design

are known for their geological features such as Cima Dome, the Cinder Cones, and the Kelso Dunes.

- *Mojave is a naturally quiet desert environment with very dark night skies that offers visitors and researchers opportunities for natural quiet, solitude and star gazing with few human caused noise or light glare sources.*
- *The Mojave Desert has a long cultural history as a travel corridor across a harsh and foreboding desert, linking different areas in the Southwest. During the late 19th and early 20th centuries, railroads were constructed in this historic transportation corridor; more recently, modern interstate highways traverse the area.*
- *Mojave National Preserve protects many significant rock art sites that provide evidence of early Native American use of the Mojave Desert.*
- *Mojave National Preserve protects numerous historic sites from early mining, ranching, homesteading and railroading endeavors that serve as reminders of the bold and tough people that opened the harsh and forbidding western frontier.*

- *Historic Kelso Depot is associated with the early 20th century heyday of the great steam locomotives and the establishment of the final major rail crossings of the Mojave Desert. The Kelso Depot, built in 1924, is a rare surviving example of a combined depot, railroad restaurant, and employees' rooming house.*

Management Objectives

- *Seek to protect significant natural and cultural resources and values, including geologic features, and to foster an improved understanding of natural processes through monitoring efforts and scientific research.*
- *Manage desert resources, including wilderness, for maximum statutory protection provided for under the law.*
- *Participate cooperatively in the preservation of ecological resources that extend beyond the Preserve's boundaries.*
- *Manage visitor use in a manner that promotes exploration and self-discovery, while protecting resources from overuse.*

- *Educate visitors regarding the NPS mission and the natural and cultural resources of the Preserve.*
- *Improve the effectiveness of operations and administration.*
- *Work actively with authorized users, including military overflights, to reduce noise impacts and perpetuate the sense of solitude for visitors.*
- *Perpetuate scenic landscapes. Landscapes viewed from scenic road corridors and developed areas should be free from recreational activities and facilities that distract from the scenic beauty of the landscape.*
- *Protect wilderness values and the wilderness experience in areas congressionally designated as wilderness.*
- *Perpetuate a sense of exploration and discovery.*
- *Perpetuate visitors' ability to view a nearly pristine night sky untainted by artificial light sources.*
- *Find creative ways to increase the accessibility of NPS programs, facilities and*

experiences in a reasonable manner. Provide access for all segments of the population, including visitors with disabilities, small children, senior citizens, and populations that generally do not use national parks, in coordination with the laws requiring the National Park Service to preserve and protect wilderness and cultural and natural resources for the enjoyment of future generations.

- *Pursue mutually supportive partnerships with representatives from gateway communities and local and tribal governments. Consider ways in which communities and the parks can support each other. Promote economic growth of communities in ways that complement the Preserve's management objectives.*

Interpretive Audiences

Interpretive audiences are those distinct groups of individuals for whom interpretive services are specifically designed. By definition, services designed specifically for one audience will be less effective for other audiences. The following is a list of specific audiences that this plan is designed to take into account.

- *General Audiences*
- *Children (curriculum-based interpretation for local schoolchildren, and children of general park visitors)*
- *Local Residents*



Visitor Experience Goals

Visitor experience goals describe what experiences (cognitive, emotional, active, and sensory) are important for visitors to Mojave National Preserve. These goals provide direction for the design of visitor facilities and services, interpretive media and programs, and partnerships.

Visitors of all ages, backgrounds, and abilities will have opportunities to:

- *Have a safe and enjoyable visit*
 - *Learn about primary interpretive themes listed below*
 - *Learn about the availability of recreational activities such as hiking, nature study, hunting, and camping*
 - *Experience a sense of solitude; establish a spiritual connection with the area; appreciate the natural quiet and vastness of the Preserve and the values of wilderness*
- *Enjoy a sense of exploration and discovery*
 - *Support resource management by participating in a spectrum of activities that range from simply complying with park regulations through active involvement such as volunteer activities*
 - *Interact with park staff (should visitors so desire)*

Primary Interpretive Themes

Primary interpretive themes are those ideas, concepts, and stories that are central to the nature and significance of the park.

- A) *Mojave National Preserve protects and provides superior opportunities to experience an extensive variety of habitats, species, landforms, and scenic resources unique to the Mojave Desert, as well as transitional elements of the Sonoran and Great Basin deserts.*
- B) *Dramatic geologic forces created and continue to shape the landforms and desert environment of Mojave National Preserve.*
- C) *The diverse species in the National Preserve have evolved adaptations that enable them to live in this desert environment.*
- D) *Deserts are often viewed as empty wastelands, but in fact, they are fragile, arid ecosystems with diverse life forms that are easily impacted by human activities -- even human footprints affect the land in different and lasting ways.*
- E) *Mojave National Preserve protects the historical and cultural values of the California Desert, including sites associated with ancient Indian cultures, patterns of exploration and settlement, and mining, ranching and railroading history -- resources that document 12,000 years of human presence in this desert region.*
- F) *The size and isolation of the Preserve -- nearly half of which is designated Wilderness -- offer opportunities to experience solitude, natural sounds, and a varied landscape of sand dunes, mountain ranges, dry lake beds, lava flows, cinder cones, Joshua tree forests, dark night skies, and far-reaching clear vistas.*

EXISTING CONDITIONS

Mojave National Preserve

The Preserve is a vast expanse of Mojave Desert lands that also includes some elements of the Great Basin and Sonoran desert ecosystems. Mountain ranges and a variety of geologic formations and rock substrates add to the diversity of environments.

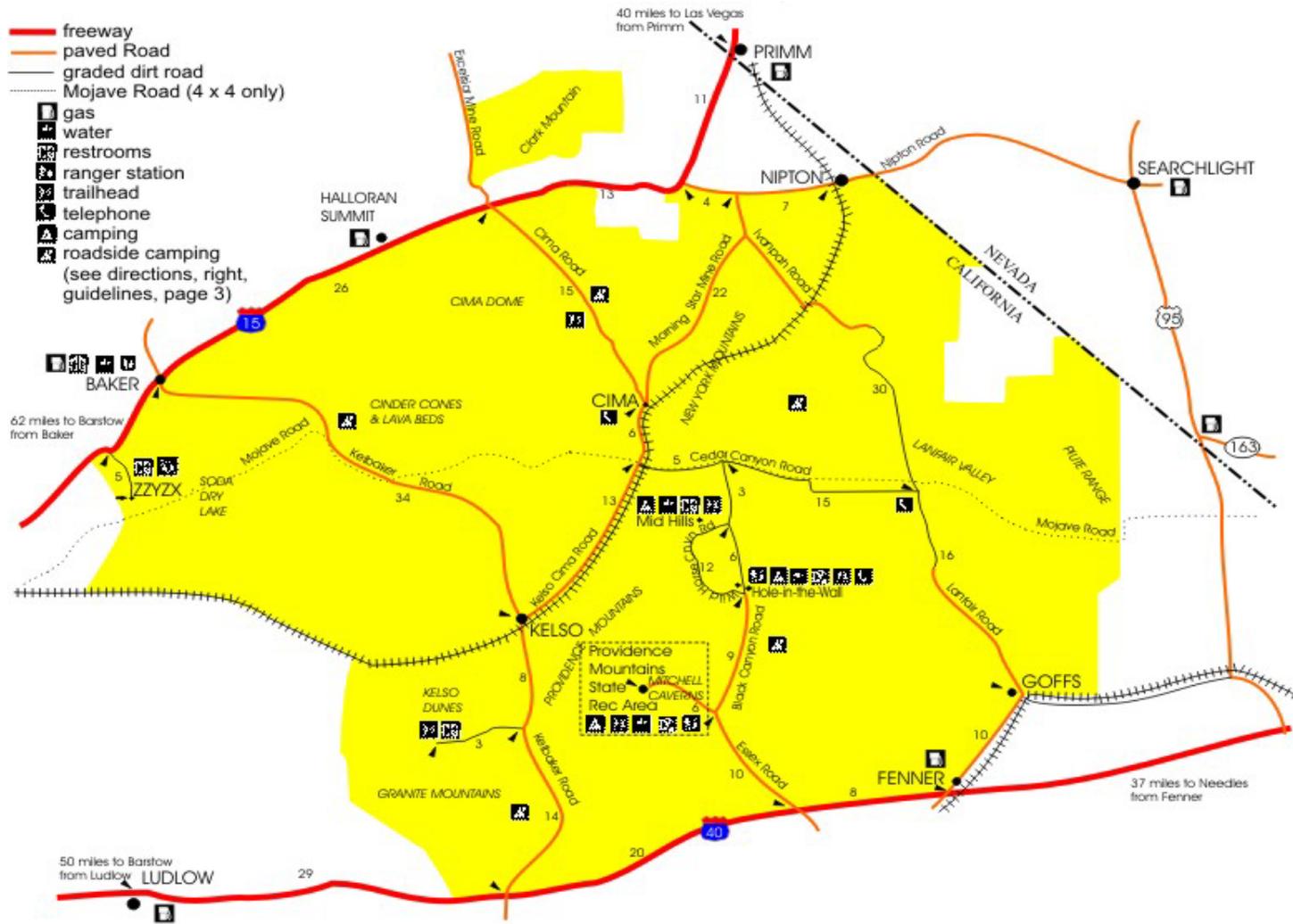
Located in southern California, Mojave is just a few hours drive from Los Angeles, and one hour from Las Vegas. Death Valley National Park lies to the north; Joshua Tree National Park is south. It is bounded to the north and south by interstate highways I-15 and I-40. The Nevada-California state line makes up most of the eastern boundary.

Mojave is a land of mountains, sand dunes, creosote flats, dry stream and lake beds, mesas, and cinder cones. This is Basin and Range country, with mountain ranges rising abruptly from the desert floor. Many of these desert flatlands are basins, which -- unlike valleys -- are not drained by rivers.

Temperature and rainfall vary by elevation. Precipitation at Baker averages only 3.37 inches per year, while at the Granite Mountains the average is 8.5 inches. Temperatures tend to the extremes. It is often hot, of course (the “World’s Tallest Thermometer” in Baker records summer temperatures exceeding 120°), but can be below freezing on winter nights. Plants and animals (including humans) must be tough, prepared, underground, well adapted, lucky, or air-conditioned in the summers to thrive for any length of time.

The land has been explored, settled, grazed, mined, enjoyed, studied, scorned, ignored, valued, set aside, and appreciated. A remarkable complex of resources, experiences, and values has been protected within Mojave National Preserve.

Existing Conditions



Natural Resources

Mojave National Preserve lies within the Basin and Range geologic province. A relatively high chain of mountains, including the Providence and New York Mountains, bisects the park, but other mountains lie to the east and west. These rugged, highly eroded mountain ranges have apron-like *bajadas* of water-washed rock and soil deposits spreading from canyon mouths into interspersed basins.

Flora & Fauna

Mojave Desert plants are predominant, but plant communities of the Great Basin and Sonoran Deserts are also present. Relict plant communities with elements from the California Chaparral zone and even two stands of white fir are also present. Common community types within the Preserve and elsewhere in the Mojave Desert are the playas, saltbush, creosote-covered flats and alluvial fans, and Joshua tree woodlands. The Preserve features dense communities of Joshua tree and Mojave yucca, and cactus gardens with mixes of barrels,

prickly pears, and chollas. A total of 803 species of plants representing 85 plant families have been identified in the Preserve.

The intermingling of the three desert environments has produced about 35 wildlife habitat types. These habitats support about 300 species of wildlife, including 36 species of reptiles, 206 species of birds, and 47 species of animals. While lizards such as the zebra tail are among the species most commonly seen, large mammals including desert bighorn sheep, mule deer, coyote, bobcat, and mountain lion are also present.

Geology

The geology of Mojave National Preserve is very complex due to igneous and metamorphic events and structural deformations associated with these events. The most notable geologic features for lay visitors are the cinder cones and lava flows along Kelbaker Road and the Cima Dome along Cima Road.

Geologic features support numerous fossils. Fossils have value as stratigraphic indicators for correlation of deposits containing them and for determination of relative geologic age, records of past life forms showing evolutionary trends of

Existing Conditions

plants and animals, and evidence of changing paleoenvironments.

Significant paleontological resources include:

- The world's oldest mitosing cells, 990 million years old, are preserved in silica in the Beck Spring Formation.
- Significant Cambrian trilobite and invertebrate fossil localities mark the beginning boundary of the Paleozoic Era, 550 million years of age.
The only dinosaur tracks in California and the only record of Jurassic dinosaurs in California are in the Mescal Range just outside the north boundary.
- Early records of crustal extension and breakup that occurred 24 million years ago to form basins in the Mojave Desert are found in or near the Preserve. Significant occurrences of fossils, including rhinoceros, camel, canid, felid, bird track, and plant, are located in the Ship Mountains, Little Piute Mountains,

Hackberry Mountains, Castle Mountains, Lanfair Valley, and Wild Horse Mesa.

- There are significant Plio-Pleistocene fossil localities, which are being damaged by erosion and amateur collecting, at Valley Wells and Kingston Wash.
- Cave deposits in the Mescal Range have produced significant vertebrate fossils.

Caves

Mitchell Caverns have been protected since 1954. Although they are within Mojave National Preserve boundaries, these limestone caverns are managed by the state of California as Providence Mountains State Recreation Area.

The lava beds along Kelbaker Road contain at least one lava tube. This cave has a constructed ladder at the entrance. Other tubes may occur; a comprehensive inventory has not been completed.



-- *Banshee Canyon, Mojave National Preserve*

Existing Conditions

Natural Resource Management Issues

Listed Species

Confirmed populations or potentially viable habitat for 3 federally endangered species, 1 federally threatened species, 6 state (California) endangered species and 1 state threatened species, are found in the park.

Federally listed species known to inhabit the park are the desert tortoise (*Gopherus agassizii*) and the Mohave tui chub (*Gila bicolor mohavensis*). The southwestern willow flycatcher (*Empidonax traillii xtimus*) and least Bells vireo (*Vireo bellii pusillus*) are listed birds that could periodically inhabit riparian areas such as Piute Spring but whose presence has not been verified.

California state listed species known to occur in the Preserve are the desert tortoise and the tui chub. The willow flycatcher (*Empidonax trailli*) and the California (or western) yellow-billed cuckoo (*Coccyzus americanus occidentalis*) have the potential to appear in Mojave.

There are no known federally listed or proposed plant species in Mojave. Thorne's buckwheat is listed by the state of California as an endangered species.

There are several additional rare plants within, including Tecopa bird's beak, forked buckwheat, Kingston Mountain bedstraw, curved-pod milk-vetch, July gold, and rock lady.



Desert Tortoise

Game Animals

Hunting is allowed by law in Mojave. Hunted game species include mourning dove, quail, chukar, rabbit, bighorn sheep, and mule deer. Hunting occurs primarily in fall and early winter.

Exotic Species

Tamarisk, Russian thistle, and introduced annual grasses (from Europe and Asia) are some of the more pernicious exotics within Mojave National Preserve. These species often out-compete native vegetation, subsequently eliminating or displacing natives and associated native animals. Exotics can also cause an unnatural increase in the amount of dried material available as wildfire fuel, increasing the risk of fire. Mojave desert plant communities are not fire adapted.

Chukar and burros are the key exotic animals. Chukar are upland game birds frequently sought by hunters. They were first introduced into California from India in 1932. The birds prefer rocky open hills and flats and are abundant in parts of the Preserve.

Burros came with the discovery of gold in California in the 1850s, used as a principal means of transportation. When mines played out or when

motorized vehicles became the more practical mode of transport, the miners' burros were released into the wild. The estimated population in 2001 was about 630 animals in Mojave National Preserve. An active burro removal program is ongoing, and over 3000 animals have been removed so far.

Fire Management

Although lightning strikes are common during the summer monsoon season, native vegetation does not typically carry a fire. Consequently, fires are usually small; large fires are infrequent but do occur. Fire ecology in the Mojave desert has not been well documented, but research is ongoing. A fire management plan is slated for completion in FY04.

Air Quality and Visibility

Mojave National Preserve is a class II "floor" area, meaning that it may never be redesignated to class III. Class II allows moderate increases in certain air pollutants; class III allows a large amount of new air pollution (Congress has yet to designate any class III areas). Although there are currently no class I areas in park, the National Park Service will seek class I designation for Mojave National Preserve, and will seek to perpetuate the best possible air quality.

Existing Conditions

Visibility is probably the most important air quality resource in the desert region, and it is the most easily affected by activities that generate dust (especially fine particulates) and sulfur dioxide. Visibility impacts occur from long-range transport of pollutants from as far away as the San Joaquin Valley and the Los Angeles basin.

Nearby sources of emissions include the Army's National Training Center at Fort Irwin; Viceroy Mine near Searchlight, Nevada; the Mojave Generation Station near Laughlin, Nevada; Molycorp Mine and Stateline Power Generation Station near Primm (Stateline), Nevada; the Las Vegas Metropolitan Area; the Marine Corps Base at Twentynine Palms and vehicle traffic on Interstates 15 and 40.

Local pollution sources in the desert consist primarily of particulate matter from off-road vehicles, windblown soil, mining operations, livestock grazing, and agriculture. These activities have left certain areas denuded or sparsely vegetated, allowing wind erosion to occur and air quality to suffer and occasionally causing violations of particulate standards at many locations.

Night Sky and Natural Ambient Sound

The dark night sky of Mojave National Preserve offers visitors and researchers opportunities to enjoy stargazing mostly untainted by artificial light reflection. However, traffic on interstate highways and the lights from Baker, Primm, Laughlin, and Las Vegas are beginning to have a noticeable adverse effect on the night sky.

The Preserve is generally a quiet landscape, with occasional, short-term interruptions of the natural quiet. Depending on the atmospheric conditions, the closeness to a noise source, and topographic features, visitors generally experience little or no noise while in the backcountry. Vehicle noise can be heard in places, but it is generally not an issue. Most areas in the park are well away from traffic and its noise. Occasional overflights of commercial jets at cruising altitudes, small private aircraft, and rare military jets at low altitudes may be heard.

The greatest potential new threat to dark night skies and natural quiet is a proposed new Las Vegas area airport to be located near Primm. The airport itself, additional freeway lanes connecting it to Las Vegas, and attendant development to support the airport would have a significant impact on night skies. The sound of jets taking off

and flight patterns towards the park would shatter the quiet of the Ivanpah Valley. The National Park Service is opposed to the development of this new facility at the Primm location; although two other locations are also being considered, land acquisition at this site is already underway. If planning continues for the airport at Primm, the National Park Service will work to ensure measures to mitigate negative effects.

Water Resources

Groundwater, found underneath much of the Mojave, varies greatly in depth and quality. The Mojave River is the primary subsurface water source for area lands. Groundwater basins are recharged from surface and subsurface infiltration. Depletion of groundwater basins and diminishing water quality are concerns. Groundwater is the principal source of water for desert springs, seeps, and a few ephemeral streams. The maintenance of groundwater quality and quantity is critical to the survival of desert plants and animals.

Small springs and seeps in the Preserve offer isolated and limited water for plants, wildlife, or domestic or commercial purposes. Some springs produce potable water, but overall water quality is poor because of high dissolved mineral concentrations. Over 200 springs and seeps have been identified in the Preserve. Many, if not most,

have been altered by the installation of retention dams, pipelines, and troughs for livestock use. Most are also used by wildlife.

The OX, Kessler Springs Ranches, Granite, Valley View, and Valley Wells have been acquired by the National Park Service and their grazing leases retired. Pipelines and tanks on these leased lands are the property of the rancher; he has been removing them as part of the relocation agreement. The National Park Service has inventoried springs and water developments in 2002 and 2003, and will work toward restoring springs and seeps that had previously been developed for ranching.

Cultural Resources

Archeology

A variety of archeological sites occur in Mojave National Preserve. In the Providence Mountains there are prehistoric village sites with rock shelters, petroglyphs, and pictographs, as well as quarries and high-density lithic scatters. Petroglyphs can be found in the Woods Mountains, Cinder Cones, and Lanfair Valley. Large open sites, rock shelters, and pictographs are found in the Granite Mountains. Numerous clusters of fire-affected rocks with associated

Existing Conditions

pottery, milling assemblage, and lithic tools occur in the vicinity of Pleistocene lakeshores. Large roasting pits associated with limestone formations are located in the Mescal Range and Clark Mountains. The Piute Range features an extensive string of campsites, milling sites, and lithic scatters. Campsites and petroglyphs are associated with prehistoric trails that connect the Colorado River with the Pacific Coast.

Human occupation of the area during the Pleistocene Era remains a controversial subject. Some researchers have suggested a pre-projectile point horizon where a crude flaking technology was used and where the ancient lakeshores may have provided a favorable environment for human occupation.

Lake Mojave complex (10,000-5000 B.C.) sites are associated with shoreline features of Pleistocene lakes (e.g., Lakes Mojave and Manly) and near springs.

Pinto sites (5000-2000 B.C.) appear to have been seasonal camps of small groups of highly mobile people; increasingly arid conditions of the desert environment limited the resources available to desert inhabitants.

The beginning of the Gypsum period (2000 B.C.–A.D. 500) coincided with commencement of a

moister climate. The Gypsum period was a time of intensive occupation of the desert coupled with a broadening of economic activities and increasing contact with the California coast and the Southwest. Bow and arrow were introduced late in this period, making hunting more efficient. Milling stones and handstones became common, indicating increased use of plant foods. Generally, the Gypsum period was a time in which the Mojave Desert population incorporated new techniques and ritual activities and increased socioeconomic ties through trade. Because of these new means of adaptation, the return of arid conditions toward the end of the Gypsum period had relatively little effect on the Mojave Desert's population density and distribution.

During the Saratoga Springs period (A.D. 500-1200), there appears to be a refinement of adaptation to the arid environment of the northwest Mojave. We find the first evidence of the eastward expansion across the Mojave of ancestors of the historic Shoshone and Piute, who inhabited the region at the time of Euro-American contact.

Essentially, the same assemblage was present across the Mojave Desert north of the Mojave River. However, Basketmaker-Pueblo influences increased with ancestral Puebloan occupation of the lower Virgin and Muddy Rivers. The Southern

Piute used the area in late prehistoric times. The mining of turquoise resulted in ancestral Puebloan influence in much of the eastern Mojave. Small parties of these Virgin and Muddy River villagers foraged in the eastern Mojave. During this time, the Mojave River also developed as a trade route between the Colorado River and the California coast. Ceramic and projectile point styles of the lower Colorado River spread through the Mojave River Valley, along with shell beads and ornament styles from the coastal region.

The Shoshonean period (A.D. 1200 – 1775) shows evidence of bow and arrow hunting, exploitation of plant resources using milling stones, and use of circular houses. The Ancestral Puebloan influence faded after A.D.1200 as a result of changes in climatic conditions, population movements, settlement patterns, social organization, and trade alignments. The Mojave River Valley and the southern Mojave continued to be influenced by the well-developed trade system between California coastal and interior populations. Villages on the upper Mojave were apparently dependent in part on the trade with the coastal region. Compared with other parts of the desert region, these villages appeared to be more elaborate; there are house pits, more abundant shell beads and ornaments, and the painting of utilitarian items such as metates with several different colors of pigment. Late in the

Shoshonean period (ca. A.D. 1650), trade networks appear to have been disrupted, bringing an end to the villages in Antelope Valley and reducing the intensity of activity along the Mojave River.

Historic archeological sites in the National Preserve area are largely associated with transportation corridors, water sources, and mining operations during the late 19th and early 20th centuries.

Archeological sites and the National Register of Historic Places

Three prehistoric archeological sites or districts located in or near the park are listed on the National Register of Historic Places:

- Piute Pass Archeological District
- Aiken's Wash National Register District (Baker Vicinity)
- Aiken's Wash Archeological Site "J" (Baker Vicinity)

Eleven archeological sites in the area have been determined eligible for listing on the National Register.

Existing Conditions

History

Historic sites within Mojave are associated with a variety of events and activities, and include early Spanish and American exploration, transportation routes of American Indians and other desert travelers, mining, ranching, homesteading, and military activity. Evidence of these activities includes trails, wagon roads, railroads, and highways. Abandoned mines, settlements, railroad grades and structures, and military sites attest to rather large, if short-lived, population centers. Fence lines, water tanks, and corrals are part of a continuing ranching industry; scattered remains of homesteads tell of a time when dry land farming was attempted in this arid land; and the outlines of military camps are reminders of World War II.

Exploration

The first Euro-American exploration expedition to enter the area was led by the Spanish priest Francisco Garces during 1775–76. Accompanied by Indian companions, Garces crossed the Mojave Desert on what would become known as the Mojave Indian Trail, eventually arriving at a mission near present Los Angeles.

In 1826, Jedediah Smith crossed the Mojave Desert via the Mojave villages on the Colorado River and the Mojave Indian Trail. During the next several years a steady flow of American "mountain men," entered California via the Mojave villages and the Mojave Indian Trail.

During 1853–54, explorers traversed the present Mojave National Preserve in attempts to find a route across eastern California for a trans-continental railroad.

During the late 1890s and early 1900s, geologists conducted the first scientific studies of local geological formations and mineralogical potential. The U.S. Geological Survey mapped most of the area during the early 1900s, produced the first reliable topographic maps of the region, and provided detailed information and maps on travel routes and water sources.

Transportation

The lands in the Mojave National Preserve have served as an east-west transportation corridor across the eastern Mojave Desert since prehistoric times.

During 1857–60 the Mojave Indian Trail was improved through the eastern Mojave to Los

Angeles, and became known as the Mojave Road. Major William Hoffman led the "Colorado Expedition" against the Mojave Indians in 1859. The Mojaves surrendered to Hoffman's superior force, and a post known as Fort Mojave was established on the east side of the Colorado River. The post, which would remain until 1890, controlled the Mojave tribe and served as a depot for army operations in the eastern Mojave Desert. It was supplied from Los Angeles via the Mojave Road, which continued to serve as the major thoroughfare across the eastern Mojave until 1883, when a railroad was built from San Francisco to Needles. During the 1870s immense herds of sheep and other livestock were driven over the Mojave Road to Arizona and New Mexico.

In 1860 an army post named Camp Cady was established on the Mojave River, as well as a short-lived adobe redoubt at Soda Springs. In 1866, the U.S. Army established relay posts across the desert at Soda Springs, Marl Springs, Rock Spring, and Piute Creek to provide escort riders for mail carriers.

Railroads came to the Mojave in the 1880s. In 1883, the 35th parallel railroad line was completed. The Nevada Southern Railroad completed a line from Goffs to the mining settlement of Manvel in the New York Mountains by the summer of 1893. The rail line was extended to the Ivanpah Valley in

1901–02. During 1906–07, a branch line was constructed from Barnwell (formerly Manvel) to Searchlight, Nevada. That branch operated until 1923.

The San Pedro, Los Angeles, and Salt Lake Railroad constructed its tracks through the present Mojave National Preserve in 1905, thus filling the last significant gap in transcontinental railroad lines from Salt Lake City to Los Angeles. Later this route was controlled by the Union Pacific, and the company constructed the Kelso Depot in 1924 to serve as an office, restaurant, and hotel for train crews that provided 24-hour essential helper (engine) service 19 miles eastward thus opening a transcontinental route between California and Springfield, Missouri. This rail line would stimulate economic and mining development of the eastern Mojave.

The Nevada Southern Railroad completed a line from Goffs to the mining settlement of Manvel in the New York Mountains by the summer of 1893. The rail line was extended to the Ivanpah Valley in 1901–02. During 1906–07, a branch line was constructed from Barnwell (formerly Manvel) to Searchlight, Nevada. That branch operated until 1923.

Existing Conditions



Early Travelers on Mojave Road

from Kelso to the top of Cima Hill. The restaurant was also open to the public. Cima emerged as a small railroad community, featuring a wye on which the helper locomotives from Kelso could be turned to return to Kelso.

The Tonopah and Tidewater Railroad extended northward from Ludlow through the National Preserve area to Beatty, Nevada. Operating from 1907 to 1940, the railroad served the growing mining settlements in the area.

With the emergence of the automobile age, efforts began to develop a highway system across the United States. The "Ocean-to-Ocean Highway," was constructed in 1914 between San Bernardino and Needles, skirting the southern edge of the present Preserve. Eventually this highway would become known as Route 66, a transcontinental road connecting Chicago with Los Angeles. Route 66 became a significant transportation artery during the Depression for people who wanted to leave the Dust Bowl to make a new start in California. In the early 1970s Interstate 40 replaced Route 66.

The Arrowhead Trail, originally marked from San Bernardino via Las Vegas to Salt Lake City during 1914–16 and realigned as U.S. 91 during the late 1920s, was replaced by present-day Interstate

Highway 15 during the 1960s. The highway skirts the north edge of the park.

Mining

Gold and silver discoveries in the Colorado River Basin during the late 1850s and early 1860s brought hundreds of prospectors trekking across the eastern Mojave. The Rock Spring (or Macedonian) Mining District was established in 1863. Silver deposits were soon discovered south of the Mojave Road in the Providence Mountains. For the next several years, mining camps proliferated in the Providence Mountains/Mid Hills/New York Mountains region, but the principal settlement was at Rock Spring, where the first post office in the area was established in 1866.

The Copper World mine was opened near Clark Mountain about 1868, and silver was discovered south of Clark Mountain in 1869, resulting in establishment of the first site of Ivanpah, where much of the mining history of the eastern Mojave would be centered during the 1870s.

The coming of the railroads during the 1880s stimulated new mining ventures in the eastern Mojave. Opening of the rich Bonanza King silver mine on the eastern slopes of the Providence Mountains, resulted in establishment of

Existing Conditions

Providence and Crow Town. The Cambria Mine at Nantan was active during 1885–86.

Gold mining dominated mining ventures in the eastern California desert region during the 1890s, since the Panic of 1893 resulted in political decisions favorable to gold interests over those of silver ventures. During this time, the widespread use of cyanide for treating gold ore sent many prospectors out to rework old dumps, and formerly unprofitable mines were reopened. These developments led to discovery and development of the Gold Bronze and Boomerang mines in the New York Mountains, the Telegraph Mine near Halloran Springs, and the Paymaster (Whitney) Mine near Old Dad Mountain southeast of Baker. The rise in copper prices during the 1890s resulted in reopening the Copper World Mine in 1898. Other mining ventures included development of copper, lead, and silver deposits in the New York Mountains, where the town of Vanderbilt was established, its name being chosen to signify the great wealth that the mines were believed to possess.

Large-scale hardrock mining operations began in the early 1900s. A variety of metallic minerals were exploited during the 1900s, including gold, copper, lead, zinc and silver. Ephemeral mining camps such as Vontrigger Camp, Goldbend, Gold Valley, Gold Park, Dawson, Kewanee, and Hart, sprang

up throughout the desert region. These mining ventures flourished until the financial panic of 1907.

Since the early 1920s, clay used for ceramic purposes has been mined in the Castle Mountains. During 1924–25, gold was discovered north of Goffs on the south slope of Hackberry Mountain, and a new Vontrigger camp emerged.

The onset of World War II led to demand for minerals such as tungsten, antimony, manganese, iron, copper, lead, and zinc necessary for military industrial production. Mines producing these ores prospered during the war.

Uranium fever, much like the gold fever of earlier days, swept the eastern Mojave during the mid-1950s. Tungsten prospecting revived after World War II, and a major talc industry that had begun during World War I (but had never thrived because of limited markets and remoteness of the deposits) revived. Talc has also been mined in the Kingston Mountain region, and cinders have been quarried from the Cinder Cones and Lava Beds (Aiken Mine) areas southeast of Baker. Rare earth minerals have been mined on a large scale in the Mountain Pass area southeast of Clark Mountain. Periodic gold excitement has resulted in reactivation of gold mining operations in the eastern Mojave, including the Vanderbilt Mine in

1968 and the Bagdad-Chase Mine south of Ludlow during the early 1970s.

Ranching/Homesteading

Throughout the eastern California desert region, little oases with fertile soil and perennial springs



OX Ranch, Mojave National Preserve

could produce crops of vegetables, fruit, and hay or fatten a herd of beef cattle, providing quick fortunes for the homesteader or rancher as long as the neighboring mining camps boomed. Although most ranchers held 160-acre homestead claims, they were usually able to irrigate only a fraction of that, while their stock ranged free for miles beyond. The proximity of ranches and mining

camps determined the profitability of both, but ultimately it was the size of the ore pocket that limited the size of the salable crop, so as the mines went from boom to bust, so did the ranches. Miners who established the Rock Spring Mining District in 1863 probably were the first to maintain cattle and horses for extended periods in the east Mojave. Military garrisons and mining settlements in the region would continue to provide a market for fresh milk, meat, vegetables, and fruits.

The Rock Springs Land and Cattle Company (RSLCC) was incorporated in 1894, consolidating the earliest ranches in the area. During subsequent years it extended its cattle operations over much of the eastern Mojave and into southern Nevada. The company spent large sums to establish claims for exclusive use and improvement of the area's water sources. By 1920 the company had nearly 10,000 head of cattle on its more than 1,000,000 acres. In 1927 company interests were subdivided. From 1927 until 1988, the OX Cattle Company, a direct descendent of the RSLCC, was the largest ranch in the east Mojave, operating on a fraction of the area controlled by its predecessor, while other parts of the former range were operated as smaller ranches such as the Gold Valley, Kessler Springs, Valley View, and Colton Hills.

Existing Conditions

Beginning about 1910, settlers established homesteads and attempted dryland farming in the east Mojave, taking advantage of a cycle of particularly wet years. Most settled in Lanfair Valley. After marginal success in drilling wells, the settlers were forced to haul water over the Mojave Road from Government Holes, the one remaining public water source. By the late 1910s, dry years had returned, and many homesteaders had left the area. After the abandonment of the railroad between Barnwell and Searchlight in 1923, most of the remaining settlers moved out.

Dunbar was an African-American settlement established in 1911, in Lanfair Valley. At its peak the community numbered approximately 20 households. Cotton was cultivated, and a home and industrial school for orphans was planned, but the settlement was short-lived. Its post office closed in 1914.

Many homes stood empty in the east Mojave at the beginning of the Depression. Driven by the economic downturn, people moved into some abandoned sites and managed to eke out a living, some trying to mine gold on an almost primitive scale.

Communication

The first transcontinental telephone line, in operation from New York to San Francisco by 1915, crossed the present Mojave National Preserve. Examples of other significant communication lines across the park include the first powerline constructed from Hoover Dam to the Los Angeles area during the 1930s and an early telephone line that parallels the Santa Fe Railroad.

During the 1960s the American Telephone and Telegraph Corporation (AT&T) constructed an underground communications cable network throughout the United States. In the early 1980s the system was upgraded to accommodate current technological advances using Phillips technology; hence, it was renamed the P140 coaxial cable system. AT&T, which owns and operates approximately 709 miles of the system between Mojave, California, and Socorro, New Mexico, has removed communications cable, marker posts, manholes, and repeater stations (incompatible with the company's current fiber optic network) from a 220-mile right-of-way that crosses the park. A vegetation restoration project associated with the removal will be completed in the summer of 2003.

Federal Administration

Until the 1930s public lands in Mojave were administered by the General Land Office (GLO), which was established in 1812 as a bureau in the U.S. Treasury Department and transferred to the Department of the Interior in 1849. In 1934 the Taylor Grazing Act provided for the segregation of up to 8,000,000 acres (later raised to 142,000,000 acres) for grazing purposes under the jurisdiction of the newly established Grazing Service (GS) in the Interior Department. The Bureau of Land Management (BLM) was established in 1946, uniting the functions of the former GLO and GS. The bureau was given responsibility for managing public lands in the United States and Alaska, including surface and subsurface resources. Lands were managed by the BLM until transferred to the National Park Service through the California Desert Protection Act in 1994.

Modern Military Training

General George S. Patton selected much of the eastern Mojave and part of the Colorado Desert to train his troops for the North Africa campaigns during World War II. Although Patton left with his troops for North Africa in 1942 after less than a year's training, more than 1,000,000 men were processed through the Desert Training Center, which was renamed the California-Arizona

Maneuver Area (C-AMA). The C-AMA focused largely on lands south of the park. However, an important campsite was established in the southern portion of Piute Valley north of Arrowhead Junction at Camp Ibis (just east of the present park boundary), and Camp Clipper was established at Goffs in 1942 for 16,000 troops, including a segregated black division. Portions of Camp Clipper fall within the park, and the Clipper Mountains and Piute Valley on both sides of the California-Nevada border served as operating areas for military training exercises.

Operation "Desert Strike," one of the largest exercises ever conducted by the U.S. Strike Command, involved more than 100,000 active and reserve men from all branches of the armed forces during training exercises between May 17 and 31, 1964. This multitude, with machines, guns, aircraft, and supplies, swarmed across the present Mojave National Preserve, building hundreds of miles of roads through the desert and leaving hundreds of tons of supplies and debris.

Today, nearly one-sixth of the Mojave Desert lies within military bases and reservations. Three of the military bases that are closest to the National Preserve area are the Fort Irwin National Training Center, the Marine Corps Air Ground Combat Center, and the Yermo Marine Corps Logistics Base.

Existing Conditions

Recreational Development and Tourism

Recognition of the recreational values of the California desert was first promoted during the pre-World War I years by such organizations as the Automobile Club of Southern California and the International Desert Protective Association, both of which encouraged their members to tour the desert and helped them do so with maps, sign programs, and lobbying campaigns for better roads. Since that time, the eastern California desert region has attracted an ever-increasing number of tourists interested in taking advantage of its recreational opportunities, including hunting, trapping, rockhounding, hiking, camping, and sightseeing.

During the 1870s, a public bathing establishment was built at Soda Springs, known as Soda Lake Station when it was a stage stop. In 1914 a religious group led by Pastor Charles T. Russell occupied Soda Springs, constructing five frame houses and attempting to mine gold in the nearby hills. In 1944 Curtis H. Springer arrived at Soda Springs and, finding it deserted, took possession of the land under a mining claim. He and his wife, Helen, developed the property into the "Zzyzx Mineral Springs and Health Resort," which operated until 1974. Transferred from the Bureau of Land Management to the National Park Service in 1994, the site is co-managed under a cooperative

agreement by the California Desert Studies Consortium of the California State University.

Mitchell Caverns was developed as a tourist attraction during the 1930s, and became a California state park in the mid-1950s. Today, the state of California administers the caverns and surrounding area as the Providence Mountains State Recreation Area.

Historic Sites on Federal and State Registers of Historic Places

Kelso Depot was listed on the National Register of Historic Places in 2001.

Boulder Transmission Lines 1, 2, and 3 is an Archeological District (CA-SBR-7694H), which passes through the park. It was determined eligible for listing on the National Register as an archeological (historic) district in 1994.

National Register nomination forms are being prepared for Soda Springs Historic District and Mojave Road.

The following historic sites in or near the park have been designated California Historic Landmarks or California Points of Historic

Interest: Fort Piute, Marl Springs, Lanfair, Zzyzx Springs, Camp Rock Spring, Kelso Depot, Barnwell, Fenner, Nantan, and Vanderbilt

Museum Collections

Mojave has a small collection of artifacts that have not yet been fully catalogued. Some valuable pieces are in storage at Death Valley National



Zzyzx

Park’s museum storage facility. The Park Service anticipates an expanding collection as items are acquired for exhibit at the Kelso Depot.

Local Communities

These communities are important to the Preserve for many reasons. Among them: Preserve neighbors and visitors live there, visitors get vital information about the park in these communities, and they are a vital part of the continuing heritage of the area.

Baker

Baker is a gateway community for Mojave National Preserve, located on I-15 just north of the park boundary. The town has about 500 residents—and restaurants, motels, gas stations, auto repair and towing services, a small airstrip, and convenience stores. The park maintains a compound on the edge of town, with five residences, an office building, maintenance and storage sheds, and an RV hook-up. The NPS information center is located on leased land at the “World’s Tallest Thermometer.” The information center is staffed seven days a week, and includes a cooperating association sales outlet, limited exhibits, and an information desk. Planning is underway to evaluate and upgrade exhibits and sales materials. The owner has expressed interest in using the building for another purpose. If this

Existing Conditions

happens, the information center could be moved to another location in town.

Needles

Needles is a gateway community of about 5,700 residents located on I-40 east of the park at the Colorado River which defines the California-Arizona border. It is also only a few minutes from Nevada. Needles has close ties with the larger towns of Bullhead City and Lake Havasu, Arizona and Laughlin, Nevada. It serves large numbers of tourists at peak times of the year. The tribal headquarters for the Fort Mojave Indian tribe is located in Needles. Needles was established as a railroad town and transportation center in 1883, and the Santa Fe Railroad is still the largest employer in the area. Needles features historic Route 66, many historic buildings, and a local museum.

The Mojave Desert Information Center, a contact station, was established in 1997 as an interagency center shared with the Bureau of Land Management (BLM). Located in downtown Needles, the Center included limited exhibits, a cooperating association sales outlet, staff offices, and an information desk. The BLM stopped supporting the office in May of 2003 due to funding shortages. With the opening of the Kelso Depot scheduled for 2004 and no immediate

increase in staffing expected, the Park Service closed the center at the end of FY 2003. Staff was shifted to support operations at Kelso and Hole-in-the-Wall.

Barstow

Barstow is a gateway community of about 25,000, located 60 miles west of the Preserve where Interstates 40 and 15 converge. Services include a community college, hospital, shopping and outlet malls, and a variety of restaurants and lodging. Park headquarters is currently located downtown in leased space, but will move into a new building in Barstow in FY 2004. Most park staff work at this location and live in the surrounding area. The new headquarters will include a reception area with exhibits where visitors can pick up park information and purchase federal fee passes.

A number of other museums and information centers operate out of Barstow. An official California Welcome Center at Tangier Outlet Mall contains about 10 feet of wall-mounted flat exhibits on Mojave, and supplies maps and newspapers of park. This center may relocate or close within the next few years. The Mojave River Valley Museum, operated by volunteers, is located just off I-15 and offers history exhibits and a book sales outlet. The Route 66 Museum, also a volunteer operation, is located in the recently

remodeled Harvey House train station. Exhibits relate specifically to Route 66, and they also operate a book sales outlet. A third local museum, known as the Desert Discovery Center, is operated by the BLM in a cooperative relationship with the Center, and functions as an environmental education center.

Nipton

The small town of Nipton is located two miles from the Nevada border and is another gateway community. Nipton features a bed and breakfast inn, store, campground, and restaurant. Tent trailers and mountain bikes are available for rent. Park information is available through brochures, maps, a wayside exhibit, and the service staff.

Goffs

Goffs served as a Santa Fe Railroad junction from 1893 to 1923, with a depot in use by section crews until 1956. Now the most prominent activity at Goffs is headquarters for the Mojave Desert Heritage and Cultural Association, a not-for-profit organization operating out of the restored Goffs schoolhouse. Their mission is “to research and conserve the natural and cultural history of the Mojave Desert region for the purpose of preserving and sharing these resources in

perpetuity.” The group has created and operates a library and archives, produces educational guidebooks and historical publications, leads tours, and many other activities. Their collection of oral histories, books, historic photographs, voting records, and other archival material related to the east Mojave is an extremely valuable resource.

Partners Inside Mojave National Preserve

Providence Mountains State Recreation Area

Centrally located within park boundaries, Providence Mountains State Recreation Area is managed by California State Parks. It features hiking trails, a small campground, wonderful scenery, a wide variety of plant and animal life, and beautifully decorated limestone caves known as Mitchell Caverns. The Caverns is a popular tourist destination located 30 minutes from the Hole in the Wall. Guided tours of the caves are offered daily from Labor Day through Memorial Day, and on weekends only during the summer. Group tours can also be arranged by special reservation. A wild cave experience is available by permit to

Existing Conditions

experienced vertical cavers. The staff includes a law enforcement ranger, tour guides, and a maintenance employee. NPS employees maintain close ties with state park staff, and participate in joint special events, search and rescue, emergency medical services, and training opportunities.

Sweeny Granite Mountains Research Center

The Sweeny Granite Mountains Research Center is located on an inholding in the Granite Mountains off of Kelbaker Road. The Center is part of the University of California's Natural Reserve System, which "makes relatively undisturbed samples of the state's natural ecosystems and the facilities needed to support teaching and research available not only to students, teachers, and researchers from the University of California, but to any qualified user from any institution, public or private, throughout the world."

Facilities include dormitories, a kitchen, library and laboratory; the Center can provide camping, dormitory space, and conference meeting space for up to 40 people. Its mission is primarily to provide work and living space for researchers and it is not open to the general public. The director and other staff have considerable expertise in local

biology and archaeology, and are a valuable resource for interpreters.

Desert Studies Center at Zzyzx

Zzyzx is home to the Desert Studies Center, a field station of the California State University system. The Center "provides opportunities for individuals and groups to conduct research, receive instruction and experience the desert environment." Weekend seminars are popular, and attract adults from throughout southern California who want to learn about the Mojave Desert. Students at these courses often travel into the park to learn more.

The facilities at Zzyzx are located in the renovated buildings of the former Zzyzx Mineral Springs Health Resort, described in the History section of this document. Charming stucco buildings are situated near a pond surrounded by palm trees, and adjacent to scenic Soda Dry Lake.

The Desert Studies Center welcomes visitors. To facilitate these visits, Mojave National Preserve has recently renovated the picnic area and restroom facilities, and replaced wayside exhibits around the pond.



Kelso Depot

Information Centers & Campgrounds

Kelso Depot

The Kelso Depot, a mission-revival style train station built in 1924, is currently undergoing renovation for use as a major information center for the park. Its location at the busy junction of Kelbaker and Kelso Cima Roads is ideal to conveniently reach a large percentage of visitors traveling through the park. Regional interest in the depot is high, and is expected to be a major draw for visitors to the area.

Most of the building will be open to the public, and plans are currently underway for exhibits on the first floor and half of the second floor. Exhibits are designed to reflect the feelings of space, solitude, and freedom in the desert that are becoming increasingly more precious as Los Angeles and Las Vegas continue their rapid expansion.

Planning for exhibit space while preserving the historic integrity of the building was a challenge. Most exhibits will be placed in 10' x 12' rooms that were originally designed to be hotel rooms. Most rooms will use one location within the park as a spring-board for conveying park interpretive themes. Natural and cultural history topics will be interwoven.

Since the building itself is of regional interest and significance, considerable space will be devoted to interpreting its original use. The Beanery Restaurant, conductors' office, waiting room, baggage room, and two upstairs hotel rooms will be historically furnished and interpreted.

Two rooms upstairs will be outfitted as reading rooms. Here, visitors will have the opportunity to browse through a variety of books, magazines, maps and old newspapers to learn more about the desert.

Existing Conditions

A small theater will be located on the first floor. Planning for an introductory audio-visual program has not yet begun.

One room in the basement will be outfitted with environmental education supplies such as field guides, lab equipment and study skins. The vision is for this room to be used as an organizational and learning space for school groups on field trips to Mojave.

Kelso History

The town of Kelso was established to serve the needs of Union Pacific railroaders and miners in the early 1900s. Kelso Depot was built in 1924 to serve meals to railroad passengers, provide a location for community events, and house depot workers. The population grew to almost 2000 people during World War II, primarily due to jobs in mining and transporting iron ore from the nearby Vulcan Mine; but the numbers declined when the mine closed. The Kelso Depot continued to operate into the early 1980s, when railroad officials decided to demolish it. A coalition of local governments, Congressman Lewis, and supporters managed to save the building.

Hole-in-the-Wall Information Center and Campgrounds

Rhyolite cliffs riddled with holes and hollows probably inspired this place name. BLM-era development at Hole-in-the-Wall includes an information center, family campground, group campground, and fire center (dormitory, engine bays, and office space). A nature trail connects the campground and information center, and the popular Rings Trail is nearby. In the absence of other developed areas, Hole-in-the-Wall is currently the hub of ranger contact and recreational opportunities in the park. However, some problems at the site have been identified, and the park is preparing a development concept plan to analyze alternatives.

The information center is nestled at the base of the cliffs, and has some rudimentary exhibits, an information desk, and a cooperating association sales outlet. Picnic tables and a pay phone are adjacent to the parking lot. Additional tables are about ¼ mile away at the trailhead for the Rings Trail, a moderately strenuous two-mile loop that utilizes metal rings in the rock to help with hand and foot holds.

Hole-in-the-Wall Campground has 35 sites, including sites for RVs and two walk-in sites, but little shade. Pit toilets, potable water, picnic tables,

fire rings, and an RV dump station are available. Black Canyon Group Campground and Equestrian Site is located on the opposite side of the road from the family campground and information center, and can handle 2 or 3 groups at a time. Reservations are required.

The Fire Center is near the group campsite. The current buildings were built in 2002 to replace worn-out temporary buildings installed by the BLM. The dormitory at the fire center offers potential short-term housing for volunteers and interpretive staff.

Mid Hills Campground

Located just six miles north of Hole-in-the-Wall Campground, Mid Hills Campground is nestled amidst piñon pine and juniper trees at a comfortable 5600 feet elevation, and contains 26 campsites. This campground is especially pleasant during the hot summer months, due to increased shade and cooler temperatures at higher elevation. The campground is located off Wildhorse Canyon Road, which can be bumpy and uneven, so this campground is not recommended for RVs. The Mid Hills to Hole-in-the-Wall trail is an eight-mile hike, one way.

Minimally developed points of interest

Kelso Dunes

Kelso Dunes are one of the most popular and well-known features at Mojave, and are among the highest sand dunes in North America. The Dunes are referred to as “singing” or “booming” dunes due to an audible low rumbling sound that occurs in areas of shifting sand. A surprising variety of plants and animals live among the dunes.



Kelso Dunes

Existing Conditions

Two waysides are currently in place. Parking and pit toilets are available at the trailhead. A three-mile hike leads visitors to the top of the dunes for a spectacular view. Hiking up is slow and strenuous in the loose sand, but the trip down can be an exciting run-and-tumble. Kelso Dunes is a day-use area.

Cima Dome and Teutonia Peak

Cima Dome is a nearly symmetrical geologic dome rising 1500 feet above the surrounding desert. The dome covers an area of about 10 square miles, and is a subtle feature, not readily apparent. It is best viewed from a distance, such as from Cedar Canyon Road. Teutonia Peak is located on Cima Dome and is the end point for a two-mile one-way trail. The trailhead with interpretive wayside is located 12 miles south of I-15 on Cima Road. One of the world's largest concentrations of Joshua trees grows on the slopes of Cima Dome and is interpreted on a wayside panel at the parking area.

Rock Springs and the Rock House

Two wayside panels tell the story of Camp Rock Springs. An Army outpost was established in 1866 at this lovely spring in a rocky alcove to protect travelers on the Mojave Road. It was known as one of the most isolated and comfortless Army posts in

the West, and was soon abandoned. Nearby is the Rock House, an unassociated structure whose visibility from the road and unique stacked rock construction draw interest from passersby.

The spring and interpretive waysides are not visible from the road, and visitors who don't know about it are unlikely to find it. On the other hand, the Rock House is very visible and interesting, but no signs identify it. A four-wheel-drive vehicle is recommended to access the spring site.

Areas where development is planned

Fort Piute

Fort Piute was a military outpost established to protect a water source (Piute Creek) and area travelers. The ruins are clearly visible today. A stabilization project carried out in 2002 capped and cleaned the ruins to prevent further deterioration. Planning is underway for a major archaeological study, to be followed by limited development including road improvements, picnic area, and interpretation.

Beside the fort a narrow ribbon of willows, cottonwoods, and rushes thrive along the half-mile section of Piute Creek that flows above

ground. This is one of the few free-flowing stretches of water in the park. Four-wheel drive vehicles are recommended for access from the east. The site can also be approached from the west by parking near the top of Piute Gorge in the Lanfair Valley and hiking in.

Quail Basin Trail

This trail begins at Arrowweed Springs located off Kelbaker Road, and uses closed dirt roads as the basis for the trail. Environmental compliance documents are still being compiled before work can proceed. The project will include limited road improvements, parking, trail improvements, and limited signing.

Undeveloped points of interest

Cinder Cones and Lava Flows

Intense volcanic activity created cinder cones and lava flows near Kelbaker Road, 14 miles south of Baker. Although there is no established trail at this location, access to the lava flows is easy from an unmarked parking area along Kelbaker Road. Access to the Cinder Cones is via Aikens Mine Road, a dirt 4WD road.

Clark Mountain

The only section of the Preserve north of Interstate 15 is also its highest point at 7929 feet. Inhabited for thousands of years by at least three different American Indian groups, the mountain is archeologically and spiritually significant. Mining operations on or near Clark Mountain continued for more than a century; significant amounts of silver, gold, copper, and rare minerals were extracted. The short-lived boom town of Ivanpah, located on the slopes of Clark Mountain, was founded in 1869 with the discovery of rich silver veins in the mountain. The population peaked at about 500, and the town was abandoned by the end of the century. Little can be seen of this ghost town today. Access to Clark Mountain is mostly by rough dirt roads; four-wheel drive high-clearance vehicles are strongly recommended. This area is a popular location for rock climbers, and more than 80 climbing routes have been identified. The mountain is also habitat for Bighorn sheep.

Lanfair Valley

Little remains of the buildings constructed by homesteaders early in the 1900s who tried to farm this arid land. Conflicts over water and grazing rights, increasingly arid weather, declining mining

Existing Conditions

activity, and the abandonment of the railroad station in Lanfair marked the end of this little community. The high valley shelters a healthy Joshua tree forest.

Caruthers Canyon

Marked on some unofficial maps with a prominent camping symbol, this well-known canyon is a popular summer holiday camping area, and dozens of informal campsites fill up over the Fourth of July holiday weekend. Access into the area is generally by 4WD vehicle. Beyond the camping area is a rough road, now closed to vehicles, that leads to an abandoned mine.

OX Ranch and Kessler Springs Ranch

The recent acquisition of these two ranch headquarters may offer possible venues for interpreting ranching in the east Mojave. Kessler Springs is more easily accessible, while OX has a more interesting and representative collection of ranch buildings. Limited government housing will be located at both ranches.

Visitors

Visitation to Mojave has increased over the last six years to 537,488 visits in 2002. Holiday weekends between October and May, as well as the fall hunting season, bring the largest numbers of visitors. Park staff anticipates a significant increase in visitation with the opening of the Kelso Depot in the fall of 2004. Increasing publicity and continued phenomenal growth of Los Angeles and Las Vegas will also lead to rising visitation.

Bound by two interstate highways, one of which connects Los Angeles with Las Vegas, Mojave is within a few hours drive of over 21 million people. Six entrance points on paved roads provide relatively easy access, yet most visitors see few other people; the vast, mostly open landscape offers visitors opportunities for seclusion and a sense of wilderness, even while in a vehicle.

Typical visitor experiences range from a scenic drive of a few hours to several days of camping and exploring. Early miners and ranchers developed roads that today offer visitors a chance to drive into many remote locations where informal camping has traditionally occurred. There are several major sand dune systems; Kelso Dunes is especially popular for sand play. Many come to explore cultural sites, especially abandoned mining districts. Relatively cool, forested

mountain ranges such as the New York and Providence Mountains offer a contrast to the dry hot valleys, attracting many people in summers. Volcanic cinder cones, lava flows, rock outcrops, and unique wildlife and vegetation are other elements that attract people. The land has many extremes and contrasts that people come to experience; some even come specifically to experience the extreme heat of summer in the Mojave.

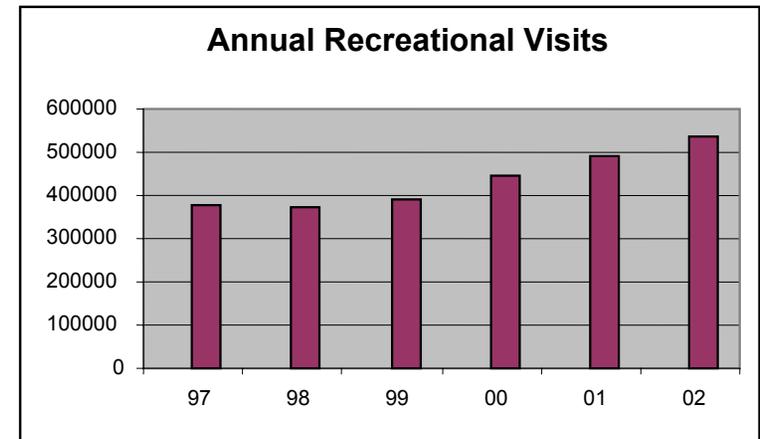
Existing Conditions

Annual Recreational Visits

1997	378,977
1998	374,378
1999	391,694
2000	444,402
2001	492,745
2002	537,488*

* Data amended from official report

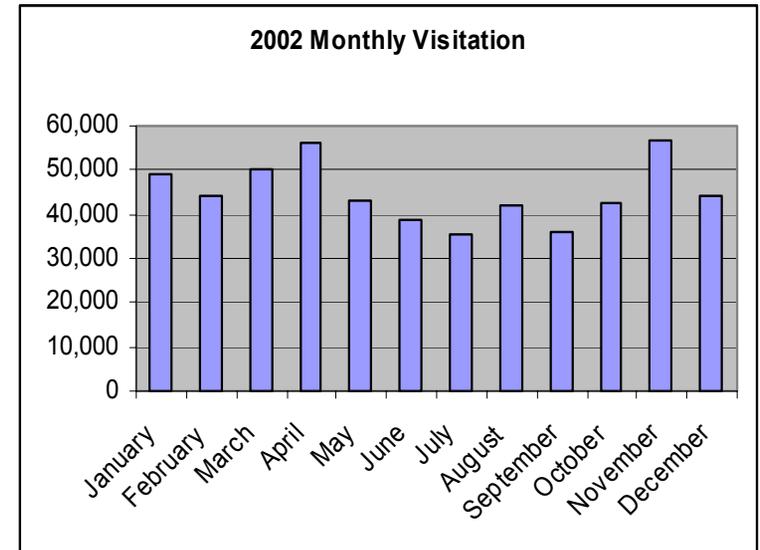
Park website: 414,920 hits in 2002



2002 Monthly Recreational Visits

Jan	49,013
Feb	44,266
March	50,000*
April	56,256
May	43,102
June	38,525
July	35,184
Aug	41,758
Sept	35,827
Oct	42,730
Nov	56,902
Dec	43,925

* Data amended from official report



Information Sources for Visitors – Contacts in FY 2002

- The park website counted 414,920 hits
- Interpreters at the three information centers spoke with about 25,000 people
- Roving contacts and other informal interpretation reached 2,150 visitors throughout the park
- Staff presented 20 programs for 285 park visitors
- Interpreters and others presented 60 education programs for 2,239 students
- Staff participating in community programs such as fairs reached 8,630 people

Visitor Study

A survey by the NPS Visitor Services Project (*National Park Service, 1997*) was conducted April 5-13, 1997. Survey results revealed that most visitors come in small family groups. About 70% are from California and 12% from Nevada. 7% are international visitors; most of these come from Canada, the United Kingdom, and Germany.

About half of the visitors had been to Mojave before, and 61% stayed less than a day. Common activities included sightseeing, driving on paved

and unpaved roads, nature study, day hiking, and exploring mine ruins.

One third entered or exited the park on Kelbaker Road from I-15, one fifth entered or exited on Ivanpah Road from I-15, and 15% entered or exited from I-40 on Kelbaker Road. Over half visited Kelso Dunes and the Kelso Depot; over one third visited Hole-in-the-Wall.

The survey revealed that open space and the sense of solitude are important elements of a visit to Mojave. Visitors appreciate campgrounds and other developed areas that already exist, but few support additional development. As other southern California parks become more crowded, visitors turn to Mojave as a place to go to escape the crowds.

RECOMMENDATIONS

General Recommendations

The primitive nature of Mojave would be maintained by the choice and location of interpretive media and services, which would concentrate at information centers, a few roadside pulloffs, and trailheads. More detailed interpretation, orientation, and information would be available through publications, guided walks, and other personal services.

Park orientation would be a primary function of the Kelso Depot and the information centers at Baker and Hole-in-the-Wall. Goals would be to help people visit the park safely with minimal impact on park resources, and to encourage discovery and exploration.

Information centers would provide primarily orientation and basic information, especially on resource protection, safety, and desert tortoises. The Depot would provide a more detailed and multi-sensory treatment of park significance and themes. Publications at all centers would provide in-depth treatments of themes and resource information. All themes would also be interpreted through various personal services, on the park

website, and through outreach services. Consideration would be given to emphasizing stories that are unique to the Mojave National Preserve, since many visitors have been exposed to broader interpretive themes at other desert parks. Examples of unique stories include the Mojave Road and the diversity of biotic communities specific to the Preserve.

Future Visitor Center

A long-term park goal is the construction of a visitor center. The California Desert Protection Act calls for this in section 514 – the “Secretary is authorized to construct a visitor center in the preserve for the purpose of providing information through appropriate displays, printed materials, and other interpretive program, about the resources of the preserve. “ The visitor center location, building layout and issues associated with the thematic presentation of interpretive displays will need to be determined through a planning process.

Specific Recommendations

Specific recommendations are repeated from four different perspectives, in the following sections:

1) Sites -- The first section lists recommendations for specific sites.

2) Media -- The second section summarizes recommendations according to interpretive media such as wayside exhibits and personal services.

3) Themes -- The third section proposes approaches to interpreting primary themes.

4) Implementation Plan -- The fourth section summarizes actions according to themes and audiences.

1) Site Recommendations

Kelso Depot

The rehabilitation of the Kelso Depot is a major asset to the park's interpretive program. Construction will be complete in the fall of 2003.

Exhibits will be installed in the summer of 2004, with the grand opening tentatively scheduled for fall of 2004.

The California Desert Protection Act calls for a comprehensive visitor center to be constructed for Mojave. Current planning envisions this to be built in the next 10-15 years. Until then, the Kelso Depot will function as the central information center.

This section summarizes interpretive and visitor experience planning for the depot, and corresponds to the Kelso Concept Design Plan (*National Park Service, 2003*). Recommendations correspond conceptually to a value analysis workshop conducted in March, 2001. Subsequent design decisions provided additional cost savings while still delivering basic interpretation.

Recommendations

Adaptive Use of Kelso Depot

Built in 1924 in the Spanish Mission Revival Style, this large, stately building standing alone in the desert has always been a remarkable attraction. The building was placed on the National Register of Historic Places in 2001, and its historic architecture presents both challenges and opportunities. When restoration is complete and the Depot stands resplendent in its 1924 color scheme of peach with turquoise trim and burgundy window shades, many people from around the region will come to see the building, and as a consequence will learn about Mojave National Preserve. However, due to its historic significance, a great deal of its functional integrity is being maintained in the restoration. The resulting floor plan, in which much of the space is divided into tiny hotel rooms, has created a significant design challenge for exhibit planners.

The restored depot will provide interpretation, orientation and information, and visitor services. The adaptive use of the building will provide a setting for both media (exhibits, audiovisual programs, and publications among others) and for personal services (an attended information area and interpretive talks and other programs).

Facility Functions

Most of the Depot will be open and accessible to visitors. The only closed area will be about half of the upstairs, which will be used for offices and storage.

Building functions include:

- orient visitors to the resources, services, and recreational opportunities in the Preserve and in surrounding areas
- enhance visitor safety and resource protection
- introduce primary park themes; introduce the overall story and significance of the Preserve; and provide resources (e.g., publications, personal contacts and reference services) for more in-depth experiences and understanding
- provide essential visitor services (e.g., restrooms, first aid, emergency services, limited food service, a cool place to sit)
- protect cultural resources: rehabilitate and preserve the essential historic fabric of the depot; interpret the depot, its associated people and activities, and their context
- support theme-related and curriculum-based educational activities by local and

regional schools and other educational programs such as Elderhostel

- enhance community relations and interaction by providing a venue for activities that do not conflict with other functions
- provide offices and storage for NPS staff and support facilities for researchers

Reception/Lobby

The information desk will be the original hotel reception desk, modified for adaptive use and placed in its original location just to the left of the entrance. The desk will be staffed by NPS interpreters; maps, brochures, and other orientation information will be available. Orientation will stress safety, encourage discovery, and convey the importance of no-trace and other low-impact recreation techniques.

Historically Furnished Rooms

Early in the design process, the decision was made to historically furnish a number of rooms in order to interpret the original functions of the Depot. A Historic Furnishings Report was prepared by Harpers Ferry Center (*National Park Service, 2003*) and preliminary work has begun on acquiring furnishings.

At the west end of the first floor, the Beanery (café) will be rehabilitated to resemble its original appearance. Visitors will be able to sit at the large U-shaped counter and review books, brochures, and maps, and converse and relax. Limited food service might be available, possibly sandwiches and snacks. On the east end first floor, the ticket/telegraph office, passenger waiting room, and baggage room will be furnished to demonstrate their functional use from 1924 through the 40s. Upstairs two hotel bedrooms will be furnished to demonstrate each of the two styles of rooms available.

Exhibits

Exhibits will convey the passion for the Mojave Desert often felt by those who have spent time here. Ranchers, miners, recreationists, and scientists all respond to the beauty, solitude, and open space...that feeling of freedom that comes from being far from urban areas and crowds. As Los Angeles and Las Vegas continue their rapid growth, the opportunity to experience that freedom becomes an ever more precious commodity. The value of Mojave becomes greater with each passing year.

Mojave National Preserve is a place of exploration and discovery. Driving through, it may seem

Recommendations

utterly empty--yet this desert landscape hosts a rich diversity of plants and animals. Much of the natural world is hidden, but those who truly look will find much to see. The seeming emptiness hides another story of the desert--the large number of mine sites and abandoned railroad grades are clues to the once thriving but ephemeral communities that existed in the east Mojave. Towns with hundreds, sometimes thousands of residents dotted the desert, linked by railroads whose tracks have long since been removed. Ranches provided meat; homesteaders even established farms during the relatively rainy decade of the 1910s.

In the Mojave Desert, the stories of man and nature are interwoven. Desert residents changed the landscape; for example, miners left piles of tailings and ranchers' cattle grazing changed plant communities. Conversely, the desert landscape profoundly influenced the lifestyles and attitudes of desert residents. Exhibit themes, too, will be interwoven. Each room will feature a different section of Mojave; exhibits will be designed to spark interest in the natural and cultural history of the area. Visitors will be encouraged to seek out special places, to create their own discovery experiences, which will provide them with the opportunity to develop their own emotional link to the desert.

For specific, room-by-room descriptions of exhibit concepts see the Kelso Concept Design Plan (*National Park Service, 2003*).

Theater and Audiovisual Program

The theater will provide a venue for audiovisual programs, interpretive talks and demonstrations, and meetings. There will be comfortable seating, good acoustics, electrical connections and lighting that support a variety of presentations and activities, and an entrance with a light trap.

An overview video program will give visitors an introduction to park significance. It will be an opportunity to present concepts not easily addressed in static exhibits and could show seasonal changes that one-time visitors would not be aware of. More than any other product, it will provide an opportunity to convey the superlative scenic qualities of Mojave. Planning and production of the video is contingent on funding.

Theme-related Sales

Western National Parks Association (WNPA) will operate a cooperating association sales area offering books, maps, videotapes, posters, CDs, postcards, theme-related souvenirs, and visitor convenience items (e.g., film, travel supplies). A

WNPA employee will be based here to manage bookstore operations throughout the park and assist directly with sales.

Reading Rooms

Two upstairs rooms will be outfitted with comfortable furniture, books, maps, old newspapers, photos, and other resources for visitors to explore. Copies of old editions of newspapers from local towns, railroad magazines, and other items will convey the realities of desert living.

Multipurpose and Discovery Rooms

A multipurpose room in the basement will be used for educational activities, meetings, workshops, display of temporary or traveling exhibits, and occasional projects such as the preparation of temporary exhibits. A discovery room will be furnished with simple interactive exhibits and devices, and educational resources relating to the park. The intended audience will be children-- both with families and in organized groups.

Accessibility

The building will be physically accessible and meet all applicable codes; an elevator will provide access to all three floors. Interpretive media will provide programmatic accessibility to the degree possible. Audiovisual programs will be captioned.

Hole-in-the-Wall Information Center

A Development Concept Plan (DCP) for the entire Hole-in-the-Wall area is currently being prepared, including the information center, campgrounds, and trails. Until the plan is complete, current occupancy and functions will continue. Functions presently include orientation, information, interpretation, cooperating association sales, and offices. Because of its location near the campground, Hole-in-the-Wall visitors have specific, detailed interests in the area and time to pursue them. Although visitation is not high, the quality of contacts is exceptional, so it's important for staff to be well informed and have plenty of resources on hand.

After the new DCP is in place, decisions can be made about upgrading locally produced exhibits. Wayside panels mounted outside on the large porch would provide interpretation and orientation even when the information center is

Recommendations

not staffed. Park staff are currently working on a project to upgrade a trail to include plant identification information.

Accessibility improvements have been identified and are being corrected.

Outside the information center, two BLM-era waysides will be replaced in FY 2003. Volunteers and campground hosts at Hole-in-the-Wall regularly update information along a nature trail between the campground and visitor center. Plans for sturdy plant label signs are currently being developed.

Baker Information Center

Baker is the busier of the park's two information centers. Located at the base of the World's Tallest Thermometer, the Information Center sits on prime real estate, and the owner is considering using it for another purpose. If this occurs, the park will probably look for another building to continue the information function in Baker.

Baker exhibits are all locally produced; some have been recently updated. Evaluation and further exhibit improvements will be planned after the location situation stabilizes.

Mojave National Preserve Headquarters

Park headquarters in Barstow will move to a new building on Barstow Road in FY 2004. The lobby of the new headquarters will be outfitted as an information center with a cooperating association sales outlet. A receptionist will staff the area initially, but visitors would be best served by adding a Visitor Use Assistant (VUA) position. In addition to working with visitors, the VUA would support Barstow interpretation activities. Exhibit installation is planned for FY 2006.

Zzyzx

The Desert Studies Center, a field station of the California State University (CSU) system, provides education and research opportunities to CSU students and non-credit classes to the public. New wayside exhibits on an informal trail around the pond interpret the history of the site, natural history visible from the trail (e.g., the tui chub -- an endangered fish species, springs, Soda Lake) and the current use of the site as a research center. Additional site planning would upgrade the informal trail into an accessible trail with additional interpretation. The site needs

orientation exhibits to greet visitors, and the now-empty shade shelter built near the restrooms offers a potential location for these materials.

There is potential for partnerships in interpretive programming with Desert Studies Center staff, especially after the opening of the Kelso Depot.

Mitchell Caverns at Providence Mountains State Recreation Area

Mitchell Caverns, managed by the California State Parks, is one of the premier destination points within the park. A cooperative agreement specifies the roles of California State Parks and NPS in interpretation and education at the site. With the close proximity of Mitchell Caverns to Hole-in-the-Wall, there is potential for additional partnering efforts between these two agencies.

Fort Piute

Planning is underway for improvements at Fort Piute, including road improvements, a picnic area, and interpretation of the Mojave Road and Fort Piute.

Quail Springs Trailhead

The park is currently planning for improvements at this trailhead. This provides the opportunity to develop a comprehensive message and appearance for all trailhead improvements that will occur over the next few years.

Historic Ranching – OX and Kessler Springs

With the acquisition of the important ranching facilities at OX and Kessler Springs, Mojave has the opportunity to interpret the ranching history of the area. During FY04 the park will evaluate both sites, develop plans to interpret ranching heritage, then search for money to make this happen.

Cal-Trans Rest Areas

Park staff will work with California Department of Transportation (Cal-Trans) to develop exhibits and materials for bulletin boards to orient rest area users to the Preserve and introduce significance and themes.

2) Interpretive Media

Wayside Exhibits

Existing waysides are found at park entrances and at a handful of other locations where BLM-era waysides have been replaced. A wayside exhibit proposal produced by Harpers Ferry Center was the basis for orientation and information waysides near park entrances that have already been installed.

Planning is underway for interpretation at Fort Piute in connection with an overall site development proposal. The park is also developing a site plan for the Quail Springs Basin Trail, which will include trailhead information. The Kelso Depot needs a couple of orientation waysides in the parking lot. Previously installed exhibits at Zzyzx do not include basic site orientation panels, which will need to be installed at a future date.

Wayside exhibits have already been installed at locations operated by partners at Zzyzx and Nipton. Waysides could be installed at locations managed by other partner organizations, such as Goffs and Interstate Highway rest stops.

Produce a new plan for wayside and trailhead exhibits; this would concentrate primarily on interpretive waysides and specify locations and topics.

Restrict wayside exhibits to developed areas, trailheads, and a limited number of pulloffs to preserve the undeveloped character of the park and to provide opportunities for discovery.

Create a systematic plan for orientation panels at trailheads.

Work with Cal-Trans to develop waysides and bulletin board exhibits for rest stops along I-40 and I-15.

Publications

Park-produced site bulletins and other in-house publications will conform to NPS Graphic Identity standards.

Develop a priority list, and review and replacement processes for park-produced site bulletins. New site bulletins should fill existing gaps in interpretation and orientation. The park has already identified a need for a number of site bulletins including day hikes, history of mining driving tour, and planning group visits. The

camping site bulletin is outdated and needs to be revised.

Produce a scope of sales plan for the natural history association.

Work with Western National Parks Association to produce inexpensive publications relating to specific themes. A general interpretive publication has been drafted and is scheduled for completion in FY 04.

Work with other partners (e.g., universities, recreation groups, environmental organizations, friends group, other parks, and other agencies) to produce publications on topics relating to park resources and issues, and of interest to the public.

Increase park newspaper publication (now annual) to twice a year with two seasonal issues. Newspaper editor should strive to include articles specifically relating to interpretive themes. The park newspaper provides orientation and information, discussion of important issues, a park map, and interpretation.

Update the Junior Ranger booklet so that it more closely covers interpretive themes. (The current supply will last until about 2004.)

Consider publication of resource studies as they become available. The Kelso Depot Historic Structure Report is well written and has wonderful photos. Publications such as these are of interest to a wide audience.

Exhibits

Produce exhibits for the Kelso Depot Visitor Center. More specific information is located in site recommendations above and theme recommendations below.

Develop new exhibits and/or rehabilitate existing exhibits at park information centers.

Design and install exhibits for the new headquarters building in Barstow.

Produce and install exhibits through partnership arrangements with other facilities in and near Mojave.

Improve portable exhibits for fairs and events.

Digital Media

Redesign the park website. Website use seems to be increasing each year (although the increase is

Recommendations

recent, and data is still preliminary: *National Park Service, 2003*). Improving the park website is a high priority. Digital media can be linked throughout the park; programming can be updated by park staff.

Install interactive computer kiosks outdoors at sites such as information centers, rest stops, and partnership sites. Provide orientation, information, and interpretation. Link programming with park website.

Incorporate interactive computer terminals in exhibits; link programming with park website.

Audiovisual Programs

Produce a 10 - 20 minute video program for the Kelso Depot. The program would provide a dramatic overview of Mojave, highlighting rare events such as spring wildflowers and winter snows and describing processes (such as geologic events) not easily interpreted through static exhibits. A longer version could be produced for sale through the cooperating association.

Consider producing videotaped oral history interviews to capture stories of former Mojave

inhabitants. Video clips may be a part of Kelso Depot exhibits.

Personal Services

On-site interpretation and contacts

Regularly scheduled hikes and talks generally are not well attended due factors including the sporadic nature of visitation. However, holiday weekends and hunting season brings groups together at Hole-in-the-Wall and Mid-Hills campgrounds. The opening of the Kelso Depot will offer additional chances for live interpretive programming. **Offer interpretive programs targeted to these time periods.**

Expand roving interpretation, which often matches visitor interests and schedules more than structured programs.

Facilitate visits by outside groups by providing information, increasing contacts, and offering brief talks.

Continue using the *Arts in the Parks* program within Mojave. This partnership program uses art to communicate messages about parks and resource protection.

Education Programs / Interpretation for Kids

Continue to expand education programs. Park staff have developed four curriculum-based education programs taught in classrooms and plan to develop a fifth in FY 04. Increased advertising of available programming would probably greatly increase demand for programs. With the large population in the Barstow and Victorville areas, the potential for outreach programming far exceeds the capacity of current staff. Enhancing staffing with volunteers and partners would allow expansion of the program.

Explore the possibilities of partnering with the California Desert Studies Center and Granite Mountains Research Center to develop teacher workshops.

Develop a kid's webpage section based on key interpretive themes.

Emphasize programs for schools adjacent to the park and in nearby desert communities. However, contacts should be extended, as staffing permits and interest of schools indicates, to Las Vegas and Los Angeles.

Develop a Discovery Room in the basement of the Kelso Depot. The discovery room would be outfitted as an educational laboratory for children. The classroom would primarily support school visits, but could also serve families touring the Depot.

Expand contacts with and programming for groups that camp in the park.

The Junior Ranger booklet should be revised to more directly address park themes.

Outreach

Continue providing outreach programs. Off-site contacts are vital to achieving the park mission. Highest priority should be given to neighboring communities, to audiences with little previous access to national parks (e.g., economically disadvantaged, recent immigrants, ethnic minorities), and to audiences that can potentially impact Mojave in positive and negative ways (OHV users, hunters, conservation groups, service clubs, scouts). **Increase contacts with outside groups. Market the availability of speakers for outside groups.**

Continue to develop positive relationships with local media (newspapers and radio). Provide

Recommendations

press releases, photos, and articles for publication. Develop an electronic mailing list for the media. Provide information and source material to support press efforts.

The San Bernardino County Fair, Barstow Earth Day Fair, and Public Lands Day Event have been successful methods of reaching local audiences. The park will research additional events of this kind to connect with neighbors.

Strengthen partnerships with other desert land management agencies and interested groups through participation in the Desert Information and Resource Team (DIRT). This group has the potential to reach a huge audience with messages common to all participating groups, providing economies of scale. The team is currently planning a media campaign to promote awareness of the desert tortoise.

Produce Powerpoint programs to introduce park significance and management issues.

Explore development of a Travelers' Information System to reach travelers both inside the park and on Interstates 15 and 40.

3) Interpreting Primary Themes

All themes

Website

All themes can be effectively explored with compelling graphics, interesting and varied information, and relevant links on the park website. The “Kids’ Page” portion of the website will be an exceptional medium to reach children with all interpretive themes. Themes can be interpreted in a “place-based” context that combines orientation and interpretation, and supports both visitor interests and park goals.

Environmental Education

Reaching children is the most effective way to influence attitudes over the long term. There are numerous initiatives being developed desert-wide to bolster the effectiveness of education programs. The park is interested in promoting programs developed by park staff, as well as cooperative ventures that have the potential to reach a wider audience. Programs will eventually cover all park themes.

Outreach

Effectively reaching park neighbors has been identified by park management as a critical goal for interpretation. Creative and diverse methods need to be developed to reach as many people as possible, and all park themes need to be incorporated into these interpretive products.

Theme A Mojave National Preserve protects and provides superior opportunities to experience an extensive variety of habitats, species, landforms, and scenic resources unique to the Mojave Desert, as well as transitional elements of the Sonoran and Great Basin deserts.

Outdoor interpretation at transitions and specific vegetation zones: waysides and brochures

Outdoor interpretation of this theme would best be accomplished where the transitions between desert types occur, and at accessible places in the different vegetation zones. The map of the park *Unigrid* brochure identifies locations of specific vegetation types, and can be used as field guide.

Additional interpretation could identify indicator species and other distinguishing characteristics. Indicator species include smoke tree (Sonoran), Joshua tree (Mojave), and sagebrush (Great Basin). Selection of species associated with different habitats would include smaller and less well-known species in addition to the more charismatic fauna and flora. Ecological relationships and biological diversity would be interpreted.

Possible methods include wayside exhibits, a brochure, and interpretive trails. Ideally, each vegetation zone would be accessible by trail. Since transitions happen over some distance, several sites may need to be interpreted for each transition. Identifying locations where the transition is more abrupt would shorten the distance between sites. Possible locations include:

- Great Basin → Mojave: Mid Hills to Hole in the Wall
- Mojave → Great Basin: Cedar Canyon Road to Mid Hills
- Sonoran → Mojave: Goffs to Lanfair.

Information center interpretation: exhibits, A/V, publications, personal services

Recommendations

Theme A is already interpreted at Baker and Hole in the Wall Information Centers through photo exhibits. However, the association between the exhibit and the theme should be strengthened through upgrades of the exhibits. Kelso Depot and Barstow exhibits will cover this theme.

The park newspaper carries related topics. Sales publications describing the Mojave are already available. Western National Parks Association (WNPA) is producing a general interpretive publication which will describe Theme A specifically. Consideration should be given to publishing a field guide sales publication that more fully interprets the three deserts. Alternatively, a site bulletin could be developed.

Theme B Dramatic geologic forces created and continue to shape the landforms and desert environment of Mojave National Preserve.

Topics

Important topics and locations include:

- Volcanism: Cima Volcanic Field
- Sand Dunes: Kelso Dunes
- Minerals and Mineralization: mine sites
- Granitic Intrusions: Cima Dome

- Geologic connections with life: Caruthers Canyon (limestone bedrock), fossil locations, lichen colonization, biologic soil crusts, etc.

On-site interpretation of mines: publications

Interpret the history and environmental and cultural impacts of mining. A brochure/guide describing a driving tour of six mines (Evening Star, Standard #1, Standard #2, Silverado, New Era, Riley's Camp) would convey some of the history and variety of mining techniques. Resource protection and visitor safety issues must first be resolved.

Landforms; develop roadside pullouts

Kelso Dunes is already interpreted with wayside exhibits. Additional landforms such as cinder cones, lava flows, alluvial fans, one arch, and minerals (where visible) could be interpreted with waysides. Other locations to interpret could include Soda Lake, Providence Mountains, and Piute Mountains.

Geology interpretation

Wayside exhibits, a geology auto tour (on cassette tape and/or CD), publications (field guides and other sales items, site bulletins), and guided hikes can be used to interpret geological phenomena outdoors. These methods have the advantage of interpreting formations where visitors can see them. Indoor interpretation can include the Mojave website, Kelso Depot and information center exhibits, audiovisual programs, and publications. Indoor experiences could include computer simulations, audiovisual images and other graphics, touchable and encased specimens, and mechanical interactives to show formations and processes. WNPA sales items could include geology maps, publications, videotapes, and CDROMs. Some items that relate specifically to the Preserve could be produced by the WNPA.

Partnerships

Interpretation of Theme B would involve considerable cooperation with the U.S. Geological Service (USGS). USGS is currently working on geology brochures relating to specific park areas. There would also be cooperation with the NPS Geologic Resources Division (GRD) in Denver; one example is their Geologist in Parks program. Partnerships with universities (such as University of California at Riverside, which operates the

Granite Mountains research station in the park) would also be implemented. The USGS has also expressed an interest in creating a Mojave National Preserve geologic map.

Theme C The diverse species in the National Preserve have evolved adaptations that enable them to live in this desert environment .

Interpreting adaptations of small animals

Similar to the approach for Theme A, interpretation would include smaller and less-noticed species (e.g., arthropods, fungi, microorganisms) as well as the larger, more charismatic species. Include discussion of limited adaptability (e.g., the tui chub failing to adapt to natural forces; desert tortoises being threatened by to human forces). Examples of adaptations include thermoregulation, timing of activity, and water recycling by tortoises. Consider making comparisons with human adaptations.

Examples of species, topics, interpretive media, and locations to interpret Theme C:

Recommendations

Diverse flora and fauna: Caruthers Canyon, Hole-in-the-Wall, Cima Dome, mountain tops, dry washes, Lanfair Valley

Desert tortoises: natural history, adaptations, habitats, threats, protection measures. Interpret in information centers (exhibits, audiovisual -- including video in exhibits, publications), on website, TIS radio station, and with road signs. Props and media for conducted education and outreach programs could include models, prepared and live specimens, and graphic and audiovisual materials. Most favorable habitats include Nipton area and Ivanpah Valley. Wayside panels would be considered at Nipton, Ivanpah Valley, Kelso Dunes, Goffs, Fenner, at entrance monuments, and parking lots within tortoise habitat (because tortoises sometimes seek shade under parked cars). This subject could be rolled into a Desert Managers Group initiative to create a desert-wide strategy to interpret the tortoise.

Creosote bush: leaves, dormancy, root system, longevity. This topic could be effectively addressed in different ways by any interpretive medium.

Plants: diversity, desert adaptations, efficient use of resources can be interpreted at numerous locations. A plant identification trail at Hole-in-the-Wall, park *Unigrid* brochure, site bulletins, park webpage are some of the methods to elucidate this theme.

Interpret insect adaptations, such as those of the yucca moth role in pollination of Joshua trees; relationship between the tarantula and the tarantula wasp (adaptations for feeding and breeding); diversity of ant species. Interpret with a trailhead wayside (Yucca moth), publications (trail guide, site bulletin, field guides), guided hikes, Jr. Ranger booklet and information center media.

Kangaroo rats: adaptations that allow them to survive in an arid environment without drinking water. Audiovisual programs, exhibits, publications, website, and personal services.

Lizards: there are many adaptations that can be interpreted. People often see lizards in the field; interpretation can enhance the experience. Audiovisual programs, exhibits, publications (field guides, site bulletins, checklists), website, and personal services.

Bighorn sheep: Visitors are unlikely to see them, but are likely to be interested. Audiovisual programs, exhibits, publications, website (explore the possibility of setting up a webcam), and personal services. Some media should be changeable to keep up with research and monitoring.

Interesting when you get to know them: rattlesnakes, black widow spiders, and scorpions. Emphasize natural history and adaptations that make the creatures more interesting and help visitors understand how to coexist safely with these residents. Interpret through information center media, personal services, publications (field guides, site bulletins, checklists), website.

Snakes: Visitors seldom see them, but are often fascinated with -- or terrified of -- snakes. Adaptations can be interpreted with the entire spectrum of interpretive media and programs. Consider using captive specimens for education and outreach programs.

Theme D Deserts are often viewed as empty wastelands, but in fact they are fragile, arid ecosystems with diverse life forms that are easily impacted by human activities – even human footprints affect the land in different and lasting ways.

Interpreting deserts

Some people may regard deserts as inhospitable and threatening wastelands, with little value. These negative beliefs would be countered in several ways that could include:

Start in a comfort zone: Show people how to be comfortable and safe in a desert, whether on a short hike or a longer camping trip. Interpret interesting stories in a comfortable environment (e.g., information center, at home via publication or website, park TIS radio station).

Show people compelling scenes that they would be unlikely to see on their own. Audiovisual programs work well for this: rare animals, animal interactions such as predator/prey encounters, infrequent

Recommendations

occurrences such as spring wildflowers and unusual weather events, aerial views, and rare and important habitats such as springs.

Incorporate interesting and dramatic visual materials such as computer graphics, slides, videos from the National Aeronautics and Space Administration (NASA).

Make outdoor experiences accessible, safe, and enjoyable for various audiences, including people with disabilities, seniors, and people with little or no previous experience with national parks or similar protected areas. Address through targeted development such as short loop trails that are universally accessible and include attractive views and features.

Interpreting to OHV users

An important audience is users of off-highway vehicles (OHV's), who can have significant impacts: appreciate and protect or damage the desert. OHV riders crossing over from Razor Road -- an OHV area managed by the BLM -- over the Thanksgiving holiday are a serious resource management and law enforcement problem. Staff have been experimenting with using interpretation

to increase compliance. Last year, interpreters worked with law enforcement rangers to develop a publication explaining rules and boundaries. Interpreters and other staff members handed them out on the entrance road to campers heading into the area. Personal contacts were positive and gave visitors a chance to ask questions. This program should be continued. Additionally, large posters could be developed for the bulletin board at the entrance to Razor Road explaining rules and boundaries. NPS should work with the BLM to upgrade information currently offered at this bulletin board.

Mojave Road tours are currently offered through the Mojave Desert Heritage and Cultural Association. Additional trips could be offered by other permittees or volunteers, with Park Service oversight and training in interpretation.

Other outdoor locations

Interpret Theme D on the loop trail at Hole-in-the-Wall and on the trail from Hole-in-the-Wall to Mid Hills. Methods could include trail guides or site bulletins, exhibits in the Hole-in-the-Wall Information Center, and guided hikes. Interpret this theme with wayside exhibits at scenic roadside pullouts. It is important that the pullouts be located where visitors would be inclined to stop

for the views or visible features alone (otherwise, waysides alone are not likely to draw many viewers). Interpretation could be combined with Theme A (the three desert systems).

CD-ROM

Obtain or develop a CD-ROM program on the ecology and fragility of deserts. Obtain or develop a short version to display in information centers and on the website; obtain or develop a longer version for education and sales. Explore partnerships with universities to develop such programs. Consult with the cooperating association to obtain or develop a computer screen saver sales item of the desert.

Media partnerships

Work with partners to produce media programs on desert preservation; include newspaper articles, television news and feature programs, radio programs (consider a travelers' information station), and magazine articles. Possible partners include: radio and television stations and networks, universities, other federal and state agencies, communities, and non-governmental organizations.

Outreach

Target outreach programs to user groups. Produce media such as Powerpoint slide shows and large, colorful graphics to support personal presentations. Consider using live animals such as snakes and desert tortoises in presentations. (The effectiveness of direct contact with live animals for appealing to children, especially from lower socioeconomic populations and other underrepresented groups, has been observed in many contexts. See *Post Occupancy Evaluation Report*, Paul H. Douglas Center for Environmental Education, Vaughn, 1992; *Biophilia Hypothesis*, Kellert and Wilson, 1993.)

Off-site exhibits

Produce standardized exhibits for off-site locations including highway rest stops, welcome centers, fairs, and nearby tourist/casino developments. Also consider for use in Mojave Preserve information centers. Explore media products such as a traveling information center with nearby desert parks and other agencies.

Recommendations

Research communication strategies

Commission a research project to develop and evaluate specific communication strategies to encourage attitudes and behavior with positive impacts on desert environments (see similar projects such as *Understanding Visitor Attitudes, Beliefs, and Motivations about Feeding Wildlife*, Wiles and Hall, 2003).

Theme E Mojave National Preserve protects the historical and cultural values of the California Desert, including sites associated with ancient Indian cultures, patterns of exploration and settlement, and mining, ranching and railroading history -- resources that document at least 12,000 years of human presence in this desert region.

Interpret some archeological sites

Work with archaeologists to identify pictograph sites that visitors can see. Develop a plan for protecting the sites while providing visitor access.

Resource protection considerations would prohibit public access to most archeological sites.

The Desert Studies Center at Zzyzx already has exhibits on prehistory. The park could partner with Zzyzx to upgrade existing exhibits or develop additional interpretation. Continue to work with park cultural resource staff, neighboring tribes, professionals from other agencies and groups, and other scholars to plan for both protection of and access to cultural resources.

Interpretation at Kelso

Kelso Depot exhibits, currently in development, will cover Theme E. The Kelso School is also owned by NPS. It, along with the Packard Store (privately owned), offers potential for additional interpretation at Kelso. Wayside exhibits or a “walking tour” brochure could offer more information about life at Kelso.

Interpret railroads, mining, homesteading, and ranching

Stories of railroads, mining, homesteading, and ranching are interrelated, and will be introduced in the Kelso exhibits. Specific sites can be interpreted with waysides, site bulletins, personal services, and exhibits. Some of the railroad story can be told in Cima with waysides and a brochure.

Roadside wayside exhibits can interpret the mining towns of Vanderbilt and Providence. A 4WD driving tour of mine sites in the Ivanpah Mountains could show the history of mining techniques in the desert. Safety and resource protection considerations would need to be addressed.

The story of homesteading can be told in the Lanfair Valley with a brochure and wayside exhibits at locations where the valley is visible or significant events occurred.

Two historic ranches, Kessler Springs and OX, offer tremendous potential for interpretation. Some historic surveys have been completed, including a description of ranch structures and features. The two ranches should be evaluated for their potential as interpretive sites; detailed site planning is needed.

Waysides, hikes, indoor media to interpret forts, trails, roads

Sites such as historic forts, trails, and roads can be interpreted with wayside exhibits, guided hikes, and indoor interpretive media (e.g., exhibits, audiovisual programs, and publications in visitor and information centers).

Route 66 could be interpreted through a partnership; the BLM and the Route 66 Museum in Barstow are potential partners. Twentieth Century military camp sites, including General Patton's camp near Goffs and three camps and airfields used in the 1960's in the Ivanpah Valley, could be identified by signs, waysides, and/or a brochure.

Not all sites should be interpreted. A wayside plan would identify those sites that are the most important, and can be effectively interpreted with wayside exhibits. Care should be taken to maintain the primitive nature of most of the park.

Work with partners

Identify people in region with knowledge of history and prehistory. Work with them to develop information and identify volunteer or contract educators and interpreters.

Theme F The size and isolation of the Preserve – nearly half of which is designated Wilderness -- offer varied opportunities to experience solitude, natural sounds, and a varied landscape of sand dunes, mountain ranges, dry lake beds, lava

Recommendations

flows, cinder cones, Joshua tree forests, dark night skies, and far-reaching clear vistas.

Improve visitors' abilities to connect with wilderness

Positive experiences with wilderness will encourage stewardship. A range of experiences should be available. Effective orientation, interpretation, and education services help people choose what experiences are best for them and for protecting resources. Wilderness may be experienced directly by backpacking, hiking a universally accessible loop trail, joining a guided hike, or by gazing from a roadside stop across a scenic expanse. Wilderness may be experienced indirectly by watching a video program in the visitor center auditorium, attending a campfire program, or purchasing a publication. Safety and resource protection information are particularly important components of orientation, especially for first-time visitors.

Produce video program

A video program would be produced to be shown in the Kelso Depot theater. Rather than trying to communicate large quantities of information, it will be an evocative "mood piece," 10-15 minutes

in length. A longer version with more detail should be available as a sales item and for classroom and television broadcast use. This program can offer visitors access to scenes and experiences that otherwise might be inaccessible, such as a rare spring wildflower bloom or snow in the desert. It can motivate them to explore the park and correct misconceptions they might have about deserts. The program should be visually, acoustically, and emotionally compelling, presenting both desert grandeur and its subtleties.

Personal programs, outreach, publications, and exhibits

Interpretation of the concept of wilderness should help visitors explore questions such as: What is wilderness? Why preserve wilderness? What is the history of human relationships and attitudes toward wilderness? What are values of wilderness? What are different perspectives toward wilderness preservation? What are costs and benefits of wilderness preservation? What does wilderness preservation mean for the future? Why should I care?

Interpretation and exploration of questions such as these could be accomplished through personal programs, outreach, publications, and exhibits. Exhibits would provide an introduction to

wilderness concepts, and an orientation to wilderness in the park. Outreach to community groups would include information related to wilderness.

Night sky, natural sounds, solitude

Opportunities for experiencing a clear night sky, natural soundscapes, and solitude abound in the Preserve. Interpretation could include astronomy programs at campgrounds and Mitchell Caverns, campfire programs at Hole-in-the-Wall, and guided walks. Information center exhibits would introduce visitors to opportunities for and threats to solitude and natural sounds in parks.

Research Needs

For interpreters to educate and inspire visitors, they first must know the resource. Mojave does not have a large library of information, as do many older parks. Interpreters here must do basic research and build a library, including both books and vertical files, from which they can draw to create programs. Photo and other media files are also not well developed. As both information and media files grow, future interpreters will be able to develop new programming without having to invest large quantities of time in gathering these materials.

A great deal of scientific research is ongoing at Mojave. The interpretive staff needs to work closely with the Science Advisor and Resource Management staff to keep interpreters up to date on research activities and results. Scientists and resource management specialists should be encouraged to present regular briefings to the entire park staff, especially interpreters. Encourage agency and contract researchers to produce executive summaries and programs that translate research results for park staff and the public.

Mojave National Preserve needs to learn more about actual and potential audiences: Who visits? What are their motivations, expectations, and satisfaction levels? Who doesn't visit and why? While some of these questions are being answered through the Visitor Services Projects of 1997 and 2002, other methods may also be employed. For example, **front-end evaluations** would query potential users of programs, facilities, and media before the products are developed. This type of research is targeted so that practical use can be made of the results. **Formative evaluations** would be conducted during conceptual design, and would test inexpensive mockups of interpretive media before fully investing in final products.

The interpretive staff would support the park archeologist in developing a **scope of collections**

Recommendations

statement, since museum collections are a source of objects used in exhibits. Park interpretive staff is assessing the park collection, collections of local and regional museums such as the San Bernardino County Museum, and private collections in search of objects for Kelso Depot exhibits.

Baker and interior posts such as Hole-in-the-Wall and Kelso. Park management needs to identify creative solutions to housing problems for park staff.

Staffing Needs

The responsibilities of and challenges to the interpretive staff are considerable. The Kelso Depot, Baker, and Hole-in-the-Wall information centers must be staffed year round. Adequate staffing is essential for visitor understanding, enjoyment, and safety as well as resource protection. Interpretive facility and media development require staff coordination and expertise. Expanded outreach and education programs yield substantial benefits, yet with significant costs associated with managing a high-quality program.

While the park will continue to request staffing commensurate with increasing workload, it will also supplement existing NPS staff through programs that include volunteers, partnerships, and contracting.

The availability of housing is a limiting factor for staffing in several areas of the park, especially

4) Implementation Plan

The implementation table below indicates the service and locations that Mojave National Preserve intends to provide for each theme and audience over the life of the plan. Under each theme and audience, interpretive services currently offered are presented first, followed by an italicized list of future services.

Items in *italics* are planned with projected date of completion

THEMES	General	Children	Local Residents
1. Mojave National Preserve protects and provides superior opportunities to experience an extensive variety of habitats, species, landforms, and scenic resources unique to the Mojave Desert, as well as transitional elements of the Sonoran and Great Basin deserts.	Exhibits/AV		
	Baker IC photo exhibit	Desert Cousins web story	San Bernardino Co. Fair
	HITW IC photo exhibit	<i>Kelso Discovery Rm. FY 06</i>	Barstow Earth Day Fair
	California Welcome Center exhibits	<i>Website Kids' page FY 07</i>	Barstow Street Fair
	Website		Public Lands Day Fair
	<i>Kelso Depot FY 04</i>		
	<i>Kelso AV FY 05</i>		
	<i>Barstow HQ exhibits FY 06</i>		
	Waysides		
	Desert Woodland at Teutonia Trailhead		<i>Interstate Rest Areas FY 08</i>
	Bulletin boards		
	<i>Trailhead panels FY 06</i>		
	Publications		
	Unigrid	Jr. Ranger <i>(Update 04)</i>	Newspaper articles
	Bird checklist	Mojave Desert Discovery Curriculum Guide	
	General Interp Pub (WNPA)		
	Park Guide (newspaper)		
	National Geographic (formerly Trails Illus.) map		
	Talks, programs, workshops		
	Desert Studies Center classes	Who Lives in Mojave NP? School program	Service Club/ Community Programs
		<i>Teacher Workshops FY 06</i>	

Recommendations

	General	Children	Local Residents
2. Dramatic geologic forces created and continue to shape the landforms and desert environment of Mojave National Preserve.	Exhibits/AV		
	Website --(USGS partnership)	San Bernardino County Fair	
	<i>Kelso Depot FY 04</i>	Barstow Earth Day Fair	
	<i>Kelso AV FY 05</i>	Barstow Street Fair	
		Public Lands Day Fair	
		<i>Kelso Discovery Room FY 06</i>	
		<i>Website Kids' page FY 07</i>	
	Waysides		
	Glowing Clouds at HITW		
	A Lost Lake at Zzyzx		
	Kelso Dunes at Kelso Dunes		
	Publications		
	Park Guide (newspaper)	Junior Ranger (<i>Update 04</i>)	Newspaper articles
	General Interpretive Publication (WNPA)	Mojave Desert Discovery Curriculum Guide	
	<i>Geology Site Bulletin(s) FY 04</i>		
	<i>Geologic Map FY 08</i>		
Talks, programs, workshops			
Desert Studies Center classes	<i>Geology Road Trip School Program FY 04</i>		
	<i>Teacher Workshops FY 06</i>		

	General	Children	Local Residents
3. The diverse species in the National Preserve have evolved adaptations that enable them to live in this desert environment.	Exhibits/AV		
	Baker IC lizard photo exhibit	San Bernardino County Fair	
	Website	Barstow Earth Day Fair	
	<i>Kelso Depot FY 04</i>	Barstow Street Fair	
	<i>Kelso AV FY 05</i>	Public Lands Day Fair	
	<i>Barstow HQ FY06</i>	<i>Kelso Discovery Room FY 06</i>	
		<i>Website Kids' page FY 07</i>	
	Waysides		
	Teeming with Life at Zzyzx		
	A Sanctuary of Green at Zzyzx		
	Secret Life on Shifting Sand at Kelso Dunes		
	Publications		
	Park Guide (newspaper)	Junior Ranger (<i>Update 04</i>)	Newspaper articles
	Threatened Desert Tortoise site bulletin	Mojave Desert Discovery Curriculum Guide	
	General Interp Publication (WNPA)		
	HITW Nature Trail		
	National Geographic Map (formerly Trails Illustrated)		
	Talks, programs, workshops		
	Desert Studies Center classes	Who's Who & What's What? School program (animal classification and adaptations)	
	Tortoise Tales School Program		
	<i>Teacher Workshops FY 06</i>		

Recommendations

	General	Children	Local Residents
<p>4. Deserts are often viewed as empty wastelands, but in fact, they are fragile, arid ecosystems with diverse life forms that are easily impacted by human activities – even human footprints affect the land in different and lasting ways.</p>	Exhibits/AV		
	Website	<i>Kelso Discovery Room FY 06</i>	San Bernardino County Fair
	Tortoise Country Poster @ Kelso	<i>Website Kids' page FY 07</i>	Barstow Earth Day Fair
	<i>Kelso Depot FY 04</i>		Barstow Street Fair
	<i>Kelso AV FY 05</i>		Public Lands Day Fair
	Waysides		
	Bulletin boards		
	Publications		
	Guide (newspaper)	<i>Junior Ranger (Update 04)</i>	Newspaper articles
	Threatened Desert Tortoise site bulletin	Mojave Desert Discovery Curriculum Guide	
	General Interp Publication (WNPA)		
	HITW Nature Trail		
Talks, programs, workshops			
Desert Studies Center classes	<i>Teacher Workshops FY 06</i>	Service Club/Community Programs	

	General	Children	Local Residents
5. Mojave National Preserve protects the historical and cultural values of the California Desert, including sites associated with ancient Indian cultures, patterns of exploration and settlement, and mining, ranching and railroading history -- resources that document 12,000 years of human presence in this desert region.	Exhibits/AV		
	Website		San Bern. Co. Fair
	HITW IC photo exhibit (<i>Upgrade pending DCP</i>)	<i>Kelso Discovery Room FY 06</i>	Barstow Earth Day Fair
	<i>Kelso Depot FY 04</i>	<i>Website Kids' page FY 07</i>	Barstow Street Fair
	<i>Kelso AV FY 05</i>		Public Lands Fair
	<i>Barstow HQ FY 06</i>		
	<i>Traveler's Information Radio Station (TIS) FY 04</i>		
	Waysides		
	Ft Piute at Ft Piute (E Clampus Vitus)		
	HITW (how named) at HITW		
	Camp Rock Spring at Rock Springs		
	Desert Travelers at Rock Springs		
	Nipton at Nipton		
	A Travelers Rest at Zzyzx		
	<i>Fort Piute FY 05</i>		
	<i>Historic Ranching FY 07</i>		
	Publications		
	Park Guide (newspaper)	Junior Ranger (<i>Update 04</i>)	Newspaper articles
	General Interp Publication (WNPA)	Mojave Desert Disc. Curr. Guide	
	HITW Nature Trail		
	<i>Kelso Depot Historic Structures Report (WNPA) FY05</i>		
	Talks, programs, workshops		
	Desert Studies Center classes	They Called the Desert Home School Program (survey of desert dwellers)	Service Club/Community Programs
	<i>Teacher Workshops FY 06</i>		

Recommendations

	General	Children	Local Residents
6. The size and isolation of the Preserve – nearly half of which is designated Wilderness -- offer opportunities to experience solitude, natural sounds, and a varied landscape of sand dunes, mountain ranges, dry lake beds, lava flows, cinder cones, Joshua tree forests, dark night skies, and far-reaching clear vistas.	Exhibits/AV		
	Baker IC photo exhibit	<i>Kelso Discovery Room FY 06</i>	San Bernardino County Fair
	HITW IC photo exhibit (<i>Upgrade pending DCP</i>)	<i>Website Kids' page FY 07</i>	Barstow Earth Day Fair
	Website		Barstow Street Fair
	<i>Kelso Depot FY 04</i>		Public Lands Day Fair
	<i>Kelso AV FY 05</i>		<i>Public Service Announcements FY06</i>
	<i>Barstow HQ FY 06</i>		<i>Arts in the Park Show FY 07</i>
	<i>Traveler's Information Radio Station (TIS) FY 07</i>		
	<i>Arts in the Park Show FY 07</i>		
	Waysides		
	Bulletin boards		
	Publications		
	Park Guide (newspaper)	<i>Jr. Ranger (Update 04)</i>	Newspaper articles
	General Interp Publication (WNPA)	Mojave Desert Discovery Guide	
	Talks, programs, workshops		
	Desert Studies Center classes	<i>Teacher Workshops FY 06</i>	Service Club/Community Programs

	General	Children	Local Residents
7. Orientation and Safety	Exhibits/AV		
	Website	<i>Kelso Discovery Room FY 06</i>	San Bernardino County Fair
	<i>Kelso Depot FY 04</i>	<i>Website Kids' page FY 07</i>	Barstow Earth Day Fair
	<i>Kelso AV FY 05</i>		Barstow Street Fair
	<i>Barstow HQ FY 06</i>		Public Lands Day Fair
	<i>Traveler's Information Radio Station (TIS) FY 07</i>		
	<i>Community exhibits (Goffs, Nipton Fenner) FY 07</i>		
	Waysides		
	HITW (how named) at HITW		
	Upright maps at park entrances (6)		
	Bulletin boards		
	<i>Trailhead panels FY 06</i>		
	Publications		
	Park Guide (newspaper)	<i>Jr. Ranger (Update 04)</i>	Newspaper Articles
	General Interp Publication (WNPA)	Mojave Desert Discovery Guide	
	AAA map		
	National Geographic (formerly Trails Illustrated) map		
	Talks, programs, workshops		
	HITW IC – personal services		Service Club/Community Programs
	Baker IC – personal services		PSAs
Desert Studies Center classes		<i>PSA updates FY 06</i>	

APPENDICES

Planning Team

Terry Baldino	Assistant Chief of Interpretation, Death Valley National Park
Chris Burns	Park Ranger, Interpretation, Mojave National Preserve
Corky Hays	Chief of Interpretation, Death Valley National Park
Mary Karraker	Chief, Resource Interpretation, Mojave National Preserve (former)
Mary Martin	Superintendent, Mojave National Preserve
Sean McGuinness	Chief Ranger, Mojave National Preserve
Lynne Nakata	Interpretive Specialist, Pacific West Region
Janice Newton	Executive Director, Death Valley Natural History Association
Anne-Marie Reber	Park Ranger, Interpretation, Mojave National Preserve
Kay Rhode	Chief of Interpretation, Lake Meade National Park
Dennis Schramm	Management Assistant, Mojave National Preserve (former)
Linda Slater	Park Ranger, Interpretation, Mojave National Preserve
Sam Vaughn	Interpretive Planner, Team Captain, Harpers Ferry Center
Ted Weasma	Geologist, Mojave National Preserve
James Woolsey	Chief, Resource Interpretation, Mojave National Preserve

References

Kellert, Stephen and E. O. Wilson. 1993. *Biophilia Hypothesis*. Island Press. Washington, D.C.

National Park Service. 1997. *Mojave National Preserve Visitor Study*. Visitor Services Project. Cooperative Park Studies Unit.

National Park Service. 2003. *Kelso Concept Design Plan*. Mojave National Preserve. Barstow, California.

National Park Service. 2003. *Historic Furnishings Report*. Harpers Ferry Center. Harpers Ferry, West Virginia.

National Park Service. 2003. *Visitor Use and Evaluation of Interpretive Media*. Visitor Services Project. National Park Service Social Science Program.

National Park Service, 1999. *Programmatic Accessibility: Guidelines for Interpretive Media*. Harpers Ferry Center. Harpers Ferry, West Virginia.

Vaughn, Sam. 1992. *Post Occupancy Evaluation Report, Paul H. Douglas Center for Environmental Education*, Harpers Ferry Center. Denver, Colorado.